DAIRY MANUAL FOR FOOD CHAIN SUPERMARKETS

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DAIRY MANUAL FOR FOOD CHAIN SUPERMARKETS

By

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CHAPTER I

INTRODUCTION

The purpose of this study and research is to gather information which will help to train the personnel responsible for the dairy department operation. As much information as possible will be presented concerning the three points of operating a dairy department in a food chain supermarket. These points are: (1) good mechanical equipment and the proper use and care of it; (2) an adequate selection of quality dairy products, stored and displayed at proper temperature and moisture levels; (3) careful and intelligent merchandising of those dairy products by capable personnel.

The information gathered will be made available to those food chains who may desire to prepare a dairy manual fitted to their own needs and operating policies and to the specific conditions which may be peculiar to their own areas of operations and store locations. Many suggestions concerning merchandising techniques, product care, equipment care and merchandise handling will be made. These suggestions are based on the actual experience of the writer and information collected from various equipment manufacturers, dairy processors, and books written by accepted authorities on the subjects. Additional information will be presented from

surveys and other research projects, both published and unpublished.

The dairy department can be one of the most profitable departments found in a modern food chain supermarket. The volume of sales per man hour is usually greater than that of any other department of the supermarket. It has been estimated that one person working 48 hours a week can stock and take care of all the details of running a dairy department with a weekly volume of $2500 to $3000. This statement has been authenticated by various members of management of leading food chains. Some of these men have spoken of the high man-hour production demonstrated in the dairy departments of food chain supermarkets. That this department can be a very profitable one will be demonstrated in this study under the various product headings. The amount of the average store sales and the percentage of total store sales which each product class represents will be given under these headings also. The number of stock turns will be given as well.

One factor should be held in mind at all times when an average figure is quoted; that is that any individual supermarket is not average. The volume of sales in a supermarket is dependent upon the number and buying habits of the people patronizing the supermarket. The sales of the dairy department are likewise dependent upon these variables. For instance, in a farm community which is small in population,

one could not expect to sell as much fluid milk as a supermarket in a large metropolis.

Various estimates of the total sales of the supermarket which the dairy products represent vary from 7% to 12%. One particular company's sales are said to be approximately 9%. This percentage is the total of only those dairy products sold from refrigerated display cases. Many of the dairy products which do not require refrigeration are classified as grocery items; such items as canned milk, dry milk, nonfat dry milk solids, dried cream, etc. Various estimates of national sales of dairy products sold in supermarkets on an average store basis coincide with this average as quoted above.

There are very few companies in the chain food retailing industry who break down their sales of dairy products into a dairy department. The sales are not recorded at the cash registers and records are not kept for inventory purposes for the dairy department. It must be recognized at the beginning that those statistics quoted are only estimates and from surveys of those supermarkets which do ring the dairy sales on a separate key. Yet, the sales estimates can be said to be fairly reliable since a great deal of care is taken to separate these items being surveyed and due to the reliability of the people making the survey.

For the most part, the supermarket sells only a small portion of the total dairy products consumed by the nation. The following survey lists the dollar value of the total

TABLE I

WHAT CUSTOMERS SPENT FOR ALL PRODUCTS SOLD IN FOOD STORES [1]
(Add ,000 to all dollar figures)

Product	Value of total domestic consumption	Amount spent in comb. & groc. stores	% of total store	% groc. to total consump.
Dairy Products	$11,809,850	$2,626,120	8.38	22
Milk, butter	6,944,710	1,263,330	4.03	18
Fresh Milk	5,385,550	690,030	2.20	13
Fresh Cream	473,420	121,180	.39	26
Butter	1,085,740	452,120	1.44	42
Eggs (shell)	2,804,560	695,050	2.22	25
Cheese	712,270	490,950	1.57	69
Natural Cheese	327,790			
Processed Cheese	280,330			
Cottage Cheese	104,150			
Ice Cream	1,348,310	176,790	.56	13

[1] Anon. "What the Public Spends for Grocery Store Products," Food Topics. (330 West 42nd Street, New York 36, N. Y.: 1952). p. 3.

dairy production and the portion marketed through the supermarkets and food stores of the nation.

Margarine was not quoted in the Food Topics survey under the heading of dairy products yet due to its perishable nature and the need for refrigeration it is included as a product item in the food chain store dairy department. Food Topics list this item in percentage of total store sales as being 0.88%. In addition, 77% of all margarine produced is sold through grocery and combination stores.

Ice cream, though being a dairy product, is not included in the usual breakdowns of store dairy department sales. Various estimates have been made indicating that ice cream sales will total as high as 2% of total store sales. Some of the supermarkets do not carry ice cream since they do not have the display cases. The fact that stores do not register ice cream separately makes computing a reliable store average sale difficult. Where self-service ice cream cases have been placed in stores, the sales results have been very good.

The following study is from the merchandise survey as reported by the Chain Store Age, Grocery Edition.

It should be stated that there are differences between the surveys by Food Topics and Chain Store Age, but they can be attributed to the difference between food chain stores and the all-classes of stores as the Food Topics survey covers. Yet it must be recognized that the sales of the dairy departments of the food chains can be increased inasmuch as the

TABLE II

WHAT DO FOOD CHAIN STORES SELL

(1952) [2] (1953) [3]

Classification & average profit	% of total store sales		total sales (add ,000,000)		average weekly store sales	
	1952	1953	1952	1953	1952	1953
Cheese 15-19%	1.5	1.6	$218	$256	$153	$180
Margarine 10-14%	1.6	1.6	232	256	162	180
Fluid Milk 10-14%	1.8	1.9	261	304	183	214
Butter 10-14%	1.2	1.0	174	160	122	113
Eggs under 10%	2.1	2.2	305	352	214	248
Total dairy sales	8.2	8.3	$1,190	$1,228	$ 834	$ 935

[2] Anon. "Grocer's Manual," Chain Store Age, Grocery Edition. July, 1953. Vol. 29. No. 7. p. 91.

[3] Anon. "Grocer's Manual," Chain Store Age, Grocery Edition. July, 1954. Vol. 30. No. 7. p. 123.

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percentages are even less, in some instances, for the food chain stores.

From the figures presented in Table I and Table II, it is obvious that there is a tremendous market which the supermarket and food stores have not cracked. Only 22% of all dairy products are sold by the grocery and combination stores. The share of the market which these retail stores receive is small in comparison with the total spent for dairy products. How then could the dairy department increase its sales? Better merchandising and consideration of the consumer's problem by the food chain supermarkets would increase these sales. The public is spending approximately 19% of its food dollar for dairy products, yet the portion of total store sales represented by dairy products is only 7% to 12%. The market is there and to get a larger proportion of the consumer's dollar spent for dairy products it will be necessary for the food chains to institute a greater promotional effort.

In presenting the following information regarding dairy merchandising principles and techniques, the care of dairy equipment and information about dairy products themselves, the writer has attempted to provide such information as will be helpful in training personnel responsible for dairy department operation in food chain supermarkets. It is hoped that this study will, in some measure, aid supermarket operators in training people to a better and more profitable job in promoting the sale of dairy products and realizing the potentials of the dairy department.

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CHAPTER II

MERCHANDISING PRINCIPLES AND TECHNIQUES

There is one thing which every person, large or small, has in common and that is the necessity to eat. To some people it is a chore, yet to others it is a pleasure to be indulged in to the utmost capacity of their appetites and purses.

The modern supermarket is designed and operated to cater to this need and pleasure. One may find in the supermarket a variety of delicacies from the most expensive kinds to an assortment of foods which are very economical in price. The supermarket carries a price line of the varieties of foods which appeal to the purses of people in every walk in life. It is a specialty shop only in the sense that it sells foods in all states of preparation, household needs, and a few other lines of merchandise which have been added in the past few years.

The supermarket is designed and operated so that the customer may select from the merchandise displayed those articles desired. No personnel is specifically assigned to help the customers with their selections. Yet, the entire personnel group of the supermarket assist the customers in selecting the merchandise needed to satisfy their wants by using certain techniques in displaying the merchandise and

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servicing their purchases. The combined efforts of the staff of the supermarket are directed toward assisting the customers in making their purchases. These efforts of the supermarket staff in assisting the customers in making their selections have been called "silent selling" by some of the spokesmen and critics of the supermarket method of retailing food.

The merchandising principles used in the supermarket and self-service food stores are concerned chiefly with the vision, reach, and the direction from which the customer approaches a shelf or other display of merchandise. The labels and other particulars about the merchandise are usually made familiar to the customer through the advertising and promotion efforts of the manufacturers and distributors. The customer has established brand preferences through these efforts or a friend recommending the particular brand or product. Thus the merchandise is placed within the reach and vision of the customers because any merchandise not seen by the customers stands a very poor chance of being sold. There are exceptions to this statement in that where a customer has found a product satisfactory in every respect she will ask for the brand or product if she does not see it.

In "silent selling" as practiced in the retail food store there are three techniques of getting a customer to buy a product: (1) the goods well displayed; (2) the printed word; signs, price tags, labels, etc.; (3) the spoken word, from the store personnel who are qualified to give the customer the information desired, in a courteous manner.

Why do customers buy the products which they do? The answer to this question is not an easy one. Basically they buy products which appeal to them through the five senses to some motive or want which they think or feel needs satisfying. In other words, people buy goods and services to satisfy their wants.

Most customers are blessed with five senses:

1. the sense of sight.
2. the sense of touch.
3. the sense of smell.
4. the sense of taste.
5. the sense of hearing.

In the case of dairy merchandise, it is displayed to appeal to one or more of these senses. It should be mentioned that some customers possess a smaller degree of sensory perception than others. This factor should be kept in mind at all times and displays and signs kept as simple as possible so that those people who do not have the full faculties of their senses will be able to see, hear, feel or touch, smell, or taste, as the case may be, any promotional display or device.

In general, customers want to see a product, read the attractive label, and know exactly what a product costs from the clearly marked price. They want to feel the merchandise, squeeze it, and shake it. It has been said that a product in the customer's hand is almost sold, and that once a customer has a product in her hands, there is a fifty-fifty chance that it will be sold. If there are any odors coming

from the product, especially from some of the varieties of cheese, coffee, meats, the customers like to smell them to see if the odor is fragrant and characteristic of the fresh product.

Customers enjoy tasting a sample of a product during a demonstration or from a display. (See local health department regulations concerning the sampling of merchandise.) In fact, this technique is the easiest, most effective way in which a product can gain immediate customer acceptance. It has been said that if a person is given a sample of cheese, 9 times out of 10 she will purchase a package of it, if there is a display in close proximity.

People are motivated by two basic motives; one, to gain pleasure, and two, to avoid pain. The good merchandiser will keep these two factors in mind at all times. And when a well placed message is received by the customer, whether it is from a display, advertisement, or from an employee, and the message makes an appeal which the customer thinks or feels will satisfy a want, if they have the money, the product is sold. It has been said that a sale is made at only one place and that is in the mind of the purchaser. The customer makes up her mind as to whether she wishes to purchase a product or service. The good merchandiser will aid the customer by making a silent, or through some advertisement or other written communication, a suggestion as to how the customer can have more pleasure or less pain if she uses a certain product for a particular project or activity which the customer may desire.

In speaking of desires and motives, the following list includes some of the more prevalent ones present in people's minds when they are making purchases.

1. Physical pleasure or comfort. Each customer makes purchases which will give her pleasure in one form or another, or provide her with a comfort which she has been enjoying or would like to enjoy.

2. The desire to feel important. The customer is the most important person existing to the merchandiser, and it has been said that the customer is the retailer's real boss. The desire to feel important may mean also the desire for personal adequacy, the urge to excel; in general, a person likes to be appreciated, to be complimented, and above all in relation to a customer's feelings, to be recognized and be regarded as important.

3. Money Gain. To some people, economy appeals register very well.

4. Imitation. Most people, there are some rare exceptions, like to "keep up with the Jones", to consume those products and services which their friends and neighbors do.

5. Curiosity. This desire is closely associated with the imitative desire. In some people, it is the most dominant desire which they possess.

6. Possession. People like to call their possessions "mine". This motive is a very strong one and it has caused revolutions, wars, and family conflicts as well. In this nation, private property is well understood and laws are

enforced so that everyone observes the principle and motive of private property and the possession of it. This motive cannot be underated at any time.

7. Love of others or altruism. People can be motivated into buying things which are supposedly good for their children, or for the love of their family, sense of duty toward the company for which they work, their municipalities, states, and for their countries or nations.

8. Health. The bacterial enemy is feared and fought with every conceivable diet, exercise, and antibiotic available. The mother carefully supervises the diet habits of her children in the hope that the children will mature into healthy adults. This drive or motivation force is one of the strongest to which appeals can be made in selling dairy products.

9. The urge to create. The hostess who desires to create better flavored dishes may desire many of the highly flavored varieties of cheeses and other dairy products.

10. Play or relaxation. The vacation today is accepted as standard practice in nearly every industry. People spend their working hours in getting the tasks done so that they may enjoy more leisure activities by plan or relaxation. The trends in foods packaging are toward giving Mrs. Housewife less work in the preparation of a meal and more time to watch television, play bridge or canasta, sun herself and her children at beaches, summer and winter resorts.

11. Security. Customers like the assurance of wholesome foods, and the best way to provide the customers with

this assurance is by selling only fresh dairy products from a clean dairy display case. Customers keep their kitchens as spotless as possible and want to buy their foods from clean stores and see the merchandise handled only by personnel with a clean apron and personal appearance.

12. Fear or caution. Related closely to a desire for security is fear, or caution. The fear motive is nature's device for the preservation of life and is nothing of which to be ashamed. People fear death, fire, accidents, illness, failure in business, poverty, ridicule, pain, social ostracism, losing the respect of their fellow humans, loss of strength or beauty. It has been said that to understand human beings is to understand their fears. [3]

Many other motives could be listed concerning the motives which compel people to do certain things and buy certain products and services. Customers are only human and "every human being wants something." The food chain is in business to satisfy those food and household wants at a profit if possible. And if the food chain can't satisfy those wants, there are other food retailers where customers may secure those products which are necessary to satisfy their wants. There are no monopolies in the food retailing industry. In closing this discussion of the customer and what makes him buy, the following is quoted to give an outstanding summation of the customer and the retailer's relations with him.

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[3] Russell, Frederic A. and Frank H. Beach. Textbook of Salesmanship, 4th Edition. New York: McGraw-Hill Book Company, Inc. 1949. pp. 156-166.

"(1) The customer is not dependent upon us--we are dependent upon him.

(2) The customer is not an interruption of our work--he is the purpose of it.

(3) The customer is not a rank outsider to our business--he is part of it.

(4) The customer is not a statistic--he is a flesh-and-blood human being completely equipped with biases, prejudices, emotions, pulse, blood chemistry, and possibly a deficiency of certain vitamins.

(5) The customer is not someone to argue with or match wits against--he is a person who brings us his wants. If we have sufficient imagination we will endeavor to handle them profitably to him and to ourselves." [4]

Merchandising Control

In order to have control of any function, it is necessary that one person be responsible for the operation thereof. This applies to the dairy department as well. The person in charge of the dairy department may have other duties to perform, depending on the size of the supermarket, of course, but the responsibility should be undivided in order that the dairy department be a success. The cases and displays should be kept well stocked and arranged attractively if the customers are to find the dairy department appealing. Maximum sales and profits with a minimum amount of loss cannot be expected unless there is some one person responsible for the ordering, stocking and building of the displays.

This responsibility factor applies to the loss or shrinkage problem in the dairy department, as well. One person whose duties are specifically those of taking care of the dairy department must be responsible for seeing that losses from any

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[4] Lesly, Phillip (Editor), Public Relations Handbook. New York: Prentice-Hall, Inc. 1950. p. 214.

cause whatsoever are salvaged immediately. The perishable nature of most dairy products emphasizes the necessity for careful ordering, handling and immediate salvaging or removing from the cases or displays any products which are unsalable in their present form. This must be done if part of the investment in the merchandise is to be recovered.

Proper ordering cannot be emphasized too greatly. It is the primary means by which a supermarket is able to supply the customer's wants. Secondly, proper ordering enables the dairy department to operate at a better profit and minimize its investment in the amount of inventory needed to stock a well-balanced display and assortment of merchandise to meet the customer's wants. Proper ordering will reduce the quantities of the slow-selling items on hand, thereby insuring a more rapid turnover in the investment in items of which there is a consumer demand. All of these factors add up to greater sales with better profits.

The merchandise sources of the dairy department of the food chain supermarket depend upon the buying policies set up by the management of the particular food chain. Some food chains will warehouse all of the items to be sold in their dairy departments. Others authorize the individual supermarket to purchase its needs from local vendors and farmers. Naturally, there are all degrees of centralized and decentralized buying policies, varying with the individual food chain. Local and regional operating conditions and public and community relations are factors taken into consideration at the time the policy is set forth by the individual food chain.

It is of primary concern that the person responsible for the dairy department knows the food chain's buying policies in relation to the items sold in the dairy department. The pertinent facts which should be known are the days of the week in which deliveries are made, the days preceding deliveries in which orders would be made out and mailed, and the proper way of making out the orders, including the shipping quantities (amount of retail items contained in a shipping unit).

As is often the case, many of the items sold in the dairy department are distributed by local vendors and branch houses of national concerns. Since there are several sources for supplying the dairy department, much dependence is placed by the person responsible for ordering the merchandise on the salesmen of these vendors. This circumstance does not make for good efficient buying by the supermarket dairy buyer. Too much reliance is placed upon the memory of this person or persons and, if there is a reassignment of duties of responsibility for the dairy department, there is a period of lost motion before the new person will order sufficient quantities of merchandise. In view of these factors the following suggestion is made in order that the person in charge of the dairy department may buy more efficiently.

The system is basically the same as used in the grocery department for ordering quantities of merchandise from the food chain's warehouses. The operation of it is a little different in that there will be several sources from which the merchandise is delivered. Essentially, it is a catalogue

with an alphabetical or numerical listing of the items authorized by the central buying department of the food chain. As an order is given, or before the order is given, it should be entered in the catalogue after checking the quantities of each item on hand. It is recommended that these orders be made out prior to the salesman's call for two reasons. The first reason is that it will save the operator's time and permit an uninterrupted schedule of work and save the salesman's time, too. The second reason is that the salesman will be able to merchandise his products by dressing up the displays and checking them for out-of-date merchandise. The basic reason for suggesting this catalogue is that the invoices of the quantities of merchandise received in the dairy department of the supermarket are grouped and forwarded to the central accounting office for payment. This almost universal practice leaves no record in the supermarket for reference as to quantities of merchandise received and sold during the period between shipments. Records are very good if they are in the hands of the persons who need them for reference when ordering the merchandise. Ordering from memory and by guessing or suggestion from the salesman is no substitute for qualified appraisal of the accurate merchandise records of the movement of various items.

The design of the catalogue is primarily the concern of the food chain since it will have to plan the catalogue to suit its operation conditions. The following deserve consideration when making up a dairy catalogue:

1. The items authorized to be sold should be listed alphabetically and/or by distributor.

2. Draw columns horizontally with the items and vertically by weeks. Draw additional columns to coincide with major delivery dates in the week. Four sub-columns would be sufficient, labeled with abbreviations for the days of the week in which major deliveries are to be made. (M-W-F-S or T-Th-F-S)

3. The quantity of the item ordered should be entered in the column of the day and week in which the merchandise will be received. (Quantities received previously and the dates can be noted at a glance rather than thumbing through a sheaf of invoices, if available.)

4. The order can be made out from the catalogue if merchandise is to be secured from the chain's warehouse, or given to salesman straight from the catalogue. In entering the order into the catalogue, stocks on hand, when they were received, amount on display, and next delivery date should be carefully checked. Capable judgment should be exercised in ordering quantities of each item sufficient to carry through the period, with a reasonable amount to be carried over as a safety factor. The reason for the latter is so that there will be neither an excess amount or out-of-stock of any of the items before the next shipment is received.

5. As the order is being received, the invoice for the shipment should be checked for any "shorts". If the vendor or warehouse reports on the invoice that the merchandise was

not shipped for any reason whatsoever, the quantity should be circled in the catalogue to denote out-of-stock and not received on the regular shipping date. The circumstance may be such that the merchandise will be shipped later. The amount should be entered under that date or the date in closest proximity of the actual date the merchandise will be received.

6. For the best results, keep the catalogue up to date.

7. The catalogue should be in a three-ring binder covering each accounting cycle or otherwise geared to the operation in general. The individual pages could be reproduced very economically and placed in the binder together with records of the preceding periods. Tabs should be provided to separate the periods covered.

Additional bits of information which would be very beneficial to the person responsible for ordering the merchandise are the retail prices of each item in the catalogue and the gross profit of each item. The availability of the retail price in the catalogue would be a ready source as to the correct price, eliminating much time lost in checking at the store office, or such place where the supermarket price book may be kept. The retail prices could be changed in the catalogue by a simple pencil mark. The retail price could be placed on incoming cartons of merchandise as they are received. These last suggestions were made so that there would be a greater efficiency in the amount of time necessary to operate the dairy department as well as an elimination of some of the causes of incorrect price marking.

The suggestion of a catalogue type of merchandise movement record was made so that the persons who do the actual ordering of merchandise will be aided through the utilization of on-the-spot simple movement record as this type of record is intended to be. It will be an aid to these persons if it is kept up-to-date. It should be simply designed and worded so that complete understanding on the part of the person using it can be had. The front tab should have a list of the delivery days of the week as well as when the orders should be mailed. A series of blanks should be provided for showing the name of the distributor or vendor and the salesman's name and days upon which they call and days deliveries will be made.

Proper ordering includes ordering enough merchandise to meet the customer demand. "You can't do business from an empty wagon," is an old saying from the days when retailers did business from a horse and wagon. The same expression could be used today. "You can't sell merchandise when the shelves and displays are sold down." Neither will an empty or almost empty dairy case or display sell merchandise. Actually, this out-of-stock condition will give the impression to the customer that the merchandise remaining will be "tag-ends" and left-overs from previous customers' shopping.

Numerous surveys have been made concerning sales from filled displays and partially depleted displays. The results have ranged from 15% to 35% sales increases when the displays and shelves were kept reasonably full and out-of-stock conditions did not exist. The maintenance of an attractive, full

assortment of merchandise in the dairy case and on displays will greatly increase the sales of the dairy department. Emphasis should be placed on striking a happy medium between out-of-stock and excess stock conditions. In order to achieve this "success," control over the amounts ordered or purchased is necessary at all times. The suggestion of the catalogue as a guide is only a step up this ladder. The principal ingredient is furnished by the person in charge of the dairy operation in accurately gauging the customer demand for each item and having this item on display at all times in sufficient quantities and in positions where it can be seen by the customer.

A rapid turnover through proper ordering and display results in several desirable conditions for the dairy department. The primary condition is that the merchandise is being sold rapidly at a profit. The amount of idle investment in non-selling or slow-moving merchandise is kept to a minimum. Profits, if the merchandise was priced right, are inevitable where a rapid turnover is realized.

The following terms and phrases are defined by the writer for the purpose of a better understanding of some of the principles of merchandising.

1. Turnover. This word is used to describe the process of merchandise movement. In accounting terms the turnover is computed by averaging the investment in the total inventory on a period basis at retail prices and dividing into the total net sales to arrive at a number which shows how many times during a period the average inventory was "turned." In

merchandising terms, as used in supermarkets, turnover refers to the movement by sales of the goods needed to stock a shelf. Reserve stocks needed to maintain shelf or other display between deliveries also are included. Therefore, turnover of merchandise is the amount needed to refill shelves, displays and reserve stocks with merchandise sold during the period between deliveries. No consideration is given to the amount of investment (either retail or at cost) in the merchandise. It is purely a matter of the quantity of a particular item necessary to fill up a shelf or a display and to keep sufficient quantities of the item on hand so that the item will not be out-of-stock at any time between delivery dates.

2. Margin of safety. This term is used to denote the quantity of merchandise needed as a reserve to meet any increased demand by the customer for a particular item. Since the sales of many of the items sold in dairy departments vary from day-to-day and week-to-week, close attention to the quantities of the particular item on hand at all times should be given by the person responsible for ordering the merchandise. If there exists the condition of carrying over quantities of merchandise more than adequate to meet customer demand through additional delivery periods, naturally an overstock condition exists. Quantities to be ordered should be reduced to where this condition can be eliminated as rapidly as possible yet still maintain adequate stocks to meet customer demand.

3. Retail price. This is the price which the customer pays the retailer for services performed for the merchandise which the customer wants. Retail prices are set forth by the

central office of the food chain and include the cost of the article paid the processor or distributor and a markup which includes the retailer's cost of getting the merchandise into the hands of the customers plus a profit for his efforts. Due to the competition factors existing in the retail food distribution industry, the markup occasionally may include only a portion of the retailer's costs.

3. Gross margin. After the sale has been made the gross margin is that portion of the retail price realized after the original cost of the merchandise has been deducted. The retail price and the actual selling price may have been two different prices. There may have been a reduction in the original retail price because of special price promotions or a shrinkage of some type may have occurred. Part of, or all, of, these factors could have caused a reduction in the original retail price. In general, the gross margin refers to the remainder of the proceeds of the sale of merchandise after the original cost of merchandise has been deducted. The following formulas are generally used in computing retail prices and the cost of merchandise when the retail price and the markup percentages are given.

$$\text{Retail Price} = \frac{\text{Cost of Merchandise (\$.00)}}{\text{Cost Markup \% (.00)}} \times 100\%$$

$$\text{Retail Margin \%} = \frac{\text{Markup (\$.00)}}{\text{Retail Price (\$.00)}}$$

$$\text{Merchandise Cost} = \text{Retail Price} \times (100\% - \text{Retail Markup})$$

One other point about proper display should be understood and that is the products will be fresher if the merchandise is rotated as it is being stocked. The first merchandise received should be the first sold. This point will be discussed more thoroughly under "Minimizing Losses."

Displaying the Merchandise

1. Shelf Display

The display of the merchandise in a supermarket is most important for the selling efforts to be successful. The design of the package or label and the frequency with which it is advertised to the consuming public is an additional ingredient in attaining this success. The package design to some extent dictates the manner in which it will be displayed both on a shelf and a floor display. Another factor to be taken into consideration is whether or not the product can retain its quality without refrigeration. The physical properties of the products must be considered before they are placed on display. Probably no other groups of merchandise found in the supermarket are as varied in physical properties as the merchandise found in the dairy department.

Before any discussion of shelf and display arrangements is made, one point should be understood about merchandising in the dairy department. The location of the dairy case is very important from the viewpoint of customer traffic. The dairy department should be located so that as many customers as possible will pass in close proximity to it. Product

placement should be arranged so that customers walking past the dairy department may readily identify any of the products and labels being displayed. The amount of customer traffic flowing past the dairy cases and displays will determine to a great extent the volume of sales and profits which the dairy department will produce for the supermarket. It has been stated by reliable authorities that the dairy department can produce 8-13% of the total store volume from an occupied floor space of only 4%. This sales potential demonstrates the necessity for giving the dairy department one of the best possible locations in relation to the flow of customer traffic.

On the following page a suggested case layout is given. Following that page there will be some discussion as to why each product was given its particular location.

CHART I *

Bottom Shelf	Top Shelf	Top of Case
Milk	Sour Cream & Yogurt	Jars Kraft Relish
	Light Cream (coffee)	" " Olive & Pimiento
	Heavy Cream (whipping)	" " Pimiento
	Reddiwhip	" " Pineapple
Butter	Other Toppings	" " Roka
	Yeast	" " Old English
	Phila. Cream 1/4's	" " Bacon
	" " 1/2's	Kraft 8 & 16 oz. Cheez-Whiz
	Borden Cream 1/4's	1½ oz. Kraft Parmesan
Canned Biscuits-- Ballard's Pillsbury's Puffen, etc.	" " 1/2's	4 oz. " "
	Borden's Wej-Cuts (cream)	2 oz. " American Grated
	Kraft Cream Varieties	4 oz. " " "
	Chive, Pimiento, etc.	4 oz Borden's " "
Margarine	Borden's Cream Varieties	½ oz. " " "
	Kraft Slices (Processed)	3 oz. " Italian Grated
	American, Old English, Pimiento, Swiss	Jars Borden's Olive & Pimiento
	Borden's Slices	" " Relish
Natural Bulk Cheese Extra Sharp	American, Pimiento, Swiss	" " Pimiento
	Gouda, Baby & Wedges	" " Cheese & Bacon
	Borden's Pippin Extra Sharp	" " Smokey
Medium	Kraft's Coon (Bulk)	" " Vera Sharp
	Kraft Camembert & Edam	" " Pineapple
	Borden Camembert & Edam	" " Blue
Mild	Gruyere, Bulk or Portions	Borden's Vera Sharp 8 oz. pkg.
	Mozarella & Romano Bulk & Scamorza	" Swiss 8 oz. pkg.
	Provolone (Bulk or Other)	" Chateau 8 oz.pkg.
	Blue Chips	Kraft American " " "
Eggs	Blue Bulk (Domestic)	" Old English " "
	Roquefort Portions	" Velveeta " " "
	Gorgonzola Bulk	" Velveeta 1 lb. pkg.
	Liederkranz Portions	" " 2 " "
	Limburger Portions	Borden's Chateau 2 lb. pkg.
	Kraft Horse Radish & Others	Your Label Processed American 2 lb. pkg.

* Suggested case layout for 2-shelf display case.

Milk and eggs, being the largest volume items, were given the end positions to stop customers at the beginning of the dairy case and draw them down to the end of the case. It will be noted that the zone of vision and reach for customers standing in front of the eggs display extends over into the bulk cheeses which are high profit items. The zone of vision and reach for these customers also extends over many of the "delicacies" displayed on the top shelf in the dairy case. Butter is placed close to the milk so that people picking up a quart or two of milk will see and, it is hoped, buy butter as well. Butter carries a fair gross margin for the dairy department, estimated to vary from 11-14%. Canned biscuits, which have become one of the better volume items in the dairy department, are located between the butter and margarine, two fine spreads for hot biscuits or rolls.

Bulk natural cheddar cheese is displayed in the bottom section for several reasons. The first reason is the amount of shelf space needed to make an adequate, attractive display of bulk cheese. The second is that the majority of natural cheese sales is from the sale of mild, sharp and extra sharp cheddar cheese. Therefore it should occupy a shelf space equal to its sales and profit potential.

The items on the top shelf and the case top were located so that color and package design would stand out as much as possible. Each item is complimented for the most part by its neighbor. In some instances the items were located because of certain physical properties, particularly flavors and odors

being picked up from some of its more fragrant (!) neighbors. The items which have strong flavors were located as much as possible in an area to themselves. Items such as foil-wrapped cream cheeses will pick up any flavors or odors quickly from the stronger flavored varieties of cheese if placed next to them.

The cheese types were located as close together as possible. If a customer wants a blue-type cheese, she should be able to find all of them located as close together on a shelf area as possible. The same reasoning applies equally as well to the bulk and packaged varieties of cheddar and other types of cheese. The jar cheeses, on the other hand, are processed cheeses which, with the exception of a very few items, require no refrigeration. These cheeses are also able to command considerable brand preferences by the customers. These items were grouped according to the brand names, being broken only by the brands of grated cheese.

The processed, packaged loaf cheeses were grouped together for the consumer preference motivated by intensive advertising. These are processed cheeses and do not require refrigeration for display purposes. The loaf cheeses are also easily displayed in other areas of the supermarket. The packages are so designed that they stack very easily when used in a mass display.

The case layout did not include the number of rows each item should be displayed. This information was not included for several reasons. The primary reason is that due to

customer preference, which may vary according to the geographic area and other contributing factors, the demand for any one item will vary greatly between supermarkets. The second reason is that there may be more refrigerated cases in one supermarket than in another. The third reason is the difference in shelf-space dimensions between the various manufacturers and the method of design and construction. It is suggested that the individual responsible for the dairy operation experiment with the case layouts to find where an item sells the best. As was previously mentioned, each customer is an individual and individuals have preferences. Therefore experiments should be conducted in each store to determine customer preference. Experimentation with new items and different layouts often stimulates the sales of a dairy department.

The suggested layout was by no means complete as to the quantity of different items customers expect to find in the dairy departments. The attempt was made to suggest a layout for some of the better selling items in the dairy department. A variety of the different dairy items was used to give the impression that the dairy department should stock numerous sizes and quantities to meet the demands of each individual shopping in the food chain supermarket.

It is of the utmost importance that the dairy operator watch the movement of the individual items in the dairy department and gauge display space accordingly. Where there are special promotions for a period, the number of rows devoted to the item(s) being promoted should be increased to give

the product a better chance of being seen by the customer. Four label facings have three times as great a chance of being noticed by a customer as two facings. The number of the facings of the competing or neighboring items should be about half as many as the product being promoted. These are rule-of-thumb methods in determining how many additional rows to be given to a product during a push.

2. Special Displays (Shopper Stoppers)

There are two distinct types of displays. A dump display is the type whereby a container is used to keep the merchandise from falling to the floor or from resting on the floor. The name "dump" was derived from the method of placing the merchandise on display without concern for the appearance of the display itself. The second type of display is the stacked display. This display is built by using a base and then stacking the merchandise according to a systematic plan. The following observations are well-worthwhile to follow in building a display of any type.

1. Pick a high traffic spot. The more people that pass by and see a display the greater the sales will be from the display.

2. Use the materials available in building the display. Secure them either from the premises of the store or, if available, from the distributor. A fancy display is not necessarily a good display. Often a cheese box will attract more attention than the fanciest dump table.

3. Always use a base of some type to start the display. Do not let the merchandise, even in its shipping case, rest on the floor.

4. Do not pile or stack the merchandise over 5½ feet high. Most women are not that tall. Build the display so that the average woman (5'3" tall) can reach the top of the display easily. If a display is too tall its height and massive appearance may repel the customer's attention after it has attracted the customer. Remember, if it cannot be reached, there is very little chance of its selling.

5. The display should not look so perfect that the customer will hesitate to take an article off the display because it would ruin the "beauty" of it. Leave a couple of items off so that it appears to the customer as if someone else has already purchased from the display. It should be remembered that the "beautiful" displays are those which have sold down to the point of refilling.

6. Keep the display fresh looking and loaded with merchandise. Rotate the cases used for bases frequently and rotate the locations of the displays so that the customer will receive the impression that the merchandise on display is fresh.

7. The liberal use of recipes and other consumer information helps the product to sell. Customers are always glad to have a suggestion on how to prepare a dish, meal, snack, tray, etc.

8. Price cards should never be placed so that it is necessary for the customer to move one in order to take the product off the display. Be sure that the cards are easily read, neat in appearance and are fastened securely to the display. Also, the cards should tie in with the proper items because the customer is doubtful about buying those items about which there seems to be a price discrepancy.

9. The items should be placed on display so that the label side is out and easily seen by the customer.

10. Never use tacks or staples in attaching signs, recipe folders, etc. to displays of packaged items. When the container is pierced permitting air to enter, the product will mold or spoil rapidly. Where a base with a sharp-cornered edge is used in building a display, the merchandise should be stacked so that the weight of the merchandise above it does not cause it to bend or crease. If the package has a noticeable crease or other defect appearing on it, the customer will assume that it is imperfect and will not buy it. Jars should be displayed in a dump or in the partially cut-away original case. Never stack them without something to keep them from falling.

11. Build related-item displays, pick natural tie-ins, such as crackers and cheese, bacon and eggs, etc. Dairy products are widely used and related-item displays will suggest to the customer various combinations of dairy foods with which to build a meal. More displays increase dairy department sales and profits. The market is there and more

intensive promotional efforts will get more sales and profits for the dairy department.

> "Massive appearance, eye-catching qualities and signs that tell a story are the three basic elements of special-display building. Mass displays are popular because there are few products that do not lend themselves to this type. And well-planned mass displays give the store a well-stocked appearance that creates a buying atmosphere.
>
> "Many varieties of point-of-sale material have been developed by chains and manufacturers to help sell merchandise from the special display. Through a word, phrase, drawing, photograph, or sample, point-of-sale material stimulates the customer to buy.
>
> "Added punch with a local flavor is frequently created by the store manager by combining manufacturer--or chain--supplied material with store-made signs. By tailoring the point-of-sale material to the shopping habits of the neighborhood, store managers can develop more effective special displays.
>
> "Another way managers create more effective special displays is use of attention-getting devices. Thus, one special display stands out from other displays. Color, lights, moveable parts, unusual fixtures, streamers, unusually priced specials, and gimmick signs all help draw the customer's attention to a display and give it an individual touch." [5]

For a full, illustrated discussion on the art of selling through displays, the writer recommends that this article be read thoroughly.

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[5] "Display Manual," Chain Store Age, Grocery Executives' Edition. (December 1953), Vol. 29, No. 12. p. 52.

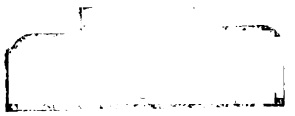
Advertising

Point-of-sale advertising is a medium through which the customer can be motivated at that crucial point in making the sale, deciding which ones or what kinds to buy. Informative material and suggestions on new ways to use a dairy product give the customer a desire to try them out.

The wording of the point-of-sale material should be simple and descriptive. If a phrase is used it should not be over six or seven words in length. The signs should be neat and attractive to the eye.

Inside the dairy case, price tag-moldings should show the price of the product. A recent technique in presenting product information to the customer is a printed message on a piece of white cardboard designed to fit in the tag moulding over the dairy product or next to the price of the item in the dairy case. This sign helps the customer to find those items desired easily. These signs may include additional information which may cause the customer to buy more readily. It is fairly safe to assume that the dairy manufacturers and distributors may in the future have these tag moulding signs printed on plastic to describe the ways their products can be used. The tag-moulding signs are catching on over the country as merchandising gimmicks. These signs do attract the eye and hold the attention of the reader.

Concerning newspaper ads or the other media ads being used for promoting dairy products, the supermarket clerk in the food chain has no part in deciding whether they are to



be used or not. What the clerk can do is to back up the ads with sufficient, attractive displays of the items being promoted. The clerk responsible for the dairy department should give extra rows to the item(s) being promoted for the extra push. It is of primary importance that enough of the promotion merchandise be on hand to meet customer demand. If there is a sold-out sign on the item being promoted, the item has lost a sale, and what might be more important, the supermarket may have lost a customer whose dissatisfaction was great enough to cause the customer to shop elsewhere in the future.

Minimizing Losses

This portion of the discussion will not go into control of shrinkage from moisture and cutting losses. This factor will be discussed under the individual products information.

The most important way to control losses from product deterioration is to order only those quantities of an item needed to meet customer demand between delivery periods. As the products are received, care must be taken to see that the oldest merchandise, if in salable condition, should be sold first. Proper rotation cannot be emphasized too much or too often. Where the product is received in a damaged condition, and it is not guaranteed by the manufacturer's distributor or the food chain will not give inventory credit for it, it is suggested that it be sold immediately at a loss if necessary. The first markdown taken should be sufficient to induce a customer to buy it and if it is sufficient, it should

be the only markdown taken. It has been said many times by many people that it is better to take a 25-50% loss now than to wait a few days or a week or two and take a 100% loss. By proper ordering and rotation losses should be held to a minimum.

The dairy cooler was not designed so that it would be a warehouse for dairy products. It should be used to store those quantities of items which are needed to carry through from one delivery to the next. It is designed to keep the quality of those products needing constant refrigeration as nearly as possible the same as when they were received.

The second factor to help control losses is the clerk in charge of the dairy department keeping constant vigilance over temperatures in the dairy display cases and coolers. It is suggested that where the manufacturer has not installed thermometers in the display cases and coolers that thermometers with "safe" and "danger" areas marked by colors be installed in places so the clerk can check the temperature from time to time.

The following program is suggested for clerks in checking refrigeration temperatures in dairy display cases and walk-in coolers.

1. If covers are used for dairy cases, check temperatures in cases when covers are removed and case lights turned on the first thing upon entering the store in the morning.

2. Check cooler temperature the first time the cooler is entered.

3. If temperatures are above or below safe limits (36^{o}-40^{o}F), check compressor units immediately. (For further information on refrigeration troubles or malfunctions, see Chapter 3, the section concerning operation and maintenance.)

4. As merchandise is placed in the case or taken from the cooler the thermometers should be checked.

5. The clerk should check the thermometers often enough so that it will be a habit and part of the clerk's daily routine of duties.

These suggestions should help in keeping refrigeration losses to a minimum. Actually, the refrigeration equipment when received from the manufacturer, installed correctly and given good maintenance and care will give good service for a long period of time. But improper care and service will cause the equipment to start malfunctioning very quickly. The maintenance expense of poor refrigeration will devour a large portion of the profits made on a dairy operation.

> "No open self-service dairy case will refrigerate efficiently if air currents or drafts are blowing over the display area of case. Air currents and drafts blowing over the case literally 'scoop' the well of cold air from the display area of the case. As the well of cold air is scooped out of the case, warm room air rushes in to replace it. Actually a strong draft can scoop practically all of the cold air out of a case in a matter of seconds. The coil cannot supply new cold air as fast as strong drafts remove it. Temperatures in the case will rise rapidly. Never locate an open self-service refrigerated display case in the path of a draft or strong

> air current. Do not locate fans so that they will blow across or too near an open case. Be careful that heating vents (especially those equipped with blower fans) do not blow hot air over or too near an open case. If an interfering condition exists which the retailer cannot readily correct himself, he should call for refrigeration advice.[6]

The loss in quality from the products being out of refrigeration and refrigeration zones is quite large. It is large enough to cause a complete loss of the product in some instances. Melted butter, spoiled milk, etc. cannot be reclaimed by the retailer to the point where it could be sold as "distressed" merchandise. The remedy for these losses is quite simple. "Keep it under refrigeration," or "refrigerate at once." It is relatively easy to put merchandise shipments into the cooler as soon as they are received. If the necessity of checking the shipment as it is being unloaded arises, it could be accomplished with maximum ease and security by placing the shipment on the floor of the cooler and then checking it with the door cracked for ventilation. After the shipment has been checked the merchandise can be placed on the proper shelves. As the merchandise is being placed in the dairy case, it is necessary that the products be well within the zone of refrigeration. On the following page there is a diagram of a self-service dairy case showing the limits of the zone of refrigeration.

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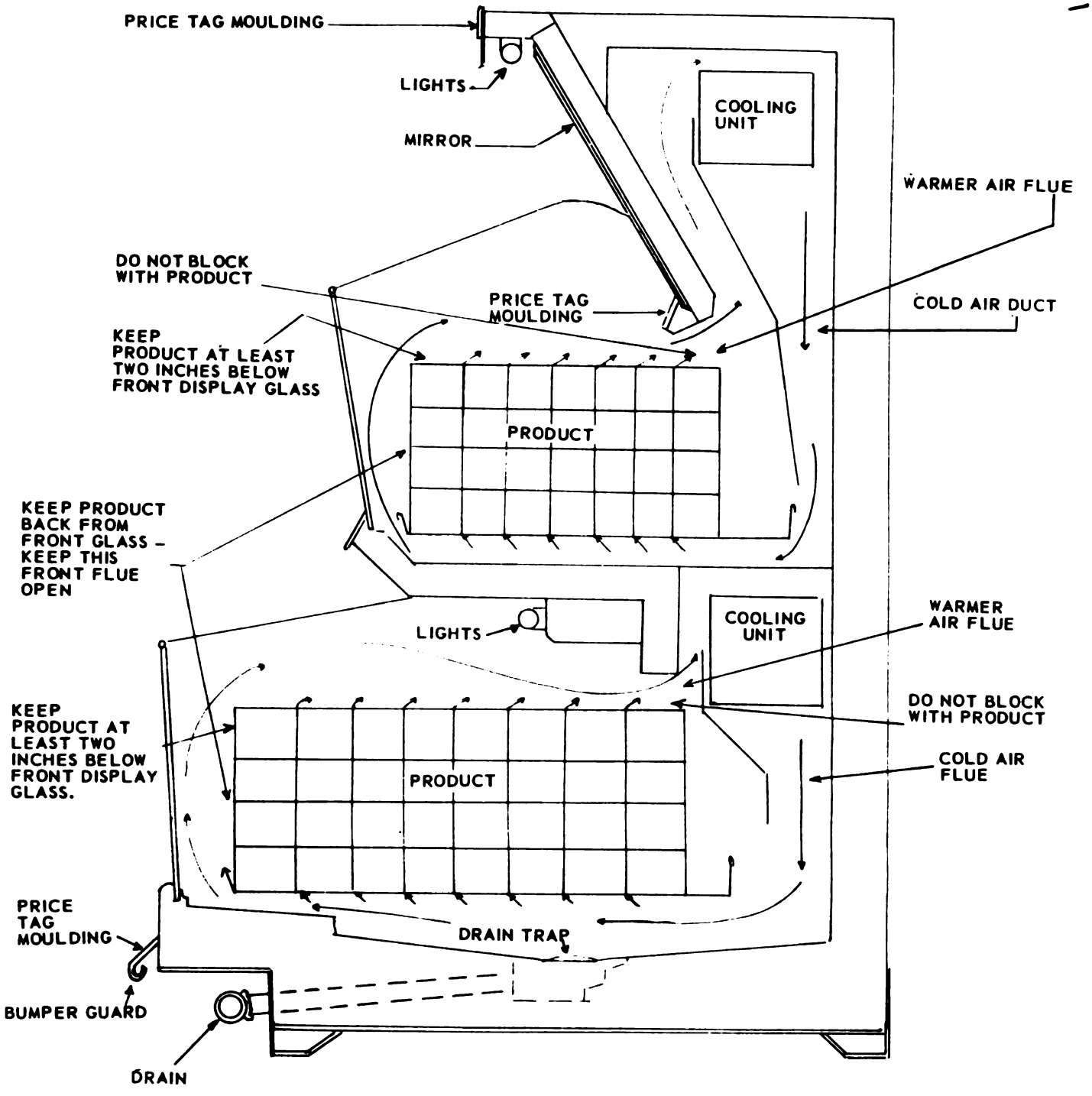
[6] Anon. Hussman Refrigeration Pamphlet. (St. Louis 6, Hussman Refrigeration, Inc.)



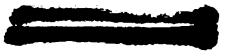
CROSS SECTION - OPEN SIDE VIEW OF SELF-SERVICE CASE

Courtesy of : Hussmann Refrigeration, Inc., St. Louis 6, Mo.

Another device for protecting the quality of merchandise has been adopted by several manufacturers. This device is the use of a code-mark to tell a person acquainted with the code either when the product was manufactured or when its guaranteed shelf-life will run out. It would be wise of the dairy clerk to learn the various manufacturers' codes of the branded items sold in his particular dairy case. The salesmen for these firms usually can be prevailed upon to divulge this "top-secret information on the lower levels" concerning the code systems used on their products.

It has been suggested by many authorities that the shipping cartons of incoming merchandise be marked with crayon with the date the merchandise was received in the store. This suggestion has much merit in that only a glance at the date of arrival is needed to distinguish between the merchandise on hand as to which is the oldest and therefore should be sold first. Naturally, such items as fresh milk would not have to be marked. But most of the other merchandise needs to be "dated."

The writer would like to carry this suggestion a step further and to suggest that a repeating stamp with an adding attachment could be secured so that the total number of items date-stamped could be read without the necessity for a physical count. This stamp could be used on all grocery department shipments as well and would eliminate the necessity of making a physical count and dating of each case of merchandise received individually. Many food chains have eliminated the



item-check-against-invoice when shipments are received to speed up delivery time and use a physical piece count instead. As to the benefits of using this type of "gadget" the following control measures are possible. The dates could be checked at physical inventory and retail amounts of merchandise recorded as excess-stock charges if the merchandise was received prior to a specified period. This would probably insure better rotation of stocks and elimination of slow-movers if the program was set up and executed properly. It could be applied just as easily to all case-packaged items as well as perishables.

Coding merchandise is one way of getting proper rotation and quality control through maximum shelf-life. Simple dating helps also if the persons responsible for it follow through with the plan--a big IF.

Another big source of merchandise losses is from fragile merchandise being handled roughly. Once an egg is broken it cannot be salvaged by the clerk. There are many other items besides eggs which are susceptible to rough handling. Therefore it is to be emphasized that all of the merchandise should be handled like eggs to keep breakage losses to a minimum.

Carelessness in the use of case-cutters and knives has caused merchandise losses which could have been prevented by a little common-sense on the part of the users. Over-heated sealing irons in wrapping cheese have caused merchandise losses as well as the loss of the wrapping supplies.

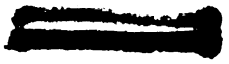
Losses, regardless of the cause, do not add to the profits of the dairy department. A loss may not be a total loss, but once a few pennies or dollars are lost they can never be recovered.

In general, the writer's intentions were to include in this chapter information and suggestions to help store personnel to operate the dairy department with increased sales and profits. Increased sales and profits can be brought about through a combination of numerous factors.

Proper ordering can insure freshness of product and increased turnover by adequately meeting customer demand. To enable the dairy personnel to estimate the probable customer demand a systemized ordering method was devised by the writer.

The best method of minimizing losses is to sell the products as rapidly as possible. Proper refrigeration and careful handling do much to forestall any losses.

Displaying the products so that they appeal to customers' wants and needs is the basis of sound merchandising. In short, know the customer's wants and how best to satisfy those wants at a profit.



CHAPTER III

EQUIPMENT AND HOUSEKEEPING

Good equipment kept clean does much to attract customers to the dairy display cases. Good equipment, given proper maintenance and care, will last longer and produce greater profits for a longer period of time for the supermarket. It is estimated that maintenance and repair bills cost the supermarket approximately 0.4 of 1% of its annual net sales. As was mentioned previously, excessive maintenance costs can eat up the profits from an operation which depends upon refrigeration equipment as the dairy department does.

The following excerpts are from refrigeration equipment manufacturers.

"Proper Temperature and Relative Humidity"

> "Most retailers generally regard a shelf temperature of from 35 to 40 degrees and relative humidity between 60 to 70% as the most satisfactory for their dairy cases. This condition seems most favorable in keeping the combination of all types of perishable dairy products normally merchandised in the best possible condition for the longest period of time." [7]

"Humidity Can Be Too High"

> "Modern open self-service dairy cases of good quality and design are mechanically designed

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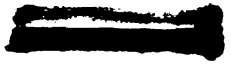
[7] Anon. Hussman Refrigeration Pamphlet. (St. Louis 6, Hussman Refrigeration, Inc.)



to provide the proper degree of relative humidity as well as proper temperatures in the display areas of cases. The proper percentage of relative humidity helps to prevent certain dairy products, such as cheese, from drying out too rapidly. However, if the humidity is too great, packages become damp and unsealed, labels peel off, milk cartons sweat, etc. This is not conducive to creating greater sales. The proper percentage of relative humidity in the case is important; it helps keep products in good condition and thus helps increase sales."[8]

"Too-High Humidity in the Store Itself Is a Factor and a Problem"

"On hot humid days, the air in the store itself may have a high percentage of relative humidity. To say it in another way, the air in the store may be heavily laden with moisture. When this warm moisture-laden air comes into contact with a colder surface or area, such as the front glass or mirrors of open-service refrigerated cases, the hot humid air will give up much of its moisture. This moisture from the hot humid air may then appear as condensation (sweating) on certain parts of a self-service refrigerator. Modern self-service cases are mechanically designed to eliminate such formations of condensation under normal conditions, but when the humidity in the store is too high, there is too much moisture condensation to practically evaporate mechanically from the dairy case. On hot humid days when sweating occurs, the retailer should:

"1. Wipe condensation from cases frequently throughout the day. Do not let moisture accumulate for too long a time.

"2. Clean parts (usually front display glasses and mirrors) where sweating is occurring. Polishing front display glasses and mirrors with an agent such as glass wax also helps."[9]

These excerpts should give a wealth of background information on the heart of the problems associated with refrigeration equipment in the dairy department.

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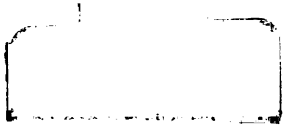
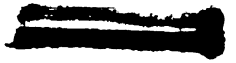
[8] Ibid.

[9] Ibid.





Care of Display Cases

A good housekeeping program is designed to do two things; to keep the equipment clean and to lengthen the life of the equipment. That the display cases be kept clean and attractive is a fact the clerk should always remember. Nothing detracts more from a wide display of merchandise in a customer's mind than to see that the display cases are dirty. Dairy products are associated with cleanliness in a customer's mind. Though the merchandise may be the right kind, size and price, to the customer it is still not right if the product is displayed in dirty cases. Naturally, there may be some customers who will purchase dairy products from a dirty case, but the majority of the customers will not.

As each succeeding year's new models of self-service dairy cases are introduced, materials and designs are improved for better operating and maintenance purposes. For cleaning purposes, the following suggestions have been gathered from various equipment manufacturers.

1. Do not use ammonia or any chlorine bleaching liquids commonly used in stores. Ammonia will stain and leave odors which may be picked up by certain types of soft-ripened cheeses. It should be noted that acids have an adverse effect upon any zinc fittings. Particular acids found in the dairy department are vinegar (acetic) and buttermilk (lactic). Zinc is the metal used most in making galvanized metal. If parts become rusted, use a liquid rust remover, retin the

spot with any of the available compounds and refinish with a good grade of enamel.

2. Do not use abrasive or alkali cleaners. They will remove the gloss and eventually the porcelain finish of the fixture.

3. Always turn off the electricity in the case before starting the cleaning. Water soaked connections and wires can cause very serious accidents.

4. Use warm water, mild soap, and soft cloths. (Never strong soaps or brushes.) If there are spots of dried foods or food drippings on the case, soak with warm, soapy water for a few extra minutes. These spots will wipe off quite easily a little later. If a hose is used to rinse the inside of the case, be sure that the full force of the water pressure is not used. A gentle, steady stream will do the job more effectively since all of the soapy water should be washed down the drain, not spattered on walls and in cooling units. Full water pressure might force soapy water onto aluminum parts and corrode them. Also, there is the danger of soaking electrical connections and insulation.

5. After cleaning mirrors and glasses with warm, soapy water and cloth, wipe dry and polish with a clean cloth or chamois. Polish them with a glass wax for extra glossiness.

It will be necessary for the operator to decide how frequently the cases should be cleaned, conditions not being the same for every supermarket. It is recommended that the cases be cleaned at least once a week. As for the time of

week when the cases should be cleaned, again local conditions must be taken into consideration. Mondays are usually preferable since the cases will be sold down from the previous weekend business. Then not as much merchandise will have to be moved in order to clean the cases. The cases should be cleaned one section at a time. Merchandise from the section to be cleaned should be placed in carriages and rolled into coolers.

In cleaning stainless steel fittings on the cases a little scouring powder, water and "elbow grease" have been recommended. A cloth and metal polish have been used by some operators in cleaning stainless steel. Care should be exercised so that none of the polish gets into or on any of the products. Steel wool is not recommended since it will pit the fittings causing tiny rust spots to appear.

Burned-out fluorescent tubes should be replaced immediately. Tubes which do not light up adequately or blink indicate that starters are worn-out and should be replaced at once. To get maximum light efficiency wipe tubes and reflectors frequently.

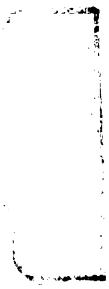
For cleaning the ice cream display cases, a hardwood scraper is recommended to remove the accumulated "frost" in the compartments. The exterior of the cases should be cleaned in the same manner and with the same materials as the other refrigerated display cases. Porcelain wax should be applied frequently to help the finish retain its gloss. Many ice cream cabinets are equipped by the manufacturers

with automatic-defrosting controls. Where this equipment is not provided by the manufacturer, the cabinets should be defrosted manually. (Pull out the electric plug from the electricity source.) After the case is partially defrosted loosen and remove accumulated frost. Remove the water with a wooden scoop and/or cloths. Use a mild soapy water and wash the interior thoroughly. Interiors are usually made of galvanized metal. If refrigeration accidents occur, clean the melted ice cream out immediately. The interior of the cabinet will give off objectionable odors if it is not cleaned immediately and thoroughly. The interiors will rust from the lactic acid in the soured ice cream mix. Excessive frost in the interior will cut down the efficiency with which the cooling mechanism keeps the ice cream frozen. Soft ice cream is unsalable.

Care of Equipment

Coolers should be scrubbed frequently. Hard-fibre brushes should be used with a good mild soap to clean floors, shelves and walls. If the interior is metal instead of wood, cloths are necessary. Floors should be cleaned with a mop. If the interior is metal, in all probability it will be galvanized with zinc. Precautions as noted previously should be used with zinc metal alloys.

Clean coolers make it very hard for mold spores to thrive. Mold spores penetrate into packages and cause excessive losses from moldy products (eggs, cheese, butter,



etc.). It is recommended that a solution of 9 parts of water to 1 part liquid bleach be used in scrubbing walls and shelves. If the interior is made of wood the finish will be removed or partially bleached out. Two coats of shellac will be sufficient to seal the wood.

For the care of compressors and refrigeration in general, the following excerpts are from a service manual.

> "1. Caution: Always pull switch before checking belt tension, cleaning condenser or doing anything that may result in injury if flywheel or fan were turning.
> "2. Oil compressor motor with light lubricating oil (S.A.E.20) once every three months. (Open-type unit.)
> "3. Keep compressor clean and free of dust and oil. Clean condenser with stiff bristle brush, vacuum cleaner, or air pressure at least once every three months. Be sure to pull switch before cleaning.
> "4. Check tensions on belts by depressing belt with hand. If they can be depressed more than one inch, they should be tightened to depress 3/4" only. (Open type unit only.)
> "5. Keep cover on switch at all times to prevent dust getting inside.
> "6. Do not attempt to adjust controls; have service man do this. Compressor should be properly adjusted for seasonal weather changes by service man.
> "7. Do not stack boxes around condensing unit or obstruct air circulation around it." [10]

The following are common complaints arising from the malfunctioning of some part of the equipment. Listed after each complaint are some of the probable causes.

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[10] Anon. Friedrich Service Manual. (San Antonio: Friedrich Refrigerators, Inc., 1954.)

"A. Drying of Merchandise.
1. Temperature too low
2. Low humidity
3. Coils iced solid, blocking proper air circulation
4. Failure to use all of evaporator coils
5. Excessive running time
6. Long off cycle
7. Butane, propane or natural gas fumes
8. Compressor too small or inefficient
9. Lights
10. Low-grade merchandise

B. Uneven Temperature
1. Coils iced solid
2. Fan turning wrong direction.

C. High Head Pressure
1. Air in system
2. Too much refrigerant
3. Dirty condenser
4. Poor air circulation through condenser
5. Compressor too small or inefficient

D. Low Head Pressure
1. Not enough refrigerant
2. Leaking valve plate
3. Suction line too small for its length

E. Short Cycling
1. Low on refrigerant
2. Leaking valve plate
3. Bad control switch
4. Improper switch setting
5. Expansion valve not opened sufficiently
6. Clogged dehydrator or strainer in liquid line or expansion valve
7. Long, kinked or restricted suction line
8. Sticking expansion valve
9. High head pressure
10. Motor heating
11. Oil lock

F. Compressor runs excessively or continuously
1. Control won't cut out
2. Expansion valve stuck open
3. Insufficient air circulation through condenser
4. Speed of compressor less than normal due to loose belt.
5. Overloading compressor

G. Compressor doesn't run at all
   1. Blown out fuse
   2. Belt broken or slipping
   3. Stuck compressor
   4. Defective motor
   5. Key pin dropped out of motor shaft or compressor shaft
   6. Belt too tight.

H. Noisy Machine
   1. Tubing rattling or vibrating against part of unit or tubing
   2. Loose belts
   3. Dry motor bearings
   4. Low line voltage will cause excessive long motor starting noise
   5. Flywheel or pulley, out of line (frayed belt will be good indication).
   6. Shaky foundation
   7. Worn belt
   8. Loose pulley

I. Bad Taste or Colors
   1. Refrigerant leak
   2. Ozone (poor electric connection).
   3. Foods with objectionable odors stored in open containers (fish, bananas, melons, onions, relishes, spoiled foods, etc.)
   4. Dirty case interior." [11]

This list of complaints and probable causes should give the dairy personnel some information on spotting refrigeration troubles immediately. The immediate correction of a minor complaint often saves the cost of a major repair later.

In many of the newer models of self-service dairy display cases, anti-sweat heaters have been installed to cut down the amount of moisture condensation on the mirrors, glasses and other parts of the case. The manufacturers recommend that when the lights are cut off at night that they

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[11] Ibid.

be cut off at the switches in the cases. If the power switch to the case is turned off, cutting off all of the lights at one time, the electric power to the anti-sweat heaters will be turned off causing an overload on the unit from accumulated, excessive condensation when the power is turned on in the mornings.

On the following pages appear some diagram drawings of several of the self-service dairy display cases now in use in the supermarkets of many of the food chains. With the addition of these diagrams and the information on the preceding pages, it is felt by the writer that a better understanding of refrigeration equipment and the problems in its use can be had by the personnel responsible for its use.

Accessory Equipment and Care

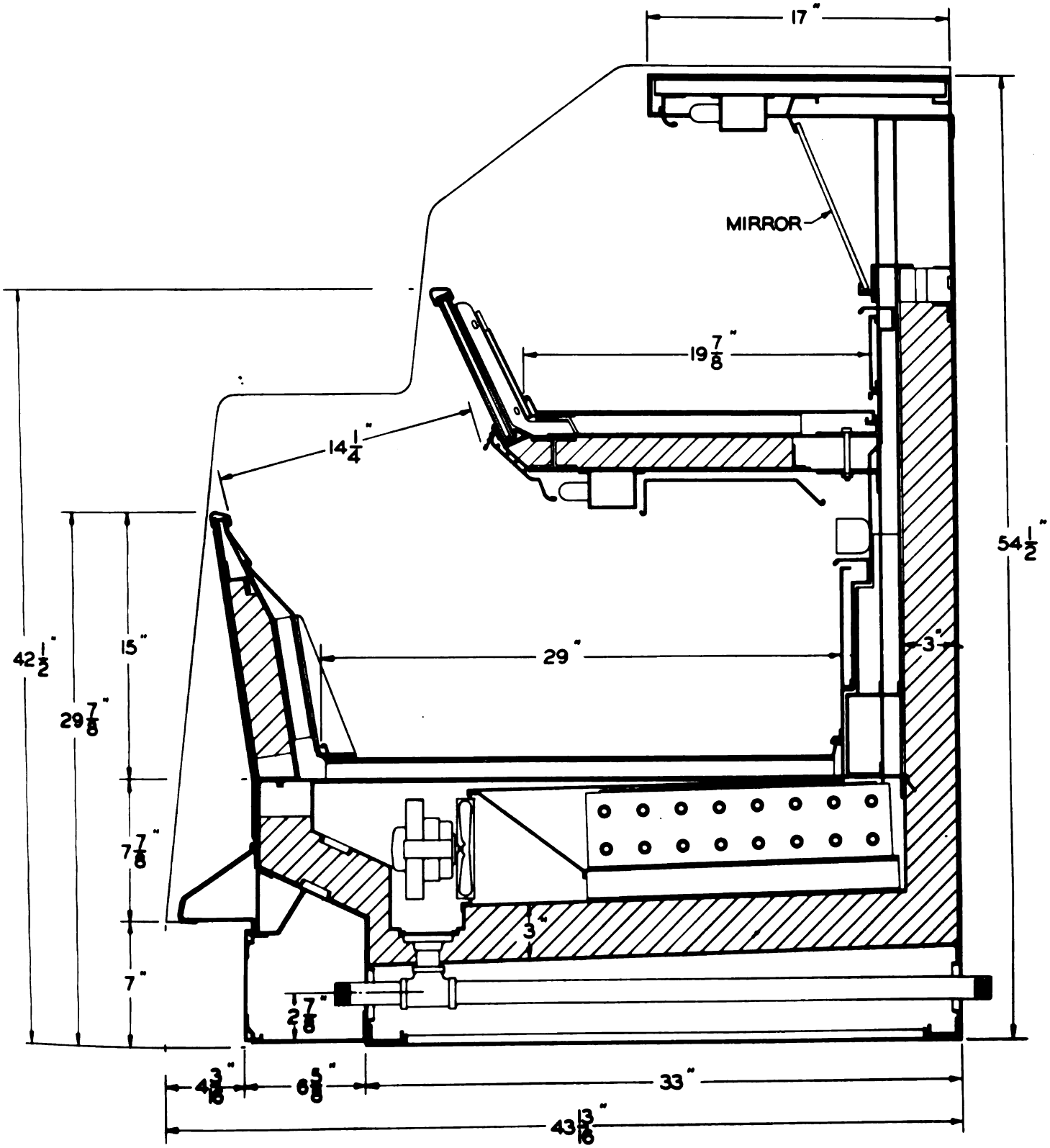
There are many accessory tools needed by supermarket dairy personnel. A list of tools, equipment and materials together with some information on their care and use will be given.

The following is a list of tools and equipment thought to be essential in performing the duties of caring for a dairy department.

1. Case cutter with a supply of blades for opening shipping cartons.

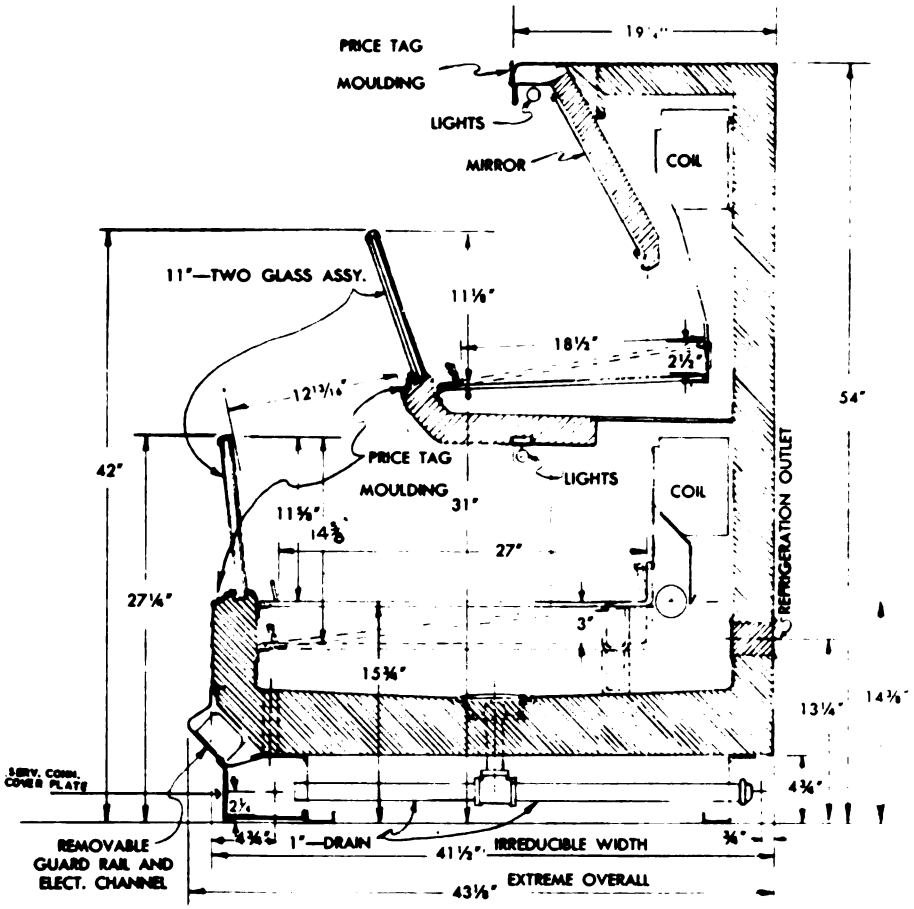
2. Band stamp or N.C.R. stamp for pricing packaged merchandise. Stamps should be cleaned regularly so that price impressions are clear and unmistakable.

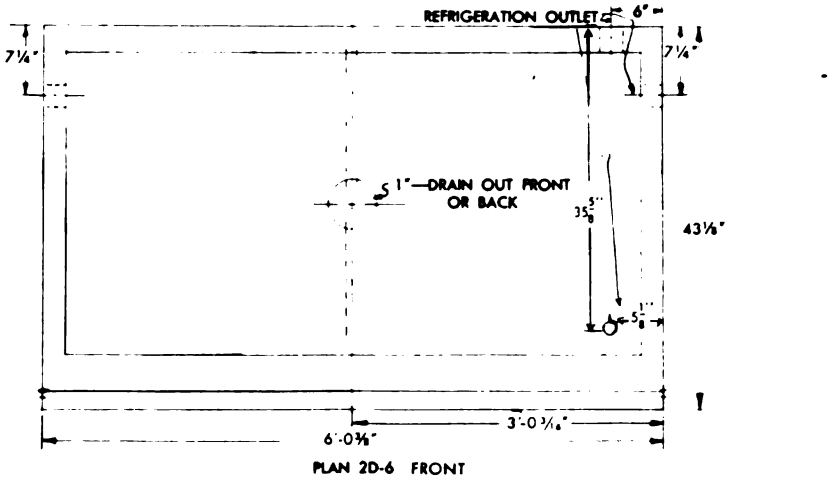
IMPROVED TYLER MULTIPLE SHELF OPEN MEAT & DAIRY CASE 54



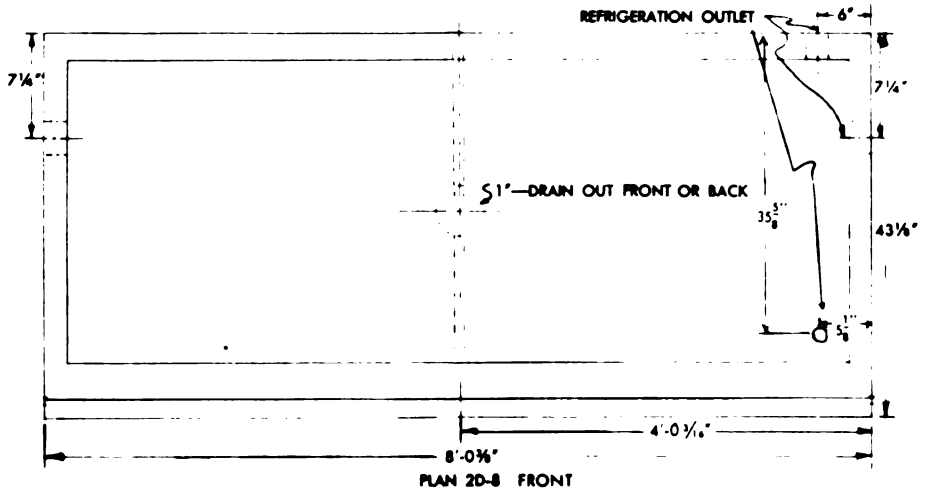
TYLER REFRIGERATION CORPORATION NILES, MICHIGAN

*PRICE TAG MOULDING ACCOMMODATES 1", 1¼", 1½"





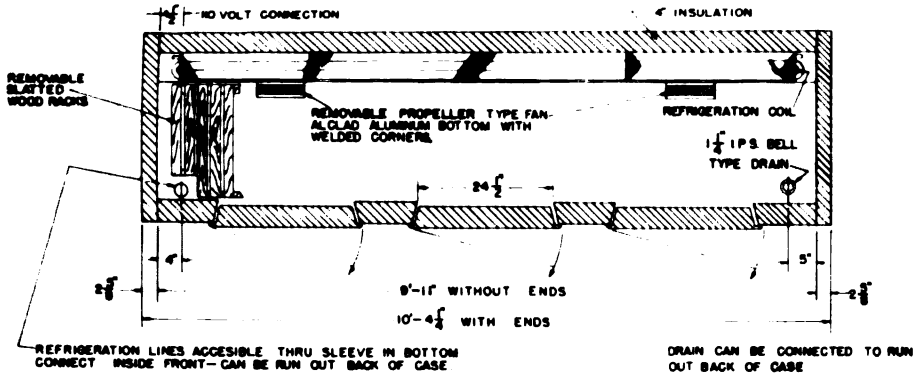
PLAN 2D-6 FRONT



PLAN 2D-8 FRONT

HUSSMANN REFRIGERATION, INC.

ST. LOUIS, MO.



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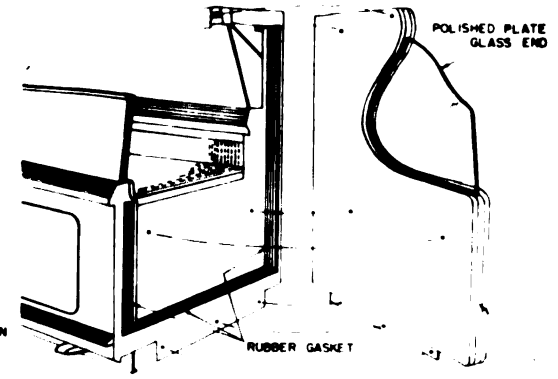
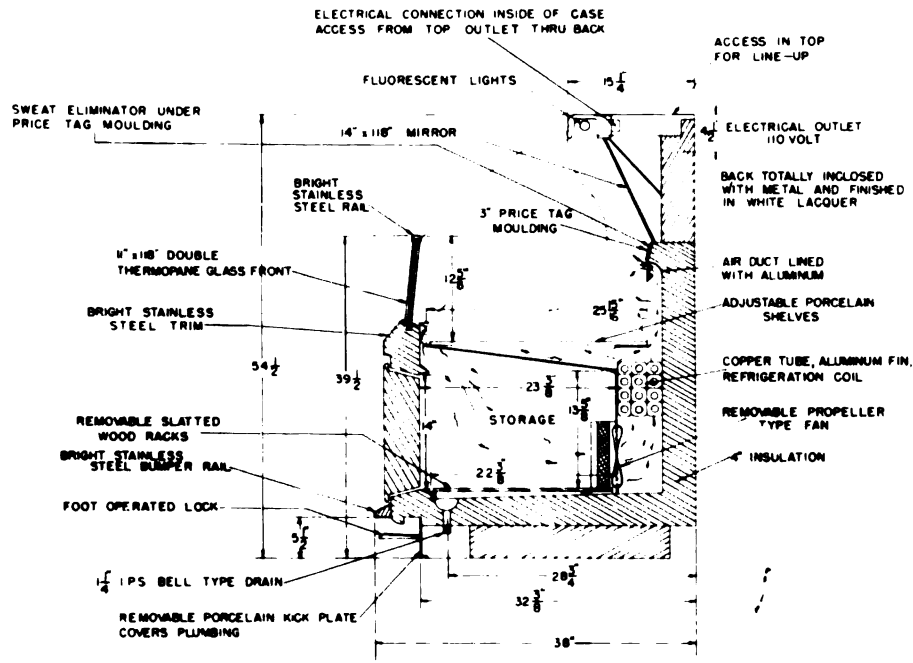


PERSPECTIVE WITH END REMOVED

MODEL—OCIOR



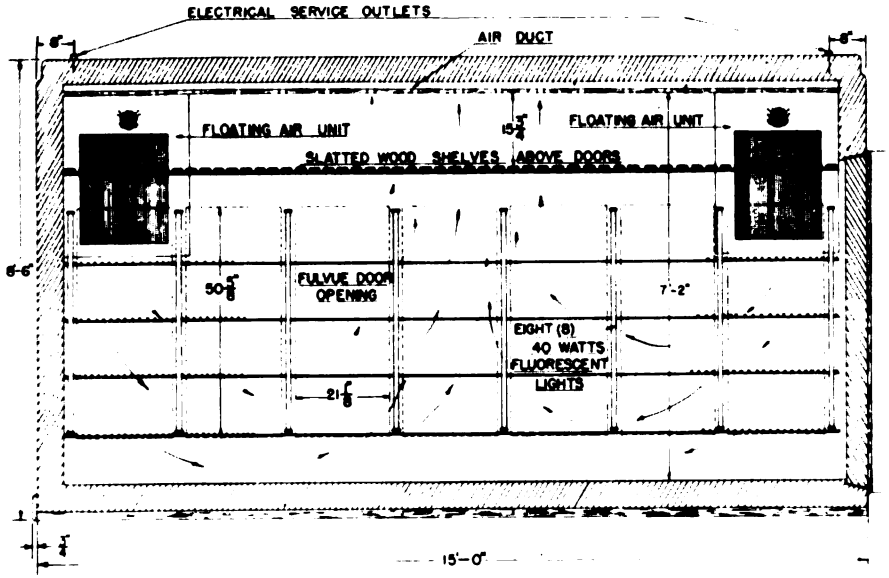
END CROSS SECTION

SPECIFICATIONS

FINISH—ALL PORCELAIN EXCEPT, EXTERIOR BACK AND BOTTOM
HEIGHT—54½", OUTSIDE DEPTH—38", LENGTH (WITH ENDS)—124¼"
DISPLAY SHELF AREA—21.4 SQ FT
STORAGE SHELF AREA—18.0 SQ FT
DISPLAY CAPACITY—15.2 CU FT
STORAGE CAPACITY—22.6 CU FT
TOTAL CAPACITY—37.8 CU FT
TOTAL COIL SURFACE—250.88 SQ FT
FLOATING AIR FAN MOTORS—76 WATTS
LIGHTS ——— 80 WATTS
TOTAL ——— 156 WATTS
COMPRESSOR—¾ H.P. FRIEDRICH AIR COOLED COMPRESSOR AND TIME-PRESSURE DEFROST CONTROL
CASE COVERED BY U.S. PATENT No. 2421314
FOOT OPERATED LOCK, PATENT APPLIED FOR

NOTE: ALL DIMENSIONS IN INCHES UNLESS SHOWN OTHERWISE

Form 247



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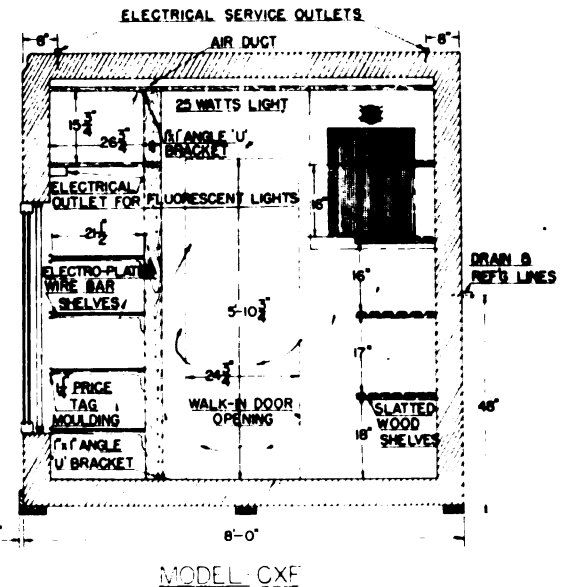
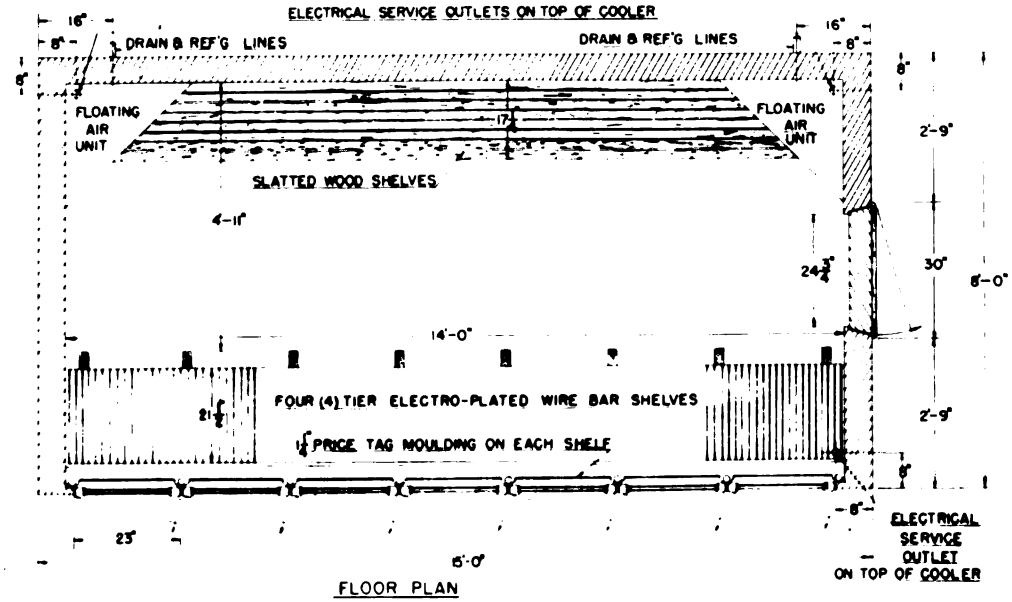


MODEL CXF

END CROSS SECTION



FLOOR PLAN

OUTSIDE DIMENSIONS		7'x8'	9'x8'	11'x8'	13'x8'	15'x8'
	LENGTH	7'-2"	9'-2"	11'-2"	13'-2"	15'-2"
	WIDTH	8'-1"	ALL COOLERS LISTED			
	HEIGHT	8'-6"				
SHELF AREAS IN SQUARE FEET						
WIRE BAR SHELVES		41.5	57.0	76.0	86.0	100.50
SLATTED WOOD SHELVES		39.5	55.0	74.5	87.5	94.50
TOTAL CUBICAL CONTENTS		294.3	394.3	492.5	591.5	688.5
FULVUE SERVICE DOORS		3	4	5	6	7
TOTAL COIL SURFACE IN SQUARE FEET		1275	1455	194	2125	2545

7547

3. Store service truck, a four-wheel conveyor for handling case merchandise in restocking dairy cases. It should be oiled regularly and rust spots buffed down and repainted.

4. Two stainless steel- or enamel-topped tables, one for wrapping and weighing and one for preparing and cutting cheese.

5. One cheese knife, one boning knife and a piano wire cutter for trimming and cutting cheese.

6. A computing scale. It is suggested that the manufacturer's instructions be followed closely for care and maintenance.

7. Sealing iron and tray holder for the iron.

8. Bucket, supply of cloth and a waste bin.

9. Bristle brush for cleaning paraffin and mold from cheeses.

10. A pair of wire cutter pliers and hatchet for opening wooden cases.

11. Holders or frames for film wrappings and labels. These keep expensive films from being scattered and lost.

For the care of cheese cutting and wrapping equipment, the following excerpt is quoted:

> "Cheese dries quickly on cutting wires and tools and they should be cleaned with a cloth dipped in hot water and dried several times a day. A hand-made hard wood knife is a helpful tool for cleaning cheese from metal knives.
>
> "Always wipe cutting tools with a clean, wet cloth after cutting each variety of cheese.

> "At the end of the day, all tools should be washed in hot water with pure soap and then rinsed in a borax solution before drying." [12]

For cleaning table tops and scale platforms at the end of the day's operation, a solution of hot water and a few drops of quarternary ammonium compounds has been recommended. A vinegar and water solution also has been recommended.

The care and maintenance of accessory tools are most important to the success of the dairy department operation. Replacement tools and parts are expensive and, if the true cost of the dairy operation is to be derived, these factors must be taken into consideration. Another factor is the cost of the labor necessary to operate the dairy department. Often great savings in labor can be accomplished by having the right equipment to do the job on hand when needed. Careful planning of the layout and equipment needed will result in time and steps saved in operating the dairy department. These factors should be emphasized when the dairy work space is planned. Efficiency cannot be decreed, it must be planned for and executed.

This chapter has covered many of the equipment and maintenance factors necessary to the dairy operation. Obviously there are many additional ones which could have been included. For the most part, only those factors which directly affect

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[12] Anon. Know Your Cheese and How to Sell It. (350 Madison Avenue, New York 17, New York: The Borden Cheese Company. 1949)

the supermarket personnel of the food chains were included. Facts and information of the particular food chain's methods of operation should be included when the food chain sets forth its own manual.

CHAPTER IV

INFORMATION ABOUT DAIRY PRODUCTS

The foundation of good merchandising is the product knowledge possessed by the persons doing the actual merchandising. The personnel in contact with the customers of the food chain supermarket should possess as much knowledge of the products as the customers might desire to know. The purpose of this chapter is to present basic product information which may be used as a basis for preparing a dairy manual designed to aid store personnel.

Eggs

Eggs are said to represent on an average approximately 2.2% of total store sales. (See Table II) They should realize a stock turnover of about four times per week or yearly stock turnover of 200 times or more. The average gross profit is said to be just under 10%. The gross profit on eggs varies with the season and competition.

1. Parts of the egg.

> "A normal egg of the domestic fowl contains all the essentials necessary for the maintenance of life and the development of a normal chick embryo. With the single exception of milk, a

more complete food than an egg would be difficult to name." [13]

Since the bulk of egg sales in food chain supermarkets are hen eggs, any reference to "eggs" may be construed as being "hen eggs", unless noted otherwise.

Some of the following terms and descriptions are taken from mimeographed material furnished by the Poultry Husbandry Department, Michigan State College, East Lansing, Michigan.

Shell: Varies in thickness and color. Typical of species, breed, variety or strain. Relatively smooth, hard calcerous coat.

Outer shell membrane: Outer membrane is thicker. Made up of protein, small
Inner shell membrane: amounts of water and traces of minerals.

Cuticle: Thin, protective film of transparent material (similar to egg membranes) on surface of the shell.

Air Cell: Air comes through the pores of the shell after interior cools and ages. (Size of the air cell major factor in determining quality of unbroken eggs.)

Albumen: Chiefly water and protein. Small amounts of carbohydrates and minerals. May show slight greenish or yellow-greenish tint from riboflavin.

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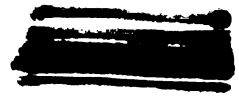
[13] Benjamin, E. W., H. E. Pierce and W. D. Termohlen. Marketing Poultry Products, 4th Edition. (New York: John Wiley & Sons, Inc. 1949). p. 14.



Inner thin layer: Liquid (white) next to yolk.

Inner dense layer: Liquid (white) chalazae area.

Middle layer: Liquid (white), syrupy in density.

Thin outer layer: Liquid (white), watery in appearance.

Chalaza: Composed of twisted mucin-like fibers. Serves to stabilize position of the yolk.

Yolk: Complex structure from which the embryo grows. Composed of lipins, protein and very small amount of carbohydrates.

Viteline membrane: Two layers. Probably collagen and mucin.

Germ spot: Outer surface of yolk. Blastodisc, also germinal spot.

Latebra: Spherical core in center of yolk.

Alternate layers of light and dark yellow: Yellow and white layers in interior of yolk.

These descriptions should give one a better idea of what the inside of a hen egg looks like. No attempt was made to give the possible defects occurring in the interior of the egg. Some of the more prevalent internal defects of an egg are meat spots, blood spots, bloody whites, broken air cells and various types of rot.

2. Egg Sizes and Grades. The following chart gives the weights and tolerances for consumer grades of shell eggs as set forth by the United States Department of Agriculture.

TABLE III

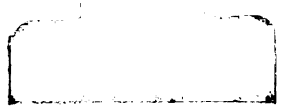
U.S. WEIGHT CLASSES FOR CONSUMER GRADES FOR SHELL EGGS [14]

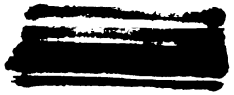
Size or Weight	Minimum Net Weight per Dozen (Ounces)	Minimum Net Weight per 30 Dozen (Pounds)	Minimum Net Weight for Individual Eggs. At Rate per Dozen. (Ounces)*
Jumbo	30	56	29
Extra Large	27	50½	26
Large	24	45	23
Medium	21	39½	20
Small	18	34	17
Pee Wee	15	28	--

Source: U.S. Department of Agriculture.

[14] Anon. "Eggs." Poultry Husbandry Department, Michigan State College, East Lansing, Michigan. (mimeographed)

* Weight tolerances: Minimum weights listed for individual eggs at the rate per dozen are permitted in various size classes only to the extent that they will not reduce the net weight per dozen below the required minimum.





Various states may have additions or changes in these regulations for the weight tolerances allowed for a particular size class. These tolerances may be checked by requesting pertinent information from the particular state's agriculture department.

The following grade specifications were made by the U.S. Department of Agriculture for determining egg grades by candling (examining the interior of an egg by holding it against an opening approximately one inch in diameter in a light with candle-power of 350 to 450 foot candles from direct light).

TABLE IV

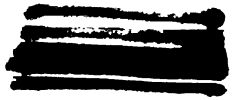
U.S. STANDARDS FOR QUALITY OF INDIVIDUAL SHELL EGGS [15]

AA Quality:	Shell must be clean, unbroken, and practically normal. The air cell must not exceed 1/8 inch in depth and be practically regular. The white must be clear and firm so that the yolk appears well centered and its outline only slightly defined when the egg is twirled before the candling light. The yolk must be free from apparent defects.
A Quality:	The shell must be clean, unbroken, and practically normal. The air cell must not exceed 2/8 inch in depth and must be practically regular. The white must be clear and at least reasonably firm so that the yolk appears at least fairly well centered and its outline only fairly well defined when the egg is twirled before the candling light. The yolk must be practically free from apparent defects.
B Quality:	The shell must be clean, unbroken and may be slightly abnormal. The air cell must not exceed 3/8 inch in depth and may show total movement not in excess of 3/8 inch. However, an air cell not over 2/8 inch in depth may be free. The white must be clean but may be slightly weak so that the yolk may appear off-center with its outline well defined when the egg is twirled before the candling light. The yolk may appear slightly enlarged and slightly flattened and may show other definite but not serious defects.
C Quality:	The shell must be clean, unbroken, and may be abnormal. The air cell may be over 3/8 inch in depth and may be hubbly or free. The white may be weak and watery so that the yolk may appear off-center and its outline plainly visible when the egg is twirled be-

[15] Ibid.

Table 4 (Continued)

fore the candling light. The yolk may appear dark, enlarged and flattened and may show clearly visible germ development but no blood due to such development. It may show other serious defects that do not render the egg inedible. Small blood clots or spots may be present.



U.S. Standards for Quality of Individual Eggs with Dirty Unbroken Shells [16]

Stained: Individual egg that has no adhering dirt and no more than a combined total of 1/8 of the shell surface stained or soiled.

Dirty: Individual egg that has adhering dirt or more than a combined total of 1/8 of the shell surface stained or soiled.

U.S. Standards for Quality of Individual Eggs with Checked or Cracked Shells [17]

Check: Individual egg that has a broken shell or crack in the shell but with no leakage of the contents.

Leaker: Individual egg that has a break or crack in the shell and shell membrane with content exuding or free to exude through the shell.

The foregoing information on quality grades and sizes should be checked against the regulations of the various states in which the individual food chain may operate. The Federal egg specifications for grades have been given fairly wide publication so that a consumer may know what to expect in a dozen of eggs bought under the label of "U.S. Grade A Large Eggs."

Informed sources indicate that the use of the term "AA Grade" may be dropped due to the time factor between the time elapsed when the eggs were graded and later sold. Studies have been made concerning this factor. Indications and

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[16] Ibid.

[17] Ibid.

conclusions from these studies are that there is only a small percentage of the "AA" eggs remaining when regraded at the time of sale.

Grading and sizing of eggs is done by almost every middleman who takes possession of the eggs from the producer. Very little grading by candling is now done in the food chain supermarket since the eggs are graded, sized and placed in cartons before being delivered. The grade size specifications were included for information purposes in the event of the necessity for reference.

3. Handling Eggs. In handling eggs, one important thing should be emphasized to everyone concerned. An egg is very delicate. Once an egg has been broken it cannot be salvaged. Eggs should be kept under refrigeration as much as possible. Recommended temperatures vary depending on the length of time the eggs are to be held. Storage eggs are usually held at a 30° temperature. Eggs freeze at a fraction over 28°F. For display purposes, eggs should be displayed at a temperature of 36° to 38°F. with a relative humidity of 60 to 70%. During some seasons of the year eggs are displayed away from refrigeration. If the demand and turnover are high, this practice might be worthwhile. The temperature at which the quality deterioration increases greatly is approximately 68° to 70°F. If the eggs are fertile, the germ will start to develop at 70°F. and at 80° will begin to "rot" if not refrigerated. Assuming that the eggs are infertile (no

roosters in the laying flock) the quality will still deteriorate rapidly.

Another factor to be emphasized is that eggs should not be subjected to frequent changes in temperature. Where eggs are brought from a storage room into the truck or store where temperatures are higher, condensation will collect on the eggs causing damage to the interior quality and weakening the carton itself.

Due to the porous nature of an egg shell, it will "breathe" in odors which may or may not be noted upon smelling or tasting an egg. Therefore, it is recommended that strong or aromatic substances not be stored in the same compartment with the eggs. Some of the substances from which eggs "pick up" odors are: fish, onions, apples, melons, bananas, some of the more "aromatic" cheeses not in air-tight containers, and many other fruits, vegetables and meats not mentioned.[18]

Carton and case designs have advanced rapidly since 1940. The 2x6 egg carton has almost replaced the 3x4 egg carton. Due to the design and construction of the 2x6 carton, when the top is loose or not fastened securely, there is danger of the carton being mishandled and egg breakage occurring. Customers have been known to open cartons to examine the dozen of eggs to see if each one was the color and size

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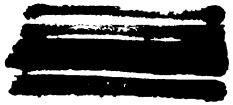
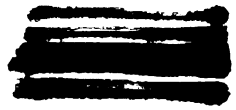
[18] Benjamin, Pierce and Termohlen. Loc. cit.



desired. These cartons have been left on the displays and other customers have pulled a carton from under the opened carton causing the opened carton to spill its contents, often breaking eggs on the display itself as well as on the floor. A recent change in egg cartons has been the cutting of small apertures over each egg in the carton so that the customer might note the individual egg's color and ascertain whether it was cracked. Customer acceptance, breakage-in-transit, etc. of this carton have not been made public.

It is recommended that close observance of the display of eggs be made. Any opened cartons of eggs should be closed securely. Where an accident or breakage in one form or another occurs, the display and dirtied area should be cleaned at once. Any remaining eggs in the carton should be washed clean in running water and dried with paper towels. This should be done to prevent the spreading of bacteria and molds from one egg to another. If parts of the broken eggs are found to have adhered to the sound eggs, a fine grade of sandpaper carefully used will buff the dried portions from the good eggs. These accidents may occur from inept or rough handling at some time between the place the cartons were packed and where the evidence was discovered.

When there is a question as to whether or not the egg may now fall into the specifications for a lower grade, and facilities are not available for candling, the following technique has been suggested for determining the grade of an egg. The system is crude yet fairly effective in that



the specific gravity and the size of the air cell can be detected. Fill a basin of water and add some salt to the water, just enough to give the water a very slight salt taste. Place the eggs in the water. The eggs which lie flat on the bottom are fresh eggs. If the egg remains on the bottom but rests at an angle of 45° or less, the egg should be edible or between an "A" and a "B." If the egg stands up straight, the air cell has enlarged to the point it is a low "B" or a "C." If the egg rises part or all the way to the top, the egg is very old and probably rotten. Too much salt in the water causes the egg to rise and the test will not be accurate. [19]

4. Merchandising. Quality in eggs starts deteriorating right after they are laid. The deterioration continues, to a greater or lesser degree depending on the handling, temperature, and moisture until it is either consumed or thrown away as inedible. This fact brought rise to the statement, "Quality in eggs cannot be increased, only maintained."

In order to insure "quality fresh eggs" on display in the dairy cases, they should be rotated religiously each time the display is refilled. Care should be taken to see that the supply of eggs on hand is only sufficient to meet the customer demand until a new shipment is received. When there is an excess carry-over at the time new shipments are received, orders should be adjusted so that the stock will be completely sold out, or nearly so, when the next shipment will be received.

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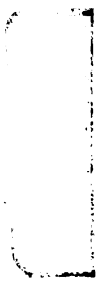
[19] Benjamin, Pierce and Termohlen. Loc. cit.



Code dating or just plain expiration dates have been stamped on egg cartons so that customers may know when the shelf life of the eggs will run out, or when they were graded and "cartonned." This factor has increased the confidence which customers have in the eggs sold by food chains.

At certain seasons of the year, pullet eggs, usually designated as "Grade A (or B) Medium" or "Grade A (or B) Small" flood the egg markets. "Large" and "Extra Large" eggs are usually pretty expensive in comparison. Customers appreciate being told that a particular item, such as "Mediums" and "Smalls," is a bargain. Price them so that the customer can readily see the advantage of buying 4 dozen of "Mediums" instead of 3 dozen of "Large." This will be doing the food chain a favor as well as the producers.

Since only 25% of the eggs sold are sold in food stores (see Table I), it is obvious that there is a larger market which the food stores and the food chain supermarkets are not reaching. Discounting the estimated 15% of total egg production which goes into industrial products, there is a difference of 45% of the production which goes into hotels, restaurants, roadside stands and other egg marketing channels.

It is felt by the writer that better merchandising and handling of eggs would increase the sales of eggs by food chains. In the preceding paragraphs, as much information as is practical was included so that the store personnel may do a better job of selling eggs.

Fluid Market Milk

Milk is the first food known to man. The history of man, or as far back as it has been recorded, finds milk being given a leading role as a food supply.

Since milk is the raw product which can be consumed in its natural state, or various products are produced from it by special processes, the following table is presented to show the sources of milk consumed by man and the nutritive analyses of the various milks.

Milk, unless noted otherwise, will refer to cow's milk. Milk is graded on the basis of the bacteria count, foreign sediment and the content of butterfat and other solids. Fluid milk regulations are usually set up and enforced by local city or state ordinance. Conditions under which the milk is produced, packaged and sold are carefully governed to see that the milk is a wholesome food at the time it is consumed. Where local municipal health regulations do not apply, state and federal regulations do. All are directed toward keeping the milk wholesome.

The properties of milk lend themselves to the rapid growth of bacteria which may or may not be harmful. It was this factor which caused the adaptation of the Louis Pasteur (1864) heat treating process called "Pasteurization" for milk to be fed infants. It was first used by Soxhlet (1886) in

TABLE V [20]

*Average Composition of Milks
of Certain Mammals and Breeds of Cows

Species or Breed	Water %	Protein %	Fat %	Lactose %	Ash %
Ewe	80.60	5.44	8.28	4.78	0.90
Goat	87.37	4.00	3.00	4.84	0.79
Mare	89.86	2.00	1.59	6.14	0.41
Woman	87.80	1.73	3.40	6.83	0.24
Cow:	87.29	3.42	3.66	4.92	0.71
Ayrshire	87.20	3.46	3.85	4.80	0.69
Brown Swiss	86.59	3.63	4.01	5.04	0.73
Devon	86.26	4.15	5.07	3.76	0.76
Guernsey	85.31	3.98	5.00	4.96	0.75
Holstein	88.07	3.15	3.45	4.65	0.68
Jersey	85.35	3.84	5.14	4.92	0.75
Short Horn	87.32	3.32	3.72	4.92	0.72

* Compiled from various published analyses and authorities.

[20] Lampert, Lincoln M. Milk and Dairy Products. (Brooklyn, New York: Chemical Publishing Company, Inc. 1947). pp. 10-12.

Germany. In 1889, Jacobi employed this process in the U.S. for feeding infants cow's milk. [21]

> "In general, two time-temperature relationships are recognized for pasteurizing milk in the United States. These are 142° to 143°F. (61.1° to 61.8°C.) for 30 minutes, known as the holding process, and 160° to 161°F. (71.1° to 71.8°C.) for 15 seconds, known as the high temperature short-time process." [22]

> "Milk is homogenized by pumping it under high pressure (1500-3000 lbs. per sq. in.) through the very small opening between a valve and its seat or between the narrow spaces of a series of discs pressed against each other by means of a heavy spiral...The fat globules in milk become subdivided when they are forced through a very small aperture and they practically explode as they reach the other side where the pressure is suddenly released. The greater the pressure used, the smaller will be the size of the fat globules. The ability of the globules to combine or coalesce is practically destroyed owing to the presence of a film of protein which forms around them. [23]

The pasteurization and homogenization processes have contributed greatly to the food preservation and digestibility as used by the processors of milk and milk products of today. The importance of these two processes should be known by personnel in the supermarkets in that they are used in the processing of many other foods besides dairy products.

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[21] Sommer, Hugo H. Market Milk and Related Products, 2nd Ed. (Milwaukee, Wisconsin: Olsen Publishing Company. 1946). p. 104

[22] Nelson, John A. and G. Malcolm Trout. Judging Dairy Products, 3rd Ed. (Milwaukee, Wisconsin: Olsen Publishing Company. 1951). p. 62.

[23] Lampert. Op. cit. p. 145.

For the purposes of identifying grades of milk and the various fluid milks found in supermarkets, the following information is submitted.

> "The United States Public Health Service (1939) defines milk as follows:
> "The lacteal secretion obtained by the complete milking of one or more healthy cows, excluding that obtained within 15 days before and 5 days after calving, or such longer period as may be necessary to render the milk practically colostrum free; which contains not less than 8 percent of milk solids not fat, and not less than 3.25 percent of milk fat." [24]

Maximum plate bacteria counts per milliliter for pasteurized milk grades are as follows: Certified--10,000; A--30,000; B--50,000; C--no limit. Additional specifications for these grades are as follows: Certified milk must meet requirements of the American Association of Medical Milk Commissions. Grade A milk must be produced on inspected farms, tuberculosis and Bang's disease tested and free. The pouring lip of containers must be covered to at least its largest diameter. Grade B requirements are the same except abortion testing requirements may not be fully met. [25]

The following are descriptions of the various milks marketed.

> "1. Pasteurized milk. Pasteurized milk is milk which has been subjected to pasteurization temperatures for a prescribed period of time...

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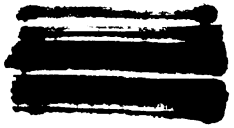
[24] Nelson and Trout. Op. cit. p. 59.

[25] Ibid. pp. 60-61.



"2. Certified milk. Certified milk is produced under strict sanitary conditions and, whether raw or pasteurized, must have a bacteria plate count under 10,000 per ml....

"3. Special breed milk....

a. Golden Guernsey milk. This is a trade name for high quality milk produced according to the regulations of the American Guernsey Cattle Club.

b. Jersey Creamline milk. This is a trade name for high quality Jersey milk produced under the regulations of the American Jersey Cattle Club.

"4. Vitamin D milk. Vitamin D milk is milk the vitamin D content of which has been increased above that of normal milk by special processes in accordance with public health regulations...

"5. Vitamin Fortified milk. Vitamin fortified milk sold under specific trade names, contains a variety of vitamins, as A, B_1, B_2, C, D, nicotinic acid and calcium pantothenata, in quantities per pint to meet adult requirements. The milk is pasteurized and homogenized...

"6. Homogenized milk. Homogenized milk is milk the fat globules of which have been so finely divided that they remain uniformly dispersed throughout the serum...In 48 hours there should be no visible cream separation...(Said to possess a curd tension of 30 grams by the Hill method.)

"7. Soft-curd milk. A soft-curd milk has a curd tension not exceeding 30 grams as determined by the Hill method. (Soft-curd milk is said to be more easily digested for infants, adults, etc. Human milk has a soft-curd tension of almost 0 grams.) This type of milk may be secured by several ways, namely, by...

b. High heat treatment. (Canned evaporated milk.)

c. Homogenization, including high frequency vibration.

d. Zeolite treatment. (base-exchange)

e. Proteolitic enzyme treatment...

"8. Reconstituted milk. Reconstituted milk is the product resulting from the recombining of milk fat and nonfat dry milk solids or dried whole milk with water in proportions to yield the constituent percentages occurring in normal milk. For this purpose various forms of milk fat such as butter, butter oil, fresh or frozen cream and nonfat dry

milk solids, dried whole milk, or concentrated milks may be used. The product is practically always homogenized..."[26]

9. Skimmilk. Skimmilk is milk which has had part of the butterfat removed. The estimated percentage of fat remaining is approximately 0.12%. Usually it is packaged in similar containers as whole milks.

10. Chocolate milk. Chocolate milk is milk which has had a mixture of cocoa, sugar and water mixed with it. Cocoa and sugar are mixed separately, then mixed with the water and cooked to make a syrup. The resulting syrup is mixed with the milk to get chocolate milk.[27]

The following list is of creams, some or all of which may be sold in the food chain supermarkets.

1. "Table Cream. Sweet cream, raw or pasteurized, containing 16 to 22 percent fat, according to legal standards in the different states, is known as table cream. Table cream may or may not be homogenized. It is sometimes called "coffee" cream.
2. "Whipping Cream. Raw or pasteurized sweet cream containing 30 to 40 percent fat, which has been aged for a sufficient length of time to enhance its whipping qualities, is known as whipping cream. This cream is often referred to as "double" cream, because the percentage fat is about twice as high as that of table cream.
3. "Ready-whipped cream. Whipping cream, raw or pasteurized, which has been flavored, whipped and delivered to the consumer in the whipped state, is known as ready-whipped cream...May have a nitrous oxide gas added.

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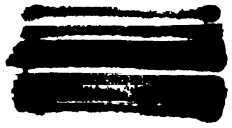
[26] Ibid. pp. 62-68.

[27] Lampert. Op. cit. pp. 143, 153.



4. "Plastic (80 percent) cream. Plastic cream is a thick, viscous, semi-solid, raw or pasteurized, sweet cream containing from 70 to 80 percent fat. Plastic cream is produced by separating milk through a specially designed separator bowl under certain conditions. Plastic cream is used mainly for making ice cream mix. It may also be used in its natural state as a spread for bread or it can be used in a mixture with salt, honey, chocolate, or peanut butter...it does not keep as well as butter, due primarily to the higher curd content.

5. "Substandard cream. Substandard cream is a sweet cream product, pasteurized, containing from 10 to 12 percent fat, and usually homogenized at a pressure sufficiently high to inhibit the formation of a cream layer. It is also known by other names, such as "cereal milk," "cereal cream," "cereal treat" or "breakfast cream"...

6. "Frozen Cream. Frozen cream is sweet cream containing from 50 to 75 percent fat carefully processed and stored at 0°F. to -10°F. (-17.7°C. to -23.3°C.) for several weeks or months...

7. "Devonshire cream. Devonshire cream is obtained by hand skimming shallow pans of scalded, whole milk. The whole milk, after standing 10 to 12 hours, is scalded for 20 to 30 minutes at about 190°F (87.8°C.), then cooled, held 24 hours and skimmed...The butterfat content usually averages from 60 to 65 percent. It is referred to by many other names such as "clotted cream," "Devonshire clotted cream," "Cornish cream," "scalded cream" or "cooked cream."

8. "Cultured cream. Cultured cream is a heavy, smooth, viscous, sour cream prepared by the ripening of pasteurized sweet cream with a clean-flavored, aromatic, lactic culture. It is sometimes called "commercial sour cream," "Jewish sour cream," or "Hebrew cream." [28]

The following list and descriptions are of fermented milks of which some or all may be found in food chain supermarkets.

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[28] Nelson and Trout. Ibid. pp. 297-299.

1. Natural buttermilk. Natural buttermilk is a by-product from the manufacture of butter.

a. "Sweet-cream buttermilk. High quality, sweet-cream buttermilk has a clean, sweet flavor not unlike good sweet cream. In comparison with that of cultured buttermilk, the body of natural sweet-cream buttermilk is relatively non-viscid, and pours smoothly like high-testing milk. It may or may not have flakes or granules of butter in it.

b. "Sour-cream buttermilk. High-quality, sour-cream buttermilk made from clean, sour cream which has been standardized for acidity has a slightly sour taste and a buttery aroma. The body is slightly less viscid and smooth than that of sweet-cream buttermilk." [29]

2. "Cultured or commercial buttermilk. Owing to variations in the churning process during the manufacture of butter and differences in the quality of the cream churned during various parts of the year, a uniformly high quality of genuine buttermilk is not always obtainable. To supply the demand for the beverage, a large amount of cultured buttermilk, sometimes called artificial buttermilk is made by the fermentation of milk or skim milk with lactic acid bacteria. Usually skim milk is used, but a small amount of cream may be added to improve its flavor...Particles of butter may be added to cultured buttermilk by actually spraying melted butter on the surfaces of the milk while it is under agitation; this modification of churned buttermilk is known as flake buttermilk...The pasteurized milk used for the preparation of cultured buttermilk is inoculated with the starter and held at a temperature of about 70°F. until the desired acidity is reached. This usually is between 0.6% and 0.8%, expressed as lactic acid. Often a little common salt is added to improve the flavor...

3. "Acidophilus milk. Acidophilus milk is milk that has been inoculated with a pure culture of Lactobacillus acidophilus and has been allowed to ferment under conditions that favor the growth and the development of large numbers of the organism...

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[29] Ibid. p. 342.

4. "Bulgaricus milk. (Bulgarian buttermilk.) Lactobacillus bulgaricus is used in the preparation of a fermented milk of high acid content. The method of manufacture is similar to that used for acidophilus milk.

5. "Yogurt. Yogurt is the Turkish name for a fermented milk of the lactic acid type. It is known by different names, according to the place where it is made; for example, in Armenia it is known as Matzoon, Leben in Egypt, Gioddu in Italy and Dadhi in India.

"In the preparation of yogurt, the milk is boiled, cooled and then inoculated with a culture of lactic acid-forming organisms, especially L. bulgaricus, B. yogurtii, and S. thermophilus...The action of the various organisms produces 1 to 2% acidity in about three hours." [30]

The preceding information about milk, cream and buttermilk should help one to know these dairy products better. Books have been written about each of these products and to give an apt description of some of these products in a few short words would be an impossible task. If further information on these products is desired, the source notes are taken from very thorough books.

Merchandising these products hinges mainly on the attractiveness of the package and its ability to be seen. Cleanliness is also a big factor in selling milk and milk products--cleanliness of the container, the shelf and the surrounding area. This factor is often hard to maintain since dairies usually pack milk products in flake or marble ice which causes the wet cartons and bottles to collect dirt and trash on the outside. Refrigeration of the delivery trucks has

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[30] Lampert. Op. cit. pp. 128-131.

eliminated this condition to some extent. A fairly recent development has been the refreezable-leak-proof ice bag for placing on top of the case of milk to keep it cold.

Freshness of product is of primary importance. The old supply should be sold before the new supply. Therefore extreme care in rotation should be observed on all occasions. An additional help is the code dating by the bottling dairy of milk products delivered to the supermarket. The code date should read: "Use before (month), (day)--Refrigerate at 38°F." or similar type of code which the customer can read. Code dating may or may not be used in the various sections of the country served by the food chains.

To increase sales of milk, keep the display full at all hours of the day except the half-hour before the store closes. At that time, or as deemed necessary, remaining stocks should be moved to the front of the display case to make selection easier for customers. If the display and stocks are running out before the store is closed, a 10% increase in the order for the next day's deliveries should furnish a supply capable of meeting customer demand. In the event the sell-out occurs earlier in the day, the supplying dairy should be contacted for immediate delivery of quantities needed. The dairies are usually happy to sell a few extra cases of milk providing they have it on hand and do not have to deliver it too far.

Fluid milk carries a gross margin averaging from 10-14% (Table 2). With the tremendous turnover, estimated at 5-6 times per week, the profit potentials of milk and milk products are worth the time and effort.

Butter

Butter is a mixture of butterfat (at least 80%), water (approximately 16%), salt (0 to a maximum of 3%), curd (85%) and vegetable coloring depending upon the season of the year the milk was produced. A pound of butter is said to contain 3,400 calories and, if produced from July to September, 18000 units of Vitamin A, other months 15,000 units. The history of butter is said to go back over 3500 years.

> "Many kinds of butter are to be found on the market. These vary with the type of cream from which the butter is made and with variations in the manufacturing process. Unless specifically stated, the various kinds of butter may or may not have been salted.
>
> "Generally, butter may be grouped as follows:
>
> "1. Pasteurized-cream, or unpasteurized-cream butter.
> "2. Ripened-cream, or unripened-cream butter.
> "3. Salted, or unsalted butter.
> "4. Sweet-cream, or sour-cream butter.
> "5. Fresh, or storage butter.
> "6. Dairy, or creamery butter." [31]

Most butter being sold in the supermarkets is creamery butter. It may or may not have been in storage. (0°F.) To be called storage butter it must have been in storage longer than 30 days.

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[31] Nelson and Trout. Op. cit. pp. 129-131.

The quality classes of commercial butter and terms are as follows:

> 1. "Shakes. 'Shakes' is a term applied by judges to samples of butter of very excellent quality, usually meriting a score of 94 points or above...This butter scores above any of the established market grades recognized at the present time.
> 2. "Specials. 'Specials' is a market term which refers to fine flavored butter that scores 93 points or above. Terminal wholesale markets usually recognize a 93-score butter as 'special.' This grade of butter is also referred to as 'higher scoring.' (Letter grade--AA)
> 3. "Extras. 'Extras' refers to a 92 score butter...(A-letter grade.)
> 4. "Firsts. The scores may range from 91 down to 89 points. Reference is sometimes given to 'high firsts' (B-91), 'medium firsts' (B-90), 'low firsts' (C-89).
> 5. "Standards. Centralized carlots of butter manufactured in one plant and scoring 90 points or higher are sometimes referred to as 'standards.'
> "At the present time, the United States butter grades classify lower scoring lots, 88 down to 86 points, as 'Cooking Grade.' Butter scoring below cooking grade is classified as 'No Grade' by the federal butter graders." [32]

The factors and perfect numerical rating given to each factor are as follows: flavor (45 points), body and texture (25 points), color (15 points), salt (10 points), package (5 points). Flavor is the most important factor in scoring.

These factors, to be given a perfect rating (seldom does a sample receive a perfect rating), are described as follows:

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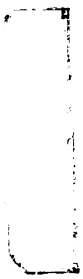
[32] Ibid. p. 132.



1. "The package, 5 points, in which butter is sold should, above all, be neat, clean, and tidy in appearance, showing good finish.
2. "Whether the butter is high or low in salt or even unsalted, provided the sale is all dissolved and not too sharp, salt is given the perfect score of ten points. The sale in the interior of the butter must be dissolved.
3. "The uniform light straw color seems to meet the demand of the American people...The chief point to observe in scoring butter for color is the uniformity of color throughout. (15 points)
4. "Body and texture--25 points. The body of butter should be firm, showing a waxy, close-knit texture. When broken, the butter should present a jagged, irregular, broken wrought-iron like surface. Due to improved workmanship, creamery butter generally scores perfect in body and texture.
5. "Flavor--45 points. The desired flavor of butter is mild, sweet, clean and pleasant... It should have a delicate aroma...A characteristic of such butter is that the appetite always craves for more. Butter scoring 38 points or higher in flavor is considered to be in a class which is beyond flavor criticism. (The perfect score is theoretical, never given.)" [33]

Butter will pick up any strong odors which may be in close proximity to it. Therefore, it is advisable to check shelf arrangements to see if there are any products near the butter section which may have strong odors. This was one of the reasons that butter was placed on the bottom shelf of the suggested merchandise shelf arrangement for the dairy cases. (See Chart No. 1)

Another reason for displaying butter on the bottom shelf is that butter needs constant refrigeration to as low a temperature before freezing as could be found in the refrigerated dairy case. The bottom shelf is said to be a little colder

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[33] Nelson and Trout. Loc. cit.

than the top shelf in a two-shelf dairy case. The shelf on top of valance is not considered as part of the refrigerated dairy case. It is space which can be utilized for the display of non-refrigerated dairy products.

Care should be taken to see that butter is kept under constant refrigeration. Butter has a very low melting point. To bear out this point, it is suggested that a pattie of butter be placed in the mouth and allowed to melt, noting the necessary time. Then compare the melting time of butter with the melting time of a similar piece of margarine. The butter will melt much faster.

Butter should be ordered only in quantities to sufficiently meet customer demand between delivery periods. Butter is highly susceptible to rancidity if held under improper temperatures or too long periods. Therefore it is imperative that butter stocks be rotated so that old stocks are being sold first. Fresh quality butter has no substitute. By ordering and rotating properly, the supermarket's butter sales will start to increase.

There are numerous shapes of prints and packaging materials. The shapes include the 1-pound roll, ½-pound round print, and the 1/4-pound stick (the latter wrapped separately for a pound or half-pound package). Patties are now being sold in supermarkets in packages of 60 to 80 per pound. Butter is still packed in bulk, cartons from 52 to 76 pounds of weight or better. Wooden tubs are used very rarely.

Wax paper has been the wrapping material most widely used previous to 1952. Aluminum foil has been adapted since then to wrapping butter and for backgrounds of packages. The use of foil has made the vivid colors of the package more attractive to the eye.

Butter consumption figures recently released by the United States Department of Agriculture state that butter consumption per capita has dropped from an average of 16.8 pounds for the years of 1935-39 to 8.6 pounds in 1953. Recently, retail and wholesale prices of butter have dropped. With the decreases in prices, perhaps more people will go back to consuming butter.

Butter gross margin is fairly profitable (10-14%) and by displaying it next to high traffic items increased sales will probably result. (See Table II and Chart I.)

Margarine

Though margarine is not a dairy product, it is included in the dairy department since it requires refrigeration when stored at temperatures of 70°F. or higher.

Margarine sales account for 1.6% of the average food chain store's total sales. (See Table II) These figures show a steady increase in consumption. Department of Agriculture statistics indicate that in 1953 8.1 pounds of margarine per person were consumed. In 1951, 6.5 pounds per person were consumed. The average consumption per capita for the years of 1947-49 was 5.5 pounds of margarine. Some authorities feel that the consumption of margarine has been aided by the decrease in amount of taxes and other regulatory measures. There are a few states which place taxes and other regulatory measures upon the sale of colored margarine.

Margarine is said to have originated in France and became a product of importance about 1870. Margarine may be described as being a fatty product, composed in part or wholly of fat (80% minimum by federal law) other than milk fat, together with water (estimated to average about 15-16%), skim milk (non-fat dry milk solids, average ± 1.65%), and salt (up to 3%).

Margarine contains about 3,400 calories per pound and 15,000 units of Vitamin A are added to equal the vitamin

content of butter produced in the winter season. It is not equivalent to butter or a complete substitute for it since it lacks some of the constituents of butter, such as certain fatty acids and vitamins.

The principal fats and oils used in the manufacture of margarine are cocanut oil, soybean oil, cottonseed oil, oleo oil, oleo stock and natural lard. (Oleo oil, oleo stock and natural lard are used very little in the manufacture of margarine today.) The fats and oils are mixed with ripened skimmilk and the other ingredients (0.1% of benzoic acid may be added as a preservative) until a complete oil-in-water emulsion is obtained. (Butter is a water-in-oil emulsion.) The emulsion is chilled by passing it over a steel cooling drum or through a freezer and then kneading it in high-speed machines. Vegetable coloring material is added in areas permitting the sale of colored margarine. From these machines the margarine is passed through a series of machines which forms, wraps and packages it. Margarine is manufactured under modern sanitary conditions from wholesome ingredients and is a wholesome food product. [34]

Margarine products are said to average a gross margin from 10-14%. With consumption figures climbing, the sale of margarine has become one of the large sales volume products for the dairy department.

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[34] Lampert, Op. cit. pp. 191-194.

Margarine has a relatively higher melting point than butter. The melting point is high enough to permit large displays of margarine away from refrigeration during cooler weather. Margarine displays can be tied in with meat displays, fresh corn-on-the-cob displays and other related item displays. This type of merchandising should increase margarine sales.

Margarine should receive the same careful handling as butter. Non-refrigerated displays should be watched closely for evidence of the packages softening, and especially, the bottom layers being mashed. The display merchandise should be rotated as frequently as possible. Rancidity can develop in margarine just as in butter even though a small amount of preservative is added in the manufacturing process.

Ice Cream

1. Product Information. This dairy product, almost without exception, is consumed by all ages, sizes and shapes of people. It has been a "treat" for many years. It is one of the favorite desserts on most dinner tables in the United States.

Ice cream history goes back many years and is believed to have originated in the Orient. Marco Polo brought the original recipes and techniques for freezing from the Orient during the 1400's. Water ices were introduced to France by Catherine de Medici in 1550. Early records indicate that ice cream was first sold in the United States by a Mr. Hall in what is now Park Row, New York, New York. It was introduced

in Washington, D. C., by Mrs. Alexander Hamilton at a dinner given in honor of President Jackson. Jacob Fussell, a Baltimore milk dealer, founded the wholesale ice cream business in 1851. [35]

Ice cream is relatively high in nutritive value. The average recipe provides approximately 4,400 calories per gallon of liquid mix. Since freezing produces an "overrun" of 100% ice cream will contain approximately 2,200 calories per gallon. The composition of ice cream is s follows: fat, 8-25%; milk solids nonfat, 6-14%; sugar, 12-18%; stabilizer (gelatin, sodium alginate) 0-1%; egg yolk, 0-4.5%.

"Overrun" is the increase in the volume from air being whipped into the mix during the freezing process. The overrun is a natural occurrence in any process to freeze ice cream. It is said to vary from 80% to 150%, the usual overrun being about 100%. Federal regulations which apply to the manufacture of ice cream set the minimum weight of one gallon of ice cream at 4.5 pounds. (Whole milk weighs approximately 8.5 pounds per gallon) A five-gallon container of ice cream will yield approximately 3½ to 4 gallons of ice cream sales, when sold over the counter in "cones." Thus the overrun shrinks when ice cream is scooped in the store. [36] Abuses of the overrun factor have caused some consideration for regulatory legislation to [illegible] sell ice cream by pound measure

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[35] Turnbow, Grover D., and Lloyd A. Raffetto. Ice Cream. (New York: John Wiley and Sons, Inc. 1928) pp. 1-2.

[36] Lampert, Loc. cit.

or by minimum filled-container weights. (For example, one gallon of ice cream shall weigh at least 4.5 pounds.)

2. Merchandising Ice Cream. The distribution of sales by flavors according to the source follows: [37]

1. Vanilla . . .	51.26%	6. Maple	1.07%
2. Chocolate . .	16.36%	7. Cherry . . .	1.01%
3. Strawberry .	7.95%	8. Pineapple . .	.91%
4. Butter Pecan	3.67%	9. Coffee . . .	.62%
5. Peach	1.46%	10. All others	15.69%

This distribution of flavors as presented here should not be taken as absolute for any particular area. The preferences of customers and the availability of the particular flavors should be taken into consideration in selecting the flavors to be stocked in the ice cream display case. This guide can be used in the initial display as an indication of the flavors customers are likely to prefer.

The following points of merchandising information are suggested to aid in selling more ice cream.

1. Ice cream is classed as an impulse sales item. Therefore it should be displayed in high customer traffic areas, preferably near checkstands.

2. Adequate aisle space is necessary to permit customers to select desired flavor(s) without being jostled. Related item displays should not overshadow effectiveness of display case.

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[37] Nelson and Trout. Op. cit. p. 257.

3. The case should be kept clean at all times. Appearance does much to make a "selling" impression. Covers should be placed on cabinets at night.

4. Price tags, tag mouldings and lists of flavors should be kept clean and up-to-date.

5. The duties of merchandising and caring for the ice cream cases should be assigned to one person for best results. Ice cream sales can account for as much as 2% of total store sales.

6. Varieties and package sizes should be kept in a neat, orderly arrangement.

7. Ice and frost should be kept off of packages and damaged packages removed.

8. Insulated bags should be kept on display cases within easy reach of the customer.

Ice cream sales can do much to bolster sales during summer months. Profit potentials are very good since there is a turnover of one to three times per week. Ice cream sells the year round now since improved refrigerating facilities are in many American homes. Ice cream helps to sell many related items--cookies, cakes, sundae toppings, nuts and cones.

Many people prefer ice cream as a dessert. Customer preferences in flavors and packages should be displayed in adequate, clean cabinets to attract more sales of this product.

Cheese

Cheese is one of the important volume products sold in the food chain supermarkets. Of the total store sales volume, cheese sales are said to represent approximately 1.5-1.6%. (See Table II.) Sales of cheese products are increasing although most of the increase is in the consumption of processed cheese rather than natural cheese. Per capita consumption figures for cheese for 1953 recently released by the United States Department of Agriculture indicate that 4.7 pounds of American cheese and 2.3 pounds of "other" cheese were consumed per person. This is a slight total increase over the 1947-1949 average.

> "Cheese is highly nutritious and palatable. It is of value in the diet because it contains in concentrated form almost all the protein and usually most of the fat, as well as essential minerals, vitamins, and other nutrients of milk.
>
> "...According to ancient records, cheese was used as a food more than 4,000 years ago. It was made and eaten in Biblical times. Travelers from Asia are believed to have brought the art of cheesemaking to Europe...Gorgonzola was made in the Po Valley in Italy in 879 A.D...Roquefort was mentioned in the ancient records of the monastery at Conques, France, in 1070 A.D. The Pilgrims included cheese in the ship's supplies when they made their famous voyage to America in the Mayflower in 1620...In 1851 the first cheese factory in the United States was built by Jesse Williams near Rome, Oneida County, N.Y...Cheesemaking in the United States and in other leading cheese-producing countries of the world is now largely a factory industry, only small amounts being made on farm for home use.
>
> "...Most cheese is 'natural' cheese, that is, it is made directly from milk (or whey, in a few instances) as opposed to 'process' cheese, which is made from a blend or combination of one or more kinds or natural cheese. Natural cheese is made by coagulating or curdling milk, stirring and heating the curd, draining off the whey, and collecting

or pressing the curd. Desirable flavor and texture are obtained in many cheeses by curing the cheeses, that is, holding them for a specified time at a specific temperature and humidity.

"...There probably are only about 18 distinct types or kinds of natural cheese...The following are typical of the 18 kinds: Brick, Camembert, Cheddar, Cottage, Cream, Edam, Gouda, Hand Limburger, Neufchâtel, Parmesan, Provolone, Romano, Roquefort, Sapsago, Swiss, Trappist, and whey cheese (Mepost and Ricotta.)

"Cheese can also be classified (with examples) as follows:

"1. Very Hard (grating): (25% to 33% water)
   (a) Ripened by bacteria: Asiago old, Romano, Sapsago, Spalen.

"2. Hard: (30 to 40% water)
   (a) Ripened by bacteria, without eyes: Cheddar, Granular or Stirred-curd, and Caciocavallo.
   (b) Ripened by bacteria, with eyes: Swiss, Emmentaler and Gruyère.

"3. Semisoft: (38 to 45% water)
   (a) Ripened principally by bacteria: Brick and Müenster.
   (b) Ripened by bacteria and surface micro-organisms: Limberger, Port du Salut, and Trappist.
   (c) Ripened principally by blue mold in the interior: Roquefort, Gorgonzola, Blue, Stilton, and Wensleydale.

"4. Soft: (40 to 50% water)
   (a) Ripened: Bel Paese, Brie, Camembert, Cooked, Hand, and Neufchâtel (as made in the United States), Mysost, Primost, and fresh Ricotta." [38]

Bel Paese. Bel Paese (Beautiful Country) is a trade name for a group of uncooked, soft, sweet, mild, fast ripened, Italian table cheese. It was first made about 1920 in Lombardy, Italy, although similar varieties were known as early as the middle 1800's. Some of the varieties similar to Bel

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[38] Sanders, George P. Cheese Varieties and Descriptions. Handbook No. 54. U. S. Department of Agriculture. Washington; U. S. Printing Office. December 1953.

Paese are: Königskäse, Bella Alpina, Bella Milano, Bel Piano Lombardo, Bel Piemonte Fior, Cacio Fiore, Strachino, Crescenza, d'Alpe, Savora and Vittoria, Italian; Shönland, Chantelle and Fleur des Alpes, Switzerland; The Butter group, St. Stephano, Germany.

This group of cheese is made by using whole, pasteurized cow's milk to which a lactic starter has been added together with a small amount of rennet. The mass, after being heated to a temperature of 104° to 110°F. for a period of 15 to 20 minutes, is cut into 3/8 inch cubes and stirred gently to prevent matting while the whey is drained off. The curds are then placed in perforated square or round metal forms and allowed to drain for five to seven hours. The forms are turned frequently to insure maximum draining.

The cheeses are salted by being placed in a salt solution (light brine) for 17 to 19 hours. Then they are dried and placed in a curing room with a 38° to 42°F. temperature. After three weeks in the curing room the cheeses are cleaned, dried and wrapped in tinfoil and may be paraffined before final wrapping and placed in a box. Then the cheeses are further aged for two to six weeks before being shipped. [39]

For cutting this group of cheeses, see "Blue" recommendations. (Page 99)

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[39] Ibid. p. 11.

Blue. Blue, Blue-mold, or Blue-veined cheese is the name for cheese of the Roquefort type that is made in the United States and Canada. It is made from cow's or goat's milk, rather than ewe's milk (see Roquefort, page 109). The French cheeses which are classified as "Bleu" are: Bellelay (Tete de Moine), Bleu, Fromage Persillé, Bleu d'Auvergne, Laguiole, Gex, Gex Bressans, Mont Cenis, Sassenage, Septmonfel and St. Flour. The English varieties of blue cheese are Cotherstone, Dorset, Stilton, and Wensleydale. Italian blue-veined cheeses are called Moncenisio, Gorgonzola, Castelmagno; in Denmark, Danablu (Danish Blue); in Norway, Gammelost. There are several excellent American blue-veined cheeses of this type: Maytag Blue, Iowa State Blue. Many of these varieties are produced in the United States and others are imported from the countries in which they originated.

Blue-veined cheese is so called because of the use of Penicillium Roqueforti to ripen the interior of the cheese under perfect temperature and humidity conditions. The following is a brief description of the process for making "blue" cheese.

"Blue" cheese may be made from whole cow's, sheep's, or goat's milk. Lactic acid starter and rennet is used to make the curd. After the curd is mixed with a powder containing P. Roqueforti, it is placed in different size forms, depending on the variety. Later the cheese is removed from the form and hand or brine salted. Blue cheese is cured in rooms where

temperatures are held to 48°F. with a relative humidity of 95%. After a period of time, the outside of the cheese is wiped clean and pierced up to 40 places to aid the development of the "blue" veins. After curing, the cheese is aged for at least 60 days at 40°F. with a high humidity.

For cutting blue types of cheese, it is recommended that the foil not be removed. This prevents crumbling. The foil should be scored with a knife to make 18 to 24 wedge-shaped pieces (five pound cheese) of varying sizes. A cheese wire should be used and if the cheese crumbles too easily it should be left at room temperature to "thaw" out more. Care should be exercised to wrap packages air-tight. This prevents loss of moisture. Wraps should be made so that the sealing iron will be applied at the rind end (over the foil). Heat will damage the cheese. Labels should be at the small end of the wedge under the film. Keep under refrigeration as much as possible. [40]

Brick. Brick cheese is American in origin. It is a sweet-curd, semisoft, cow's milk cheese, with a mild but pungent and sweet flavor, midway between Cheddar and Limburger, but not as sharp as Cheddar and not as strong at Limburger. Other varieties similar to Brick are Muenster (Germany), Box (Firm), Box (Soft), and Burmeister (Tradename).

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[40] Ibid. p. 12.

In manufacturing brick cheese (10"x5"x3") high quality pasteurized whole cow's milk is used. It is warmed to a temperature of 88° to 92°F., lactic starter added, and enough rennet so that in about 30 minutes the curd will be firm enough to cut. Then the curd is heated for 45 minutes to between 96° and 115°, depending on the size of the curd. The curd is then placed in forms and the forms placed on mats so that the whey may drain off. Then a cover with a "brick" for a weight is used to press the curd while retaining as much heat as possible. The form containing the curd is allowed to drain overnight, then removed. The cheese is dry or brine salted the next morning.

The cheeses are stacked very close to each other in a curing room held at 80°F. temperature and a relative humidity of 90 percent for 10 to 12 days. This prevents the rind from cracking and drying. Micro-organisms grow on the surface producing a desirable reddish-brown color. After 12 days the cheeses are separated so that air can circulate around them. After having a protective coating of paraffin, parchment or other material applied, the cheese is usually stored for two or three months from 40° to 50°F. before being shipped. [41]

Brick varieties of cheese are cut into wedges or slices, wrapped in transparent films and may be prepackaged or packaged in the supermarket for sale to customers.

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[41] Ibid. p. 16.

Camembert. Camembert is a soft, surface ripened, cow's milk cheese. It was said to have been given the name "Camembert" by Napoleon in 1791, for the village where he first ate the delicacy. The village of Camembert is in the Department of Orne in France. As the legend goes, Napoleon highly complimented the cheese and its originator, Mme. Marie Harel (née Fontaine). There are a number of cheeses which are similar to Camembert in many respects. They are: Barberey, Brie, Coulommiers, Rollot, Thenay, Vendôme, Cané de l'Est, Ervy, Gournay, and Livarot.

Camembert is cured on mats, turned frequently and hand-rubbed to keep mold growth uniform. It is cured in rooms having a temperature of 55°F. and a relative humidity of 85 to 90%. After curing and aging for at least 60 days, the cheese is marketed. Camembert types of cheese ripen continuously and when ripe the interior is yellow and waxy, creamy or almost fluid in consistency. [42]

Usually Camembert is wrapped in foil, plastic or cellophane, ready-wrapped for sale when it reaches the supermarket. The packages should be rotated faithfully and kept under refrigeration.

Cheddar. Cheddar cheese was first made in England in the late 1500's. Today it is the most popular cheese in America. It is made from sweet, whole cow's milk, either

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[42] Ibid. p. 22.

raw or pasteurized, and vegetable coloring may or may not be added. If it is made from skimmed milk, Federal or State laws require that it must be labeled as such. Cheeses which are similar to Cheddar are: American, Herkimer, Dairy, Cheshire (England), Colby, Cornhusker, Coon, Derby (England), Dunlop (Scotland), Granular, Stirred Curd and Monterey (or Jack).

> "'Cheddar' cheese is a hard, ripened cheese made from raw or from pasteurized whole milk to which a small amount of lactic starter has been added. The curd formed by the addition of rennet is hardened by heating. The characteristic body of Cheddar cheese is developed by a process of matting the curd, known as 'Cheddaring'. The curd may be pressed in many different styles of hoops. After removal from the hoops the cheese is dried and dipped in hot paraffin to give it a protective coating.[43]

A recent change has been to form the cheese and then place a heavy film wrap over it. This eliminates the waste caused by the rind.

Cheddar cheese, cured from 60 days to three months, is known as "Young" or "Mild" Cheddar. "Semi-aged", "Medium" or "Medium Sharp" is Cheddar cheese aged from three to eight months. "Aged", "Extra Sharp" are terms used to designate Cheddar cheese cured over eight months.

Since the bulk of cheese sales in the dairy department are of the cheddar varieties, it is important that they be handled properly. Cheddar cheese will dry out very quickly when exposed to air and therefore should be cut and wrapped

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[43] Nelson and Trout. Op. cit. pp. 185-187.

as needed. It may be cut and wrapped two or three days in advance, then replaced in the original container for later use. If the occasion arises when all of the cheese was not cut and wrapped for sale, it should be wrapped in a cloth soaked in a mixture of vinegar and water. Vinegar inhibits the growth of mold and water will prevent it from drying out too much. (For overnight periods water alone is sufficient.)

Careful rotation of film-wrapped wedges or squares should be made when replenishing the shelf display. "Oil" appearing on the inside of the film wrap detracts from the appearance of the package. Heat from sealing irons will cause the cheese to "oil-off."

"Aged," or "Extra sharp" varieties have a "crumbly" texture. If the cheese has a tendency to crumble too much while cutting, it should be allowed to stand in ordinary room temperature to thaw out. The wrap should be made so that the sealing iron is applied to the rind portion. Labels should be under the wrap near the top of the wedge, if cut in wedge form, so that heat need not be applied directly to the body of the cheese. Many of the "Extra sharp" cheeses are coated with a heavy, black paraffin. In cutting these varieties, the black rind should be scored and left on the cheese when cut. The rind prevents the cheese from crumbling and drying out.

Some of the styles of Cheddar cheese and the approximate weights of the cheeses are: Cheddar, 70-78 pounds; Twins, 32-37 pounds; Daisy, 20-22 pounds; Young American, 12-13

pounds; Jr. American (Family Twins, Pets or Commodores), 11-12 pounds; Longhorn, 12-13 pounds; Square prints, 40, 20, 10, 5 and 2½ pounds.

Cottage:

> "Cottage cheese is a soft cheese generally made by coagulating raw or pasteurized skimmilk by lactic culture with or without the addition of rennet. The cut or broken coagulum is heated and held for a period of time sufficient to facilitate removal of the whey and to form the curd. When the curd has the proper consistency, the whey is drained after which the curd is salted. Cream may or may not be added." [44]

There are three general types of cottage cheese. They are:

1. "Flake cheese is the present, popular sweet flake or 'pop-corn' type of cottage cheese... (Distinguished by large curd particles.)
2. "Creamed cheese is a flake cheese which has been lightly salted and moistened with cream.
3. "Baker's cheese is a fine-grained, plastic cottage cheese sold in bulk. (...small bits of curd. This style is also called country or farmer style.)" [45]

Some other names for cottage cheese are: Cooked, Dutch, Creole, Farm, Schmierkäse, Glumse (Dutch and German).

Cream. Some other names of varieties of cream cheese are: Mascarpone (Italy), Bondon, Carré Frais, Fromage à la Creme (France).

> "Cream cheese is a soft, unripened cheese usually made from cream testing from 12 to 20 percent fat, coagulated by the development of

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[44] Ibid. p. 246.

[45] Washburn, R. M. Cottage Cheese. (Milwaukee, Wisconsin: Olsen Publishing Company, 1934). p. 103.

> acidity as by use of rennet, and then pressed in cloth bags. It is creamy white in color, has a fine, smooth texture, and a full, rich cream flavor. The fat content of the cheese varies from 30 to 40 percent, with a corresponding variation in moisture." [46]

Moisture content of cream cheese is relatively high, approximately 50%. It is usually foil-wrapped in portions of three and eight ounces. Fruits and vegetables are occasionally mixed with cream cheese (pimiento, chive, pineapple, etc.).

Edam. Edam cheese originated in the Netherlands, in the town of Edam in the Province of North Holland. It is known by several names: Manbollen, Katzenkopf, and Tete de Maure. A variety of cheese made in the United States similar to Edam is Commission cheese.

Edam cheese exported from Holland is dipped in a red coloring and oil-coated. It is round and may be packed in "cannon-ball-tins" of various sizes. Domestic Edam is coated with red paraffin and may be round or loaf shaped.

Edam is made from partially skimmed cow's milk and weighs from 3½ to 14 pounds. Baby Edams are sold in one piece. Edam is usually sliced and wrapped in foil or film packages. [47]

Gouda. Gouda originated in the vicinity of Gouda, Province of South Holland in the Netherlands. It is a semi-soft to hard, sweet curd cheese similar to Edam except that it contains more fat. It is usually shaped into a flattened

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[46] Nelson and Trout. Op. cit. p. 250.

[47] Sanders. Op. cit. p. 41.

sphere. Domestic Baby Goudas weigh up to a pound and are coated with a red paraffin. The process for making Gouda is similar to that used in making Edam. Some of the varieties are: Bergquara (Sweden), Camosun (U. S.), Geheimrath (Holland), and Patazras (Cuba). [48]

Hand. Hand cheese originated in Germany. It has a very sharp, pungent flavor and aroma. It is made from skimmilk and is surface ripened in a very moist room. It is said to be a favorite cheese with people of Germanic origin.

Some varieties of cheese similar to Hand are: Armovir, Brand, Ihlefeld, Satz, Thuringia, Carroway, and Bierkäse. [49]

Limburger. Limburger is a semisoft, surface ripened cheese with a characteristic strong flavor and aroma. It originated in Lüttich, Belgium. It is made from whole, fresh cow's milk. It is cured for at least two or three weeks, if made from unpasteurized milk, 60 days. Limburger has a reddish-yellow appearance from the curing process of the surface molds and other organisms.

Some other varieties of cheese similar to Limburger are: Liederkranz (U. S.), Romadur (Belgium), Schloss (Germany), Voil (France), and Poona (U. S.). [50]

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[48] Ibid. p. 53.

[49] Ibid. p. 56.

[50] Ibid. pp. 68-69.

Neufchâtel. Domestic Neufchâtel is similar to American Cream cheese. Imported Neufchâtel is made basically the same way as cream cheese. The differences between them are that Neufchâtel has a smaller percentage of fat and is ripened by surface organisms. Some varieties of cheeses similar to Neufchâtel are: Ancien Imperial, Petit Carré, Petit Affiné, Bondon, Malakoff, Petit Suise, Malakoff, all French in origin. [51]

Parmesan (Grana). This name is applied to a group of cheeses whose origin was around Parma, Italy. Among cheeses of this group are: Parmigiano, Reggiano, Lodigiano, Lombardy, Emeliano, Veneto (Venezza) and Bresciano (Bagozzo). These cheeses are made from skimmed cow's milk. The curd is heated to a high temperature causing a small proportion of water to remain in the curd. It is cured for a period of more than a year. The outside of the cheese (rind) is coated black. It will keep indefinitely. It can be grated for salads, soups, spaghetti and macaroni. [52]

Provolone. Provolone is light in color, mellow, smooth, with a very pleasant flavor and cuts without crumbling. It is of Italian origin and is imported from Italy to the United States. There are many shapes of Provolone. The most common is the pear shape. The small spherical shapes are called

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[51] Ibid. p. 83.

[52] Ibid. p. 87

Provoletti, Provolotini and Provoloncini. Some shapes may be "Salame" (sausage) shaped. These may vary in weight from 5 to 200 pounds. Grooved marks from strings or ropes may appear on the surface of these cheeses. Provoloncini may have the strings still in place when received in the stores. (If the weight of these is under two pounds they should be sold un-cut and priced with a tag or label placed on the cheese or strings.)

Provolone is made from whole cow's milk to which a starter, rennet, and an enzyme preparation has been added to form acid. It is ground (milled) and mixed with water heated to 180° and stirred until the curd becomes elastic and stringy. Then it is removed from the machines and cut into pieces for salting and curing. Next the pieces are tied with string or rope and hung over poles to cure. They are usually smoked, then rubbed with olive oil and coated with a paraffin.

Some varieties similar to Provolone are: Caciocavallo, Mozzarella, Scamorze, Provatura, and Casigiolu, the differences being, for the most part, the degree of ripening and curing. [53]

Romano. Romano is a very hard cheese of Italian origin. There are three basic types: Vacchino Romano (cow's milk), Pecorino Romano (ewe's milk), and Caprino Romano (goat's milk). Domestic Romano is made from cow's milk . Partly skimmed cow's milk to which rennet and a starter are added

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[53] Ibid. p. 97.

is heated to 115°F. When the curd is formed, it is placed into cloth-lined forms and salted. It is cured for five months to a year. Romano is used as a table cheese after being cured five to eight months. If aged over eight months, Romano is used for grating purpose. It is usually black coated. It has very good keeping qualities.

The following varieties of cheese are similar in many respects to Romano. They are: Asiago Old, Calcagno, Spalen, Sbrinz, Kasseri (Greece). [54]

It is recommended that this type of cheese be kept at room temperature overnight before cutting and wrapping. The bandage (sock) should be removed before cutting.

Roquefort. The name of this cheese is derived from the small village of Roquefort, France, which receives direct sunlight only three months of the year.

> "Constant currents of air, passing down the unnatural shafts and rock fissures over the ever-present moisture, completely replaces the air in the caverns six times per hour. Thus, the present-day, commercial, Roquefort caves, shaped out of the irregular caverns, are well ventilated, moist and constant in temperature, 46° ± .5°F., the year around. Here, for centuries Roquefort cheese has been ripened." [55]

The three primary requisites of Roquefort cheese are that it is made of whole, pure, sheep milk, that the milk must be raw, and that the cheese be ripened in the natural caves of Roquefort, France.

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[54] Ibid. p. 109.

[55] Trout, G. M. "Highlights of the Roquefort Country and Its Famous Cheese." Dairy Department, Michigan State College.

> "Approximately 1,000,000 ewes...are hand or machine milked twice daily from February until August. The milk, brought to convenient factories, is curdled with rennet, drained for a few hours and the resulting curd, sprinkled with the Penicillium roqueforti, is placed in hoops. After four days, the compact curd is brought to Roquefort where it is hand salted, pierced to admit air to enhance mold growth and stored until properly ripened for a specific market." [56]

Sapsago. Sapsago originated in the Canton of Glarus, Switzerland, more than 500 years ago. It is a small, very hard cheese, frequently dried and prepared from a powder of milled clover leaves which gives it a sharp, pungent flavor and a pleasing aroma. It is colored light-green or sage-green.

Sapsago is made from slightly sour, skimmilk. The curd is prepared by the use of a starter (buttermilk) and sour whey. Then the powdered clover leaves (2½ lbs. per 100 lbs. of curd) are mixed with the curd. After the curd is placed in forms, it is cured for five weeks or more.

There are many varieties of spiced cheeses. Their natural classification belongs with Sapsago. Some of the spiced cheeses are Sage and Smoked Sturgeon (Cheddar, U.S.), Carraway (Cheddar, U.S.), Kuminost, Nockkelost (Scandinavian), Leyden, Friesian Clove (Dutch), Christian IX (Danish), Pepato, Bondost and Spitzkäse. [57]

Swiss.

> "Swiss cheese, known also as Emmenthal, Emmentaler, or Schweitzer cheese, is a type of hard cheese made from clean, fresh, whole milk by specific processes of manufacture differing widely from those of Cheddar cheese, which result in a cheese of flavor

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[57] Sander. Op. cit. p. 113.

> and body and texture characteristics peculiar unto itself. Swiss cheese is characterized by its (a) cream-yellow color; (b) solid, compact, slightly translucent body, which is interspersed with large, shiny surface gas holes that are fairly evenly distributed throughout the center but becoming less numerous near the edge of the cheese; and (c) the peculiarly sweet hazelnut flavor." [58]

The "wheels" of Swiss weigh from 175-200 pounds. Only the best cheese is exported from Switzerland. The surface of the "wheels" is covered with "Switzerland" to denote a product of that country.

Gruyère is similar to Swiss except that it is not cured the same as Swiss. Other varieties of cheese similar in many respects to Swiss are: Appenzeller, Battlemat, Buzkäse, Piora, Fontina, Montasio, Walliser, Traanen, Samso, Betto Fontina. [59]

Domestic Swiss cheese production is second only to Cheddar. It is the favorite cheese of many people. It is served on sandwiches, on buffets, appetizer trays, and in many other waxs. Swiss cheese is usually sold in slices or squares.

Trappist. Trappist cheese was first made in a monastery near Bosnia, Czechoslovakia, in 1885. This variety is made in other monasteries throughout Europe. Port du Salut and Oka (Canada) varieties are similar to Trappist. Other varieties similar to Trappist are: Gautrias (France), Pont L'Évêque, Marolles, Livarot, Mignot and Mont D'Or.

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[58] Nelson and Trout. Op. cit. pp. 233-234.

[59] Sander. Op. cit. p. 124.

Trappist is usually made from fresh, whole cow's milk. Some goat's or sheep's milk may be added. The ripening period is from five to six weeks. The cheese is pale yellow and has a mildly pungent flavor and aroma. It is a semisoft cheese and more like a hard cheese in the amount of moisture in it. The sizes vary from two and one-half or three pounds to ten pounds or more. [60]

Mypost and Ricotta (Whey cheeses). The whey cheeses are by-products of the manufacture of Cheddar and Swiss cheeses. The cheese consists of carmelized lactose (milk sugar), remaining fat, protein and minerals in the whey. It is light brown in color with a buttery consistency and a mild sweetish flavor. It does not undergo appreciable ripening but keeps well when packaged properly.

Similar cheese made from goat's milk whey is called Gjetost. Where whole milk or cream is added to the whey, the cheese is called Primost. Some of the other varieties similar to these cheeses are: Rizer or Schottenzizer, Recuit, Broccio, Brocotte, Sérac and Mejette. [61]

Process Cheese Food. (Pasteurized Process Cheese Food).

> "Process Cheese Food is made in the same way as Process Cheese. Cheddar or other varieties are cut into small cubes then placed in a kettle, heated to 175°F. for 15 minutes and stirred continuously as they are heating. (An emulsifier-- Cream or

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[60] Ibid. p. 130.

[61] Ibid. pp. 105, 81.

> Neufchâtel cheese --is added to help developed the 'Blended' product.)* Certain dairy products (cream, skimmilk, cheese whey, or whey albumin) or concentrates or mixtures of any of these may be added, but at least 51 percent of the weight of the finished cheese food must be cheese.
>
> "Fruits, vegetables, or meats are sometimes added, in which case the fat content must be at least 22 percent." [62]

One comment should be made concerning the varieties of cheese. Observation and information indicate that the higher the moisture content of a cheese, the greater its perishability.

In cutting bulk cheese for store packaging, three general shapes are usually found: wedge, rectangular, and slices. The major considerations to be kept in mind are: (1) the size of the portion most customers like; (2) the package wrap should be as neatly done as possible; (3) the wrap should be made so that the sealing iron will not damage the cheese; and (4) the label should be placed on the interior of the package if it is to be affixed by heat.

Another factor to consider is the wrapping materials: films, paper, paraffin, cloth and foil. Paper can be ruled out of the self-service operation, since rarely is it used because of the lack of product visibility. Paraffin and cloth packaging equipment is not available in most supermarkets. Films and foil are the materials used in the stores. Films are thought to be the best since the "eye appeal" of

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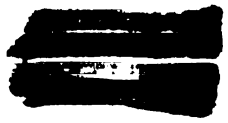
* Patented process owned by the Kraft Foods Company

[62] Ibid. p. 96.



the cheese is a strong selling point. In order for the dairy department to have a wide assortment of cheeses it is necessary to package many of the varieties on the premises of the supermarket. Recent trends indicate that all cheeses soon will be pre-packaged before being shipped to the supermarket.

CHAPTER V

SUMMARY

This research project was undertaken to study the important factors to be considered in operating self-service dairy departments in food chain supermarkets. The factors to be given important consideration are: (1) good equipment, properly maintained and kept clean; (2) a full assortment of quality dairy products, merchandised to appeal to customers' desires; (3) training responsible personnel to display merchandise correctly.

"Profit" potentials of the dairy department are high because of the high turnover. The profitability of the dairy department is indicated by the following table.

Dairy department sales average 8.3% of total store sales and contribute 21% of total store net profit using a space of only 7.0% of total retail selling area. How much additional profit could the dairy department contribute through capable personnel if the facilities and variety of merchandise were improved and expanded? This question can be answered only by the food chain executives who set the policies, build and equip the supermarkets, buy the merchandise, and hire the personnel to serve the customer's needs at a profit.

TABLE VI [63]

COMPARATIVE ANALYSIS OF DEPARTMENTAL OPERATIONS OF SUPERMARKETS

Department	% of Total Store Sales	Gross Profit Dollars per Square Foot Shelf Space	% of Net Profit**	% of Retail Shopping Area
Groceries	54.1	.55***	24.5	55.0
Meat	23.5	1.69	24.3	13.0
Produce	11.0	1.33	23.2	11.0
Dairy*	8.3	3.15	21.0	7.0
Frozen Foods	3.1	.91	7.0	5.0
(Administrative)	0.0	0.00	0.0	9.0
	100.0%		100.0%	100.0%

* Ice cream percentages of sales, profits and floor space not included.

** Equipment and operating costs not allocated.

*** Estimated by writer.

[63] Combined by writer from statistics in Chain Store Age, July, 1954. "What Do Food Chain Stores Sell." Survey, reprinted from Meat--Fresh and Frozen Food Merchandising, 1953. Shelf space figures from a study by Progressive Grocer, 1953.

In order to assist the food chains to better serve the customer's needs for dairy products, information on the following topics was included as a basis for preparing a dairy manual which a food chain would be able to fit into its own particular operation.

(1) Customers should be accorded first consideration. The basic buying motives or drives and how to channel appeals to the customers indicate that much can be done to increase dairy sales.

(2) Merchandising control ("The right merchandise at the right place at the right time."). A system of ordering from accurate records will help to eliminate or at least reduce out-of-stock and over-stocked conditions. A basic formula on pricing should be used to help personnel figure the profitability of particular items. Frequent turnover is essential not only for profits, as such, but to keep the merchandise as fresh as possible. A system of dating, which may or may not be in practice, will eliminate guesswork as to which merchandise should be the first out.

(3) Displays. Well built displays located in high traffic areas will sell dairy products. Proper shelf arrangement can do much to increase the sales of profitable dairy products as well as protect the quality of the merchandise.

(4) Personnel should be trained to operate the dairy department with a minimum loss due to deterioration of quality and shrinkage. This is especially important in handling

products of a perishable nature which require special handling knowledge to protect quality.

(5) Good equipment, refrigeration and accessory tools are vitally important to the dairy operation. Proper housekeeping and maintenance programs are as important as proper equipment. Merchandise attractively displayed in clean cases adds to the customer appeal thereby increasing sales. Knowledge of equipment care and maintenance will help dairy department operators keep equipment functioning properly.

(6) It is recommended that each company prepare a dairy manual designed to provide the product information needed by the dairy department operator. Product information is necessary to assure proper handling of the various types of merchandise.

Fluid milk and milk products consumed in the homes of America amount to approximately 48% of the total annual milk production. Of the total food dollar, approximately 19% is spent for dairy products. Approximately half of this amount, or 9%, is spent for fluid milk. Average store sales of fluid milk amount to only 1.9% of total store sales. The difference between 1.9% and 9% indicates that there exists a market for which the food chain supermarkets may compete.

(7) Consumption of butter has been declining for the past two decades. The probable causes are the out-of-proportion price per pound of butter in relation to its successful substitute, margarine. Indications from recent

events are that butter consumption is increasing. A substantial drop in the price of butter would help to reduce the tremendous surplus built up since the end of World War II. People's habits are not easily changed. It will take time and merchandising to get people into the habit of using butter.

(8) Margarine sales have increased as butter sales decreased. Knowledge of margarine is important since it is one of the leading volume items for the dairy department. Competition between margarine and butter will continue in that the price differential will be an important factor in channeling the consumer's dollar from one to the other.

(9) Ice cream is no longer a seasonal product. The sales potential of this product is great enough to assign the duties of housekeeping and merchandising to one person.

(10) Cheese. Consumption of cheese is increasing. Varieties of cheese which in the past were considered delicacies are now on every customer's shopping list.

Capable, informed personnel through proper handling and merchandising of dairy products can realize for the supermarket operator the sales and profit potentials which the dairy department is capable of producing. Dairy product sales and profits, per square foot of shelf and floor space, are considerably above the average for the grocery department.

In order to realize the sales and profit potentials of dairy products, three basic factors must be followed: (1) good equipment well kept; (2) a wide assortment of quality dairy products; and (3) personnel trained to merchandise these products. The most important factor is personnel because the dairy operation requires capable, trained personnel to make a success of the other two factors. The people who do the work should be given the tools and knowledge to do a better job for the supermarket. Information about the products and equipment makes the merchandising more efficient.

"Profit is margin plus turnover."

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