

A MANUAL FOR THE MODERN DAIRY
DEPARTMENT

Thesis for the Degree of M. A.
MICHIGAN STATE UNIVERSITY
Warren Zeiller
1957.

THESIS



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A MANUAL FOR THE MODERN DAIRY DEPARTMENT

by

Warren Zeiller

A THESIS

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Michigan State University of Agriculture and Applied
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W.Z.



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CHAPTER I

INTRODUCTION

The dairy department is rapidly gaining in popularity and importance in supermarkets. In volume, this department stands about fourth in the store, behind grocery, meat, and produce sections. The average gross margin, between ten per cent and fourteen per cent, is quite low in comparison to the other departments.¹

For outweighing these limitations is the tremendously favorable influence which a well managed dairy department has on customers. When shoppers discover that they can be assured of the freshness and high quality of milk, butter, cheese, and eggs at a particular store, they are invariably pre-sold on the store's other perishables.

Many customers either consciously or unconsciously judge the cleanliness and sanitation of the whole store, including back room areas, by that of the dairy. Customers know that dairy products require these conditions; if conditions are not present in that department other areas must certainly be unclean. By the same token, many customers

¹"Dairy Helps Sell the Store," Chain Store Age, Vol. 33, No. 2 (February, 1957), 117.

evaluate the completeness of the store's stock by the variety found in the dairy.

An intangible that should not be overlooked is the fact that most dairy products are consumed with related food items. The customer buying dairy items is almost always in the market for other foods.

In city and suburban areas the dairy department is often responsible for the frequency of customer visits for many like to purchase their dairy products, particularly milk and eggs, on a day-to-day basis.

The observant store manager can readily see, then, that this department offers a relatively easy and almost certain way to build customer confidence in the quality, freshness, cleanliness, and completeness of all store lines. This is one of the main reasons for the consistent increase in attention and emphasis on the dairy department, even though, on the average, the department accounts for less volume and gross profit than the three leading departments.²

This Manual For the Modern Dairy Department is designed to aid dairy personnel in the execution of their task in an efficient manner; to achieve the ends of personal satisfaction in a job well done and monetary rewards for themselves and their company.

²The reader must keep in mind that an "average" is seldom representative of a given store or operation, but is merely the mean or center line of a number of (often widely) varying calculations.

The need for such a manual has become evident. For years many food companies have included the dairy as part of the over-all grocery operation. The dynamics of the industry are such that today these same companies must create a dairy department as a separate entity. With this development, a greater need becomes evident for proper training material, for a "specialist" in the true sense of the word must be schooled to operate the new department. As the better meat men know the history of their products from farm to table, and better produce men enjoy complete understanding of their merchandise, so must dairy personnel have full knowledge of the highly perishable foods they sell.

Proper merchandising techniques are important in achieving success in the dairy department. The greater proportion of these techniques, such as display case arrangements, advertising, and number and types of merchandise to be carried, are governed by company policies originating in the "home office" of the organization. These policies have been carefully and expertly planned and must be adhered to in the store.

However, employees need not blindly follow company policy without question. Such a situation could lead only to inefficiency and ultimate realization of, perhaps, minimum sales at best. The point to be made is that an understanding of the reasoning behind many of these directives is necessary for expediency on the job.

Product knowledge is essential for understanding the reasons behind merchandising policies. No one can truly perform the role of "salesman" unless he has a thorough knowledge of that which is to be sold. Product knowledge, then, can be said to be the very basic core of a successful dairy operation.

Merchandising methods have historically been stressed as the basis for successful sales. Product knowledge has too often been passed over as "interesting but not entirely necessary." Personal experience of the writer in dairy departments has led to the belief that countless sales are lost each day due to the salesperson's inability to answer questions from customers concerning various products. Had the facts been known and understood, these sales would have been consummated and might have led to additional sales in the dairy or other departments within the store.

Although basic in nature, much of the information offered herein concerning product knowledge will be new and valuable to many people. Representatives of several leading food chains have requested such a compilation of material of this nature. Therefore, this report is written to (1) answer these requests; (2) to stress the importance of product knowledge in understanding company and other (e.g., Federal, State, and municipal) policies, standards, and regulations; and (3) to create in employees an appetite for further knowledge of the merchandise with which they work.

To give complete coverage of all products carried in the modern dairy department would be a tremendous task indeed. Many, such as pancake mixes, biscuits, or icebox cookies, are not dairy products. Items such as these are handled by the department because they require similar care, (i.e., refrigeration). Information concerning these items may be obtained from their manufacturers. An exception is made in margarine. Although not a dairy product, margarine is a direct substitute for butter and accounts for a fair proportion of dairy sales, thus, meriting coverage.

Dairy products requiring the same care as standard grocery items, such as powdered milk or canned milks, shall also be excluded from the study. These items are seldom handled by the dairy department.

Chapter II of the report is devoted to numerous fresh and cultured milk and cream products. Certified milk has been included to indicate that all market milk need not be pasteurized for human consumption. A product seldom encountered in the dairy department but included in this chapter is soft curd milk. This is described to demonstrate the qualities of a soft curd product which are found in many other types of milk now on the market.

The third chapter offers a brief history of cheese. An attempt is made to illustrate difficulties encountered in classifying the many types of cheese. Several methods of classification now in use are presented. The twenty-six

kinds of cheese most commonly found in stores today are discussed individually as to origin, classification, methods of cutting and display, and their uses. A few basic guides are presented for effective merchandising of cheese products.

In Chapter IV, the various attributes of butter and margarine are discussed. The bulk of the section on butter is devoted to the development of an understanding of the United States butter grading system, based on numerical score. Many dairy people know the numerical score of the grades carried in their department, but have little or no idea of the meaning of the term "score."

In covering the grading of various dairy products, Federal standards are used as the basis for discussion. State and municipal regulations are usually derived from the Federal standards but the former differ from each other from area to area. The regulations for a given area may be found by contacting local boards of health or the United States Public Health Service. Another reason for describing Federal regulations or standards is that they do apply to merchandise moving in interstate commerce.

Chapter V attempts to bring about an understanding of Federal egg grading systems for this has been a subject of endless confusion to both employees and consumers.

Although not a dairy product in the strict sense of the word, eggs are discussed as they have historically been associated with the dairy.

Quality maintenance through temperature and humidity control, date coding, and proper handling have been stressed in each chapter where applicable. Chapters II through V are supplemented with detailed information in the Appendices. Questions from homemakers and answers to the questions are listed in the Appendix also. They are designed to stress important points of the chapters and briefly cover material that is important but beyond the immediate scope of the report. The questions also will aid the reader by defining some of the more unusual terms associated with product knowledge (e.g., colostrum, metabolism, piquant, etc.).

The final chapter is limited to "Merchandising Within the Dairy Department." As previously mentioned, the greater part of merchandising is usually controlled from company headquarters. Therefore, this section is devoted to an explanation of how product knowledge will aid department employees in the efficient execution of their work. The chapter also demonstrates how this knowledge can lead to better understanding of the many governing policies under which employees must operate.

In-store merchandising is covered in some detail through discussions of "Ten Commandments," which may be considered as basic guides for the success of the dairy operation.

The topic of equipment maintenance is purposely limited to cleaning and general care. Many food companies

maintain skilled technicians to insure proper equipment maintenance and repair. In such cases, company policies prevent department employees from tampering with intricate machinery. A self-appointed "handyman" can often cause more extensive damage than his good intentions are worth.

Of these subjects and within these restrictions, then, this thesis is constructed.

CHAPTER II

FLUID MILK PRODUCTS

Milk is one of the few foodstuffs consumed in the natural state and is the only article of diet whose main function in nature is to serve as a food.¹

Milk is defined as:

The whole, clean, lacteal secretion obtained by the complete milking of one or more healthy cows, properly fed and kept, excluding that which is obtained within fifteen days before calving and five days after or such longer period as may be necessary to render the milk practically colostrum free; which contains not less than 8.00 per cent of milk solids not fat, and not less than 3.25 per cent butterfat.²

The percentages of solids-not-fat and butterfat given in the definition of milk often differ from those required by state standards of composition and identity. This is readily seen in the statement that "most bottled milk contains 3.5 to 4.0 per cent of milk fat, while most state standards require minimums of only 3.0 to 3.25 per cent."³

¹Milk also has many non-food uses. For example, casein, a milk protein, is used in the manufacture of glue, cold-water-soluble paints, paper and cloth sizing, plastics, and a wool-like cloth called "lanital." Henry F. Judkins and Merrill J. Mack, The Principles of Dairying (New York: John Wiley and Sons, Inc., 1941), p. 33.

²John A. Nelson and Malcolm G. Trout, Judging Dairy Products (Milwaukee, Wis.: Olsen Publishing Co., 1951), p. 62.

³Agricultural Marketing Service, Regulations Affecting the Movement and Merchandising of Milk, U. S. Department of

There are many variations between state, municipal, and county regulations or ordinances to cover the production, processing, and handling of dairy products. Municipal and county regulations are usually under the control of the city or county health departments. State regulations are developed and enforced by the state department of agriculture or the state board of health. Federal regulations apply in all areas not governed by state, municipal, or county milk control laws. These regulations are designed to protect the milk for human consumption, with many embodying some or all of the sanitary standards set for the "Milk Ordinance and Code" recommended by the United States Public Health Service.⁴

Pasteurized Milk

The bulk of the milk consumed in the United States today is pasteurized. This process is performed for two reasons: (1) to make the milk keep longer and improve quality, and (2) to protect the public health.

Bacteria thrive in milk. Raw milk, even when produced and handled by sanitary methods, may contain many types of bacteria. Diseases such as diphtheria, scarlet fever, septic sore throat, tuberculosis, and typhoid fever can be carried

Agriculture, Marketing Research Report No. 98 (Washington, D.C.: Government Printing Office, June, 1955), p. 37.

⁴"1953 Recommendations of the Public Health Service," Milk Ordinance and Code, U.S. Public Health Service, Pub. No. 229 (Washington, D. C.: Government Printing Office, 1953), 242 pp.

from the afflicted to the healthy through contaminated milk.

Pasteurization makes milk safe, but not necessarily sterile. Proper pasteurization should destroy all the pathogenic non-spore producing bacteria. Fortunately, the organisms responsible for milk-borne disease do not form spores. There is one exception to this and that is anthrax, but the disease is almost unknown in the United States. The process of pasteurization must also destroy from ninety-six to ninety-nine per cent of all other bacteria present.⁵

Between the years 1860 and 1864 the French scientist, Louis Pasteur, developed and perfected pasteurization for wine and beer. Pasteur's research was then adapted for the sanitizing of milk. Today, there are two basic methods used in pasteurizing milk: the vat or holding process, and the high temperature short-time or flash method. The United States Public Health Service describes both processes as consisting of:

Heating every particle of milk or milk product to at least 143 degrees Farenheit, and holding it at such temperature continuously for at least thirty minutes [the holding method], or to at least 161 degrees Farenheit, and holding it at such temperature continuously for at least fifteen seconds [the flash method].⁶

⁵Judkins and Mack, op. cit., p. 180.

⁶Irene H. Wolgamot and Lillian J. Fincher, Milk and Its Products, Facts for Consumer Education, U. S. Department of Agriculture AIB No. 125 (Washington, D.C.: Government Printing Office, May, 1954), p. 13.

The heat used in pasteurizing milk destroys appreciable amounts of ascorbic acid and thiamine. However, these losses are insignificant when considered in relation to the over-all nutritional value of milk. Also, ascorbic acid and thiamine are abundant in other common foods. Therefore, milk need not be depended upon as the source of either of these vitamins.

After either method of pasteurization the milk must be rapidly cooled to forty degrees Fahrenheit or less, but not to the point of freezing (about thirty-one degrees Fahrenheit). This is an important part of the process as the destruction of acid-forming organisms is not one-hundred per cent efficient and pasteurized milk will not keep well at high temperatures. Low temperatures inhibit bacterial growth and reproduction, and their number will generally decrease gradually when held under proper refrigeration (forty degrees Fahrenheit or below).

Grade standards are based on the bacterial count of the milk, the highest grades having the lowest bacterial count.⁷

Raw Milk:

Certified--must conform to regulations of the Council of the American Association of Medical Milk Commissions, Inc. The common standard is 10,000 bacteria per milliliter or less.⁸

⁷Judkins and Mack, op. cit., p. 186.

⁸Note: 1.0567 liquid quarts = 1 liter
1 liter = 1,000 milliliters

Grade A -- 50,000 bacteria per milliliter
Grade B -- 200,000 bacteria per milliliter
Grade C -- 1,000,000 bacteria per milliliter
Grade D -- Not meeting Grade C requirements

Pasteurized Milk:

Grade A -- 30,000 bacteria per milliliter or less.
Grade B -- 50,000 bacteria per milliliter
Grade C -- Not meeting Grade B requirements

Although commonly thought of as a beverage, milk is a real food and contains more actual solids than many so-called solid foods, especially vegetables. Palatable and easily digested, this well-balanced food is rich in vitamins and minerals.

Recommended quantities of milk for maintaining health standards are based largely on requirements for calcium and riboflavin which, like requirements for other nutrients, vary according to age, sex, and degree of physical activity.⁹ Amounts of milk suggested per day are: one quart or more for every child, and two and one-half to three glasses for adults, with increased allowances for women during pregnancy and lactation.

Table I shows the substantial contributions made by a quart of milk to the daily allowances of calcium, riboflavin, and protein recommended by the National Research Council for persons of different ages.

⁹ See Appendix A.

TABLE I
PER CENT OF 1953 NRC RECOMMENDED DAILY
ALLOWANCES OF 3 NUTRIENTS PROVIDED BY
ONE QUART OF MILK^a

Group	Calcium	Riboflavin	Protein
Men:			
Age 25 years (NRC reference man ^b)	144	105	53
Women:			
Age 25 years (NRC reference woman ^b)	144	120	62
During pregnancy	77	84	43
During lactation	58	67	34
Boys:			
16-20 years	82	67	34
13-15 years	82	80	40
10-12 years	96	93	49
Girls:			
16-20 years	89	88	46
13-15 years	89	84	43
10-12 years	96	93	49
Children:			
7-9 years	115	112	57
4-6 years	115	140	68
1-3 years	115	168	86

^aWalgamot and Fincher, op. cit., p. 5.

^bActive, in good health, normally vigorous, and living in temperate climates.

Certified Milk

Milk sold for human consumption need not be pasteurized, Certified milk is a high quality, premium-priced product, with limited distribution, sold both raw or pasteurized,

and may be homogenized to meet consumer demand.¹⁰ Certified milk is produced and distributed in accordance with strict sanitary regulations and must be certified by a local medical milk commission. Minimum sanitary requirements are established by The Council of the American Association of Medical Milk Commissions, Incorporated, which controls the copyright and use of the name, "Certified Milk."¹¹

Among the requirements prescribed for this product are strict cleanliness of stables and herd, tuberculin-free tested cows, physical examination of employees, a milk bacteria count not to exceed 10,000 per milliliter when raw, an average butterfat content of at least four per cent, and a special bottle cap to completely protect the finished product.¹²

The use of certified milk is largely confined to the feeding of infants and invalids. Certified skim milk is available in some areas both plain and with vitamins A and D added, the latter for use in special cases requiring dietary supplementation of these essential nutrients.

Soft Curd Milk

Feeding tests have shown that some babies, small children, and invalids cannot efficiently utilize ordinary

¹⁰See p. 16.

¹¹Wolgamot and Fincher, op.cit., p.14.

¹²Judkins and Mack, op. cit.

cow's milk. A tough curd forms in the stomach upon contact of the milk with the digestive juices.

Some cows naturally produce an easily digestible soft curd milk. However, there are methods of producing the desirable soft curd artificially. The more common practice of boiling milk has been used in homes and hospitals for a number of years. Commercially, soft curd milk may be produced in a number of ways, the most common today being by homogenization. This method does not alter the flavor, as does boiling, and does not necessitate excessively high premium prices.

Homogenized Milk

The United States Public Health Service has defined homogenized milk as:

Milk that has been treated in such a manner as to insure the breakup of fat globules to such an extent that after forty-eight hours of storage no visible cream separation occurs, and that the fat percentage of the top one-hundred cubic centimeters in a quart . . . does not differ by more than ten per cent of itself from the fat percentage of the remaining milk, as determined after thorough mixing.¹³

This is a severe requirement. In short the process is carried out as follows: the milk is heated to 140 degrees Fahrenheit by the flash method of pasteurization to

¹³B. L. Herrington, Milk and Milk Processing (New York: McGraw-Hill Book Company, Inc., 1948), p. 203.

melt the fat. The milk is then forced through an aperture at pressures of 2,000 to 2,500 pounds per square inch, and then against a hard surface to break up the melted fat globules. At this point, the milk is passed through a clarifier, which removes any foreign matter, and is then pasteurized by the holding process. Pasteurization is followed by immediate cooling to forty degrees Fahrenheit or below. Hence, an excellent milk product in which the fat will remain finely divided and uniformly distributed throughout the serum.¹⁴

There are several disadvantages in homogenized milk. Special equipment and handling necessitates a slightly higher price. The normal retail price averages about one cent per quart more than pasteurized milk. The extra equipment may be an additional source of contamination unless careful cleaning and sterilization methods are adhered to. Homogenized milk tends to have a slightly higher bacteria count than regular pasteurized milk, but this may be offset by more severe pasteurization.

The many advantages created by homogenization more than make up for the few disadvantages cited. As previously mentioned, the process does render milk a more desirable

¹⁴Milk serum is more commonly referred to as the "whey" or that portion of the animal fluid remaining after coagulation, as found in the process of cheese making. Chester L. Roadhouse and James L. Henderson, The Market Milk Industry (New York: McGraw-Hill Book Company, Inc., 1950), p. 435.

soft curd product. Homogenization also prevents the fat from rising to form a cream plug at the top of the bottle, leaving a watery or bluish skim milk layer below the cream line. This makes the product more rich in appearance as well as in texture and flavor. Of importance is the fact that the cream or "top milk" cannot be poured off for special household uses, leaving partially skimmed milk for family consumption. When properly used, homogenized milk will yield superior results in cookery, especially when used in cream soups, cream gravies, custards, cocoa, and the like.

A study of developments in fluid milk distribution by the United States Department of Agriculture has shown that homogenized milk is rapidly replacing regular (raw or pasteurized) milk in many sections of the country.¹⁵

Vitamin-Mineral Enriched Milks

There are two basic types of enriched fluid milk products available at present. One is the more common Vitamin D or Fortified milk. The second is a more recent addition to the dairy line, Multi-vitamin and Mineral Fortified milk.

Vitamin D Milk. A disease known as rickets (characterized by alterations in the bones due to the defective deposition of calcium and phosphorous at their growing ends) was

¹⁵Helen V. Smith and Louis F. Jermann, Changing Patterns in Fluid Milk Distribution, U. S. Dept. of Agriculture Marketing Research Report No. 135 (Washington, D.C.: Government Printing Office, August, 1956), p. iv.

prevalent in the United States not too many years ago. Vitamin D aids in the absorption of the bone forming elements, calcium and phosphorous from within the intestinal tract and is, therefore, referred to as the "anti-rachitic" vitamin. To combat the disease rickets, nutritionists suggested that vitamin D be added to milk, the best single food source of calcium and phosphorous. Thus, the child who drinks one quart of vitamin D milk daily receives a good supply of the bone forming elements and the vitamin necessary for their efficient utilization. Absorption of these elements is further aided by the lactose (sugar) in milk.¹⁶

Milk, itself, is not a rich source of vitamin D unless special procedures are followed in production or processing. The vitamin may be added to the fluid milk by feeding the cow a food rich in vitamin D, such as irradiated yeast; or irradiation of the milk; or by adding a special concentrate to the milk. The latter method is the one more commonly used today and merits brief explanation.

Fortified vitamin D milk, containing 400 International units of vitamin D per quart,¹⁷ is prepared by adding a definite amount of vitamin D concentrate to the proper amount

¹⁶Mary Ellis, "Nature's Most Nearly Perfect Food," Milk (New York: National Dairy Products Corp., 1950), p. 17.

¹⁷Minimum daily requirement recommended by the United States Public Health Service.

of market milk and mixing thoroughly to secure uniform distribution. The concentrate used in recent years has been irradiated ergosterol (vitamin D₂) because of its low cost and availability. The concentrates are packed in hermetically sealed containers and are then sterilized. The size of the container and potency of the concentrate are adjusted so that, when added to a given sized batch of milk, the desired finished potency of 400 International units per quart will be attained, plus an additional amount as a safety factor.

This method has the advantage of being both flexible and simple, requiring no special equipment. The cost ranges from 0.033 to 0.02 cents per quart, depending on the kind of concentrate used.¹⁸

The types of milk most commonly fortified with vitamin D are homogenized, fat-free (skim), and pasteurized.

Multi-vitamin and mineral fortified milk. This relatively new product is rapidly gaining wide acceptance due to the modern consumer's consciousness of basic health requirements. Studies have shown that a properly balanced diet is not easily attainable and, too often, people do not get enough of the wide variety of vitamins and minerals that are essential to good health.

Severe deficiencies of vitamins and minerals can cause serious, sometimes fatal, diseases such as beri-beri, pellagra,

¹⁸Roadhouse and Henderson, op. cit., pp. 446-447.

and rickets. Fortunately, such severe deficiencies are rare in the United States. However, mild deficiencies can cause a tired or run-down condition, poor resistance to cold and other infections, nervousness, and perhaps a dangerous inability to see well at night (night blindness).

Vitamins and minerals, in amounts needed to meet minimum daily adult requirements per quart, are added to whole milk, skim milk, or partly skimmed milk to aid in combating these deficiencies. The milk must be pasteurized and may be homogenized. The product must contain specific amounts of vitamins A and D and may also contain thiamine, niacin, riboflavin, iron, and iodine. Table II lists the percentages of added nourishment supplied by a leading brand of multi-vitamin and mineral enriched milk in comparison with that supplied by regular milk.

TABLE II
PER CENT OF MINIMUM DAILY ADULT REQUIREMENTS
IN REGULAR AND MULTI-VITAMIN MILK^a

Vitamins and Minerals	Yearly Average	
	Regular Milk	Multi-Vitamin Milk
A	41	100
B ₁	30	100
B ₂	85	100
Niacin ^b	17	100
D	3	100
Calcium and Phosphorous	100	100
Iron	6	100

^aMulti-Vitamin Homogenized Milk (New York: National Dairy Products Corporation, 59V55M, n.d.), p. 3.

^bMinimum daily requirements are not established by the Food & Drug Administration. Values for niacin are based on the recommended daily allowance of the National Research Council.

Some states require the use of colored (usually amber) bottles for multi-vitamin milk to prevent the loss of some of the vitamins, riboflavin and ascorbic acid in particular, through contact with sunlight. Twenty to forty per cent of the riboflavin can be lost when milk is exposed to direct sunlight for an hour; losses vary with the intensity of the sunlight, the temperature of the milk, and the size of the bottles in which the milk is exposed. Paper cartons are often used to conserve these essential substances by protecting the milk from light. The cartons offer the additional advantage of being easy to carry and store and do not have to be returned to the distributor, as do glass bottles.

A disadvantage of the carton is the inability to see the product contained therein. Many consumers of regular pasteurized milk desire visual reassurance of the depth of the cream level in the container, which is not possible in the opaque paper carton. This situation may slowly be remedied as consumers learn to rely on the standards of identity and composition in their given area.

Fat-Free or Skim Milk

Skim milk, sometimes called fat-free milk, is that portion of the whole milk which remains after the cream has been removed. Only a negligible quantity of butterfat remains, usually from 0.03 to 0.3 per cent.

Until recently, skim milk had been considered of not high enough value for human consumption, although large quantities were used as animal feed. Actually, this product contains all the nutrients of milk with the exception of the butterfat and the vitamins associated with the fat. These are mainly vitamins A and D; hence, the fortified fat-free milk previously mentioned. With these deficiencies supplied from other sources, fat free, or skim milk becomes a very wholesome food.

There is probably no better or less expensive way of increasing protein in the diet than by liberal use of skim milk. This is especially helpful for persons who wish to keep the caloric value of the diet low. However, when plain skim milk and its products replace whole milk in low-calorie diets, foods rich in vitamin A should be included.

Chocolate Milk and Chocolate-Flavored Drinks

For these foods, chocolate or cocoa sirup, usually the latter, is added to whole or skim milk. Other ingredients may be vanilla, salt, and stabilizer.

United States Public Health Service recommendations make the following distinctions regarding the labeling of these products: If made with skim or partially skimmed milk, the product should be called "chocolate-flavored milk drink" or "chocolate-flavored dairy milk"; when made with whole milk, the product may be called "chocolate-flavored

milk." Various states and many legislatures have regulations that incorporate similar labeling distinctions.¹⁹

Either of these products may be consumed instead of milk by those who prefer the chocolate flavor, or sold to those who prefer to purchase a chocolate beverage instead of preparing one in the home. The cocoa or chocolate makes the milk an easily digestible soft hard product.

There is every reason to encourage the consumption of chocolate milk, especially since, in many cases, non-milk drinkers are converted to milk consumers through use of this fine beverage.

Cream

Cream is an excellent food, containing all the constituents of milk. The butterfat content, however, is far in excess of other digestible nutrients. The high butterfat content gives cream two main values, one as a source of energy and the other as a source of vitamin A. While cream is high in calories, the protein content is low. Thus, when compared with milk, cream is not considered an economical food.

Gradation of cream is governed by Federal Food and Drug standards of identity and state law. To legally be labeled "cream" the product must contain a minimum of eighteen per

¹⁹Wolgamot and Fincher, op. cit., p. 14.

cent butterfat.²⁰ There is a substandard cream available containing approximately 11.5 per cent butterfat. This type of product must be labeled with a trade name such as "breakfast cream," "cereal treat," or "half and half" as the butterfat content does not meet the minimal requirement.

Cream is generally divided into three main weights for marketing according to the Federal Food and Drug standards of identity; eighteen to thirty per cent fat for light (coffee, table) cream, thirty to thirty-six per cent fat for light whipping (medium) cream, and a minimum of thirty-six per cent fat for heavy (whipping) cream.²¹ The optimum range of fat for "whipping cream" is thirty to thirty-five per cent. Too little fat results in coarse texture and lack of both stiffness and permanence of the whipped product; too much fat produces less volume and a heavy, soggy product. Each of the above grades is generally priced according to weight, or butterfat content; the higher the percentage of fat the more costly the product.

Cream may be homogenized for several reasons. The cream becomes more viscous, appears richer, becomes more smooth to the taste, and does not separate, leaving a layer of skim milk in the bottom of containers.

Disadvantages do become evident upon homogenization of cream. The product becomes difficult or impossible to whip.

²⁰Ibid., p. 16.

²¹Ibid.

Housewives who exhaust themselves trying to whip homogenized cream may make future purchases from another dealer. Homogenization also renders the cream more easily coagulated by heat, producing the curdled or "feathered" effect upon contact with hot coffee or other hot foods. This may lead the consumer to believe that the cream is sour because past experience has shown that sour cream will coagulate when heated. The fine dispersion of fat globules produced by homogenization also makes the cream difficult to churn into butter.

Pressurized cream, for producing a quick, whipped product is available under various trade names, in small sizes for consumer use. The container often contains nitrous oxide dissolved in the cream under high pressure. This particular gas does not flavor or affect the keeping quality of the cream. When the pressure is released, the gas is liberated from the solution, and the cream is aerated or whipped.

Powdered dairy products, made of light cream and skim milk, are available for use in coffee instead of cream. They are of excellent keeping quality, but sometimes impart a slight "metallic" flavor.

Cultured Milk Products

Cultured milk products (fermented milks) have a distinct sour flavor, which is produced mainly by the breakdown

of lactose, a milk sugar, into lactic acid by bacterial action. The food values of fermented milks are, in general, equivalent to the milk from which they were prepared.

Buttermilk. Probably the most popular of all cultured milk products in the United States is buttermilk, being consumed in large quantities as a beverage.

Genuine buttermilk is the liquid which remains after the fat is removed from milk or sour cream by the process of churning butter. When the butter is made from sweet cream or milk, the buttermilk does not differ materially from ordinary skim milk. If the cream was sour or fermented, the lactic acid and lower sugar content produce the characteristic sour flavor.

Since the bulk of natural buttermilk is produced away from large centers of population, artificial buttermilk is made to meet the market demand.

The cultured product is made with a clean, vigorous starter consisting of clean skim milk inoculated with a commercial culture of milk-souring bacteria. The process produces a smooth, curdled, slightly acid product. The skim milk from which the buttermilk is to be made may be standardized with whole milk or cream. This is done to raise the fat content to 0.55 to 2.00 per cent and improve the flavor.

The method of making commercial buttermilk is, roughly, as follows:²² Fresh skim milk is pasteurized at 180 degrees Fahrenheit for thirty minutes. The milk is then cooled to sixty-eight or seventy degrees Fahrenheit and one per cent or more starter culture is added. Upon standing for fourteen hours, the skim milk will coagulate and develop from 0.70 to 0.80 per cent acidity. The curd is then broken by gentle agitation and the product is cooled. The buttermilk is then bottled and must be maintained at low temperatures until consumption.

The milk souring bacteria will not increase appreciably in number if the temperature is maintained at forty degrees Fahrenheit or below. Higher temperatures stimulate the bacterial action, causing a rise in acidity and producing a sharp and less pleasing flavor.

A type of cultured buttermilk produced by churning is called churned or flaked buttermilk. This type contains particles of butter; the butter may be formed from the butterfat by churning or may be added in the form of butter granules or highly colored melted butter sprayed into the buttermilk.

According to United States Public Health Service recommended standards, both natural and cultured buttermilk

²²Judkins and Mack, op. cit., p. 268.

should contain not less than 8.25 per cent milk-solids-not-fat.²³

Buttermilk forms a small, soft curd in the stomach, facilitating digestion. The product also has a beneficial effect on the digestive process by preventing certain undesirable putrifaction within the digestive system.

Sour cream. Commercial sour cream, known also as "Jewish" sour cream or cultured cream, is a ripened (cultured) cream of high acidity, smooth texture, and heavy body. Sweet pasteurized cream is inoculated with a clean-flavored, aromatic culture of lactic bacteria. The cream is then allowed to stand until the desired acidity and other qualities are obtained, the process being similar to that of making cultured buttermilk.

The characteristics of a suitable product are "that the body will be so thick as to lose fluidity and be homogeneous throughout." Sour cream should be prepared from fresh cream equal in quality to that sold as market cream and should contain at least twenty per cent butterfat. The acidity of the finished product is from 0.60 to 0.65 per cent.²⁴

²³Wolgamot and Fincher, op. cit., p. 15.

²⁴Roadhouse and Henderson, op. cit., p. 450.

Proper temperature maintenance must again be emphasized. A temperature of forty degrees Fahrenheit or below must be maintained to prevent further bacterial action.

Although used mainly by people of eastern European extraction and Jewish people, sour cream is rapidly gaining widespread popularity. The cream may be used in salads, soups, and as a dressing for hot and cold vegetables. Many people find sour cream excellent when used on roasts and baked fish, or on bread in place of butter. Sour cream also forms an excellent base for "dips," which are rapidly gaining in popularity.

Yogurt. Yogurt is the Turkish name for a fermented milk of the lactic acid type. Yogurt produced in this country today is quite different in form from the original Mediterranean type.

The yogurt found in the United States is a semi-solid product with a fine, smooth texture. The culture used must contain at least three kinds of lactic bacteria of known types, maintained under conditions which permit their survival or normal growth for a limited time. Protection from outside contamination is a must.

Yogurt is prepared with a high quality whole milk that has been concentrated by evaporation or addition of milk solids. The milk is pasteurized at 180 degrees Fahrenheit for thirty minutes and then cooled to 115 degrees

Farenheit. Two per cent of the starter culture is thoroughly mixed into the milk. The innoculated product is placed in the merchandising packages, with the cap loose, and is incubated at 112 to 115 fegrees Farenheit for three hours or until coagulation is complete.²⁵

Yogurt is usually eaten like a junket or custard and may be flavored to taste. Many flavored yogurts are found on the market today such as vanilla, orange, prune whip, or strawberry.

Again, the bacterial content of the product necessitates particular care in the maintenance of proper temperatures (i.e., forty degrees Farenheit or below). This factor cannot be stressed enough for all fresh dairy products, and for many other processed products found in the dairy department as well. Excessively high temperatures due to equipment malfunction, over-stocking of refrigerated cases, or whatever the cause, can only lead to rapid deterioration of the product. This, in turn, is resultant in profit losses through irreparable product damage. Most important of all is the fact that the loss may be that of a store customer. The person who purchases a container of Sour milk or other "off-flavored" product is very likely to take his or her business elsewhere and the small loss to the

²⁵Lampert, op. cit., p. 131.

dairy department manifests itself in a loss of far greater magnitude to the company. There can be no excuse for such an occurrence.

Many manufacturers offer a valuable tool in "date-coding" for quality maintenance of dairy products. In many instances this code is required by state or local law. The date appearing on the container may be that on which the product was manufactured or processed. In this instance, regulations or company policy will allow a given number of days from that date for the item to be merchandised. Upon expiration of the time allowance, the product must be returned to the manufacturer for reprocessing (e.g., sour milk into a cultured milk product) or utilization in some function other than for human consumption, or even ultimate destruction. The code may give the actual expiration date, thus, automatically controlling the length of merchandising time. In either method of coding the established period of time is that in which the product will undergo no appreciable change in quality, if maintained under proper temperature.

Date coding of merchandise offers yet another service to the dairy department. The easily learned codes facilitate the important function of stock rotation. Stock rotation and other important merchandising factors will be discussed in some detail in Chapter VI.

CHAPTER III

CHEESE

Cheese originally came to America as part of the ship's supplies of the Mayflower when the Pilgrims made their famous voyage in 1620.

Until the middle of the nineteenth century cheese-making was a local farm industry, the cheese being made from surplus milk produced on the farm itself. In 1851 the first cheese factory in the United States was built by Jesse Williams near Rome, Oneida County, New York. The center of the industry in this country for the next fifty years was Herkimer County, which adjoins Oneida County. As the population of the eastern states increased, creating a corresponding increase in demand for market milk, the cheese industry gradually moved westward to the rich farm lands of Wisconsin. This region produced more milk than people were able to use, leaving a large surplus for the cheese-making industry.

About one-tenth of the annual milk production of the United States is used in making cheese, yielding well over one billion pounds of cheese each year. The 1954 per capita cheese sales averaged 7.7 pounds, exclusive of cottage cheese which accounts for an estimated three pounds per year

in addition to the above figure.¹ Estimates in 1955 (by the United States Department of Agriculture) raised the annual per capita use of cheese, excluding cottage, to 7.9 pounds. This gain is attributed to three important developments. First, there has been a consistent emphasis on the high food value of cheese. Second, the retail food stores have expanded their dairy departments so that more people can purchase their favorite kinds of cheese. Third, the cheese industry has been alert to new packaging developments and has brought these discoveries promptly to the retailer.²

The possibilities for further development of the cheese industry in the United States may easily be recognized by a glance at the annual per capita consumption of several European countries: England, ten pounds; France, almost eleven; and Switzerland, twenty-four.³

Cheese is a highly nutritious and palatable food, but its food value is not fully realized in this country. Cheese is still used as an accessory rather than as a substitute for such high-protein foods as meat or eggs. One pound of Cheddar cheese contains as much protein as 1.57 pounds of

¹How to Operate A Successful Dairy Department (Chicago: Kraft Foods Company, 1955), p. 13.

²Know Your Cheese and How to Sell It (third edition; New York: The Borden Company, 1956), p. 21.

³Henry Judkins and Merrill J. Mack, The Principles of Dairying (New York: John Wiley and Sons, Inc., 1941), p. 285.

sirloin steak, 1.89 pounds of fowl, or 1.81 pounds of fresh ham.⁴ Cheese 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. The value of milk in the diet is a well-known and established fact.

Cheese is, in general, made wherever animals are milked and more milk is produced than people use in fluid form. Most cheese is made from cow's milk, simply because cows are milked more generally throughout the world than other animals. Smaller quantities are made from the milk of goats and ewes. Cheese is also made in some countries from the milk of other animals, such as camels, asses, mares, buffalos, and reindeer.

No one really knows who first made cheese but it is interesting to look back into the past to the legend of the Arab traveler. According to this legend, cheese was first discovered accidentally by an Arabian merchant some 4,000 years ago. Stopping after a long day's journey to drink milk from his sheep stomach canteen, he made a strange discovery. The milk had turned to a mass of soft white curd. He did not know what had caused this, but found that the whey (liquid) satisfied his thirst and the curd (cheese) satisfied his hunger and had a delightful flavor. The merchant spread the word among his friends and, thus, the

⁴Ibid.

making of one of the most useful foods was begun. What had happened to the milk was this. The sheep stomach canteen contained a natural digestive substance called rennin which, under the sun's heat, caused the milk to separate into curd and whey.⁵

According to ancient records, cheese was used as a food some 4,000 years ago and was definitely eaten in Biblical times.⁶ Travelers from Asia are believed to have brought the art of cheese-making to Europe. Cheese was made in many parts of Rome and was introduced to England by the Romans. During the Middle Ages--from the decline of the Roman Empire until the discovery of America--as well as later, cheese was made and improved upon by the monks in the monasteries of Europe. Gorgonzola was made in the Po Valley in Italy in 879 A.D., and Italy became the cheese-making center of Europe in the tenth century. Roquefort was mentioned in the ancient records of the monastery at Conques, France, in 1070. Records show that cheese was introduced to America some 600 years later.

Classification of Cheese

Most cheese is "natural" cheese; that which is made directly from milk (or whey, in some instances) as opposed

⁵George P. Sanders, Cheese Varieties and Descriptions, U.S. Dept. of Agriculture Handbook No. 54 (Washington, D.C.: Government Printing Office, 1953), p. 1.

⁶1st Samuel. 17:18. Jesse said unto his son David: "Bring these ten cheeses unto the captain of their thousand and look how thy brethren fare and take their pledge."

to "process" cheese, which is made from a blend of one or more kinds of 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 or holding for a specified time at a specific temperature and humidity. These and other factors are established for many types of cheese by the Food and Drug Administration to promote honesty and fair dealing in the interest of customers.⁷

Classification of the different cheeses into groups is difficult. There probably are only about eighteen distinct types or kinds of natural cheese. No two of these are made by the same method; that is, the details of setting the milk, cutting the curd, and curing the cheese are varied to produce characteristics and qualities peculiar to each kind of cheese.⁸ The following cheeses are typical of the eighteen kinds:

Brick	Gouda	Romano
Camembert	Hand	Roquefort
Cheddar	Limburger	Sapsago
Cottage	Neufchâtel	Swiss
Cream	Parmesan	Whey Cheeses
Edam	Port du Salut	(Ricotta)
Provolone		

⁷Cheeses and Cheese Products, Definitions and Standards under the Federal Food, Drug, and Cosmetic Act. Federal Security Agency, Food and Drug Administration, S.R.A., F.D.C. No. 2, Pt. 19 (Washington, D.C.: Government Printing Office, June, 1952).

⁸Sanders, op. cit., p. 2.

This grouping, though informative, is imperfect and incomplete. Cheeses can also be classified as by the United States Government, using five major classifications:

Hard grating	Semi-soft	Soft uncured
Hard		Soft cured

Cheese may also be classified as ripened by bacteria, by mold, by surface micro-organisms, or by a combination of these, or as unripened. Examples of these are:

1. Hard grating:
 - a. Ripened by bacteria: Parmesan, Romano, or Sapsago
2. Hard:
 - a. Ripened by bacteria, without eyes: Cheddar, Caciocavallo
 - b. Ripened by bacteria, with eyes: Swiss, Emmentaler
3. Semi-soft:
 - a. Ripened principally by bacteria: Brick, Munster
 - b. Ripened by bacteria and surface micro-organisms: Limberger, Port du Salut
 - c. Ripened principally by blue mold in the interior: Gorgonzola, Blue, Roquefort, Stilton
4. Soft:
 - a. Cured (or ripened): Bel Paese, Brie, Hand, Camembert, Neufchatel (as made in France)
 - b. Uncured (or unripened): Cottage, Pot, Cream, Ricotta, Neufchâtel (as made in the United States)

Many cheeses are named for the town or community in which they are made, or for a landmark of the community.

Thus, many cheeses with different local names are practically the same in their characteristics. On the other hand, several different kinds may be known by the same local name. The complexity of this situation may be realized in the fact that more than 800 names of cheeses have been indexed.

Accidental modifications or changes in one or more steps of the cheese-making process throughout the centuries were largely responsible for the development of the different kinds of cheese. These changes were little understood and difficult to duplicate due to insufficient scientific knowledge of bacteriology and chemistry. Therefore, cheese-making was considered an art, the making process carefully passed down from father to son. With increased scientific knowledge, it has become possible to control more precisely each step in the making process and to manufacture a uniform product. Today, cheese-making is a science, rather than an art.

Basic Varieties of Cheese Available in the United States

The eighteen basic varieties previously mentioned are available in the United States. These plus eight more varieties are commonly sold in the food stores in the United States today, the latter being:⁹

⁹"Dairy Products; Grocer's Manual," Chain Store Age, Vol. 32, No. 8 (July, 1956), 156.

Bel Paese	Feta	Muenster
Blue	Gorgonzola	Stilton
Brie	Monterey	

These twenty-six kinds of cheese most commonly found in stores today will be described individually in alphabetical order. This method has been chosen for the sake of simplicity and the fact that some cheeses seem more important than others in a given location only because of the nationality group in that area. For example, a predominantly Dutch settlement in Pennsylvania might prefer Edam or Gouda, while the best seller in an Italian section of New York City might be Provolone or Romano.

Bel Paese. Bel Paese, which means "beautiful country," is the trade name of one of the best known and most popular of a group of uncooked, soft, sweet, mild, fast-ripened, Italian table cheeses.¹⁰ Similar cheese is marketed in other European countries and Canada under the name of Butter cheese.

A soft cheese of the Bel Paese type is now being made commercially in the United States and is reputedly of as high quality in every respect as that made in Italy. Because of the Italian trademark, domestic cheese of this type is sold under various other names.

¹⁰ Sanders, op. cit., p. 10.

Blue (spelled Bleu when imported). Blue, Blue mold, or Blue-veined cheese is the name for cheese of the Roquefort type that is made in the United States or Canada. Bleu cheese is imported from Argentina, Sweden, France, Finland, and Denmark. The latter type is called Danablu.

Blue or Bleu is a mold-ripened, semi-soft cheese with a sharp, salty flavor. The cheese is made of cow's or goat's milk, instead of ewe's milk as is Roquefort.¹¹ A Blue cheese weighs about five pounds and is in the shape of a small wheel roughly seven inches in diameter and four inches in height.

This type of cheese has attained widespread popularity for salad dressings, spreads, snacks, and the like. Because of the shortage of Roquefort during World War II, the use of Blue cheese has enjoyed ever-increasing popularity.

Neat rows of wedge cuts is the recommended method of displaying this cheese. The tin foil cover may be removed before cutting.

Brick. One of the few cheeses of American origin, Brick cheese is made in considerable quantities, particularly in Wisconsin.¹² This type is a sweet curd, semi-soft, cow's

¹¹Ibid., pp. 12-13.

¹²Five varieties of cheese have been developed by cheesemakers in the U.S.: Brick, Cream, Liederkranz, Monterey, and Nuworld. See: Know Your Cheese and How To Sell It, op. cit., p. 17.

milk cheese, with a mild but rather pungent and sweet flavor, midway between Swiss and Limberger. The body is of medium softness, is elastic, and slices well without crumbling. Brick has an open texture with numerous irregular shaped eyes (holes). The exact derivation of the name is unknown, but may refer to the brick-like shape or the bricks used in pressing the curd.

This cheese is highly favored for sandwiches, crackers, pie, and use in cooking.

Brick cheese should be displayed in packages of slices in a neat ribbon display.

Brie. Brie, which was first made several centuries ago in the Department of Seine-at-Maine, France, is a soft, surface mold ripened cheese made usually from whole cow's milk. Skim or partly skimmed milk is at times used, the cheese quality varying with the kind of milk used. Brie-type cheese is made also in other countries, including the United States.

Brie is similar to Camembert. Both are ripened partly by molds and bacteria, and probably yeasts that grow on the surface of the cheese. Because of differences in the details of manufacture, the internal ripening and characteristic flavor and aroma differ.

This kind of cheese is made in three sizes: large, about six pounds; medium, about three and one-half pounds; and small, about one pound. The cheese should be merchandised

in wedge-cuts and is excellent on a cheese tray or with crackers, fruit, or dessert.

Camembert. A soft, surface ripened, cow's milk cheese, Camembert was first made in 1791 at Camembert, a hamlet in the Department of Orne, France.¹³ This type of cheese is still produced in France and, today, in other countries, including the United States.

The interior of the cheese is yellowish and waxy, creamy, or almost fluid in consistency, depending on the degree of ripening. The cheeses are about four inches in diameter and one inch thick, weighing roughly ten ounces.

They are wrapped in paper, parchment, or cellophane and may be covered with metal foil and usually are packed in round, flat, wooden, or plastic boxes. Quite often they are cut into small wedges for marketing, but may cure more normally if they are not cut.

Camembert cheese is used in the same manner as Brie.

Cheddar. The first cheese made in the United States was an English type known as Cheddar, after the village of Cheddar, England. The exact date of origin is not known, but Cheddar has been made since the latter part of the sixteenth century. In the United States, Cheddar as well as

¹³Sanders, op. cit., p. 22.

its variations are often known simply as American cheese. In fact, United States standards require that the term "cheese" without any further description shall mean Cheddar.¹⁴ At present, nearly seventy-four per cent of all cheese made in this country each year is Cheddar (and Cheddar types).

Cheddar is a smooth, hard cheese, ranging in color from creamy white to golden yellow, and in flavor from mild to sharp. The cheese may be colored artificially by the use of annato, a harmless vegetable matter, to meet the preferences of different sections of the country. Cheddar cheese may be made from either raw or pasteurized, sweet, whole cow's milk; if made from partly skimmed or skim milk, the cheese must be so labeled.¹⁵

Although the varieties of American cheese are very similar, there are certain differences. Cheddar, the original American cheese, is made by the traditional method which involves cutting the matted curd into slabs which are piled one on the other in the bottom of the cheese vat. This process is known as "cheddaring." The curd slabs are then milled (ground), salted, and pressed into forms for the desired shape and weight. Washed curd is another type of American cheese. This is made in the same manner as

¹⁴Know Your Cheese and How to Sell It, op. cit., p.32.

¹⁵Sanders, op. cit., p. 27.

Cheddar up to the point where the slabs have been milled after cheddaring. Cold water is run over the curd at this point, producing a softer, more moist cheese than Cheddar which is usually sold when mild to mellow in flavor.

Cheddar cheese appears on the market in many different styles and shapes. These vary from Mammoths weighing one hundred pounds or more to ten-pound bars. The most common found in large markets are the thirty-two pound flats and thirteen-pound Longhorns. These sizes are easily handled and are used in automatic cutting and wrapping by machine.

The well-aged, sharp flavored Cheddar is a favorite cheese for use in cookery. Cheddar-type cheeses are also served with pie, crackers, fruit, and in sandwiches.

Cheddar can be most effectively merchandised in mass displays of a variety of cuts, each clearly marked according to age and whether sharp, medium, or mild in flavor. The display must be neat and the greater proportion of space should be allocated to the most popular type.

Cottage cheese. Sometimes called Pot cheese, Dutch cheese, or Schmierkase, Cottage cheese is a soft, uncured (fresh) cheese made from skim milk, reconstituted concentrated skim milk, or nonfat dry milk solids.

Large-grained, low-acid cheese is made by adding rennet to the milk, cutting the curd into large cubes and washing the curd thoroughly to reduce the acid flavor. This product is known as sweet curd, flake type, or low-acid

rennet-type cottage cheese. Small grained cottage cheese sometimes is called country-style or farm-style cheese.

Varying amounts of cream may be mixed with the cheese curd before being marketed or consumed. If the cheese contains four per cent or more of fat, the product is called Creamed Cottage cheese.¹⁶ Peppers, olives, pimientos, or the like may be added for flavoring. This produces a highly palatable and nutritious food which may be used as table cheese, with fruit, salads, crackers, as a dessert, or cheese dip.

All types of cottage cheese are highly perishable and require constant refrigeration. Therefore, an ideal display location is with milk and cream, unless the latter are located in a separate case.

Cream cheese. As the name implies, the smooth, creamy richness of Cream cheese comes directly from the fresh, sweet milk and cream from which it is made. This is a white, soft unripened cheese and is distinctly an American development. There are several French Cream cheeses, Carré and Fromage à la Crème.

The ready adaptability of this cheese to a wide variety of table delicacies and its high nutritional value have made cream cheese a prime favorite throughout the

¹⁶Ibid., p. 34.

nation. Cream cheese has all the vitamins contained in butterfat (thirty-three per cent under Federal standards),¹⁷ an excellent source of vitamin A.

Cream cheese is packed in tin foil packages weighing from three ounces to three pounds and contains added vegetable gum as a preservative. Almost as perishable as the cream and milk from which it is made, Cream cheese must be marketed with the same care and exactitude. Cream cheese may be displayed to best advantage by grouping different varieties (relish, pimento, cherry, date, etc.), into mass, ribbon displays.

Edam. Edam cheese was first made in the vicinity of Edam in the Province of North Holland, Netherlands. Like Gouda, Edam is a semi-soft to hard, sweet curd cheese made from cow's milk. Originally, the cheese was made from whole milk, but now the fat content of the milk is usually reduced to about two and one-half per cent. Imported Edam must have the fat content indicated on the label, according to government specifications.¹⁸ Edam is also made in the United States.

The typical Edam cheese is coated with a red wax and is brick-like or spherical in shape, weighing from five to six pounds. Baby Edams weigh only eleven ounces. The

¹⁷Know Your Cheese and How To Sell It, op. cit., p. 36.

¹⁸Sanders, op. cit., p. 41.

flavor of the cheese is pleasingly mild, clean, and nut-like. The body is rather firm and crumbly, free of holes and openings.

Edam cheese is very good with desserts and salads and may also be used in sandwiches or on crackers. Edam may be displayed whole, as wedge cuts, or slices.

Feta. This is a white, so-called pickled cheese. Feta is the principal soft cheese made by the shepherds in the mountainous region near Athens, Greece, usually from ewe's milk but sometimes from goat's milk.

Fresh milk is formed into a firm curd which is then cut or broken. The curd is placed in large rectangular forms and allowed to drain. When sufficiently firm, the curd is cut into blocks and rubbed with dry salt. The following day the blocks are cut into slices about one inch thick, and these are salted and packed in paraffined wooden kegs or smaller tin containers. The cheese is ready to eat after about one month of curing. Feta is rapidly gaining popularity through use in salad dressings.

Gorgonzola. Stracchine di Gorgonzola is the principal blue-green veined cheese of Italy. Named for the village of Gorgonzola near Milan, Gorgonzola is said to have been made in the Po Valley since 879 A.D. This cheese, of the semi-hard variety, was formerly made during September and October because winter conditions are favorable for curing.

However, curing caves have been built in the Alps and the cheese is now made throughout the year. Gorgonzola is also made in numerous other countries; in the United States, chiefly in Wisconsin and Michigan.

Gorgonzola is a rennet cured, mold-ripened cheese of a rather piquant flavor similar to Blue or Roquefort, and is made from cow's milk.¹⁹

The cheeses are cylindrical and flat, weighing up to seventeen pounds each. The uses and display methods of Gorgonzola are the same as for Blue and Roquefort.

Gouda. Gouda is a variant of Edam cheese. First made in the vicinity of Gouda in the Province of South Holland, Netherlands, it is a semi-soft to hard, sweet curd cheese made from cow's milk, containing more fat than Edam. Goudas are usually shaped like flattened spheres which may vary in weight from one to fifty pounds. They are also made in a loaf weighing about eight pounds. The surface of the cheese may be coated with a red wax, but this is not necessarily an identifying characteristic as the red jacket is of domestic and imported Edam.²⁰

Gouda is similar to Edam for use and in methods of display.

¹⁹Ibid., p. 52.

²⁰Ibid., p. 53.

Gruyère. The history of Gruyère (Greyêrzerkäse, Groyer, Vachellieu) dates back some 200 years to the village of Gruyère, in the Canton of Fribourg, Switzerland. The manufacture of this cheese is now an important industry in southeastern France.

Gruyère is made from whole cow's milk in much the same way as Swiss. However, the cheese is smaller, has no eyes, and a sharper flavor, and is usually cured in a more humid atmosphere. There is often an aroma of ammonia in the curing room, indicating some surface ripening.²¹

The whole cheese weighs from fifty-five to one-hundred pounds, but is usually merchandised in small foil-wrapped wedges. The wedges are excellent for party snacks, desserts, and when served with fruit. They may be purchased individually or in party packs, which readily lend themselves to striking displays in the store.

Hand. Hand cheese, a small, sour-milk, surface ripened cheese, is so named because originally the product was molded into final shape by hand; this is still done in some parts of Europe. Well-ripened Hand cheese has a very sharp, pungent flavor and aroma; the consumer sometimes must become accustomed to this before finding the cheese agreeable.

²¹Ibid., p. 56.

In the United States, cheese of this type is made by farm families of German descent in Pennsylvania and in a few factories in New York, Wisconsin, and northern Illinois. The curd is prepared in much the same way as Cottage cheese curd. The drained curd is salted and molded either by hand or in small forms. The cheeses are then cured in a cool, moist room by the action of bacteria, yeasts, and molds. Regulation of the temperature and humidity in the curing room is essential to control surface ripening; the process is also controlled by frequent rubbing or washing of the cheese.²²

Italian grating cheese. Italian cheese refers not only to varieties now made in Italy, but also to those that originated in Italy and are now made in other countries as well. Parmesan, Romano, and Sardo are among the best known, and they are made in considerable quantities in the United States.

Parmesan is the name in common use outside of Italy, and sometimes in Italy, for a group of very hard cheeses that have been known for centuries as "Grana." The cheese is made mostly from April to November from skimmed cow's milk. Fully cured Parmesan keeps almost indefinitely. The cheese is easily grated, and is used on salads and soups, and with macaroni.

²²Ibid.

Romano is one of the most popular of the very hard Italian cheeses. When made from ewe's milk, it is called Pecorino Romano; from goat's milk, Caprino Romano; and from cow's milk, Vacchino Romano. Some Romano cheese is made in the United States from cow's milk, and considerable quantities are imported from Italy and Sardinia. The type imported from Sardinia is called Sardo. This type of cheese is used in the same ways as Parmesan; all are sold in small dispenser-type containers, grated and ready for use.²³

Limberger. This is a semi-soft, bacteria ripened cheese with a characteristic pungent flavor and aroma.²⁴ Limberger is named for the town of Limberg, Belgium, where originally much of the cheese was marketed. The cheese is also made in other parts of Europe, especially in Germany and Austria, and in the United States.

Limberger is commonly packaged in weights up to two and one-half pounds and is a favorite with crackers and also for table use. This cheese should be displayed with Liederkranz and Camembert and always kept under refrigeration which, in addition to preserving the flavor, aids in minimizing the odor. Never display these cheeses with any merchandise that will readily pick up strong odors, such as fowl or butter.

²³Ibid., p. 61.

²⁴Ibid., p. 68.

Liederkrantz is the trade name of a soft, surface ripened cheese that is made in the state of Ohio from cow's milk, as is Limberger, and is very similar to the latter, only milder.

Monterey. Monterey (or Jack) cheese was first made in Monterey County, California, in the 1890's. The cheese is made from whole, partly skimmed, or skim milk. Whole milk Monterey is semi-soft; Monterey made from partly skimmed or skim milk (called dry Monterey or dry Jack) is hard and is used for grating.²⁵ The cheese is white in color, has an open texture, and is similar to a very mild Muenster in flavor and aroma. Whole milk Monterey is cut, displayed, and used in the same manner as brick or other loaf cheese.

Muenster. A whole milk, bacteria ripened, semi-soft cheese, Muenster (or Münster) was first made in Germany.²⁶ This cheese is similar to Brick in texture and Limberger in flavor, but the latter is not so pronounced. Muenster is shaped in cylindrical forms or bricks weighing about five pounds.

Muenster is particularly good on rye, pumpernickel, or date and nut bread sandwiches and may be served with scallions, radishes, or cucumbers.

This type of cheese is best displayed in wedges, slices, or blocks.

²⁵Ibid., p.79

²⁶Ibid., p.81.

Neufchâtel. The name of this cheese is derived from the town in northwestern France where it originated. Neufchâtel is made from whole or skim milk or a mixture of milk and cheese. The method is essentially the same as the rennet method for cottage cheese, but not quite so much acidity should be developed in Neufchâtel cheese.²⁷

The standard package for Neufchâtel cheese is cylindrical and weighs two and one-half pounds. Four-ounce single service cups are commonly used. Pimientos, olives, or nuts are sometimes added to Neufchâtel curd, producing a variety of delightful spreads for snacks or desserts. This cheese has a very smooth, rich taste and would pass for cream cheese, but has a lower butterfat content than cream cheese.

Port du Salut. Port du Salut (or Port Salut, Oka, or Trappist) cheese was first made in about 1865 by Trappist monks at the Abbey at Port du Salut, France. The manufacture of this cheese has spread to abbeys in various parts of Europe, Canada, and the United States, where it is made in at least one monastery in Kentucky. The Trappists have kept the exact process a secret, but similar cheese is made outside the monasteries in central and southern Europe. In France, cheese of this type made outside the monasteries is called St. Paulin.

²⁷Judkins and Mack, op. cit., p. 253.

The cheese is usually made of cow's milk, is compact and elastic, with a flavor similar to Gouda.²⁸ In some instances the aroma is like very mild Limberger. The cheeses are cylindrical and flat and weigh about three to five pounds. They may be marketed before being fully cured.

The full rich flavor of Port du Salut lends itself very well to use on the cheese tray or with crackers or fruits.

For display purposes, the smaller cheeses may simply be halved; larger cheeses are usually wedge cut into not too large portions.

Provolone. Provolone (Provolonchini, etc.), an Italian pasteurized curd cheese, was first made in southern Italy but is now made in other parts of Italy and in the United States, principally in Wisconsin and Michigan.²⁹

The cheese is smoked in the natural loaf, producing a light brown surface and light yellow interior with a sharp smoky flavor. Provolones are produced in pear, ball, or sausage shapes, ranging in weight from one pound to 200 pounds. The surface is usually seared with deep rope marks. The ropes are often used to hang the whole cheeses for display, but they may be sliced and packaged.

Provolones are often used in cookery, on sandwiches or crackers, for grating, or as a dessert.

²⁸Sanders, op. cit., p. 93.

²⁹Ibid., p. 97.

Ricotta (whey cheese). This type of cheese is made from the coagulable material (principally albumin) in the whey obtained in the manufacture of other cheeses, such as Cheddar, Swiss, and Provolone. Ricotta was first made in Italy and, therefore, is classed as an Italian cheese, but is now made in Europe and the United States.

In making Ricotta, the fat is usually left in the whey. In the United States from five to ten per cent of either whole milk or skim milk is added, the former if fresh Ricotta is being made, the latter if dry Ricotta is being made.³⁰ The incorporated fat improves the body, flavor, and food value of the cheese.

Fresh Ricotta is used much in the same way as Cottage cheese, while the dry type is suitable for grating.

Roquefort. This is a French cheese which has its beginnings in legend. Centuries ago, so the story goes, a French shepherd boy had to leave his lunch to round up some stray sheep. He left his barley bread and some newly made sheep's milk cheese in a cave. Some weeks later the boy returned to the cave and found the bread spoiled and the cheese considerably changed; the cheese was veined throughout with a delicate green mold. The lad tried some of the cheese and found the flavor pleasing. He related the experience to

³⁰Ibid., 106.

some nearby Conques monks who then developed the Roquefort process. The cheese is first mentioned in 1070 in the Conques monastery chronicles.³¹

A French regulation limits the use of the word Roquefort to cheese made in the Roquefort area from ewe's milk.³² Cheese of this type made in other countries is known as Bleu, Blue, Stilton, or Gorgonzola.

Roquefort is a semi-hard rennet cheese. The characteristic color is light but streaked throughout by the greenish mold developed in wheat and barley bread. The proper development of this mold is the great essential in making the cheese, and the many natural limestone caves in the Roquefort area provide the ideal conditions favorable to the ripening process.

The cheese is characterized by its sharp, peppery, piquant flavor and is used in salads, salad dressings, spreads, and snacks.

The wheels of Roquefort should be wedged for display, with care being taken not to break the pieces as the texture of the cheese is quite crumbly.

³¹How to Operate A Successful Dairy Department (Chicago: Kraft Foods Company, 1955), p. 18.

³²Roquefort (Paris, France: Office D'Editions D'Art, n.d.), p. 4.

Sapsago. Sapsago cheese has been made in the Canton of Clarus, Switzerland, for at least 500 years and perhaps even more; the cheese is also made in Germany. Sapsago is small, very hard, and frequently is dried. A powder prepared from clover leaves is added to the curd, which imparts a sharp, pungent flavor and a pleasing aroma and a light-green or sage-green color. The milk used in the preparation of Sapsago is usually slightly sour skim milk, butter milk, and whey.³³

The cheese may be used in cookery and for grating.

The small cylinders are easily displayed in neat rows.

Stilton. Stilton, considered by many people to be the finest English cheese, is a hard, blue-veined, cow's milk cheese. The first cheese of this kind was made about 1750 in Leicestershire but acquired its name and excellent reputation when made and served at Stilton, in Huntingdonshire. Attempts to make high quality cheese of this type in the United States have not been successful.³⁴

Similar to Roquefort and Gorgonzola, Stilton is rich and mellow and has a piquant flavor; however, this cheese is milder than either Roquefort or Gorgonzola. The distinguishing characteristics of Stilton are narrow blue-green veins of mold and the wrinkled, melon-like rind that results

³³Sanders, op. cit., p. 113.

³⁴Ibid., p. 121.

from the drying of molds and bacteria that grow on the surface.

Swiss. Swiss (Emmentaler) cheese, which is a large, hard, pressed curd cheese with an elastic body and a mild, sweet, nut-like flavor, is best known because of the holes or eyes that develop as the cheese ripens. The eyes are formed by gas-producing bacteria and should be clean and uniformly distributed throughout the cheese. A well cured Swiss cheese is likely to be of fuller flavor, finer texture, and generally of better keeping quality than a newer cheese since the moisture content lowers with age. A yellowish color generally denotes cheese made during the summer months; a whitish color is a sign of winter-made cheese.

Switzerland is famous for this so-called King of Cheeses, and a large part of the milk production of that country is used in its production. The cheese was first made in the Canton of Bern in the Emmental Valley (which accounts for the native name Emmentaler). The industry was well-developed and cheese was being exported by the middle of the seventeenth century. Only the best cheese is exported, and is commonly called "Switzerland Swiss."

Swiss cheese is now made in many other countries. The first Swiss cheese in the United States was made about 1850 by Swiss immigrants, and much of it is still being made by their descendants. Among the hard cheeses, Swiss ranks

second only to Cheddar in the quantity produced each year. About half of the annual production of one-hundred million pounds is made in Wisconsin, and Illinois, Idaho, Minnesota, Ohio, Utah, and Wyoming are other leading producers.³⁵ In the United States, Swiss cheese is often called Schweizer or Sweitzer. There is also a domestic rindless Swiss.

Swiss is one of the most difficult kinds of cheese to make. Control of the quality and composition of the milk, propagation and use of the essential bacteria starters, and the details of manufacture are complicated procedures that require the services of a skilled cheesemaker and special equipment.

The cheeses are molded in the shape of large wheels which often weight as much as 200 pounds. These whole wheels may be shipped to stores as such, or cut up in the warehouse for ease of handling. Swiss cheese is most effectively sold in mass displays of neatly packaged slices, or if the local demand is sufficient, in square or triangular chunks.

The cheese is most widely used on sandwiches, but is also popular for snacks, with fruit, desserts, and in cookery.

Processed cheese. This type of cheese is natural or bulk cheese which has been heated, pasteurized, blended with

³⁵Know Your Cheese and How to Sell It, op. cit., p.21.

other milk solids, and packaged for uniformity of flavor, texture, and to provide better keeping quality. Processing halts further ripening in raw cheese at the point where the flavor has reached its highest development. The development of packaged and glass contained cheese was a big step in the merchandising of cheese. The offer of half-pound and smaller packages, easily handled by the customer and the store, of good keeping quality has played an important part in the increase of cheese sales. The development of two- and five-pound loaves, easy to handle and slice, was another step forward for the cheese industry. Of no less importance is the fact that processed cheese is economical because of the absence of rind, and safe because the product is pasteurized.³⁶

People all over the world like and eat cheese; the people in the United States are no exception as evidenced by the annual per capita consumption which has nearly doubled in the past twenty years (from 4.6 pounds in 1925 to 7.9 pounds in 1955).³⁷

A very high percentage of cheese sales will be determined by the methods of preparation of the merchandise. The handling before display and certainly the manner in which cheese is presented to the consumer will determine to a large extent whether the sales will be made because

³⁶ Ibid., p. 40.

³⁷ Ibid., p. 21.

the cheese interests, attracts, and creates a desire to buy, or whether the sales are made only because the customer needs cheese. To create a demand for the merchandise is to create sales and, of course, profits. Point-of-sale advertising may be effectively utilized to stimulate customer purchases of cheese. The advertising may be historical in nature, explain how particular cheeses are made, offer uses in the home (menus are often readily accepted), or approach the subject from a nutritional standpoint for the modern consumer is ever mindful of the nutritive value of food for the health of the family. The following are examples of suggested selling points:

1. Cheese is an excellent source of calcium and phosphorous in the diet.
2. The vitamin content of cheese helps to meet the daily requirements necessary for physical well-being.
3. Cheese is a concentrated source of energy.
4. Cheese is an economical source of the highest quality proteins.
5. A palatable and attractive food, cheese is capable of a great variety of uses and aids in promoting the health and welfare of the family.

Good merchandising can enable the dairy department to sell ten per cent or more of the total store volume in as little as four to five per cent of the selling space.

"Ten Commandments" for profitable cheese merchandising have been formulated by the Agricultural Extension Service of the University of Delaware:³⁸

1. Make one person responsible for the dairy displays so they will not be neglected.
2. Locate the dairy department where store traffic is good, remembering that a large portion of cheese sales are made on impulse.
3. Cleanliness is essential to "eye appeal." Wash case regularly with mild soap and water.
4. Maintain shelf temperatures at 35° - 40° F. to keep dairy products in the best condition. The optimum humidity is 60--70 per cent.
5. Price mark plainly. Identify varieties. Suggest best uses.
6. Offer a good selection of cheese varieties, but avoid overcrowding which makes shopping difficult.
7. Display varieties with contrasting colors next to each other so that each item stands out. Use jumble displays for volume items (such as Cheddar wedges) to make maintenance and shopping easier.
8. Display cheese with other related items when possible. Aisle tables are effective for such promotions.
9. Make it a habit to rotate stock carefully.
10. Consult your cheese supplier for merchandising help and display materials.³⁹

³⁸"You Can Sell More" Cheese. . . "When you Know More About It" (Newark, Delaware: The Agricultural Extension Service, University of Delaware, 1956), p. 1.

³⁹Many manufacturers have published excellent material on the various phases of planning, stocking, and merchandising of cheese. Organizations such as The Kraft Foods Co., 500 Peshtigo Court, Chicago 90, Illinois; or The Cheese Division of the Borden Company, 350 Madison Avenue, New York 17, N. Y., will gladly supply these manuals upon request free of charge.

CHAPTER IV

BUTTER AND MARGARINE

Butter

Grading of butter. The fat solids from about one-fourth of the annual milk production of the United States are used in the making of butter. However, the per capita consumption of butter has reached an all time low, with only half as much being consumed per person today as was consumed some twenty-five years ago.¹

One factor responsible for the drop in butter consumption is that other types of spreads, such as cheeses or margarine, are more economical and are thought by many to be just as nutritious and flavorful as butter. Many of these substitutes also possess better keeping qualities than butter and, therefore, are purchased instead. Perhaps the most important single factor is that consumer acceptance of butter has been severely damaged by "bad" products which have been placed on the market in areas not under the protection of Federal or state grading regulations.²

¹Irene H. Wolgamot and Lillian J. Fincher, Milk and Its Products, Facts for Consumer Education, U.S. Dept. of Agriculture AIB No. 125 (Washington, D.C.: Government Printing Office, May, 1954), p. 19.

²Edwin A. Giermak, "A Study and Analysis of Consumer Grade Labeling," American Milk Review, March, 1956, p. 48.

Regulations for grade labeling of butter have passed a number of state legislatures. In these cases, letters or name grades designate state standards and the grading is checked by a state grader. State grades do not carry the prefix "U.S." as do Federal grades, but may show the state name or seal.

A grade mark on the package without "U.S." or state identification reflects the manufacturer's or distributor's own standard of quality. Much of this butter may be of good quality, but the consumer must necessarily rely on the distributor's statement that the product meets the quality designation on the package.

In states not protected by butter grading legislation, the only assurance of quality is the United States grade mark. In 1918, Congress authorized the United States Department of Agriculture to establish a Federal inspection and grading service that would enable buttermakers and dealers to have a government inspector examine commercial lots of butter and issue official certificates of grade.³

Federal butter grading has always been conducted on a voluntary basis. A manufacturer or dealer may have his butter federally graded to facilitate business with customers in distant markets who desire assurance of the quality

³Know Your Butter Grades, U.S. Dept. of Agriculture Leaflet No. 264 (revised; Washington, D.C.: Government Printing Office, February, 1956), p. 1.

of product they receive. Many packers for the retail or the hotel and restaurant trade consider it good business to assure their customers of butter quality by adopting Government standards.

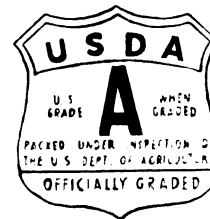


Figure 1.

The quality rating, or grade, given to butter by the Government grader is printed on an emblem. [Figure 1.] The grade emblem helps build and maintain confidence and good will in the brand name.

U.S. Grade Mark
for Butter

The grade designations U. S. Grade AA (U. S. 93 Score) and U. S. Grade A (U. S. 92 Score) are the quality ratings most often seen on butter cartons in retail stores, however, U. S. Grade B (U. S. 90 Score) may be found in certain marketing areas. U. S. Grade C (U. S. 89 Score) butter is a nutritious product but does not possess the more palatable characteristics of the higher grades. Butter of this grade is not eligible for packaging under official grade labels.⁴

The various grade terms reflect well-defined quality characteristics that are important to the consumer in buying butter. Specifications for the grades are uniformly applied throughout the country from season to season.⁵

To the purchaser, the various grade designations represent the following:⁶

⁴Ibid.

⁵See Appendix B.

⁶Know Your Butter Grades, op. cit.

- U. S. Grade AA: Fine, highly pleasing aroma, with a delicate, sweet flavor. Smooth creamy texture with good spreadability. Salt completely dissolved, thoroughly diluted and blended in just the right amount to enhance its savory qualities. Made from high quality fresh sweet cream.
- U. S. Grade A: This, too, is made from fresh cream, and possesses a pleasing flavor, and measures high on other quality factors as well. Although rated second, U. S. Grade A will please discriminating consumers.
- U. S. Grade B: Butter of this grade is generally manufactured from selected sour cream and is readily acceptable to many consumers though lacking the fine fresh flavor of the two top grades.

The Federal grader usually does his work at the packaging plant where the butter is in bulk containers of sixty and/or sixty-four pounds each.⁷ Ideally, the grading is done in a room free from all extraneous odors.

To determine butter quality, the grader selects a bulk container from a given churning. From this he withdraws a sample which is then examined for aroma, evenness of color (15 points of the numerical score), and body characteristics (25 points). The grader's sense of smell tells him what qualities of cream were used in that particular churning. A small portion of the sample is then savored to determine whether the taste corresponds to the aroma. In flavor

⁷Giermak, op. cit., p. 48. The compulsory weights designated by the U. S. Department of Agriculture as of April 1, 1957.

sampling, the product must be allowed to reach body temperature to detect the true characteristics, and the senses of smell and taste must both be utilized to determine flavor (45 points of the numerical score). The flavor of the butter also tells the grader the salt content (10 points). The package for the final product is rated last (5 points).

Defects in the churning are noted, subtracted from the possible perfect score of one hundred, and the entire given churning is so graded. Every stick and every pound of butter packaged from that churning will show the same grade. The score of one hundred is only a theoretical rating as no butter is considered perfect.

The federal Act of March 4, 1923, which applies to butter moving in interstate commerce, requires butter to have a minimum of eighty per cent milk fat.⁸

Types of butter. There are two basic types of butter, "sweet cream butter," and that churned from sour cream. Sweet cream butter churned from fresh, sweet cream is considered the type of highest quality. The butter may be salted or unsalted depending upon local market requirements (some districts demand a salt content of one per cent).

The second basic type is the more common butter churned from sour cream and is simply labeled "butter" if of

⁸Wolgamot and Fincher, op. cit., p. 20.

the salted variety, or "sweet butter" if unsalted.⁹ This basic type may also be known as "Centralized Butter" as the cream from which the butter is made is often gathered from a rather extensive area and churned at a central creamery. Centralized butter comprises some sixty-five per cent of all butter churned in the United States and is, generally, more economical than sweet cream butter.

Salted butter has better keeping qualities than other varieties due to the retarding effect of salt on bacterial growth, but the inclusion of salt reduces the butterfat content by weight and, therefore, reduces the price of the butter.

Because of the perishability of butter, many distributors recognize the need for date coding of both shipping cartons and individual packages to facilitate stock rotation in the storage refrigerator and display cases. Outdated, mouldy, or "off-aroma" merchandise must be disposed of in some acceptable manner other than by sale to the public. The off-aroma may be due to the development of rancidity caused by aging or temperature fluctuations, or acquired from proximity to strong flavored foods.

In the home butter may be safely stored in the freezer compartment of the refrigerator. This protects the delicate flavor from strong "refrigerator" odors.¹⁰

⁹How to Operate A Successful Dairy Department, op. cit., p. 10.

¹⁰Know Your Butter Grades, op. cit., p. 5.

Honey butter. Honey butter is a blend of approximately fifteen per cent, ninety-three score butter and honey. The product may also contain cinnamon for added flavoring. The uses for honey butter are many: on toast or hot biscuits, waffles or pancakes, as a topping or filling for cakes and cookies, or for glazing a Virginia ham, to mention only a few.

Honey butter is often packed in twelve-ounce cup-like containers, due to the high degree of plasticity (spreadability) of the product, that are readily displayed in the refrigerated case. The butter content of the product is the requisite for proper refrigeration maintenance.

Margarine

Although not a dairy product,¹¹ margarine is most often merchandised in the dairy department of retail food stores, receiving the same care and consideration as milk, cheese, eggs, and butter. There are several reasons for this; to facilitate handling under refrigeration conditions, and maintain proximity to spreads similarly utilized, such as butter or various cheese spreads.

¹¹Federal Trade Commission Act, as amended in 1950. The heart of the amendment is that representation or suggestion of oleomargarine or margarine as a dairy product is prohibited. "On the Legal Side; Oleo Advertising," American Milk Review, August, 1956, p. 40.

Margarine was developed in France in the late 1800's as a substitute or alternative to butter. The product has had many titles (e.g., "artificial" butter, Butterine) and until 1952 was officially described as "oleomargarine" in the United States. Today, either description, oleomargarine or margarine, may be used.¹²

The product, margarine, is defined as:

All substances, mixtures, and compounds which have a consistency similar to that of butter, and which contain any edible fats or oils other than milk fat, if made in imitation or semblance of butter.¹³

The optional fats for margarine are animal fats and oils (from cattle, sheep, swine, and goats), vegetable oils and fats, or a combination of both. The finished product must contain not less than eighty per cent fat. The fats must be emulsified [mixed or suspended in a liquid] with cream, milk, skim milk, or any combination of non-fat dry milk solids and water. "Milk" means cow's milk and must be pasteurized and subjected to the action of harmless bacteria starters, the latter to consistently develop the desired butter-like flavor and aroma.¹⁴

In margarine in which the fat is derived solely from vegetable oils, the milk ingredient may be replaced by a combination of finely ground soyabeans and water.

¹²A. J. C. Anderson, Margarine (New York: Academic Press, Inc., 1954), p. 306.

¹³Ibid.

¹⁴Ibid.

The addition of butter to margarine is optional, and no limit is placed on the proportion that may be added. To raise the nutritional level of margarine to almost that of butter vitamins A and D may be added; in a few states vitaminization is compulsory. If vitaminization is claimed, the margarine must contain not less than 15,000 International units of vitamin A per pound.¹⁵ There is no required level of vitamin D potency at present.

Other ingredients which may be used in margarine are preservatives, emulsifiers, salt, antioxidants (to retard flavor deterioration), and artificial coloring. Colored margarine must be retailed as a prepackaged product, and the net weight of the package must be one pound or less. Coloration of the product is still a subject of principal concern in some states; where prohibited, the artificial coloring matter may be included in the package for blending in the home to produce a more appealing spread for table use.

Margarine is relatively stable (does not rapidly deteriorate) at relatively high temperatures, however, manufacturers recommend that their product be stored and displayed under refrigeration. Margarine should be consumed within three weeks of manufacture, when the flavor is best. In practice, circumstances often do not permit such rapid turnover. Therefore, the product may be kept in a salable

¹⁵Ibid.

conditions for five or six weeks, and in exceptional circumstances considerably longer.¹⁶

Due to the good keeping quality of margarine, the product may be merchandised in special out-of-case displays, but only in the coolest possible locations within the store. The quality will be retained for a reasonable amount of time when exposed to warm temperatures of sixty degrees Farenheit or less.

Like similar dairy products, margarine is susceptible to odors. Practically all brands are protected by sturdy waxed cardboard cartons or foil wrapping, or both, but nevertheless bear strict watching in this respect.

Orderliness, cleanliness, and proper rotation are other important factors in the merchandising of margarine; the latter usually is facilitated by date coding of shipping cartons and individual packages.

Margarine, or oleomargarine, may be utilized in every manner enjoyed by butter, for which margarine was developed as a direct substitute.

¹⁶Ibid., p. 267.

CHAPTER V

EGGS

Eggs are exceeded only by milk in food value and, thus, are a good source of proteins, fats, minerals, and vitamins. "From both nutritional and taste standpoints, there is no difference between brown and white eggs."¹ Since the egg contains all of the nutrients except oxygen necessary to develop a perfect animal (the chick), the importance of this natural food in the human diet would be indicated without reference to experimental data. Ample scientific evidence is available, however, to prove this point.

The consumption of eggs in the United States is far from the saturation point. This may be attributed to a number of factors; the lack of education regarding the food value of eggs, the relatively limited amount of advertising, difficulty in securing the higher quality products in heavily populated areas, and the rather high price of eggs.²

¹"Emphasis on Eggs," Chain Store Age, Vol. 32, No. 11 (November, 1956), 42.

²A. R. Winter and E. M. Funk, Poultry Science and Practice (revised; New York: J. P. Lippincott Company, 1951), p. 15.

The Grading of Eggs

"Official" grading means classifying eggs by grade on the basis of individual quality, and for size on the basis of weight per dozen, according to Federal standards. In 1925 the first specifications for "U. S. Standards and Tentative U. S. Grades" for eggs were proposed.³ Revisions have since improved the original specifications, and grades have been established for the wholesale and retail marketing of eggs. They are designed to give the consumer an assurance of the quality of the merchandise purchased to maintain his or her confidence and patronage.

Many state departments of agriculture have adopted the Federal standards and grades. Some have established their own grading systems which rather closely follow the Federal standards. This is true also of many progressive commercial firms that grade on their own standards, and label their cartons with trade-mark terms or brand names that identify their different qualities.

Commercial plants that have their eggs graded under the Federal-State program are permitted to use the official grade mark designed by the Department of Agriculture (a shield similar to that used for official butter grading).

³Rowena S. Mainland and W. E. Houver, Jr., Egg Buying Guides for Consumers, U. S. Department of Agriculture Home and Garden Bulletin No. 26 (Washington, D.C.: Government Printing Office, May, 1954), p. 3.

The shield is used on cartons that may also include brand and firm names. The carton may be sealed with a single shield or strip of shields bearing the information "U. S." and "Federal-State Graded," "Graded under Federal Supervision" or a similar term. The grade of the eggs may either be printed on the shield or the carton, but the size of the eggs and date of grading always appears on the grade mark.⁴ The date may be expressed as the day of the month; "Feb. 17" for example, or a number representing the day of the year "48" (instead of Feb. 17). Upon expiration of a given length of time from that date the eggs must be returned to the producer or distributor for regrading or utilization in some manner other than retail sale to consumers. Some companies, other than those under Federal standards, print a date of expiration on the carton which serves the same purpose and effectively facilitates stock rotation.

Quality grading. Licensed graders, trained, and supervised by the United States Department of Agriculture, perform the grading of eggs for commercial plants that apply for them (the program is entirely voluntary).

There are four consumer grades for eggs: U. S. Grade AA, U. S. Grade A, U. S. Grade B, and U. S. Grade C. Each grade refers to a specific interior quality defined by Government standards.

⁴Ibid.

In grading for quality, the grader first considers the shape, texture, and condition of the shell. An egg that is unusual in shape, or has a rough, very thin, cracked, or dirty shell must be placed in one of the lower grades, regardless of the interior quality of the egg.

After judging the shell, the grader examines the interior quality of the egg before a candling light in a darkened room. The size and condition of the air cell, normally at the large end of the egg, is noted. The air cell increases in size through loss of moisture as the egg ages. Therefore, eggs of high quality will have a smaller air cell than those of lower qualities. Next, the condition of the yolk and the white is observed. A freshly laid egg of high quality has a well-centered yolk. Rapid twisting of the egg and the corresponding movement of the yolk indicates the thickness of the white. A large portion of thick white is another measure of high quality. The candling light also detects any undesirable spots in the interior of the egg which will lower the grade.

From time to time, a grader may break an egg out of the shell onto a flat plate to compare the "broken-out" appearance standards with those seen through the shell. The broken-out egg of AA quality governs a small area; the white is very thick and stands high; the yolk is firm and high, and is well centered. Eggs of lesser qualities vary in

appearance down to the flat, irregular, watery condition of the C quality egg.⁵

Grades AA and A usually bring higher prices than Grades B and C because producer and distributor costs for proper handling for quality maintenance are high. In cool weather (late winter and early spring) high quality eggs may be less expensive than at other times of the year because of quality maintenance being simplified due to the natural decline in temperature. Also, eggs of higher quality are more abundant at that time of the year. In the summer when quality can drop rapidly, the lower quality eggs are often in abundance. The price of Grade B eggs may then be considerably lower than top-quality eggs. Because Grade B eggs provide the same food value as the higher grades and have many uses in cooking, they offer a worthwhile saving to the consumer. A comparison of prices of different qualities must always be made on the basis of the same size, Grade A Large as compared with Grade B Large, for example.

Size (Weight) grading. There are six "U. S. Weight Classes" to cover the range of egg sizes. The classifications are Jumbo, thirty ounces minimum weight per dozen; Extra Large, twenty-seven ounces; Large, twenty-four ounces; Medium, twenty-one ounces; Small, eighteen ounces; and Peewee (or Pullet), fifteen ounces.⁶ The minimum weights

⁵See Appendix C. ⁶Mainland and Houver, op. cit., p.7.

are those of the eggs alone and do not include the weight of the cartons in which they are packed (usually about two ounces).

Grading or classifying for weight consists of sorting the eggs according to the weight classes. Much of the grading for size or weight is done at the same time the eggs are candled. Experienced graders often judge the weight of the egg in the hand and are remarkably accurate in sensing the weight of the individual egg. Occasionally eggs are checked for weight on an individual scale or some firms use automatic scales for the sorting process.

Cartons of eggs packed by firms that handle only two or three weight classes will often contain some larger eggs than the size name indicates. This is permissible because the minimum weight for a given dozen has not only been met but exceeded. In making up dozens from cartons of damaged eggs in the store the retailer must keep this point in mind. Eggs of one quality and size may be down-graded, but never placed in cartons of a higher grade in making up the new dozen. Perhaps the safer practice, when permissible, is to repack eggs from damaged cartons in a plain carton labeled "Eggs" for sale at a lowered price. This protects both the retailer and the consumer as the former is seldom equipped or permitted to regrade the merchandise.

As quality and weight are judged independently of each other, a number of grade and size combinations are possible;

these are further multiplied by shell color preferences. The many combinations would be difficult or impossible for one store to carry; therefore, they must carefully be eliminated to only those in demand in the particular area.

Changes in Egg Quality

The maintenance of quality in shell eggs is a major marketing problem.⁸ Freshly laid eggs are generally of good quality, with the exception of those bearing undesirable spots sometimes found in the white or yolk (known as meat spots and blood spots respectively). Most of the losses in quality from the farm to the consumer are due mainly to lapse of time and the effect of the environment in which the eggs are held (e. g., temperature and humidity).⁹

Temperature. Eggs laid in the summer when temperatures are high tend to be smaller in size, have weaker shells, and, generally, a more fluid or watery white than those laid during cooler seasons of the year. Millions of dozens of eggs become a total loss in the United States each summer because of the germ development in fertile eggs which renders them inedible.¹⁰

⁸Winter and Funk, op. cit., p. 411.

⁹"Changes In Egg Quality," Poultry Digest, Vol. 15, No. 167 (January, 1956), 563.

¹⁰Winter and Funk, op. cit.

At temperatures above seventy degrees Fahrenheit, deterioration of egg quality can become evident in only a few days. Therefore, eggs displayed out of refrigerated cases or held in unrefrigerated storerooms will rapidly lose their quality. Quality cannot be replaced in the egg or be effectively disguised through culinary art. The safest solution would be to refrain from the use of unrefrigerated displays at all times. Fluctuations in temperatures, stemming from the movement of the merchandise from cold storage to counter displays for a short time and then back to cold storage, are apt to be as deleterious to egg quality as is the complete lack of refrigeration.

Proper handling, then, necessitates cooling of the eggs promptly after they are gathered on the farm, and keeping them under refrigeration until they are to be used. Refrigeration temperatures for maintaining egg quality for short periods range from thirty-five degrees to forty degrees Fahrenheit. A lower temperature is required when eggs are to be stored longer than several weeks.¹¹ Eggs held under refrigeration for more than thirty days are known as Storage Eggs. If properly maintained, they will keep in excellent condition for several months. There is, however, a slight difference in flavor between fresh and cold storage eggs

¹¹Eggs will freeze at about 28°F; therefore, storage temperatures must be above that point.

which can be detected in table use but not in baked goods or the like.

Humidity. Natural eggs held in a dry atmosphere lose moisture quite rapidly and soon develop large air cells. As the size of the air cell is an important consideration in grading, eggs should be held in an environment of relatively high humidity to prevent the loss of moisture. The optimum humidity level is about eighty-five per cent at the thirty-five to forty degree temperature range.¹²

Temperature and humidity are important factors in egg quality maintenance and must work together to efficiently prevent grade deterioration. High temperatures in the presence of high humidity will promote the entry of bacteria through the shell pores, causing very rapid destruction of the egg. The maintenance of low temperatures and a high humidity will retard quality deterioration in eggs most effectively.

Moisture loss can be minimized by shell treating freshly laid eggs with a special grade of light mineral oil under carefully controlled conditions of temperature and sanitation. Eggs so treated are easily recognized by the term "Shell Treated" stamped on the carton.

Like many other products carried by the dairy department, eggs can acquire an "off-flavor" by storage or display

¹²Mainland and Houver, op. cit., p. 2.

in proximity to merchandise having a strong odor. If allowed to become too damp the "off-flavor" of the egg may stem from the growth of molds on the shell surface. Therefore, cleanliness and constant vigilance must be stressed. One broken, rotting egg can adversely affect many dozens, the results of which may be customer complaints or even loss of customers.

Handling. Eggs are protected by their natural container, the shell, but are extremely fragile and subject to damage by rough handling. The damage need not be to the shell itself. Undue roughness (e.g., shaking, storage with the small end of the egg up) disturbs or breaks the delicate internal membranes, thus, reducing the quality of the egg. Such destruction is not discernible to the naked eye, except through recandling, and, again, may result in customer complaints or loss, which no company can afford.

CHAPTER IV

MERCHANDISING WITHIN THE DAIRY DEPARTMENT

Having presented product knowledge as the basis of a sound dairy operation, this knowledge must now be put to use in an advantageous manner. In a word, the products must be "merchandised."

Many writers have attempted to capture the full meaning of the elusive term, "to merchandise." These definitions may be found in numerous excellent references and discussion of them at this point is not deemed necessary. Merchandising can be said to be included in many aspects of the over-all distribution of food, from producers through retailers. Coverage of any major aspect of the field of merchandising would present material enough for a complete study.

Therefore, expediency in the execution of company policies within the retail store toward the goal of maximization of profits shall suffice as a definition of merchandising in consideration of the limitations of this report. In other words, this chapter is immediately concerned with those aspects of merchandising that are carried out at the retail store level; the performance of the final phases of the company plans in the presentation of merchandise to the public.

A list of basic directives will be of assistance to dairy department employees in meeting the demands of the above definition.¹

1. Make cleanliness the by-word of the department. Customers will reward such care with their continuous patronage.
2. Offer customers variety to provide for "freedom of choice" and selection between popular brands.
3. Maintain an adequate inventory to prevent volume-killing "out-of-stock."
4. Handle all merchandise with care to prevent damage or breakage.
5. Arrange display stocks neatly, price them plainly, and promote them constantly.
6. Work for "plus" impulse sales to increase sales and gross profit for the dairy department.
7. Co-operate with other departments in the store to promote dairy sales with related profit items.
8. Rotate stocks religiously so that older merchandise is offered for sale before current deliveries.
9. Watch refrigeration of products at all times.
10. Maintain an efficient "backroom" operation.

Little insight is required to visualize the tremendous scope of these directives.

Cleanliness

Cleanliness is good housekeeping; the majority of a store's customers are good housekeepers and are influenced as to where they trade by the cleanliness of neighborhood stores.

Information gleaned from the preceding five chapters has shown that almost all dairy products are extremely

¹Know Your Cheese and How to Sell It! (third edition; New York: The Borden Company, 1956), p. 13; and Profitable Packaging of Self-service Cheese, Bulletin No. 2281 (Philadelphia: Sylvania Division, American Viscose Corp., May, 1951), p. 1.

susceptible to contamination (of bacteria, molds, etc.). A large number of the items may also acquire an "off-flavor" from any strong odors. Therefore, a lack of cleanliness can contaminate merchandise and/or appreciably alter the physical characteristics of texture, flavor, and aroma. There is no excuse for such an occurrence. Customers demand and expect cleanliness, particularly in the dairy department.

Equipment care. A leading manufacturer of display equipment has stated three simple points for equipment care.²

1. Do not use ammonia. It may stain, discolor, or otherwise injure the finish of the case. Quality finishes, porcelain or enamel, are stain-resistant but not stain proof. [Many dairy products will readily acquire an off-flavor or aroma from ammonia.]
2. Do use warm water, mild soap (never strong soaps) and a soft, clean cloth to clean the cases. Stubborn spots of dried foods or food drippings will wipe off easily if saturated with warm water and allowed to soak for a few minutes. Wipe cases with clear warm water after washing. Frequent cleansings will keep dairy cases new in appearance for a long time and will not injure finishes.
3. After cleaning mirrors and glass, polish them with a soft clean cloth or chamois. They may also then be polished with glass wax or a similar item. This produces an extra lustre and aids in retarding the condensation of moisture on the surfaces. Do not use abrasive soaps, polishes or other such materials on any case [as they will mar the high finish].

The suggestion may be made to clean display cases during the early part of the week when their contents are

²Dairy Merchandising Tips (St. Louis, Missouri: Hussman Refrigeration, Inc., March, 1953), p. 6.

relatively low following the heavy weekend traffic. This also allows full time for stocking, etc., during the latter part of the week.

Care similar to that of display fixtures must be afforded to storage areas and preparation equipment. Spilled or damaged merchandise must be cleaned up and removed from storage areas at once. Preparation equipment, cheese cutters and the like, should be cleaned immediately following use. The possibility exists that an aging contaminated piece of cheese in a Globe Slicer, for example, could contaminate any merchandise placed on or run through the machine. Results of such an occurrence could be drastic. Shelf life of the item could be shortened, the physical characteristics altered, and customer complaints may well follow. The extreme, but not impossible, end could lie in a case of food poisoning or other effect of consumer health; hence, the public health basis of many sanitary regulations³ imposed by Federal, state, and municipal governments, and individual company policies.

Personal cleanliness. Employees must keep in mind that they represent the store and the company; all the company stands for is reflected in their appearance. No matter

³Regulations Affecting the Movement and Merchandising of Milk, Agricultural Marketing Service, U.S. Dept. of Agriculture, Marketing Research Report No. 98 (Washington, D.C.: Government Printing Office, June, 1955), p. 13.

how polished the store may look, one unkempt employee will shatter the entire illusion. Again, the homemaker knows the full value of personal hygiene and is repulsed by a poor appearance of personnel. There is good reason for this for man is known to be one of the greatest sources of contamination, the effects of which have been noted.

The employee enjoying a state of general well-being and pride in personal appearance as well as in work environment will be a happy person. A person so pleased will be friendly and courteous to all. The fact is well established that these two important points, friendliness and courtesy, are tremendous builders of sales for they are true customer services.

Thus, through courtesy and friendliness, employees are best able to satisfy customer needs in such a way that the latter will want to return and trade again.

Customers are often wondering, "What to serve the family?," "How to serve it?," or "What are the best food buys?." This is particularly true in the dairy department with its myriad of cheeses, many types of milk products, and quality and size combinations of eggs. Product knowledge can almost assuredly stimulate sales in such situations and customers will certainly appreciate the courteous assistance received in answer to their questions.

Upon termination of contact with customers, employees must never forget "Thank You." People like to trade where their patronage is appreciated.



Variety

The variety of merchandise offered in a dairy department is usually governed by the store owner, the company (through the dairy buyer and/or merchandiser), or legal restrictions.⁴ However, having gained fuller knowledge of many products from the preceding chapters department employees may offer suggestions, often based on those of customers, to their superiors concerning addition or discontinuation of items in their particular store. Once the basic inventory is offered to the public, consumers will soon determine what merchandise is to be carried in the store.⁵

Alert dairy supervision is constantly seeking ways to increase sales. Slow moving items often cannot return enough profits for the valuable space and handling they require. A sales increase may, therefore, be realized by elimination of non-selling merchandise, accompanied by increased space allocation to fast movers or the adoption of

⁴For example, "one of the significant trends in dairy marketing methods has been the growing use of containers holding more than one quart. This development has been restricted in some areas by laws which state the size of containers which shall be legal; but which fail to list half gallon and gallon sizes." Regulations Affecting the Movement and Merchandising of Milk, op. cit., p. 38.

⁵How to Operate a Successful Dairy Department (Chicago: Kraft Foods Company, 1955), p. 24.

new items. Department personnel, who are in the most favorable position to know their customers' desires, can be of great assistance in bringing about these profitable alterations.

Several suggestions have been made to create an illusion of greater variety of dairy products. Grouping non-refrigerated dairy items near refrigerated dairy cases has been found to aid in the completion of the picture of endless variety. Occasional shifting of products within the dairy case can give a new look to the display by giving customers new products to see when looking for items they have become accustomed to finding in a given section.⁶

A little originality on the part of employees, followed by carefully planned action, can result in the desirable ends sought. However, undertakings such as a major display case rearrangement, should be approved by the store manager or dairy department superiors. They are experts in their respective fields and employees can rely on and benefit from their experience.

Inventory

Upon establishment of a suitable working inventory, that inventory must be kept at the proper level at all

⁶Kendall Adams, Food Store Dairy Products Merchandising, Department of Agricultural Economics, Cooperative Extension Service, Mimeo., No. 634 (E. Lansing, Mich.: Michigan State University, n.d.), p. 4.

times.⁷ Inventory maintenance (termed "Stock Control") through intelligent ordering is one of the more important phases of departmental operation; this is particularly so in the dairy due to the perishable nature of the products.

Ordering

How and when to order, most likely, will be controlled by the company. Their order forms usually list items receivable from the company warehouse and state dates or days of the week on which to order. Days of the week are often set for the receipt of order shipments, too. Merchandise other than that stocked by the warehouse but carried in the store must be ordered through "outside" distributors. Preference should be given to warehouse stock. The margin of profit is often higher than the margin on merchandise delivered by individual distributors. Exceptions may have to be made in cases of community preference; local products are sometimes in greater demand than duplicate items carried by the company. If enough storage and display space is available, both brands (local and company) should be carried in amounts proportionate in their sales.

Experience in the ordering phase of departmental operation is the best teacher. Time is required to gain

⁷New products, seasonal fluctuations, etc., will make the inventory a continuously changing account; it can never be "established" in the true sense of the word.

experience; lack of it may, in part, be overcome by maintenance of weekly sales records.⁸ The records consist of a list of products and the number of rows of display space allotted to each (as recorded for the particular department). The record sheet is often further delineated by "Beginning Inventory + Purchases - Ending Inventory = Sales" or some similar arrangement.⁹ A summation of the total sales of items for the period of one month should present a reliable picture, spotlighting "fast movers" as well as slower moving products. Thus armed with a record of weekly sales, the dairy manager is able to arrange his inventory to meet clientele demand.

Departmental employees will find it advantageous to maintain continuous records as sales (and, hence, ordering) guides. Records of this type are usually kept by the company as an aid in budgeting their large orders to meet anticipated sales. The maintenance of store level sales records similar to the company records mentioned above is recommended to provide a basis for efficient ordering.

In their most simple, yet effective form, continuous departmental sales records may merely be weekly sales reports,

⁸Many manufacturers' representatives and distributors will supply samples of these forms upon request, if they are not offered by the company.

⁹How to Operate A Successful Dairy Department, op.cit., p. 26; and Adams, op. cit., p. 8.

filed for future reference. They contain all the necessary information to provide a point of comparison for identical periods separated by an interval of one year. For instance, information compiled on the weekly sales report for June 1-7, 1956, the first week in "Dairy Month," will provide a basis for ordering for that week in 1957.

Paralleling a previous period's sales is not, however, sufficient basis for planning the current period. The employee must take into account the possibility of increased sales of items due to the current local situation. The week(s) of the month (termed "payroll week") during which a large percentage of the local population receive their work pay has a great deal of influence on the buying habits of customers. An increase in sales should be anticipated during such periods, with a corresponding increase in amounts of merchandise ordered. There are numerous other factors to be considered in the local situation. Public favor is often swayed from one item to another, or even from one store to another, for example. To be realistic, these situations may indicate a decrease in anticipated sales as well as an increase. Whatever the case, continuous records plus an estimation of sales according to the demands of the time will provide a satisfactory guide to ordering at the store level.

Unusual situations may arise that will warrant consultation with the store manager or department supervisors.

The responsibility for ordering, however, is generally delegated to the employee, and he or she must plan carefully in this important phase of the departmental operation.

What to order and quantities of various items to order are, however, governed by a number of additional factors.

1. The amount of stock on hand must be known to prevent ordering too much or too little merchandise to meet requirements for the following business period (commonly termed stock "overage" or "shortage" respectively). Determination of the amount of stock on hand in both display cases and storage is facilitated by the Ending Inventory column of the weekly sales record.

Estimating stock on hand is inaccurate. Experience may develop a degree of accuracy but is conducive to the development of habit. Habit, in turn, tends to discourage originality in ordering, or causes the employee to become lackadaisical in the performance of duties. Actually counting stock on hand is time-consuming, but is accurate and essential to proper maintenance of records.

Overstocking can be a wasteful and costly proposition. The excess merchandise on hand requires extra handling and prevents valuable storage space from being efficiently (and profitably) utilized. Product knowledge has demonstrated, too, that aging of many dairy items adversely affects quality. In more extreme situations the merchandise may require varying amounts of reconditioning (e.g., trimming

of moldy cheese, etc.) or even may become a total loss. Date-coded merchandise is particularly difficult to cope with when overstocked due to the possibility of the date of expiration being reached before the complete stock is ever placed before customers.

2. Price plays an important role in ordering. Dairy personnel usually have little or no control over the unit price of merchandise.¹⁰ However, when prices of certain types of food are low, a rise in unit sales may be anticipated (or vice versa). Price fluctuations are often difficult to foresee, and, therefore, ordering on this basis is best dealt with conservatism.

Price fluctuations are sometimes due to the seasonality of many food products; the price is often lower during seasons of peak production and abundance of particular items. Therefore seasonal items must be taken into account in planning the order.

Abundance of a food does not necessarily mean that there will be a drop in the retail price. Supplies of milk, for example, fluctuate widely because of seasonal variation in production. This situation can produce instability in milk prices. To help stabilize milk prices, producers' fluid milk cooperatives have been formed in many markets.

¹⁰Except in cases where authorized to "mark down" the price of damaged items which are not returnable to distributors, manufacturers, or the company warehouse for credit.

Some of them serve the function of collective price bargaining with distributors. Other cooperatives process milk, and some distribute it at retail, wholesale, or both. In addition, they represent producers at hearings connected with Federal or state regulations. In many markets, prices are regulated to a degree by state or Federal milk marketing orders.¹¹ In effect, these orders guarantee the farmer a minimum price for Class I milk (i.e., milk to be sold to consumers as fluid whole milk). Therefore, fluctuations that may occur in the retail price of milk will be due to marketing cost variations (marketing margin¹²).

Of some importance is the fact that people, themselves, generally create a greater demand for items that are known to be in peak production during a certain season. Consumers desire these items at that time because they realize the foods are at their "best"; they are of high quality, at the peak of flavor perfection, and have not been stored to fulfill needs of other seasons of the year. The dairy employee must order in sufficient quantities to meet these expected increases in consumer demand.

¹¹Wolgamot and Fincher, Milk, "and Its products; facts for Consumer Education," op. cit., pp. 10-11.

¹²The marketing margin is the difference between the average price that consumers pay for a quart of milk and the payment the farmer receives for an equivalent quantity of Class I milk. Marketing Costs and Margins for Fresh Milk, Agricultural Marketing Service, U. S. Dept. of Agriculture, Miscellaneous Publication 733 (Washington, D.C.: Government Printing Office, October, 1956), p. 3.

3. Variety (as previously discussed) must be considered in ordering. Employees must not fail to take notice of new items to be carried by the company or authorized for distribution through manufacturers or distributors. Such items will probably be brought to the attention of dairy department personnel by the store manager, through department mail from headquarters, or may merely appear on the order sheet.

In effect, customers have determined variety; however, new products must be brought to their attention to determine whether or not they will be accepted. The point is certainly well taken that "People can benefit by a discovery in nutrition only as they individually learn about it and decide to be guided by it."¹³

4. Holidays and Specials must necessarily be taken into account in ordering. Sales of particular items increase during many holiday seasons (e.g., eggs during Easter, cheese sales during the Lenten season).¹⁴

Holidays often provide an excellent opportunity for the promotion of so-called "specialty items." This feature should be stressed to point out the high margin of profit

¹³Henry C. Sherman, Chemistry of Food and Nutrition (eighth edition; New York: The Macmillan Co., 1952), p. 652.

¹⁴A Trade Promotion Planning Calender is prepared by the Domestic Distribution Department of The Chamber of Commerce of the U. S., 1615 H. St., N.W., Washington, D.C. This calender may be found helpful in planning for the many holidays.

realized through the sale of this type of merchandise. Holiday merchandising is of importance, as evidenced by the advanced planning involved, particularly for the Christmas season. The company must decide what merchandise will be given special attention; the many types of promotional media to be utilized, such as advertising, displays, demonstrations, etc., with each planned accordingly; estimates of total sales of all lines of merchandise must be calculated; buying must be budgeted on the basis of expected sales. Merchandise is then ordered from manufacturers and distributors; it must then be distributed in the correct amounts and merchandised in the store.

Sufficient quantities of stock must be ordered at the store level to meet expected increases in volume due to the company determined promotions and special sales.

5. Order for Superior Display. In the self-service stores of today, mass display is a department's biggest salesman.¹⁵ Such a display conveys the illusion of plentifulness, promoting the idea that merchandise in such vast amounts must certainly be a "good buy."

Thus, the employee who is attempting to determine inventory requirements for the week to come (or proportional

¹⁵"It Takes Mass to Move Mass," Chain Store Age, Vol. 31, No. 10 (October, 1955), 77.

requirements for the particular time period between order placements of his organization) must account for the "mass" of his departmental displays. The prevention of overstocking must again be emphasized.

Being conservative in inventory control can be every bit as distressing as overstocking, if not more so. Too little merchandise (in display cases) tends to lead to a reversal of the advantages of the condition of plenty mentioned above. Customers also develop the attitude that the "best" has been picked out of the display and that which is left may be inferior in some way; that it is old, of poor quality, incorrectly priced, or other similar notions.

The "unpardonable sin" of stock control is that of allowing a condition of out-of-stock in demand items to develop. Excess merchandise can often be disposed of in some manner, but there is no solution to the problem of sales lost through lack of merchandise. An out-of-stock condition of a demand item, such as milk, often results in customer dissatisfaction and the consequences thereof.

Shelf out-of-stock often entails work for department employees. The condition may develop through allocation of too little space to a fast-moving item; the display is continually emptied even though a plentiful supply of the product is maintained in storage; hence, frequent restocking of the item. Out-of-stock also permits costly space to

stand idle. Such situations lead to the loss of sales and profit.¹⁶

For these and, perhaps, numerous other reasons, proper inventory maintenance is an essential phase of profitable merchandising.

Handling

Handling (as in receiving, storing, preparation, or the like) has been stressed to a degree in the preceding chapters. Product knowledge should give dairy personnel an insight to the many restrictions and recommendations imposed upon merchandise handling methods. To repeat that the highly perishable and delicate characteristics of many dairy items (e.g., fragility of eggs or crumbly texture of many types of cheese) necessitates utmost care in handling shall suffice.

Display

The Super Market industry bases a large measure of its success on one cardinal principal of merchandising--sight and touch selling. Having recognized this correctly as the basis of customer motivation, the Super Market has become the retail giant of the food industry.¹⁷ Sight and

¹⁶How to Operate A Successful Dairy Department, op.cit., p. 24.

¹⁷"Cheese Festival: Display 'Em--Sell 'Em," Super Market Merchandising (Editorial, reprinted from September, 1950 issue, n.d.), p. 2. The remaining three human senses,

touch selling is stimulated through effective display; displays in which prospective consumers can see the products and read the informative labels, and touch the items and develop a certain sense of familiarity with them.

Excitement of four of the human senses can be affected through the offering of samples to the public. These plus "hearing," the fifth sense listed, can be further stimulated in customers by a demonstrator. The demonstrator may be hired by the company specifically for that purpose or the role may be enacted by one of the department employees. The use of a demonstrator offering samples to customers and answering their queries concerning the product is particularly effective in the introduction of new items.

Sampling methods are often controlled by legal restrictions, however, which are generally specified as a safeguard for consumer health. Therefore, the practice cannot be adopted indiscriminately without prior investigation into these governing factors.

The way in which displays are erected will be indicative to customers of the pride, or lack of it, the merchandiser has in the products offered. A well designed and cared for display reflects the high regard in which the merchandise is held by the retailer; that he is proud to

taste, smell, and hearing are also to be considered in arousing in consumers the desire to possess displayed merchandise.

offer this merchandise to the public. Logically, the reversal of this point stands true for the poorly designed or run-down display.

Neatness of displays is a must in merchandising. A rule of thumb employees might follow is to be as critical of their dairy display as if they were entering the store on a tentative shopping trip for the first time. Displays can be "too neat," however. Geometric perfection tends to impart the thought to customers that something must be amiss for the display has obviously been untouched by others. The solution to this problem lies in the removal of several units of the merchandise (forming a "starter gap"), thus, breaking the strict outlines of the display. This lends to the appearance that the particular items have been "shopped" and that all is as it should be.

The sales power of well planned, compatible color schemes should not be underestimated. As evidenced by recent trends in store interior decor, color has the power to create warmth and appeals to the human emotions, thus, helping to offset the chill of institutional bigness of the self-service market.¹⁸ Carrying these schemes into displays will produce the same effects, further stimulating the desire to "possess" in the customer.

¹⁸ Harold Mehling, "They're Putting Glamour in the Groceries," The Saturday Evening Post, August 11, 1956, p. 56.

The effects of "mass" and low or out-of-stock conditions in the cases have been discussed.¹⁹ Therefore, dairy employees must strive to maintain display stocks at the level considered optimal for their department throughout the business day, (i.e., neither too little nor too much; the level best suited to meet customer demands).

Every item in a display case should be clearly price marked, although company policy may be to omit the price marking of certain items during periods of rapid price fluctuation or similar circumstance. Individual marking in this instance would necessitate continuous price changes and the inefficient utilization of valuable employee manhours.

Shelf and case price tags should always coincide with the price of the merchandise they represent. Conflicting prices often cause needless dissention at the checkout, particularly if the case tag price was less than that marked on its respective item.

Once basic display case arrangements have been established according to company plan,²⁰ dairy employees should strive to keep items grouped according to type. This is greatly facilitated by the information contained within the

¹⁹Refer to pp.79-80.

²⁰The basic plan usually entails the drawing of traffic first past Impulse Items, to Semi-Demand Items, by the Demand Items; see pp.105-107.

first five chapters of this report. For example, all types of Cheddar cheese should be grouped together; that group should be clearly subdivided as to flavor--sharp, medium, mild. This plan simplifies the stocking procedure and the customers' shopping trip. Product knowledge has also indicated what merchandise may or may not be displayed without refrigeration.

Displays must constantly be promoted in an attempt to achieve their maximum degree of effectiveness. In-store controlled promotion may be accomplished through two mediums: (1) the printed word and (2) the spoken word.²¹

The printed word may take the form of labels, packages, price markers, posters, pennants, or the like with each expounding the merits of the merchandise. Leaflets are often used to suggest enticing recipes for various products. Here too, will product knowledge aid dairy employees in the imaginative creation of this type of advertising.²² Material employed in this way is generally termed "point of sale advertising." In the self-service operation, skillful use of some form of the printed word, plus display, is necessary, as the spoken word of the retail clerk is not normally available to guide the shopper.

²¹Know Your Cheese and How to Sell It!, op. cit., p. 6.

²²A. Conn, "Singing Signs Increase Cheese Sales," Super Market Merchandising, op. cit., p. 16.

Color may be used in conjunction with the printed word to excellent advantage. The attractiveness of point of sale advertising is also enhanced by the employment of some form of motion. Therefore, a well designed, easily read and understood, colorful, moving display should prove an excellent traffic builder in the dairy department. This should not be overdone, however. Attention of shoppers must be directed to the merchandise, not to the promotional material alone.

After customers have seen the printed matter, there may still be unanswered questions in their minds. The dairyman who has studied product knowledge is often able to close the sale by answering these queries in a voice of confidence. Hence, the value of the second in-store promotional medium, the spoken word.

Impulse Sales

Consumer decisions as to what and how much to buy are largely made in the retail store. Studies have indicated that well over half of the buying decisions are made after customers enter the store.²³ Such sales are commonly termed "impulse sales." The shopper's desire to possess was stimulated on the spur of the moment by good in-store merchandising.

²³Hugo M. Smith, Wendell E. Clement, and William S. Hoofnagle, Merchandising Natural Cheddar Cheese In Retail Food Stores, Marketing Research Report No. 115, U. S. Dept. of Agriculture (Washington, D. C.: Government Printing Office, 1956), p. 1.

Impulse items of merchandise are those generally purchased as described above. Many cheeses or specialty (e.g., party, delicatessen) items usually fall into this classification. Other dairy merchandise may be classified as semi-demand or demand. The former are items that are planned purchases for many shoppers but, unlike milk, are not on every shopping list. Example of semi-demand items might be cream cheese, natural cheddar, or the smaller processed cheeses. "Dairy products" often purchased by each customer, such as milk, cream, butter, margarine, and eggs are considered demand items.

The power of demand dairy items to draw customers through the store is the reason for the accepted practice of locating the department toward the rear.²⁴ This drawing card may also be used to advantage in stimulating impulse sales. Most impulse items command a high profit margin in comparison to that of demand items. Strategic location of the former near demand merchandise, where "it cannot help being brought to customer attention," should serve to stimulate purchases of these high profit products.

The fact must be recognized that the three demand classifications are ambiguous. A demand item may be purchased purely on impulse, for example. However, even a

²⁴"Your Dairy Department," The Nargus Better Stores Program, Unit 7 (Chicago: National Association of Retail Grocers, 1950), p. 8.

broad delineation of dairy products in this manner may be used to advantage in attaining superior display.

Interdepartmental Cooperation

No department in a retail store can stand alone. To achieve store-wide success (i.e., maximization of profits) there must be complete cooperation between departments. As almost all dairy products are consumed with other foods, this department in particular can benefit from merchandising activities coordinated with other departments.

The most important cooperative measure in merchandising is that used in interdepartmental related item sales. Product knowledge has suggested the many possible uses of dairy items. This information plus imagination on the part of dairy employees should readily lead to the creation of numerous sales combinations, such as strawberries and cream, bacon and eggs, or cheese and crackers, to mention a few of the more obvious.

The use of "dislocated displays" offers an excellent example of what can be accomplished within a cooperative environment. A dislocated display, as the term implies, is one that is placed away from its usual in-store location. For example, a display of eggs may be erected in the meat department to "tie-in" with a bacon and/or ham promotion. Of course, other departments will desire similar consideration in the dairy. The bakery may readily increase sales of

date-nut bread by locating it in the dairy department in a display with Cream or Neufchâtel cheese.

Aisle tables are often utilized in this type of display to allow for the additional space needed to meet (and stimulate) customer demand. The point must not be forgotten that product knowledge has specified refrigeration for the majority of dairy products. Thus, aisle tables must be iced to maintain the proper product temperature. Water from the melted ice must be continuously drained from these tables as excessive moisture can be as harmful to many products as the lack of refrigeration.

This type of merchandising is definitely a "two-way" proposition. Dislocated displays have the obvious advantage of placing products in several areas of the store at the same time, thus attracting more than their usual amount of customer attention. Volume, and hence, profits may well be increased for all departments concerned with the tie-in promotions and dislocated displays.

To state that cooperation, in the fullest sense of the word, is a must in efficient store operation should suffice.

Stock Rotation

Stock rotation and the importance of the role of date-coding in this phase of in-store merchandising, as well as in storage, has been stressed throughout the preceding

chapters of this report. The significance of these factors is again accentuated by their appearance on the list of merchandising directives.

Refrigeration

This control factor is presented as a major aspect of merchandising as inefficient refrigeration or lack of it will rapidly render the greater proportion of dairy products unsaleable. This point has been stressed previously; however, certain additional factors are deservant of mention.

Merchandise must be kept in the refrigerated zone of the display case to be properly protected. Figure 2 has been utilized to demonstrate merchandise placement for maximum refrigeration efficiency.

During exceptionally busy periods, dairy employees may be required to "overstock" display cases. This practice should be condoned only in instances when there is little danger of spoilage due to rapidity of sales. Under no circumstances should the display be left in an overstocked condition after business hours. The excess merchandise must be placed in storage until again needed.

Another rather common malpractice is to place aluminum foil or similar decorative material under products in the dairy case. This is thought to enhance the appearance of the display and simplify case cleaning. The value derived from either or both hardly balances with the loss in refrigeration efficiency due to the decrease in cold air circulation.

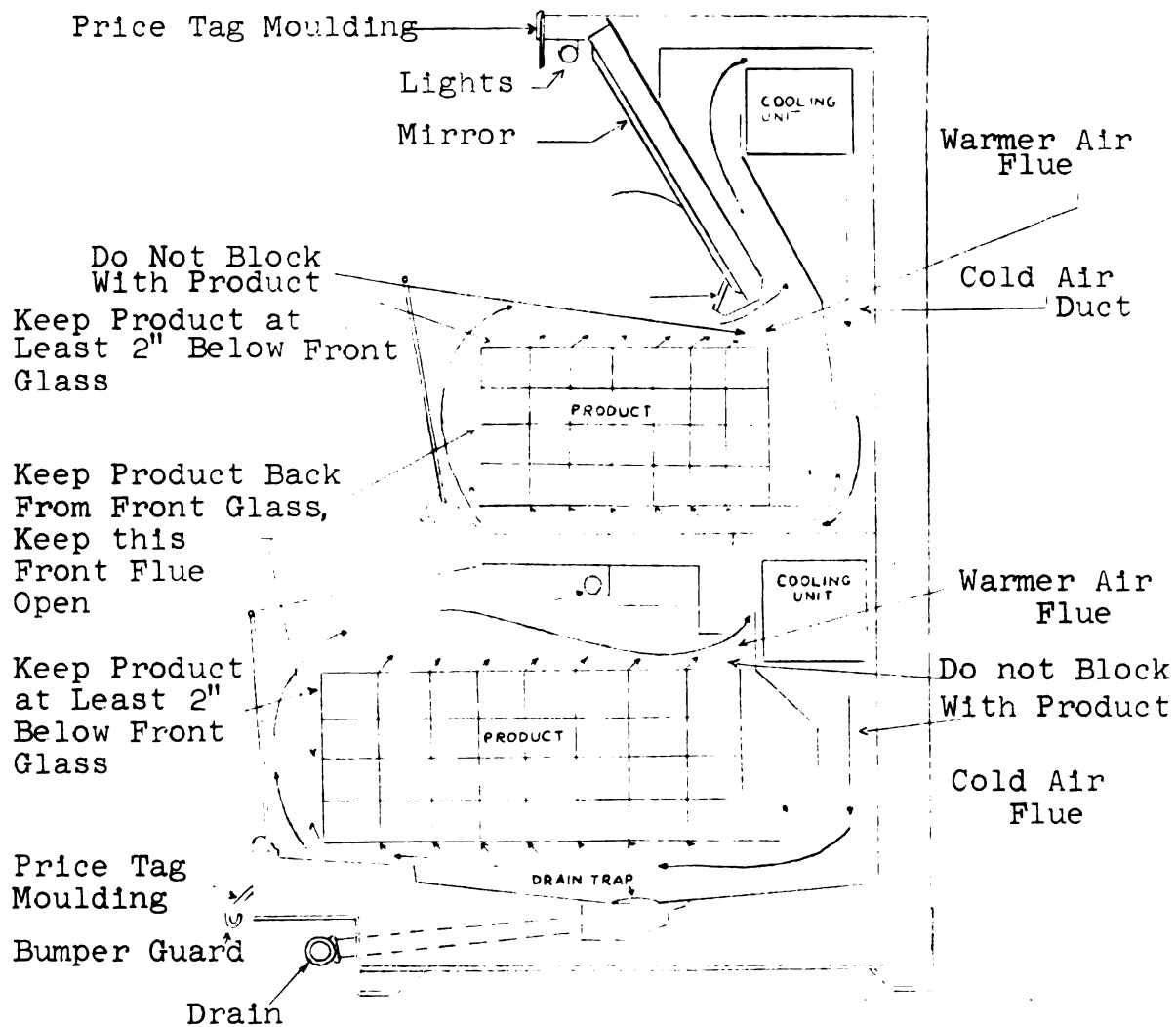


Fig. 2. Cross Section--Open Side View of Self Service Case

Source: Dairy Merchandising Tips. St. Louis, Missouri: Hussman Refrigeration, Inc., March, 1953, p. 4.

The Backroom Operation

Many phases of merchandising are executed in "behind the scenes" preparation areas. Product preparation may be governed by rather broad company policies (e. g., cheese cutting and wrapping methods) or legal regulations (e.g., weighing, date coding). There is no need to present a detailed discussion of these many practices at this point.²⁵ Product knowledge should serve to insure proper handling, etc., in the backroom operation.

Therefore, this shall be considered as the planning phase of the entire in-store dairy operation. This is where the dairy employee demonstrates all his talents and skills through scheduling work time for maximum ease and efficiency.²⁶

The inexperienced dairyman should develop a list of all the steps in the day-to-day operation of his department. In time, the list may be evaluated and condensed into a weekly work schedule. The employee will then have organized the departmental routine into a valuable time saving plan.

Many food companies construct a framework for weekly schedules through various policies. They are designed to

²⁵Refer to p.63, fn. 39. Reference is made to several excellent sources of detailed material of this nature.

²⁶How to Operate A Successful Dairy Department, op.cit.,
p. 42.

aid and guide personnel and to guarantee a certain degree of control over the operation. Within this framework, however, the employee must plot the tasks necessary to peak efficiency of the particular operation in which he is engaged.

The reader will note that continuous cross reference has been made throughout the discussion of merchandising. This has been purposely done to point out that all of the ten basic directives must be followed in entirety to achieve the desired measure of success.

CHAPTER VII

SUMMARY AND RECOMMENDATIONS

Summary

The retail food institution, because of its importance in distribution channels, has proved to be the most important avenue for affecting the movement of dairy products. For example, in 1955 approximately half of the fluid milk sales in the United States were credited to retail stores.¹ These outlets likewise accounted for a fair proportion of the many other "dairy products," such as cheese, eggs, butter, and margarine.

The high nutritional value of dairy products has been well established. This fact is substantiated by the inclusion of each of the above-mentioned items in the "basic seven" foods listed by the United States Department of Agriculture and War Food Administration.

1. Green and yellow vegetables
1. Citrus fruits, tomatoes, and salad greens
3. Other fruits and vegetables
4. Milk, including all its recognized forms but not butter
5. Meat, fish, poultry, eggs, nuts and mature legumes, including peanut butter

¹Marketing Costs and Margins for Fresh Milk, Agricultural Marketing Service, U. S. Dept. of Agriculture, Miscellaneous Publication 733 (Washington, D.C.: Government Printing Office, October, 1956), p. 4.

6. Breadstuffs and cereals, whole grain, enriched,
or restored
7. Butter and fortified margarine²

The above food groups were set up as an aid to the United States Government's widespread non-technical teaching of nutrition and food values.

That newer knowledge of nutrition is influencing the people of this country in the direction of better use of food is clearly shown by food statistics compiled by agricultural economists and by surveys of family food consumption.³ Consumer knowledge of the particularly high nutritional qualities of dairy products may then be said to be one of the major reasons for their tremendous "drawing power" in the food store. Hence, placement of the dairy department toward the rear of an establishment to literally draw customers through other departments has become an accepted practice.

To adequately supply consumer needs and wants (satisfaction of personal pleasures must not be overlooked as a basic purchasing motivation) is the function of the retailer. The retailer must not only serve the buyer's existing wants, but also stimulate additional and new wants. Inducing the

²Henry C. Sherman, Chemistry of Food and Nutrition (eighth edition; New York: The Macmillan Company, 1952), p. 587.

³Ibid., p. 634.

desire to possess may take the form of causing consumers to purchase more of products than they formerly purchased or purchase products they had not thought of buying before entering the store.

The growing trend toward impersonalized self-service selling in retail food stores has made this task more difficult. Sales personnel are seldom at the point of purchase in these modern establishments to influence the customer's decision. Impersonalized selling has focused attention on the increasing need for merchandising techniques that will present commodities to consumers with the persuasiveness formerly provided by sales personnel.

Improved merchandising techniques may take many forms, such as a different size of package, new type of display, or a different pattern of pricing or advertising. These changes cannot, however, be adopted indiscriminately. Each commodity possesses certain characteristics which are peculiar to that commodity. A technique that is effective in selling milk may not be effective in selling cream; a practice that sells cheese may not sell butter or margarine. Consequently, each factor associated with good merchandising need be evaluated to determine its effect on sales of the particular food item.

Years of experience and expertness, stemming usually from a food company's headquarters, are being taxed to the utmost to provide improved merchandising techniques for

in-store operations. This experience and expertness cannot, however, offer a complete solution to the problem. The end results (maximization of profits through merchandising) are attainable only if augmented by equivalent in-store procedures. In other words, department personnel must carry the policies and techniques to completion with imagination and confidence in accordance with their particular store or operation.

Recommendations

Dairy department personnel hold a position of importance in the store operation. Their duties demand care and exactitude; they may be outlined as follows:

1. The employee must operate the department in accordance with company policy.
2. He must serve customers to the best of his ability.
3. To properly serve customers, the employee must maintain adequate stock and promote it through neat, imaginative, and appealing displays.
4. The processes of ordering, receiving, handling, and storing must be carried out with efficiency.
5. Stock rotation in both display and storage areas is to be practiced religiously. Merchandise that is not date-coded will demand particular attention in this matter.
6. Refrigeration should be continually checked.
Improper temperature and humidity due to equipment

malfunction, as well as other property or equipment in need of repair, should be reported to the store manager at once.

7. The employee must maintain an efficient backroom operation; records are to be kept properly; sufficient supplies for wrapping, labeling, and the like must be on hand; and merchandise must carefully be prepared for presentation to the public.
8. The by-word of the dairyman is cleanliness--of all department areas, equipment, and in personal hygiene as well.
9. He must be ever on the alert for hazards that might jeopardize health or property. Vigilance must be exercised in the prevention of pilfering also.
10. Dairy department personnel must cooperate with supervisors and other employees in the over-all operation of the store.
11. In performance of the various departmental tasks, the employee must accept the responsibility delegated to him.

A means to the end of developing efficiency in the in-store phase of an operation may be found in product knowledge. Once armed with such knowledge, the dairy employee will better be able to understand directives from above (the company or immediate supervisors). Complete

comprehension on the part of the employees should promote proficiency on the job. Of equal importance is the fact that employees will better be able to answer the immediate needs of consumers. Fuller knowledge and understanding of the task at hand also tends to instill a certain amount of pride in persons performing that task. Such pride has been established as definitely having a favorable effect on prospective buyers.

Perhaps the basic motive for the advancement of dairy product information as a means to the end of successful departmental operation is that such knowledge will help to place merchandising on a more scientific plane. Members of upper company echelons are constantly striving to strengthen their many managerial functions with more firm foundations than they now possess; the need has become evident to reduce or remove the intangibility connected with many aspects of business.

Science is capable of developing the sought for tangible bases through establishment of verifiable general laws or through the enlightenment of known laws. To attempt the latter in but one important phase of the food distribution industry has, then, been the basic function of this report.

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APPENDICES

APPENDIX A

FOOD AND NUTRITION BOARD, NATIONAL RESEARCH COUNCIL RECOMMENDED DAILY DIETARY ALLOWANCES, REVISED 1953^a

Designed for the Maintenance of Good Nutrition of Healthy Persons in U. S. A.^b
(Allowances are considered to apply to persons normally vigorous and living in temperate climate)

Age Years	Weight (lb.)	Height (in.)	Calories	Protein gm.	Calcium gm.	Iron mg.	Vitamin A I.U.	Thiamine mg.	Riboflavin mg.	Niacin mg.	Ascorbic Acid, mg.	Vitamin D, I.U.
Men. . .	25 143	67	3200	65	0.8	12	5000	1.6	1.6	16	75	---
	45 143	67	2900	65	0.8	12	5000	1.5	1.6	15	75	---
	65 143	67	2600	65	0.8	12	5000	1.3	1.6	13	75	---
Women. .	25 121	62	2300	55	0.8	12	5000	1.2	1.4	12	70	---
	45 121	62	2100	55	0.8	12	5000	1.1	1.4	11	70	---
	65 121	62	1800	55	0.8	12	5000	1.0	1.4	10	70	---
Pregnant (3rd trimester)												
			Add 400	80	1.5	15	6000	1.5	2.0	15	100	400
Lactating (850 ml.daily)												
			Add 1000	100	2.0	15	8000	1.5	2.5	15	150	400
Children. 1-3	27	34	1200	40	1.0	7	2000	0.6	1.0	6	35	400
4-6	40	43	1600	50	1.0	8	2500	0.8	1.2	8	50	400
7-9	59	51	2000	60	1.0	10	3500	1.0	1.5	10	60	400
Boys .	10-12 78	57	2500	70	1.2	12	4500	1.3	1.8	13	75	400
	13-15 108	64	3200	85	1.4	15	5000	1.6	2.1	16	90	400
	16-20 139	69	3800	100	1.4	15	5000	1.9	2.5	19	100	400
Girls.	10-12 79	57	2300	70	1.2	12	4500	1.2	1.8	12	75	400
	13-15 108	63	2500	80	1.3	15	5000	1.3	2.0	13	80	400
	16-20 120	64	2400	75	1.3	15	5000	1.2	1.9	12	80	400

^aNational Dairy Research Laboratories, Inc., Food Value of Dairy Products (third edition; New York: National Dairy Products Corp., 1955), p. 8.

^bIn planning practical dietaries, the recommended allowances can be attained with a variety of common foods which will also provide other nutrient requirements less well known; the allowance levels are considered to cover individual variations among normal persons as they live in the United States subjected to ordinary environmental stresses.

NUTRIENT MATERIALS SUPPLIED BY AVERAGE SERVINGS OF VARIOUS DAIRY PRODUCTS^a

Dairy Product ^b	Milk Fat %	Average Serving	Composition							
			Calories	Protein gm.	Calcium gm.	Vit. A I.U.	Thiamine mg.	Ribo- flavin mg.	Niacin mg.	Vit. D I.U.
Whole milk	3.7	1 glass(8 fl.oz.)	156	7.9	.290	353	.01	.41	.34	4
Chocolate drink	2.0	1 glass(8 fl.oz.)	185	7.4	.264	202	.89	.43	.35	2
Nonfat (skimmed) milk	0.1	1 glass(8 fl.oz.)	79	7.9	.281	10	.10	.43	.35	0
Cultured butter-milk	0.5	1 glass(8 fl.oz.)	88	7.9	.278	50	.10	.43	.35	0
Coffee cream	20.0	1 tablespoon	31	0.4	.014	196	T	.02	.01	1
Whipping cream	35.0	1 tablespoon	51	0.3	.012	221	T	.02	.01	2
Sour cream	18.0	2 tablespoons	63	0.8	.030	221	.01	.05	.02	2
Half and half	10.0	1/4 pint	144	3.7	.130	605	.05	.19	.12	5
Salt butter(2%NaCl)	80.5	1 pat or 2 tsp.	73	0.1	.002	454	0	0	0	3
Unsalted butter	80.5	1 pat or 2 tsp.	73	0.1	.002	454	0	0	0	3
Creamed cottage cheese	4.0	1/3 cup	81	11.6	.074	125	.02	.20	.01	-
Uncreamed cottage cheese	0.5	1/3 cup	69	14.8	.073	15	.02	.23	.01	-
American process cheese	31.0	1 ounce	107	6.4	.196	360	.01	.14	.07	3
Cheddar Cheese	32.3	1 ounce	111	6.7	.247	385	.01	.14	.07	4
Cream cheese	34.0	1 ounce	97	2.0	.170	627	.03	.04	.03	4

^aIbid., pp. 6-7.

Note: T=trace

^bLegal minimum fat and total solids content of many dairy products are established by state and local regulations. These values may vary from those presented in this table.

only
- data
lacking

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APPENDIX B

DESIRED QUALITIES OF (THEORETICALLY) PERFECT BUTTER¹

1. "Flavor--45 points (of the numerical score). Good butter should have a clean, sweet, pleasant flavor and 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."

2. "Body and Texture--25 points. The body of butter should be firm, melt evenly, and show 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.

3. "The uniform light straw color seems to meet best with 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. "Whether the butter is high or low in salt or even unsalted, providing the salt is all dissolved (and not too sharp), the salt must be given the perfect score of ten points."

5. "The package, 5 points, in which butter is sold should, above all, be neat, clean, and tidy in appearance, showing good finish."

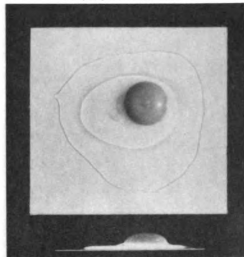
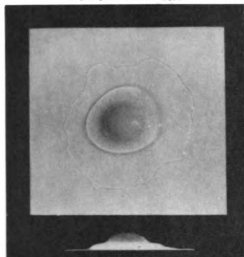
¹A complete explanation of scoring butter, and other dairy products, and sample score cards are presented in the book by John A. Nelson and Malcolm G. Trout, Judging Dairy Products (third edition; Milwaukee, Wisconsin: Olsen Publishing Company, 1951), pp. 57-75.

U. S. STANDARDS FOR EGG QUALITY^a

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U.S.GRADE AA

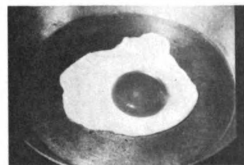
U.S.GRADE A



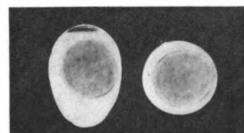
RAW



POACHED



FRIED

HARD
COOKED

An egg of AA Quality covers small area; white is very thick and stands high; yolk is firm and high, and is well centered.

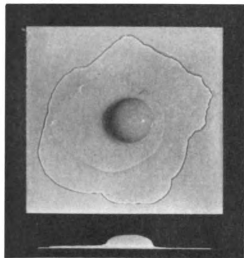
An egg of A Quality covers moderate area; white is reasonably thick, stands fairly high; yolk is firm, high, and well centered.

^aMainland and Hauver, op. cit., pp. 4-5.

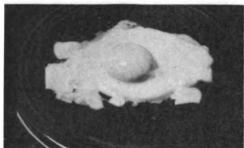
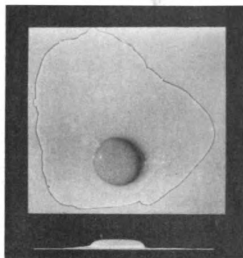
U. S. STANDARDS FOR EGG QUALITY

U. S. GRADE B

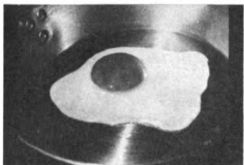
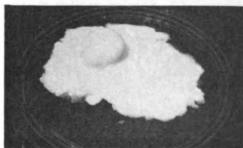
U. S. GRADE C



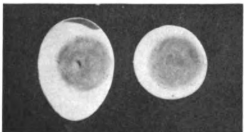
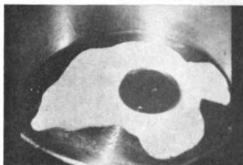
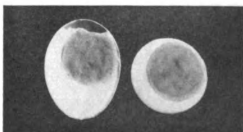
RAW



POACHED



FRIED

HARD
COOKED

An egg of B Quality covers wide area; has small amount of thick white; yolk is somewhat flattened, enlarged, and off center.

An egg of C Quality covers very wide area; white is thin and watery; yolk is flat, enlarged, off center and breaks easily.

The hard cooked eggs in the preceding illustration very closely resemble the candled appearance of eggs.

United States standards for quality of individual shell eggs are:¹

- | | |
|------------|--|
| AA Quality | <ol style="list-style-type: none"> 1. Shell--clean; unbroken; practically normal. 2. Air Cell--$1/8$ inch or less in depth; practically regular. 3. White--clear; firm. 4. Yolk--well centered; outline slightly defined; free from defects. |
| A Quality | <ol style="list-style-type: none"> 1. Shell--clean; unbroken; practically normal. 2. Air Cell--$2/8$ inch or less in depth; practically regular. 3. White--clean; may be reasonably firm. 4. Yolk--may be fairly well centered; outline fairly well defined; practically free from defects. |
| B Quality | <ol style="list-style-type: none"> 1. Shell--clean; unbroken; may be slightly abnormal. 2. Air Cell--$3/8$ inch or less, in depth; may show movement not over $3/8$ inch; if not over $2/8$ inch, may be free. 3. White--clear; may be slightly weak. 4. Yolk--may be off center; outline well defined; may be slightly enlarged and flattened; may show definite but no serious defects. |
| C Quality | <ol style="list-style-type: none"> 1. Shell--clean; unbroken; may be abnormal. 2. Air Cell--may be over $3/8$ inch in depth; may be free or bubbly. 3. White--clear; may be weak and watery; small blood clots or spots may be present. 4. Yolk--may be off center, enlarged, and flattened; may show clearly visible germ development but no blood; may show other serious defects; outline plainly visible. |

¹United States Standards for Quality of Individual Shell Eggs, Agricultural Marketing Service, U. S. Dept. of Agriculture (revised; Washington, D.C.: Government Printing Office, May, 1955), p. 1.

APPENDIX D

QUESTIONS FROM HOMEMAKERS

Milk

1. Q. What grade of milk should the consumer purchase?
A. All grades of pasteurized milk sold in markets today are safe and wholesome. Price and convenience may be the deciding factors.
2. Q. Can one judge the quality of milk by its price?
A. No, because price differences are often due to differences in services and other marketing factors.
3. Q. What causes milk to become more yellow in color in the spring?
A. When cows are put to pasture in the spring, the fresh grasses will color the milk more than the winter rations.
4. Q. How long will pasteurized milk keep in the home refrigerator?
A. A recent study showed that milk kept well for four days after reaching the home but was not always of acceptable sanitary quality when held for seven days at refrigerator temperature (average--44° F).
5. Q. Do thunder and lightening cause milk to sour?
A. No. High temperatures accelerate the growth of milk souring bacteria. This legend probably grew out of the fact that before refrigeration use milk often soured during thunderstorms because of the unusually high temperature normally associated with such storms.
6. Q. Is milk that has accidentally frozen safe to use?
A. Yes. There may be some separation of milk solids but this does not affect the safety or nutritive value of the milk.
7. Q. What is the meaning of the term "colostrum" which is used in the definition of milk?
A. The first milk secreted when a cow freshens is called colostrum. The chemical properties of colostrum differ from those of normal milk; it is

also more thick and yellow in color. Colostrum is highly laxative in effect and is not considered fit for human consumption.

Cheese

1. Q. What are the principal cheese-producing states in this country?
A. Wisconsin, Illinois, New York, Missouri, Indiana, Ohio, Oregon, Minnesota, Michigan, Texas, Tennessee, California, Washington, Pennsylvania, and Oklahoma. The largest producing state is Wisconsin, which is responsible for nearly 50 per cent of the total production of the United States.
2. Q. Is there any difference in the quality of cheese produced in the various cheese-producing areas?
A. Yes. Wisconsin and New York are credited with making a quality cheese that has highest consumer acceptance. This is probably due to fine pasture land and the favorable climate that these two states have.
3. Q. What are the factors that determine the difference in price of full cream cheese and skim milk cheese?
A. The cost for making full cream cheese is the same as for making skim milk cheese. The price differential therefore, is determined by the amount of butterfat that has been removed from the milk out of which skim milk cheese is made.
4. Q. What is the natural color of cheese?
A. White, except when the cows are out on pastures feeding on green grass, and the milk has a slight yellow color. Some cheese is artificially colored to satisfy consumers' preference.
5. Q. How long can cheese be held in storage and under what temperature without affecting quality?
A. For all practical purposes, cheese should not be held in storage longer than two years at a temperature of 35° to 40° F. To be held for a longer period, cheese must be of top quality and must be inspected at regular intervals for various imperfections.
6. Q. In aging cheese, at what point does the product reach the proper age for retailing?
A. There is no specific point that determines the proper age of cheese; trade preference usually

usually governs this. Overaging will not usually have an adverse affect on quality.

7. Q. Why are so many grades of domestic Swiss cheese offered and only one grade of imported Swiss?
A. The Swiss export only the fancy grade of cheese; the "bland" and poor grades are retained for home consumption.
8. Q. In the process of cheesemaking, what is the "curd" often referred to?
A. The spongy mass of milk solids formed upon the coagulation of milk is known as the curd. Milk is commercially coagulated with an enzyme, rennet, which is extracted from the stomach lining of suckling lambs or calves. Upon coagulation the whey (liquid) is drained off and the remaining mass is the "curd."
9. Q. What is "Vegetable gum" that is declared on some cheese labels?
A. Federal regulations require a manufacturer to declare any material added to cheese products to absorb free moisture as "Vegetable Gum." A white, tasteless flour made from the locust bean is often used. The flour absorbs free moisture and contributes to a smoother texture and appearance of the product without altering flavor or food value.
10. Q. What is the ingredient "Di-sodium Phosphate"?
A. This is a mineral salt that is added to cheese during processing. Di-sodium phosphate prevents the globules of butterfat from "oiling off" or separating from the cheese. This gives processed cheese its smooth texture and uniform appearance.
11. Q. What does the term "piquant" mean when used to describe the flavor of cheese?
A. The word "piquant" is used to describe the flavor that is pleasantly tart; sharp or biting; cheese of this flavor is generally preferred by men, while women usually care more for the milder varieties.

Butter

1. Q. What elements make up a pound of butter?
A. Salt--1 to 4%, according to trade preference. Mineral, ash, and curd--1% average. Moisture--15 to 18% depending on salt content. Butterfat--80% legal minimum requirement.

2. Q. How long can butter be held in storage without the quality being affected?
A. Butter has been held in storage for a number of years with satisfactory quality maintenance. The general practice is to limit storage to six or eight months.
3. Q. At what temperature will butter keep fresh, and how long can butter be kept in the refrigerator before becoming "old"?
A. Butter of high quality should easily carry ten days at a temperature of 60°F.; if held below 40°F. the same butter will carry about 30 days.
4. Q. Should the grade score of butter be used as a selling point?
A. No, principally because scoring is not an exact science. Experienced graders may differ in their scoring of a given churning. Uniformity, dependability, flavor, and high quality are, perhaps, better sales points.
5. Q. What causes salt to come through the wrapper on butter?
A. The salt that is in butter is in the form of brine. This brine penetrates the wrapper and the salt crystalizes upon evaporation of the water.
6. Q. Does margarine possess the same nutritive value as butter?
A. No. Margarine may be considered almost equal to butter in nutritive value only when vitamin A has been added--15,000 International Units per pound by law (addition of vitamin D is optional).
7. Q. Does margarine require constant refrigeration?
A. The quality of margarine is generally not reduced when exposed to room temperatures for a reasonable amount of time. However, for safety's sake, manufacturers recommend that their product be kept under refrigeration.
8. Q. Was margarine developed in this country during World War II to offset the shortage of butter?
A. No. Margarine was developed in France in the middle of the nineteenth century as a direct substitute for butter which was produced in insufficient quantity to meet the demands of the time.

Eggs

1. Q. What causes the yolks of some eggs to be very dark and others very light in color?
A. The difference in yolk color is due entirely to the type of feed consumed by the hens. Color alone is not indicative of nutritional value.
2. Q. In speaking of nutrition, what is the meaning of the term "metabolism" sometimes referred to?
A. Metabolism is concerned with the building up and destruction of tissue through chemical changes in living cells. In humans, energy is provided for the vital processes and activities by the absorption of nutrients through the intestinal walls.
3. Q. Does the size of an egg have a bearing on its quality?
A. No. Small eggs may be equal to large eggs in quality.
4. Q. Are all eggs Federally graded?
A. No. Federal grading is performed for distributors entirely on a voluntary basis.
5. Q. Can egg quality be determined without candling?
A. Not without breaking the egg. Quality is determined by the physical characteristics of the egg inside of the shell. Only candled eggs can be relied upon to be of desirable quality.
6. Q. Must all eggs meet the grade and size requirement set forth by Federal recommendations?
A. Not necessarily. Many state laws differ from Federal regulations. Consumers must learn and rely upon the grading practices prevalent in their particular area.

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