SERVICE VERSUS SELF-SERVICE COUNTERS IN THE RETAIL FOOD INDUSTRY

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SERVICE VERSUS SELF-SERVICE COUNTERS IN THE RETAIL FOOD INDUSTRY

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TABLE OF CONTENTS

CHAPTER		PAGE
I.	INTRODUCTION	1
	Purpose of Study	1
	Chapter Organization	2
	Procedure	2
	Sources of Information	3
II.	[illegible]	4
	Three Steps in Handling Produce	4
	Receiving of the Merchandise	4
	Storage	5
	Packaging of the Merchandise	6
III.	[illegible]	36
	Three Steps in Handling Meat	36
	Receiving of Meat	36
	Storage of Meat	37
	Packaging of Meat	40
	Four Steps of Packaging	42
	Cutting	42
	Wrapping	44
	Weighing	50
	Labeling	50
	Machine Wrapping	51
	Centralized Prepackaging	51
	Display	52
	Shingle Display	52

CHAPTER PAGE

Flat Display 53

Mass Display 53

Additional Factors of Meat Care 54

Discoloration 54

Shelf-life 55

Spoilage 55

Shrinkage of Meat 57

Rewrapping 57

Cost of Packaging 58

Yardstick For Sales Production and Cost of Operating 61

Labor Cost and Production 61

Gross Profit 65

Advantages of Self-Service 65

Customer Preference 66

IV. SUMMARY AND CONCLUSIONS 67

Customer Acceptance 67

Volume of Business 68

Investment Required 69

Space Required 69

Supplies Needed 70

Personnel 70

LIST OF TABLES

TABLE		PAGE
I.	Partial List of Produce Items Prepackaged in the Piggly-Wiggly Market	15
II.	Cost of Labor and Material for Prepackaging Submitted by American Stores Company	19
III.	Comparison of Salability of Packaged, Refrigerated Produce With Non-packaged, Non-refrigerated Produce	23
IV.	Preferences of 482 Patrons of Five Retail Stores With Respect to Methods of Offering Fresh Fruits and Vegetables Columbus, Ohio, December, 1945, by Stores	29
V.	Preferences of 466 Patrons of Five Retail Stores With Respect to Methods of Offering Fresh Fruits and Vegetables Columbus, Ohio, December, 1945, By Size of Families	30
VI.	Preferences of 482 Patrons of Five Retail Stores With Respect to Methods of Offering Fresh Fruits and Vegetables Columbus, Ohio, December, 1945, By Length of Experience	31
VII.	Preferences of 401 Patrons of Five Retail Stores With Respect to Methods of Offering Fresh Fruits and Vegetables Columbus, Ohio, December, 1945, Reasons	32
VIII.	Preferences of 209 Patrons of Five Retail Stores With Respect to Methods of Offering Fresh Fruits and Vegetables Columbus, Ohio, December, 1945, Objections	33
IX.	Number of Stores Using Specified Kinds of Transparent Film In Prepackaging Individual Meat Items	47

TABLE PAGE

X. Average Life of Individual Cuts of Meat Prepackaged For Self-Service 56

XI. Investment Required for Self-Service Meats 59

XII. Handy Yardsticks for Self-Service Meat Operators 62

XIII. Labor Costs Per Pound and Per Package in Self-Service Meat Departments, According to Sales Volume 63

XIV. Hourly Production of Skilled, Unskilled and Total Labor in Self-Service Meat Departments, According to Sales Volume . . 64

LIST OF FIGURES

FIGURE PAGE

1. Layout of Processing Room 43

CHAPTER I

INTRODUCTION

Purpose of Study

Today, competition in the grocery field is as keen as in any other field of merchandising; perhaps more so. The chain food stores are operating on a 2 percent net profit, and the independent food retailer is forced to operate on margins in close proximity. The day of high gross margins and big profits percentages is past.

As the margins in the grocery industry began to shrink, the retailers searched for new methods of merchandising to increase operating efficiency and volume of business.

Since the end of World War I, grocers have found many efficient methods of conducting business and have passed the savings on to the consumer in lower prices. However, as the prices were lowered, the grocers' net profit was also lowered. Consequently, today, net profit is about as low as it can get and still give a return on the money invested. The emphasis today is not only on prices, but also on presenting the merchandise in such a way that consumers will buy larger volumes. To achieve this increased volume, the retailer is including more package conveniences in his merchandising efforts. In this search for ways to improve methods of merchandise, self-service prepackaging was developed.

Therefore, the purpose of this thesis is to present the facts on self-service meats and produce in order that the retailer may compare his operation with existing prepackaged operations.

Chapter Organization

In chapters II and III of this thesis, a compilation of available material on prepackaging of produce and meat has been made as indicated in the procedure of this study. From this information the retailer can compare his operation with the self-service operations of other retailers. These two chapters are so organized that the retailer can trace the flow of merchandise from the time that it is received at the back door of the store until it is sold to the consumer.

Procedure

In formulating these two chapters, the author has separated each of the departmental operations into a number of steps. The produce department has been divided as follows:

Three steps in handling produce
Two methods of prepackaging
Materials used in prepackaging
Cost of packaging operation
Advantages of packaging
Customer preference

The meat department was divided as follows:

Three steps in handling meat
Four basic steps of packaging
Materials used
Machine prepackaging
Centralized prepackaging
Display
Discoloration
Shelf life
Spoilage
Shrinkage
Rewrapping
Cost of packaging
Yardstick for sales
Labor cost

Gross profit
Advantages of packaging
Customer preference

Sources of Information

The information used in this thesis has been secured from many companies and individuals. The formation of the basic idea and the method of handling this subject was formulated while talking to Mr. J. A. Cooper, District Sales Manager and Mr. C. H. Haas, Store Planning Manager, both with Tyler Fixture Company, Niles, Michigan. Information for this study was obtained from Mr. W. L. Herald, Advertising Manager of McCRAY Refrigeration Company, Kendallville, Indiana. Supporting information was obtained from the Marketing Research Division of the United States Department of Agriculture, Washington, D.C., Small Business Aids of the United States Department of Commerce, Washington, D.C., supplied very helpful information. The following periodicals aided greatly in accumulating other information: The Progressive Grocer, the Self-Service Grocer, Modern Packaging, The Voluntary and Cooperative Group Magazine and the National Grocers Bulletin.

The book that served as an indispensable aid was entitled How to Profit Lost From Self-Service Meats by the Meat Merchandising Staff of the magazine, Meat Merchandising, Chicago, Illinois. The booklets that were used in this study were the "Prepackaging Self-Service Meat" by Armour and Company, Chicago, Illinois.

CHAPTER II

SELF-SERVICE PRODUCE DEPARTMENT

Three Steps in Handling Produce

The three main steps in handling and receiving produce which will be discussed are: receiving, storage and packaging. The first step in the handling of self-service produce at the retail level is the receiving of merchandise, from the wholesaler or the warehouse.

Receiving of the merchandise. Produce may be shipped directly to the individual retail units if they are located near the central market or if the store is sufficiently large. For the smaller retailer, the produce will pass through a jobber or a wholesaler.

When the produce arrives at the store, two important tasks confront the retailer or the head produce clerk. One, a careful check against the invoice must be made; and two, the produce must be handled properly. The invoice checking of merchandise received against that which was ordered from his daily order book is very important because the retailer determines from this invoice the retail selling price of the various items, and if he is being billed correctly. For instance, if the retailer is billed for top grade merchandise and receives an inferior grade, but fails to check accurately, the produce department cannot hope to sell this particular item at a profit.

The second task of the retailer or produce clerk is to supervise the handling of the produce. As the produce is checked and removed from the truck to be stored in coolers, a great deal of care must be exercised.

Improper handling which results in damage to the produce is a consequent loss to the retailer and to the customer. Even the less perishable items such as potatoes and dried onions can be damaged by improper handling.

The prevention of this damage to produce is a real problem to the retailer. Care can be taken to see that the boxes are not dropped or handled too roughly, and that boxes that bulge on the top or sides are stacked on the flat side or the end of the box. However, none should be stacked so high that pressure will cause bruises on the items inside. For those items which are packed in bags, a dry storage place such as a wooden platform is necessary if the produce is to be kept dry.

Storage. Storage is the second step in the handling of produce. Many retailers find that they must purchase some of their produce in quantities sufficient to last for several days. When this advance purchasing is necessary, many of the items will keep best under damp refrigeration instead of dry electrical refrigeration. In the stores which are not equipped with damp refrigeration, some of the meat storage display case may be used if the temperature of these cases is not too low.[1] A temperature of 40 to 45 degrees Fahrenheit should be maintained for produce storage. If the retailer is able to use a section of his meat box for storing extra produce stock, the produce must be covered with wet burlap bags at all times to prevent dehydration.

Produce items which are placed immediately on the display rack must not be returned to the storage refrigerator because extreme changes in tempera-

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1 Office of Small Business, Proper Care and Handling of Fresh Produce, United States Department of Commerce, Small Business Aids, Washington 25, D.C., SBA No. 407, January 1948.

ture are harmful to fruits and vegetables. Perhaps, the retailer wonders why this temperature change is so harmful. When the items arrive at the store, they are packed tightly in shipping cases at temperatures considerably below that of the display cases. After the produce is placed on the display case, which has a higher temperature, it begins to heat up and a loss of moisture is the result. Thus, fruits and vegetables which are placed on display and later returned to the refrigerator, and then placed on display again have had serious damage done to their cell structure.

The factor of weight should also be considered by the retailer because the fruits and vegetables are losing weight from the time that they leave the farm until they are consumed. Therefore, the retailer who handles produce quickly and efficiently is saving money because the shortest period of time that he holds the merchandise, the smaller will be the loss factor of weight. For the produce already in storage a rotation of the stock in the cooler is necessary to remove the older items as soon as possible. Also, inventories should be maintained as small as possible in order to facilitate an increased turnover.

Packaging of the merchandise. Before packaging can begin, the produce must be washed, trimmed and graded. A report from The National Association of Retail Grocers states that most housewives comment, "Vegetables and fruits have to be fresh and crisp for my family."[2] Since all stores try to maintain the good will of the customer, the fresh look can be achieved only by washing, trimming and grading the merchandise before it is removed from the back room.

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2 Margus Better Stores Program, Your Produce Department, National Association of Retail Grocers, Chicago, Illinois, 1950, 15 pp.

TABLE I

PARTIAL LIST OF PRODUCE ITEMS PREPACKAGED
IN THE PIGGLY-WIGGLY MARKET

Product	Type of Package	Size	Units Per Package	Method of Sealing	Ventilation
Radishes	Transparent Bag	3 x 1 x 8"	2 bunches	Stapled	¼" holes
Parsley	Transparent Bag	3 x 1 x 8"	14 oz.	Stapled	¼" holes
Watercress	Transparent Bag	3 x 1 x 8"	14 oz.	Stapled	¼" holes
Salad Items	Transparent Bag	4 x 2 x 9"	8 oz.	Stapled	¼" holes
Green Peppers	Transparent Bag	4 x 2 x 9"	2	Stapled	¼" holes
Mushrooms	Transparent Bag	4 x 2 x 9"	½ lb.	Stapled	¼" holes
Parsnips	Transparent Bag	4 x 2 x 9"	1 and 2 lbs.	Stapled	¼" holes
Brussels Sprouts	Transparent Bag	4 x 2 x 9"	1 lb.	Stapled	¼" holes
Cauliflower Buds	Transparent Bag	4 x 2 x 9"	1 lb.	Stapled	¼" holes
Turnips	Transparent Bag	5¼ x 3 x 11"	2½ lbs.	Stapled	¼" holes
New Potatoes	Transparent Bag	5¼ x 3 x 11"	3 lbs.	Stapled	¼" holes
Onions	Transparent Bag	5¼ x 3 x 11"	2 lbs.	Stapled	¼" holes
Sweet Potatoes	Transparent Bag	5¼ x 3 x 11"	2 lbs.	Stapled	¼" holes
Spinach	Transparent Bag	6 x 4 x 14"	12 oz.	Stapled	¼" holes
Endive	Transparent Bag	6 x 4 x 14"	12 oz.	Stapled	¼" holes
Cucumbers	Sheet wrapped to fit	6 x 4 x 14"	1	Heat-sealed	¼" holes
Peas	Tray over-wrapped with film	4 x 3 x 12"	1 pound	Stapled	None
Carrots	Tray over-wrapped with film		2 bunches	Heat-sealed	None
Celery Hearts	Sheet wrapped to fit		2 or 3 stalks	Heat-sealed	Open at both ends
Pascal Celery	Tray over-wrapped with film		1 stalk	Heat-sealed	None
Lettuce	Sheet wrapped to fit		1 head	Heat-sealed	¼" holes
Cabbage	Sheet wrapped to fit		1 head	Heat-sealed	¼" holes

An illustration of what can be done is shown by the preparation of celery in this manner. Celery is one of the best selling items on the produce stand. It is received in large crates by the store and should be washed when removed. When the celery is clean, the dead leaves should be removed and the butt trimmed to a point. As an extra eye appeal, a red ribbon can be tied around the stalk after cleaning.

Potatoes and onions are two other items that require very little packaging. Statistics show that these two items are among the top demand items in produce. However, surveys prove that in most stores the opportunity to impress shoppers by the prepackaging of these items has not been used.[3] Many areas growing potatoes wash, mark and grade them before the store receives them; consequently, these items require very little attention from the produce manager beyond the normal inspection for unsalable and damaged potatoes. However, potatoes from other areas are not washed and graded. These should be spread out on a flat surface so that grading and washing can be done as efficiently as possible. Only then, should the potatoes be placed on the produce stand.

Because the proper washing, trimming and grading are of such importance in the selling of produce, enough work space must be allotted to the produce department. For example, a produce manager who does a business of $6,000 a week recommends the following arrangement. For the cleaning and packaging operation, space has been set aside in one corner of the back room to permit the use of a simple production line method. The merchandise starts at one end in the original container and at other end it is carefully graded, washed, trimmed, if necessary, packaged, labeled and priced ready

3 Wargus Better Stores Program, Your Produce Department, Op. Cit.

for display. The work space required is 18 feet long by two and one-half feet wide. Beginning at the left, a metal top table six feet long is placed to receive the produce for grading and trimming. The next step is a two-section metal tub that occupies the six feet in the center of the production line. A movable platform has been built to cover one section of the tub for use when both sections are not needed; thus, an extra three feet of table space is provided. At the extreme right is another six feet of table with a sheet metal top on which the actual wrapping operations are performed. A bag rack and a rack for sheet cellophane built to fit the sizes used, are fastened to the wall over these sections; consequently, the workers are able to secure supplies within convenient reach. Sturdy shelves high above the production line hold the reserve supplies of materials. A floor rack keeps workers from standing on the cold, wet floor and stools are provided when they wish to sit down at their work. Scales are temporarily placed on rollers which facilitate easy moving to any needed spot. Two electric wall plugs are spotted over this end of the production line for the heat sealing irons.[4]

Now, the actual packaging operations must be considered. Two methods of packaging, hand and machine, are now being used in the prepackaging of fruits and vegetables. In the larger type of centralized prepackaging operations, up-to-date over-wrap wrapping machines are being used. For smaller retail units, the hand method is the one being used. However, the equipment setup that was described in the above paragraph will be the same

4 Ben Vail, "Inside Story of a Produce Prepackaging Experiment," National Grocers Bulletin, Vol. XXIV, No. 7, July 1947, p. 84-87.

for both types of produce operation. The size of the installation will depend on the produce volume that is going to be handled.

A closer examination of both methods of packaging will now be made. The wrapping machine used is the Universal Model 4 and it offers high speed, easy adjustment plus perfect wrapping. A self-measuring feeder produces a perfectly formed wrap regardless of the position of the vegetable which can be either above the top of the tray or level with it. The package itself measures the length of the cellophane sheet; thus, no adjustments are required for the cut-off.[5] This automatic cut-off is particularly valuable for wrapping of produce which varies greatly in size and for produce in which the pre-determined cut-off is not possible.

The machine's adjustment covers a wide range of package sizes from six to 18 inches in length, two and five-tenths to seven and five-tenths inches in width and one and five-tenths to six inches in height. A single hand adjustment for the length of the package wrapped is all that is needed in switching from one size to another.

Special features of this machine are: cellophane spindle, automatic sealer and the speed of operation. A new roll of cellophane can be inserted to accommodate the size of the package being wrapped. This can be done in a fraction of a second because the cellophane spindle is provided with compensation flanges and the roll is self-centering. Two spindles are provided with the machine so that a new roll may be placed on one spindle before the roll on the other is completely used.

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5 Cut-off. The exact sizes of film needed to cover the packages.

An attachment is provided which automatically seals a printed dated label to the top of the package. An automatic printing device for pricing and dating also is provided. The machine can also apply a printed band designed to serve as an easy opening device.

The speed of the machine is a decided advantage. One operator can turn out from 25 to 55 packages per minute depending on the size and shape of the package. If desired, this same company manufactures a smaller model which turns out 13 to 35 packages per minute.[6]

The second method of prepackaging produce, hand packaging, requires very little equipment. After the produce is ready for prepacking, the merchandise is placed in the bags or on the trays that are designated. The weight is determined, the package priced and marked, and the mouth of the bag is sealed. After a sheet of cellophane is wrapped around the tray with the price tag on the inside, the tray is then sealed.

Consideration will now be given to the various materials used in prepackaging produce in retail stores. There are five main types of materials used: mesh bags, transparent film, taped or partially wrapped items, transparent and window bags, and boxes, tills, and baskets covered with transparent film.[7] Adhesive tape, both scotch and the paper types, and a stapling machine are generally needed as accessories. A supply of tabs in which the name of the store, item, and space for inserting the weight and price can be printed, are needed. Price tags are necessary for

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6 Package Machinery Company, Springfield, Massachusetts.

7 Office of Small Business, Proper Care and Handling of Fresh Produce, Op. Cit.

some types of packages, while other items can be priced with either a marking crayon, an indelible pencil or a rubber stamp.

1. Mesh Bags. Some of the more substantial items are available to the dealer already packed in mesh bags; however, when necessary produce can be simply and speedily packed by the dealer. Self-service operators frequently use mesh bags for items that are sold in large quantities. Items of this type include: apples, sweet corn, grapefruits, nuts, dry onions, oranges, potatoes, sweet potatoes and tangerines. The items which are packed in these bags are easier to display and larger unit sales result.

2. Transparent Film. In self-service stores, transparent film is a very desirable material to use because the film increases the appeal of the items and retards deterioration. Price tags may be placed inside the wrapper, pasted or stapled to the outside. A marking crayon also can be used to indicate the price. Items wrapped in this manner include: broccoli, cauliflower, cabbage, celery, cucumbers, sweet corn, egg plant, lettuce, melon quarters, parsley and pineapples.

3. Taped or Partially Wrapped Items. Retailers often prefer to partially wrap certain items by placing tape on the articles to prepare them for self-service sales. Many of the "bunched" and "head" vegetables are wrapped in this way. The price generally is marked on the tape with a marking crayon or a rubber stamp. Items of this type include: asparagus, bananas, bunch beets, carrots, celery, sweet corn, cucumbers, kale, head lettuce, leaf lettuce, leek and others.

4. Transparent Bags and Window Bags. This type of wrapping is especially desirable for fruits and vegetables. The price is stamped on the white closing tab of the bag. Items wrapped in this manner include:

artichokes, asparagus, avocados, trimmed beets, sweet corn, cauliflower, dates, dried fruits, figs, garlic, lemons, limes, head lettuce, nuts, dry onions, oranges, parsnips, peas, peppers, parsley, rutabagas, radishes, salad mixes, spinach, trimmed turnips and tangerines.

5. Boxes, Tills, Trays, and Baskets. Another quick and convenient material is the transparent film placed over the items packaged in boxes, tills, trays or baskets. These packages are very desirable for perishable soft items which require as much protection as possible when sold by self-service. The price is stamped on tags which are placed under the cellophane film. Items wrapped in this manner include: apples, artichokes, avocados, apricots, asparagus, bananas, berries, broccoli, brussels sprouts, green beans, lima beans, peaches, pears, parsley, dry onions, peppers and tomatoes.

Five additional factors must be considered: type of film to use, fogging, proper temperature, waterproof materials, and size of cellophane bags and sheets.[8]

1. Type of Film. The requirements vary with each commodity and with conditions; therefore, the proper selection of film for each item of produce is very important. Before a selection can be made, certain key factors must be known about the items that are to be packaged: respiration rate, temperature of the display case, humidity and the kind of handling the product will receive while on display.

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8 Sylvania Division, Fruit and Vegetable Prepackaging, Market Development Department, American Viscose Corporation, Market Bulletin # 11, July 1, 1949.

The two main types of film used are: coated type and semi-permeable films. The first type, coated, can be used for items such as lettuce and leaf vegetables which contain an excess of moisture. The second type, semi-permeable, is used for items which require an exchange of gases.[9] Sufficient ventilation can be provided by perforating the bags or overwraps with two one-fourth inch diameter holes; thus, water vapor evaporation is insignificant, and the exchange of gases is provided for.

2. Fogging. Most vegetables contain a large percentage of moisture which will, under normal conditions, condense on the inner lining surface of the moisture proof bags; thus, fogging results. If produce is packaged while cold and kept under a constant temperature in refrigeration, condensation will be maintained at a minimum. A gradual increase in temperature will not result in fogging, but wide fluctuations in temperature should be avoided. To minimize this condensation on the inner surfaces, cold produce should be wrapped immediately and overwrapped trays and loaded bags be transferred to the refrigerated self-service cases.

3. Proper Temperature. According to recent United States Department of Agriculture tests, fresh vegetables should be kept at a temperature of 42 degrees Fahrenheit. If this temperature is maintained during marketing operations, the produce will stay fresh for two or three days longer than when the average store temperature of 47 degrees Fahrenheit is maintained.

4. Waterproof Materials. Paperboard trays and cartons should be water resistant for wet produce, otherwise the trays will become soggy and

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9 Ibid.

limp. Machines are available to set up waterproof trays which posses sufficient structural strength to prevent water absorption.[10]

5. Size of Cellophane Bags and Sheets. The most efficient use of the wrapping materials should be strived for because they are expensive and the correct size paper assures a better looking package. The first step in determining the kind of material that will be needed is to contact the different equipment manufacturers who have done a great deal of research in this field.[11] Various trade publications have completed a great deal of research in this field and determined which film should be used on the different items on produce.[12]

The following Table I shows the kinds of supplies that the Piggly-Wiggly Company of Danville, Illinois uses in its prepackaging operations.[13] The chart also gives a detailed list of the number or weight of each item that should be packaged in each unit. The number of units and the weight of each unit will depend on local demands of the population that the store is serving. For example, a farm community would buy larger units when not growing their own produce than would be purchased by an apartment house area.

Another retailer, Max Kessler, operator of the produce department of the food market located in Windmieler's Department Store, Chicago, Illinois,

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10 Hayssen Oliver, Package Machinery Company's F, Universal 4 and 5, Springfield 7, Massachusetts.

11 E. I. du Pont de Nemours Company, Wilmington, Delaware; Goodrich Rubber Company, Akron, Ohio; and American Viscose Corporation, Sylvania Division, Philadelphia, Pennsylvania.

12 Prepackaging Age; Prepackaging Meat; and Modern Packaging.

13 Ted Barash, Don't Compromise With Quality In Prepackaging Produce, Progressive Grocer, September 1947, p. 57.

TABLE I, continued

Product	Type of Package	Size	Units Per Package	Method of Sealing	Ventilation
Cauliflower	Sheet wrapped to fit		1 head	Heat-sealed	¼" holes
Broccoli	Sheet wrapped to fit		1 bunch	Heat-sealed	Open at butt end
Apples	Transparent Bag	5¼ x 3 x 14"	7-113 box	Stapled	¼" holes
		6 x 4 x 14"	9-150 box		
Apple (Culls)	Mesh Bag			Sewed	Mesh bag
Oranges	Transparent Bag	5¾ x 3 x 14"	7-176	Stapled	¼" holes
		6 x 4 x 14"	Crate		
Oranges	Mesh Bag		6-9-12	Sewed	Mesh bag
Bing Cherries	Transparent Bag	3 x 1¾ x 8"	½ lb.	Stapled	¼" holes
		4 x 2 x 9"	1 lb.		
Plums	Transparent Bag	4 x 2 x 9"	6-8	Stapled	¼" holes
Apricots	Transparent Bag	4 x 2 x 9"	8	Stapled	¼" holes
Limes	Transparent Bag w/ cardboard backing	4 x 2 x 9"	6	Stapled	¼" holes
Peaches	Transparent Bag	4 x 3 x 12"	6-8	Stapled	¼" holes
Lemons	Transparent Bag w/ cardboard backing	4 x 2 x 9"	6	Stapled	¼" holes
Cranberries	Transparent Bag	4 x 3 x 9"	1 lb.	Stapled	¼" holes
Grapefruit	Transparent Bag	4 x 3 x 12"	2	Stapled	¼" holes
Grapes	Transparent Bag	4 x 3 x 12"	1 or 2 clusters	Stapled	¼" holes
Pears	Transparent Bag	4 x 3 x 12"	4	Stapled	¼" holes
Avocados	Sheet wrapped to fit		1	Heat-sealed	¼" holes

Ted Barash, "Don't Compromise With Quality in Prepackaging Produce, Progressive Grocer, September, 1949, 57 pp.

attacked the material problem of packaging in still another way. Mr. Kessler determined the exact size of bags that would be needed in his operation and had them fabricated in Chicago.[14] He found that seven types of bags and five types of cut-to-size sheets of cellophane would be adequate. These bags are made for two dollars a thousand regardless of size, plus the cost of the cellophane. The total cost is approximately $1.65 to $4.50 per thousand.

Mr. Kessler uses red and white labels of two different sizes. One is a thermo-plastic heat seal label two inches high and two and three-fourth inches wide. This type of label is attached to the outside of the cellophane package by a heat sealing iron. The other type of label used is a saddle label four and one-eighth inches high and four and one-fourth inches wide. This label is folded over the middle of the package and is stapled over the top of the bag so that the printed message can be read from either side. Thus, both the printing and closing of the package is done in one operation. The first type of printed labels cost $2.60 per thousand, and the second type $3.50 per thousand. The main advantage of both types of labels is that they carry a message about the crisp, fresh, clean refrigerated content of the package plus the factual information of name of the store, item, weight and the price.

The actual cost of this prepackaging operation is the next topic to be discussed. Two factors: labor and material costs and salability, will be considered in detail.

1. Cost of Labor and Materials. The cost of labor per package is very important in determining which items can be packaged and which items

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14 Ben Vail, Op. Cit.

should not be packaged. For instance, the packaging of cherries at a labor cost of two cents for a 49 cent package, retail selling price, or about 4 percent of the sales dollar, is much more practical than the prepacking of carrots, a low priced item, would be. The absolute cost is approximately the same, but the percentage-wise cost is much greater. Thus, consideration of packaging costs based on normal gross margin available when the commodity is sold, either in bulk or prepackaged, is very important. The retailer may find the packaging of some items, which are selling at a high price, very profitable and the same item will incur a loss at a later date.[15]

Even though some items such as string beans are relatively costly to prepackage, a retailer should weigh the extra cost against the labor required to retail these items in the bulk. Time studies in the retail store have indicated that the retail labor cost of weighing, bagging and pricing often exceeds the cost of both the labor and the materials required for a centralized prepackaging operation.

The cost of labor for packaging is influenced by the efficiency of the machines being used. Improvements in the designs of packaging machinery and conveyors will eventually help to lower the present production costs, particularly in large operations and centralized prepackaging operations.

Table II shows what the costs for material and labor for individual items were for American Stores Company, Philadelphia, Pennsylvania. This table is for a centralized prepackaging operation, but the form and cost

15 Donald R. Stokes, The Marketing and Transportation Situation, United States Department of Agriculture, Bureau of Agricultural Economics, MTS-61, April-May 1948.

TABLE II

COST OF LABOR AND MATERIAL FOR REPACKAGING
SUBMITTED BY AMERICAN STORES COMPANY

Item	Size	Number of Packages Per Unit	Type of Trays	Cost Cello Per Package	Cost Trays Per Package	Total Cost	Total Cost Per Package
All of the following packages are overwraps							
Carrots	2#	8s	#235 7x5x2-5/8	.008	.0118	.0143	.0341
Peppers	3s	12s	#236A 7x3-3/4x2	.006	.0089	.0143	.0292
Apples	6s	16s	#241 7x5x1-1/4	.0088	.0071	.0143	.0302
Pears	5s	16s	#241 7x5x1-1/4	.0088	.0071	.0143	.0302
Tangerines	5s	20s	R. Best 9-3/8x3x2-1/4	.0045	.007	.0143	.0258
Temple Oranges	3s	20s	R. Best 9-3/8x3x2-1/4	.0045	.007	.0143	.0258
Lemons	4s	10s	Lemons 9-3/8x2½x2	.005	.0065	.0161	.0276
Limes	4s	10s	Limes 9-3/8x2½x2	.005	.0065	.0161	.0276
Tomatoes	3s	10s	Tomatoes 8x2-3/4x2	.005	.00751	.0161	.0236
Tomatoes	4s	10s	Tomatoes 9-3/8x2½x2	.005	.00751	.0161	.0236

TABLE II, continued

Item	Size	Number of Packages Per Unit	Cello Bags	Cello Cost	Labor Cost	Total Cost Per Package
The following packages are cellophane bags						
Green Beans	1#	12s	Printed 11-1/4x6x2	.0144	.0143	.0287
Wax Beans	1#	12s	Printed 11-1/4x6x2	.0144	.0143	.0287
Lima Beans	1#	12s	Printed 11-1/4x6x2	.0144	.0143	.0287
Peas	1#	12s	Printed 11-1/4x6x2	.0144	.0143	.0287
Celery	1 Stalk	12s	Printed 17x4-1/2x2-1/2	.0144	.0143	.0287

TABLE II, continued

Item		Size	Number of Packages Per Unit	Bags	Cello Cost	Labor Cost	Total Cost Per Package
The following packages are Window Pak bags*							
4# Bags	Onions	2s	12s	Window Pak Bags	.0133	.0143	.0276
5# Bags	Onions	3#	8s	Window Pak Bags 12-1/4x6x2-3/4	.0135	.0143	.0278

*Information from Paul J. Cupp, District Manager of Kearny Branch of American Stores Company, Kearny, New Jersey.

breakdown could be used for any type of operation to determine the profitability of packaging a certain type of produce.

2. Increase in Salability. In the beginning of this chapter a survey was cited illustrating the fact that the average housewife bought produce because it looked fresh. Another survey conducted by the National Association of Retail Grocers states that 46 percent of the produce bought during the week is purchased after 4:30 in the afternoon. This means that fresh produce should be in the display case at all times during the shopping hours. Thus, the retailer can readily see the advantages of prolonged shelf-life for produce.

Another important factor, weight loss, should be considered by the retailer. If a great deal of weight is lost by the produce, the retailer will lose money because he has to pay the original weight cost of the item. Table III shows the results of an experiment conducted by the Great Atlantic and Pacific Tea Company of Columbus, Ohio. This experiment was conducted in conjunction with the United States Department of Agriculture, and five Fixture and Supply Companies.[16]

This experiment proved that prepackaging increases the shelf-life of produce items from one to 21 days, that weight loss was reduced as much as 30 percent and that a greater percentage of merchandise was salable after five days on display.

Another example of the decrease in waste can be cited. The average waste for a group of stores was calculated as follows:

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16 E. I. du Pont de Nemours and Company, Wilmington, Delaware; Hussmann Refrigeration, Inc., St. Louis, Missouri;

TABLE III

COMPARISON OF SALABILITY OF PACKAGED, REFRIGERATED PRODUCE WITH NON-PACKAGED, NON-REFRIGERATED*

Item	Type of Package	Original Weight Oz.	Weight 5 Days	Weight Loss %	Salability 5 Days
Tomatoes	Packaged	11-1/2	11-1/2	...	100
	Non-packaged	12	11-1/2	.0417	50
Spinach	Packaged	16	15-1/2	.0313	90
	Non-packaged	17	12	.2941	-
Peas	Packaged	16-1/2	16-1/2	...	100
	Non-packaged	18-1/4	12-1/2	.3151	25
Radishes	Packaged	16	16	...	90
	Non-packaged	13-1/4	9-1/2	.2830	-
Peppers	Packaged	16	16	...	100
	Non-packaged	13-1/2	12-1/4	.1019	80
Broccoli	Packaged	26-1/2	26-1/2	...	90
	Non-packaged	28-1/2	20-1/4	.2895	-
Parsley	Packaged	5-1/2	5-1/2	...	100
	Non-packaged	5	2-1/2	.50	-
Mich. Celery	Packaged	20-1/2	20-1/2	...	100
	Non-packaged	19-1/2	13	.3418	30
Pascal Celery	Packaged	29	29	...	100
	Non-packaged	48	31-1/2	.3438	40
Beets (tops off)	Packaged	24-1/2	24-1/2	...	100
	Non-packaged	25-1/2	19	.2621	70
Cauliflower	Packaged	20-1/2	20-1/2	...	100
	Non-Packaged	34-1/2	24-1/2	.2898	50
Head Lettuce	Packaged	15	15	...	100
	Non-Packaged	15-1/4	12-1/2	.1803	50
Carrots	Packaged	17	17	...	100
	Non-Packaged	18	13-1/2	.2361	25
Brussels Sprouts	Packaged	13	13	...	80
	Non-Packaged	13	11-1/4	.1346	-
Green Beans	Packaged	16	16	...	100
	Non-Packaged	16	11-1/4	.2969	-
Vegettes	Packaged	11	11	...	80
	Non-Packaged	12	11	.0833	50

*Charles W. Hauch, Housewives Prefer Prepackaged Produce, Ohio State Agricultural Experimental Station, 1945.

	Percentage Before Prepackaging	Percentage After Prepackaging [17]
Store A	5 to 6	1.08
Store B	6	.2
Store C	7	1.5
Store D	7	4.

The results of extensive laboratory tests in cooperation with a large food chain on such produce as string beans, beets, cauliflower, carrots, lettuce, husked corn, peas, peppers and radishes shows that packaging alone will extend the average shelf-life by 36.7 percent or three to four days. By combining packaging with refrigeration, the average shelf-life has been extended to ten days or an increase of 260 percent; however, these results will vary with the different store conditions and different produce items.[18]

Surveys show that approximately 38 percent of all items sold in super markets are bought on impulse, compared to 30 percent of the items sold in service type stores by impulse buying. Efficient layout, adequate displays and effective packaging are necessary if impulse buying is to be increased. The following study is typical of the sales increases after prepackaging was installed.[19]

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17 Office of Small Business, Results From Prepackaging Fresh Fruits and Vegetables, United States Department of Commerce, Small Business Aids, Washington 25, D.C., SBA No. 37., November 1947.

18 Ibid.

19 Ibid.

Store	Percentage
A	35
B	61
C	65
D	80
E	110
F	120
G	161
H	50
I	81

Three additional advantages of prepackaging should be considered by the retailer: better merchandise control, a reduction in the labor force is possible as well as an increase in net profit. A closer examination will now be made of these three advantages.

1. Better Merchandise Control. When a retailer converts to prepackaging, only enough packages to keep ahead of sales are required. Merchandise turnover can be more easily calculated and the produce does not need to be stacked as high. The losses that will be incurred are from faulty produce, and are seldom more than 1 percent of sales.[2]

One independent merchant kept records on the losses before and after converting to prepackaging. He found that spoilage and markdowns accounted for 6 percent of loss, and weight reduction, shrinkage, errors in weighing and counting and pilferage accounted for a 2 percent loss. With bulk selling, these losses were difficult to avoid because large displays and variety were necessary.

2. Reduction in Labor Force Required. When the first completely prepackaged store was put into operation, the sales per man-hour were approximately twenty dollars per hour. At that time the sales per man-hour

2. Don Vail, Inside Story of a Produce Prepackaging Experiment, National Grocers Bulletin, Vol. XXIV, No. 6, June 194-, pp. 66-115.

for the service stores was ten dollars per hour. For seven weeks in the summer of 1946, observations of the time lost by produce clerks between customers were made in two prepackaged stores and four bulk stores by the United States Department of Agriculture. During this period the average weekly man-hours of non-productivity averaged one and one-half hours per week in the prepackaged store in contrast to non-productivity of nine hours in the bulk stores.[21]

When customers were served by clerks, each item was weighed, bagged and priced at this time. Eleven people were required to handle the Saturday business. Even with this large staff, service was often slow and the customer impatient. Now, with prepackaging, the Saturday business can be handled by six people working in the back room supplying the produce for the display cases. The manager of this store found that the wage scale dropped from 12 percent to 7 percent even though he had increased the wage scale of the people still employed.

Another advantage of this type of operation is that a more satisfactory work schedule can be formulated. Before this was possible, part-time employees had to be hired and the turnover among these fill-in employees was very great. Consequently, many errors which amounted to a large percentage of profit were made.

3. Increase in Net Profit. The cost of the prepackaged produce delivered to the retailer will be slightly higher than identical bulk merchandise; however, a comparison of the difference can readily be accounted for in the final net profit. Many retailers are interested in making a net

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21 Ben Vail, Op. Cit.

profit on the whole store operation not individual items. Therefore, a study was made in which identical prices were charged for both bulk and prepackaged items. The original gross margin, before waste and spoilage, in the prepackaged store was 4 percent less than in the bulk stores. In the final analysis, the gross margin was 2 percent lower in the prepackaged store than in the bulk stores; however, this 2 percent was compensated for because of other savings in the increased efficiency of centralized operation and the handling of the labor force.[22] For example, during February 1946, the net profit realized in the produce department of the 25 prepackaged stores averaged .24 percent lower than the net profit realized in 82 bulk stores.[23]

A final consideration will be given to customer preferences for self-service prepackaged produce. The Ohio Agricultural Experiment Station, Department of Rural Economics and Rural Sociology, Columbus, Ohio, in cooperation with a large corporate chain[24] with retail stores in Ohio, has conducted a study on consumer preference for prepackaged produce. The results of this study will now be cited.

1. Methods Used to Record Preferences. Inquiry schedules were placed in the hands of patrons in five produce departments on Friday, December 14, and Saturday, December 15, during the hours in which store traffic was the most heavy. Each inquiry was accompanied by an addressed return envelope requiring no postage, and each patron was asked to answer a few simple

22 Ben Vail, Op. Cit.

23 Ben Vail, Op. Cit.

24 The Great Atlantic and Pacific Tea Company

questions after the returned home. Four hundred and eighty-two usable replies were received.

A. The Results of the Study. The results will be shown by the following five tables: preference by stores, preference by size of family, preference by length of experience with prepackaged foods, reasons stated for preference, and the objections to prepackaging.

The location of the store, type of neighborhood, and the duration of time since installation of prepackaging in these respective produce departments seemed to have no effect on the opinions of the patrons. The most pronounced preference for prepackaging was expressed by the patrons of store 35, the largest retail operation of this company, located in the downtown shopping area. This store was converted to prepackaging ten months prior to this study. Store 38, located in a medium economic class neighborhood shopping area, showed almost identical reports of customer preference by stores. The three other stores showed reports not as favorable but still not varying too widely from stores 35 and 38.

Approximately the same proportions of distributions were among those with only one in the family, 8 .9 percent and those with five in the family, 8.3 percent. Both families of two and three members can readily be compared because an equal number of returned inquiries were received by the investigators. The family of two members expressed lowest preference for prepackaged food, while the family of the three expressed the largest percentage of preference.

Longer experience was accompanied by significantly greater acceptance of prepackaging and refrigerated self-service. Of those with less than one month experience, 73.3 percent voted favorably; of those with one to

TABLE IV

PREFERENCES OF 482 PATRONS OF FIVE RETAIL STORES WITH RESPECT TO METHODS OF OFFERING FRESH FRUITS AND VEGETABLES
COLUMBUS, OHIO, DECEMBER, 1945
BY STORES

Store Number	Number Months Since Installation	Prefer Conventional Bulk Displays		Prefer Prepackaged Displays		Total Number of Respondents
		Number	Percentage of Total Number Answering	Number	Percentage of Total Number Answering	
30 x/	10	5	6.5	72	93.5	77
36 xx/	22	17	15.7	91	84.3	108
37 xxx/	4	23	16.7	115	83.3	138
38 xx/	5	4	6.1	62	93.9	66
43 xx/	6	17	18.3	76	81.7	93
Total Average		66	13.7	416	86.3	482

x/ Downtown shipping area; largest store operated by the company in Columbus.
xx/ Medium economic class neighborhood shopping center.
xxx/ Medium economic class suburban shopping center.

TABLE V

PREFERENCES OF 466 PATRONS OF FIVE RETAIL STORES WITH RESPECT TO METHODS OF OFFERING FRESH FRUITS AND VEGETABLES COLUMBUS, OHIO, DECEMBER, 1945 BY SIZE OF FAMILIES

Number of Persons In Family	Prefer Conventional Bulk Displays		Prefer Prepackaged Refrigerated		Total Number of Respondents
	Percentage of Total Number Answering		Percentage of Total Number Answering		
	Number	Percentage	Number	Percentage	
1	1	11.1	8	88.9	9
2	23	16.2	119	83.8	142
3	12	9.2	119	90.8	131
4	16	15.0	91	85.0	107
5 plus	9	11.7	68	88.3	77
Total Average	61	13.1	405	86.9	466

TABLE VI

PREFERENCES OF 482 PATRONS OF FIVE RETAIL STORES WITH RESPECT TO METHODS OF OFFERING FRESH FRUITS AND VEGETABLES COLUMBUS, OHIO, DECEMBER, 1945 BY LENGTH OF EXPERIENCE

Number of Months Experience	Prefer Conventional Bulk Displays		Prefer Prepackaged Refrigerated		Total Number of Respondents
	Percentage of Total Number Answering		Percentage of Total Number Answering		
	Number	Percentage	Number	Percentage	
Less than 1	8	26.7	22	73.3	30
1 - 6	48	14.8	277	85.2	324
More than 6	10	7.9	117	92.1	127
Total Average	66	13.7	416	86.3	482

TABLE VII

PREFERENCES OF 401 PATRONS OF FIVE RETAIL STORES WITH RESPECT TO METHODS OF OFFERING FRESH FRUITS AND VEGETABLES
COLUMBUS, OHIO, DECEMBER, 1945
REASONS

Reason	Number of Times Mentioned	Percent of Total Replies	Percent of Patron's Replies
Produce is higher in quality and appearance	226	24.0	56.4
More sanitary; not handled by previous patrons	216	22.9	53.9
Speeds shopping and permits better choice at early and late hours	184	19.5	45.9
Produce keeps longer after purchase	127	13.5	31.7
Produce stores more readily in household refrigerator	74	7.9	18.5
Kitchen preparation and waste disposal easier	35	3.7	8.7
More convenient to carry in shopping bags	30	3.2	7.5
Miscellaneous minor reasons	50	5.3	12.5
Total	942*	100.0	....

*Since some patrons stated more than one reason, the number of replies (942) exceeds the number of patrons replying (401).

TABLE VIII

[illegible] OF 209 PATRONS OF FIVE RETAIL STORES WITH [illegible]
[illegible] OF CERTAIN FRESH FRUITS AND VEGETABLES
COLUMBUS, OHIO, DECEMBER, 1945
OBJECTIONS

Objections	Number of Times Mentioned	Percent of Total Replies	Percent of Patron Replies
Packaged units are too large	103	41.9	49.3
Quality of produce not dependable	93	37.8	44.5
Visibility not adequate for wise selection	21	8.5	10.0
Package units are too small	10	4.1	4.8
Moisture condensation on wrapper undesirable	8	3.3	3.8
Packaged produce more expensive	7	2.8	3.3
Miscellaneous minor objections	4	1.6	1.9
Total	246*	100.0	...

*Since some patrons stated more than one objection, the number of replies (246) exceeds the number of patrons replying (209).

six months experience, 85.2 percent voted favorably, and of those with more than six months experience, 92.1 percent were in favor of prepackaging. The confidence of the patrons in prepackaging increased with their familiarity of it.

Of these 482 consumers, 401 offered the reasons shown in Table VII for preferring to buy fresh fruits and vegetables prepackaged. Many patrons felt that the longer life of the produce purchased was an important factor. Many emphasized that the produce purchased was better than if it had been selected from the open bins after exposure to unfavorable conditions of temperature and humidity. Several patrons were impressed with the advantages of a wider choice of fresh, top quality merchandise during both the early and late business hours. Also, with prepackaging, laborious trimming and preparation of displays which prevents some items from being brought from the stock room, was eliminated.

Of the 482 persons replying to the inquiry, 209 or 43.3 percent expressed one or more objections to prepackaging of produce as they experienced it in these stores. Yet of these 209, there were 146 or 69.9 percent who preferred prepackaging over the bulk method of presenting produce to the patrons.

The family-size distribution of this typical group of buyers should be considered by the retailer when preparing perishables for prepackaging. The concentration in the classes with two, three and four persons for preference of prepackaged produce suggests that these are the patrons to please.

Although the emphasis of this last chapter has been on customers who prefer prepackaged produce, the fact that 14 out of 100 customers indicated

that they would rather buy produce in the bulk form should not be overlooked. The retailer should consider the objections of these customers and try to eliminate the complaints as much as possible.

From these surveys that have been cited, the retailer may see the importance of some of the principles formulated in the first part of this chapter. The produce manager must maintain quality items at all times because the customer cannot sort through the fruits and vegetables which are packaged. If the preference for prepackaged produce is to continue to increase, all of the previously cited reasons for customer acceptance must be considered by the retailer.

CHAPTER III

SELF-SERVICE MEAT DEPARTMENT

Three Steps in Handling Meat

The three main steps in the handling of meat which will be discussed are: receiving, storage and packaging.

Receiving of meat. The importance of the receiving process of meat should not be underestimated. Meat receiving schedules for a self-service operation must be carefully worked out so that the packaging operation will be supplied with retail cuts at all times. Because the heavy demand is during the latter part of the week, a back log of cut meat must be prepared the first part of the week. To provide the necessary time to prepare this reserve supply, careful scheduling of the receiving process must be made.

Most retail units have their receiving schedule set up so that they obtain three shipments per week. The first part of the week a short order consisting of luncheon meat and other prepared meat plus a small order of fresh meat is received. The second order received is generally the heavy order consisting of fresh meat. The third order is called the fill-in order and is received at the last part of the week. This order consists of items that will be needed to accommodate the heavy week-end traffic.

When these orders are received in the retail store, there are three checks that the meat manager must make: check for the grade of the meat, condition of the meat and the quantity received. These three checks should be made as the meat is unloaded from the trucks. If shipshod handling occurs, the retailer will lose money. To avoid these losses, a few

simple rules can be formulated for the proper handling of meat. These five rules are as follows:

1. Meat shall be checked from the truck to the retail unit by the meat manager or his assistants.

2. As the meat leaves the truck, the condition of the meat shall be noted on the bill of lading.

3. Grades of meat on the bill of lading must comply with the United States Government inspection stamp.

4. All meat received should be weighed on the retailer's scales and any shortages or overages should be noted on the bill of lading.

5. Meat should be placed under refrigeration immediately after checking is completed.

If these few simple rules are followed, the meat will be received and checked efficiently. This receiving process, as stated before, is very important if a profit in handling the merchandise is to be realized.

Storage of meat. The second step in the handling of meat on the retail level is the storage of this perishable item until it is packaged into retail units and sold. Upon arrival, the meat should be placed immediately into the cooler at a temperature of 35 to 36 degrees Fahrenheit. An even colder cooler is preferred, but it must be equipped with special defrosting equipment to inhibit excessive dehydration which occurs at the lower temperatures.[1] The meat should not be removed from the cooler until it has reached the temperature of the cooler. Then cutting can be started at any time.

The meat may be aged from one to five days depending on its condition when received. Some retailers have a speed-up aging of beef in which ultra-

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1 Staff of Meat Merchandising, How To Profit Most From Self-Service Meats, Van Hoffmann Press, Inc., St. Louis 2, Missouri, 1954, p. 88.

violet lights and a higher temperature are used. In this process the items are placed in a box containing the ultra-violet lamp which prevents the formation of slime and slows down the bacteria rate of the meat. A temperature of about 45 degrees Fahrenheit is maintained.

The duration of time that the meat remains in these boxes depends on the temperature of the box and the humidity that is maintained. For instance, the Kroger Company uses this method under the name "Tender-Ray" process. The temperature of the meat boxes in this process is allowed to rise to 60 degrees Fahrenheit at 100 percent humidity. The meat remains in these boxes for approximately 48 hours before it is removed to another box where it is chilled to 34 degrees Fahrenheit and then shipped to the retail outlets.

After the meat has been chilled down to the cutting temperature, the cutting and wrapping processes should maintain this temperature. The condition of the meat when it leaves the wrapping room for the open display case is very important to the shelf-life of the items.

Therefore, the first rule of temperature maintenance is to see that the meat which has already been chilled in the cooler is routed to the open display case with minimum temperature losses. The best control can be achieved by cooling the processing room. Some retail operators are keeping their processing room at temperatures of 55 degrees Fahrenheit even in the summer time while other operators are using the store air conditioning system to lower the processing room ten to 15 degrees.[2]

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2 Staff of Meat Merchandising, Op. Cit., p. 89.

During the cutting and the wrapping of meat, the temperature will rise somewhat. The faster the processing of the meat can be accomplished, the less the temperature will rise and the condition of the meat, when it reaches the display case, will be improved.

To facilitate quick chilling in the cooler and to make the handling of large quarters of meat in the warmer processing room unnecessary, progressive self-service operators are breaking the carcasses into wholesale cuts before placing them into the cooler. For example, the beef hindquarter will be cut into five sections: the shank and heel, the round, the tip sirloin and rump, the sirloin, the short loins and the flank.[3]

For storing in the cooler, the fore-quarter may be cut into the plate, the rib, the square chuck, the brisket and the shank. Some of this meat, such as the shank, will be trimmed off and prepared for grinding before it goes into the cooler. Other cuts will be hung together on hooks and grouped in the cooler for easy identification. These pieces may be taken out of the cooler piece by piece and broken up; consequently, the whole quarter is not exposed to the warmer temperatures of the processing room.

Once the wholesale cuts have been removed from the cooler, trimmed, backed, wrapped and labeled, they should be returned to the cooler or display case at once. If the cuts have to be held until needed, a dark storage place that will inhibit discoloration should be used. To prevent heat absorption when the meat is taken to the display cases, they should not be permitted to lie in dollies and trays for any length of time.

As general recommendations of temperature, the following are suggested:[4]

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3 Staff of Meat Merchandising, Op. Cit., p. 89.

4 Staff of Meat Merchandising, Op. Cit., p. 31.

	Degrees Fahrenheit
Cheese	40
Luncheon Meats	36 to 40
Fish, Poultry and Offal Items	28 to 33
Pork Loin	28 to 33
Beef and Veal	28 to 32
Frozen Meats	25 to 30

These temperatures are reliable but each will need to be qualified to fit individual store conditions such as defrosting procedure, turnover of meat, the temperature of the store and the type of meat being displayed.

Packaging of meat. This section will discuss the following aspects of packaging: processing room layout, the four steps in packaging, the materials used, machine wrapping and centralized prepackaging.

In planning the processing room, a breakdown into specific jobs should be made resulting in a production line technique in order that the meat will flow readily from one operation to another. The first job is that of butchering the meat into retail cuts from wholesale units. The meat comes to the cutting block fresh, cold and firm. The meat cut to retail size is placed in easy reach of the wrapper, who then puts the items in the proper trays or back boards, wrapped with transparent film and passes them along to be labeled. After the labeling of the transparent wrapped package is completed, it then is passed on to the person who weighs each package and attaches the price per pound, weight, and total cost on the label. From here the meat is taken to the lower line of the self-service cases or to the holding storage space in the cooler. A more detailed analysis of packaging will now be made.

Any retailer may lay out his processing room in a number of ways, depending on the space that he has for this operation. Space should be provided for each operation and the minimum space of 225 square feet is

needed. In this amount of space, the retailer can cut, weigh and package about four thousand pounds of meat per week including delicatessen items. There will be enough working space for one meat cutter and two wrapping girls. If a larger volume of business requires more personnel, 35 feet per additional worker should be allowed. Each additional meat cutter should cut two thousand pounds of meat per week, and each additional girl wrap one thousand pounds per week.

After the space that will be needed is determined, the next factor to consider is the shape of the processing room. The following are some of the popular arrangements for processing rooms:[5]

1. Rectangular Arrangement. Small cutting rooms laid out in a square or rectangular space usually have the cutting area along one wall, one section of wrapping tables along the second wall, wrapping and weighing tables along the third wall, boxed with a working table in the center. The fourth wall usually contains a door or a pass window to the self-service meat case.

2. Straight Line Arrangement. Under this arrangement the flow of meat is usually from left to right. The meat is cut, wrapped, weighed, priced and passed into a dolly so that it may be rolled into the meat cooler. This system is probably the simplest of all the arrangements, but a fairly large wall is needed. In the smallest type of this arrangement at least 30 to 35 feet of wall space is necessary.

3. L Shaped Arrangement. Some self-service operators feel that the processing room is most efficient if it is located in a corner. The power

5 Staff of Meat Merchandising, Op. Cit., p. 33.

saw and block are placed against one wall and the cut meat is fed down to the turn at which point the packaging personnel take over.

4. Separate Cutting and Wrapping Room. This arrangement which is shown by a diagram on the following page, is the type of cutting rooms used by the Winn and Lovett Grocery Company, Jacksonville, Florida. The greatest advantage of this arrangement is that the cutting room and wrapping room can be controlled separately, both for speed of production and for the temperature at which both rooms need to be maintained. In this large cutting room, overhead tracks are used to bring the meat from the cooler to the tables on which it is broken down into retail cuts. When the meat is completely cut and ready for packaging, it then moves into the wrapping area. After the wrapping process takes place, the meat is either placed back in the meat box or pushed out the windows of the wrapping room into the display cases.[6]

Four Steps of Packaging

Cutting. The most important requirement of any cutting operation in prepackaging is that the cuts be uniform. The size of the cuts that will be packaged is determined by customer wants, by trial and error in each store. In fashioning the individual cuts, there are a few general rules that should be followed.[7]

1. The meat must be trimmed close in order that the package of lean meat can be easily seen.

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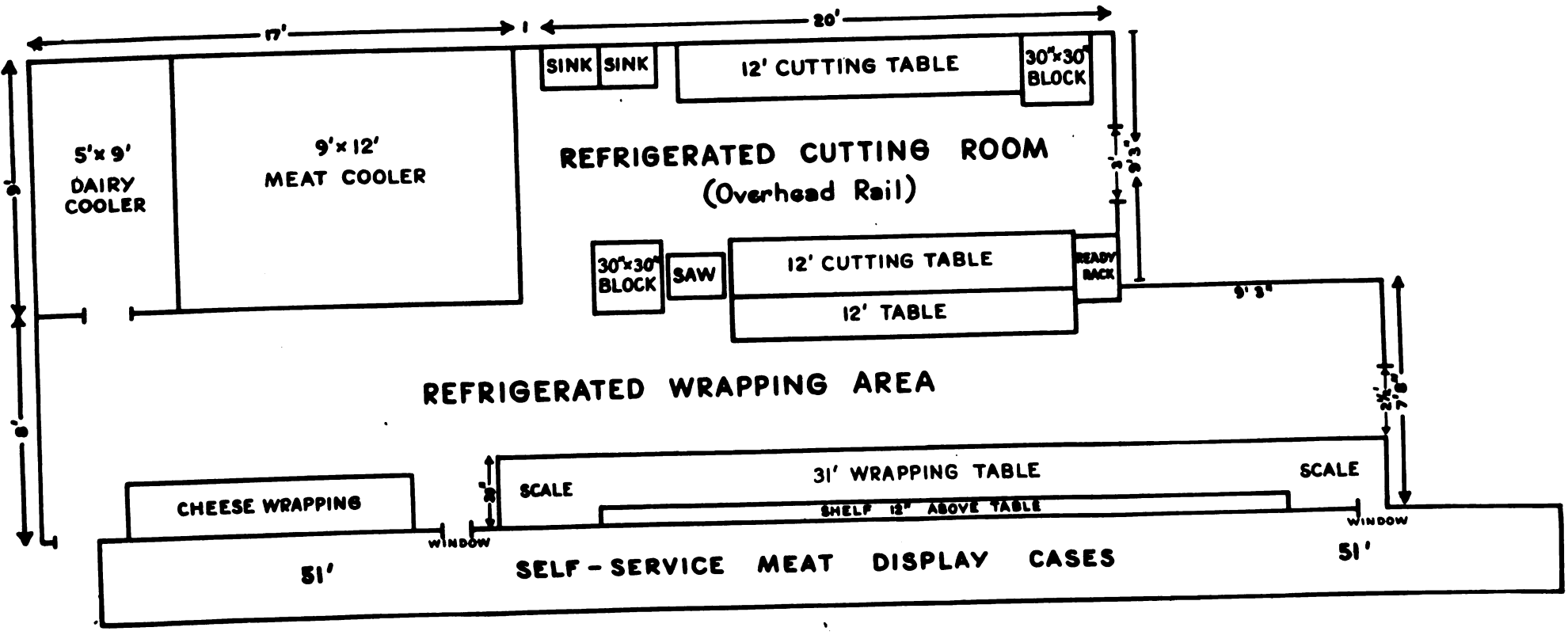
6 National Association of Food Chains, Meat Clinic, Chicago, Illinois, February 14-15, 1949, National Association of Food Chains, Washington 6, D.C.

7 Staff of Meat Merchandising, Op. Cit., pp. 97-98.

CUTTING AND WRAPPING ROOM LAYOUT



WIGGINS & LOVETT GROCERY COMPANY

SCALE — 3/4" = 1'

Fig. 1. Layout of processing room

2. The sharp corners of the cuts should be trimmed to prevent puncturing of the transparent film.

3. The bone dust of the saw must be removed from the meat.

4. The store must acquire a customer following to purchase ground meat made from the trimmings.

5. To speed up production, equipment such as the power saw should be used as often as possible.

6. To achieve the best possible bloom of the meat, it should be put aside for 15 to 20 minutes before wrapping takes place.

Wrapping. There are four types of film materials used for wrapping: cellophane, cellulose acetate (Lumarith), rubber hydrochloride (pliofilm), and polyethylene.[8]

1. Cellophane. This transparent film is made from cellulose which is an inert material making up the greater portion of wood, cotton linters, sawdust and other cheap materials. There are three basic types of cellophane used. These are: for fresh meat, luncheon meats and cheese; but each of these types has different characteristics of gauge, transparency, application and heat sealability. Cellophane can be used for the following items: fresh meats, cheese, smoked meats and table-ready meats.

2. Cellulose Acetate. This film is the second type that is used. It differs chemically from the cellophane and other transparent wrappers. It has no coating and either side of the material can be placed next to the meat. This highly transparent film seals at 325 degrees Fahrenheit and is recommended for a breathing wrap because it allows gases to be exchanged. In sealing, the iron is moved over the film with a patting motion instead of a sliding motion.

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8 Ibid., pp. 74-75.

3. Pliofilm. This film has a natural rubber base and is produced by casting with a solvent solution. It is rubbery and elastic, uncoated and seals at 325 degrees Fahrenheit. This film is also air proof, acid proof, alkali proof, non-inflamable, grease proof, moisture proof, water repellant and heat sealing. Its elasticity tends to eliminate many of the re-wraps that are necessary in the other types of film.

4. Polyethylene. This is a plastic film that is obtainable in sheets, bags and tubes. It is used for packaging meats, vegetables, fruits and other perishable items. This film will not change the color, odor or flavor of its contents and will not stick together. It is flexible and useable from 80 to 100 degrees Fahrenheit. When sealing is applied, the same iron that is used for the other films should not be used unless an inert material that will prevent sticking is placed between the iron and the material.

The size of the film purchased is another important consideration. Most of the films can be bought in either rolls mounted on a cutter or in square sheets of various sizes. Study should be made of the size of packages that are desired and specifications set up of the size of film that will be needed. The standard package of film has about one thousand sheets to the package. The size of films generally ordered from jobbers are as follows:[9]

Inches
8 x 8
10 x 10
10 x 12
12 x 15
15 x 15
18 x 18

9 Staff of Meat Merchandising, Op. Cit., p. 77.

Table IX is a study of 97 prepackaged meat departments on the type of films used for particular cuts of meat. Cost is omitted because these retailers only gave rough estimates.[10]

All of the 97 meat departments used MSAT-80 for wrapping fresh meats. It was also used in 16 departments for wrapping smoked meats and in 19 for wrapping luncheon meats, in 45 for wrapping fresh poultry and in 18 departments for wrapping fresh fish. The film that was next most frequently used was L&T.

The second type of material used in packaging is the backing. A great number of backings for self-service meat have been tried and are still under experimentation. Some merchants are using backings that are only large enough to protect the meat from the heat seal and other retailers are using elaborate backings with printed advertisements on them.

There are several types of laminated board which combine the rigidity of the cardboard backing with the good qualities of the interleaving paper commonly used in service meat displays. This type of board must have four essential qualities which are as follows:[11]

1. The backing board must be blood proof, grease proof, and retain the bloom of the meat.
2. It must be an adhesive which will prevent the seepage of the meat juice which causes a soggy package.
3. It must stand considerable handling in the case, in the push cart, in the shopping bag and in the home.

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10 Marketing Research Branch, Retailing Prepackaged Meat, United States Department of Agriculture, Production and Marketing Administration, Washington, D.C., December 1949.

11 Staff of Meat Merchandising, Op. Cit., p. 82.

TABLE IX

NUMBER OF STORES USING SPECIFIED KIND OF TRANSPARENT FILM IN FRESH MEAT DISPLAY

Meat Item	LSAT-80*	LST-52*	LSAT*	MCBO**	Plio-film	Retailers Supplying Information
Fresh Meats	97	-	-	-	-	97
Smoked Meats	16	8	61	2	11	98
Luncheon Meats	19	12	59	3	2	95
Fresh Poultry	45	5	27	1	13	91
Fresh Fish	18	2	16	2	2	40
Number of Retailers Interviewed	97	97	97	97		97

*LSAT-80, LST-52, and LSAT are DuPont Cellophane

**MCBO is Sylvania Industrial Corporation Cellophane

Pliofilm is a Goodyear Tire and Rubber Corporation product.

4. It must not show the finger prints of the wrapping girls.

Backing board made in this general manner usually has round corners to prevent the transparent films from being punctured. The backing board can be secured in round shapes and rectangular shapes, both of which can be used for luncheon meats and other items. The sizes range from four by four to eight by eleven inch backings.

There are four types of backboards that can be used: pulp flat boards, pulpboard trays, lard trays, and U boards.[12]

1. Pulp Flat Boards. This type of backing, which comes in perforated squares, has been designed to allow maximum flexibility. The full size board is adequate for the larger cuts of meat. The intermediate sizes of meat can be placed on one-half of the full size board, and small pieces of meat can be placed on one-quarter size pulpboard. These boards are absorbant, permit the passage of air for breathing of the meat, are adaptable to a wide range of packages and are light in weight.

2. Pulpboard Trays. These trays are in wide use and come in many sizes. They are particularly desirable for ground meat, offal items, and odd cuts. Splitting the trays permits items that will not fit into one tray, to be put in two trays.

3. Lard Trays. The common lard tray is used for items that need more protection, such as cut chicken, offal, and ground meat.

4. U Boards. The U board is a piece of flat chipboard or other cardboard with the edges turned up to make a semi-tray. It is a compromise

12 Staff of Meat Merchandising, Op. Cit., p. 83.

between a full-flanged tray and a flat backing board and provides additional protection for the meat in the case.

The type of paper that covers the backboard is very important. For the best results and economy, the paper on which the heat seal label is applied must have the following characteristics.[13]

1. It must not stick to itself when stacked.
2. It must have a good all purpose printing surface.
3. It must stick securely to transparent film so that it cannot be removed when once applied.
4. It must stand refrigeration and a high degree of temperature.
5. It must stick so firmly when applied that it will not slide around on the package before it adheres permanently.

After a decision has been made as to the type of film that will be used in the packaging operation, the next step is the actual packaging. The steps in this process will be somewhat as follows:[14]

1. The meat is received from the cutter already plattered and easy to handle.
2. The proper film, backing, material, and label are selected.
3. Then, the meat is placed on the backing and the backing trimmed, if necessary.
4. The meat is inverted on a film sheet with the backing facing the wrapper.
5. The corners of the film are drawn tightly to make the film wrinkle free.

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13 Staff of Meat Merchandising, Op. Cit., p. 83

14 Staff of Meat Merchandising, Op. Cit., p. 112

6. The corners are rolled over the backing and the package is sealed close by heat.

7. Then, the label is affixed.

The fact that transparent films are coated and must be placed properly on the meat, should be kept in mind. The film should be so stock in the racks that selecting the proper film for each type of meat becomes a habit with the wrappers.

The finished package will be called either contour-wrapped or contained-package wrapped, depending on the size of the backboard. The contour wrap has no backing other than at the sides of the meat to make the package tight. When the shopper looks at this type of package in the display case, all she sees is the meat and a small label.

The contained-package wrapping is either a flat board or a meat board which is larger than the meat item. Manufacturers of these supplies suggest that retailers do not try to crowd the meat on these trays, but instead they suggest that the meat be placed flat.

Weighing. This material was covered adequately in the first part of the chapter.

Labeling. The fourth step in packaging is also important. Uniformity of packaging is not the only must in labeling, but the retailer should be uniform in where he places the label. If the label appears in a different position every time the customer purchases a particular cut, he or she will soon think that the various locations of the same label are to cover up bones and fat.[15]

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15 Staff of Meat Merchandising, Op. Cit., p. 113

Machine Wrapping

At the present time most of the wrapping of meat is a hand operation; however, machines have been developed to perform these operations. One such machine is a supplementary hand wrapping machine which can be placed in a space six feet square. It will handle any size package, but the kind of cuts which can be packaged on it are still limited.[16]

Centralized Prepackaging

Centralized prepackaging is now being used by some of the larger chains that have found that centralized prepackaging is more economical. At the present time, the Great Atlantic and Pacific Tea Company is prepackaging a number of items in a warehouse operation in Detroit for all of the stores in that area. This prepackaging operation consists mainly of luncheon meats and smoked products.

A small chain that is doing a large centralized prepackaging operation for seven stores is the Victory Chain, Incorporated, Norwich, New York.[17] The business has been quite successful; however, the stores serviced were very small and the volume of meat sold in all seven stores did not exceed five thousand dollars per week.

The following advantages and disadvantages were sighted by the Meat Clinic of the National Association of Food Chains.[18] The advantages were

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16 Staff of Meat Merchandising, Op. Cit., p. 67

17 Charles A. Smith, Jr., How We Package Meats For Our Victory Stores in Our Central Prepackaging Department, The Self-Service Grocer, Vol. XI, No. 1, October 1950, pp. 6-9.

18 National Association of Food Chains, Op. Cit.

given as follows: a possible lower unit labor cost, more package uniformity, and more use value for fat and bones. The disadvantages suggested were as follows: higher delivery cost, more difficulty with quality control, larger number of re-wraps because of increased handling of the meat packages and continual refrigeration even in the delivery trucks.

Display

A good display is one which will not punish the meat; permits a fair amount of air circulation around it; will accommodate a maximum poundage on busy days and still afford a representative showing on slack days; permits some visibility of all the packages being displayed; and permits the shopper to read the labels on several packages without disarranging them.[19]

There are three main types of displays that are used in self-service meat operation.[20] These three types are as follows:

Shingle display. The first type of display that is found in self-service operation is the shingle display. These displays are built by setting the various packages on edge and leaning them back against the next package. This arrangement leaves one entire package visible in the front and a portion of another package visible to the shopper. It is sometimes called a feathered or leaf display and can be used for practically all fresh meats, cheese, and luncheon meats. This type of display meets more of the requirement of a good display than any other type.

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19 Staff of Meat Merchandising, Op. Cit., p. 142

20 Ibid

Flat display. The second type of display used is the flat display. In this type of display the packages are arranged in lines, one package behind another with their backing against the case and the face of the package turned up. In one single layer of packages there is no overlap of packages. Depth in the case is obtained by placing one layer on top of the other. The chief advantage of this display is that a few packages cover a large portion of the case area and when the turnover is slow, a small number of packages will make a good showing. The main disadvantage of this type of display is that the first and second layers of the meat display take a great deal of punishment from the weight of the above packages and be enough to distort the package in shape therefore making it unsalable.

Mass display. The third type of display used is the mass display. These are used for sale items or items that have an irregular shape and cannot be stacked in an orderly fashion. Although they appear to be tossed at random into the case, this is not the case at all. They are usually arranged with considerable care to prevent the mashing of the packages. Some of the items that lend themselves to this type of display are as follows: weiners, irregular pieces of cheese, hamhocks, packaged stew meat, neck bones and spareribs.

An additional fact to take into consideration in building any of these three displays is that the demand items which the shopper will look for should be placed at the extreme ends of the case. As the customer seeks these demand items, she will pass all of the other items in the case; thus, more additional items will be sold.

Additional Factors of Meat Care

Additional factors about meat care that will need the attention of the retailer are as follows: discoloration, shelf-life, spoilage, shrink and rewrapping of meat.

Discoloration. One of the biggest problems in self-service meats is the discoloration that results when meat is allowed to remain in the case too long. Customers demand that beef have a rich red appearance. This factor appears to depend entirely on the intensity of light and the length of time the meat is exposed to light. Some people are enthusiastic about the soft, white florescent light which makes the meat appear free from it; however, when the meat is viewed at the home the discoloration is easily seen.[21]

One method to reduce discoloration that is used is the rotation of the meat in the cases. For some types of meat it will not prevent discoloration; therefore, a plain parchment paper or a printed label on the top side of the package is used. The bottom side of the package is completely transparent. Although many housewives will turn the meat over to see the particular cut, many retailers have found that this necessity of turning the package has resulted in lost sales.

The progressive retailer believes that the best way to eliminate this difficulty is to reduce the stock on hand and to have as rapid a turnover as possible. To assist the retailer in keeping his turnover as fast as possible, a system of codes has been devised. This coding system indicated

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21 W. S. Shafer, Prepackaged Self-Service Meats, Sales Department, Armour and Company, Chicago, Illinois, May 1948, p. 17.

the day that the package should be removed from the display.

Shelf-life. According to a survey, "The Pros and Cons of Self-Service Meat," taken by E. I. du Pont Company, one of the biggest cons for self-service meat is that the customer does not think that the meat is as fresh as service packaged meat. Because of this apprehension, the meat manager must have a continuing educational program plus a readiness to stand behind his meat at all times. However, the most important factor to watch is the rotation of the merchandise.

Many retailers, as stated above, are using a system of coding. Thus, the meat can be removed from the case when the time designated arrives. Many retailers and most of the large meat packers have conducted tests on prepackaged meat to determine when the meat is too old to remain in the cases. Table X is a typical example of this testing and publishing of results.[22]

Spoilage. In a survey of 97 stores with prepackaged meat departments by the United States Department of Agriculture the following facts about spoilage were found: 78 stores reported that spoilage in prepackaged meat departments amounted to less than 1 percent of sales; 14 stores reported 1 percent spoilage; 3 stores reported 3 percent spoilage; 1 store reported 4 percent and 1 store reported 5 percent spoilage.[23]

The Victory Chain Stores had a different experience with spoilage of meat when they used a centralized prepackaging operation. This chain found

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22 Glenn R. Curtis, The Answers to Your Questions Concerning Self-Service Meats, The Voluntary and Cooperative Group Magazine, March 1949, pp. 40-42.

23 Marketing Research Branch, Retailing Prepackaged Meat, Op. Cit.

TABLE X

AVERAGE LENGTH OF INDIVIDUAL CUTS OF MEAT
RECOMMENDED FOR SELF-SERVICE*

Items	Days	Items	Days
Beef		**Pork**	
Top Sirloin Roast	2	Sausage Meat	4
Face of Rump Roast	2	Chops	3
Chuck Roast (rolled)	2	Link Sausage	4
Prime Rib Roast	3	Fresh Ham	4
Pot Roast	2	Salt Pork	7
Club Roast	2	Briskets	7
Sirloin Steak	1		
Rump Roast	1	**Poultry**	
Club Steak	1	Frying Chicken	4
Tender-Knived Steak	1	Chicken	4
Hamburger	1	Cut-up Foul	4
Beef for Stew	2	Turkey	4
Shin Bone	2	Duck	4
Short Rib of Beef	2		
		Smoked Meats	
Lamb		Hams	7
Leg	4	Canadian Bacon	7
Loin Chop	3	Smoked Dried Beef	7
Rib Chop	3	Smoked Butts	7
Stew Meat	3	Smoked Shoulder	7
Fore Quarter Chop	4		
Lamb Fores	4	**Prepared Meats**	
		Skinless Franks	5
Veal		Dinner Franks	7
Cutlets	1	Boiled Ham	3
Chops	2	Pressed Ham	2
Roast	3	Minced Ham	4
		Spiced Ham	4
Pork		Veal Loaf	3
Fresh Shoulder	3	Pork and Chicken Loaf	3
Loins (roasts)	3		

*Glenn R. Curtis, Op. Cit.

that their spoilage amounted to 2.2 percent of sales.[24] The officials of this company thought that this percentage was too high and after investigating, they discovered that this high degree of spoilage was readily explained by the company policy of permitting returns from the retail units at full credit. This privilege was abused by store managers and strict control was not possible.

Shrinkage of meat. Shrinkage in ready-to-eat luncheon meats is a serious problem to the retailer. As in fresh meat, a porous film allows rapid dehydration on the surface of the meat; thus, a dark lifeless color and a hard surface condition results. Moisture proof film gives too much protection for ready-to-eat luncheon meats; consequently, slime and mold growth are likely to develop. A semi-moisture-proof film has proven most effective in providing the desired protection for cured and ready-to-eat meats. The following facts on avoiding shrinkage deserve emphasis: a temperature of 30 to 32 degrees Fahrenheit will protect fresh meat items, packaging techniques and materials will improve the original quality of the food, packaging materials will vary widely in their abilities to moisture proof and fresh meats need oxygen and a minimum of moisture loss to retain their best appearance.[25]

Rewrapping. In a survey conducted by the United States Department of Agriculture, referred to before, the rewrap problem for 97 stores was not serious.[26] Meat items on which rewrapping exceeded the average of all meat

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24 Charles A. Smith, Op. Cit.

25 Marketing Research Branch, Retailing Prepackaged Meat, Op. Cit.

26 Ibid.

products were reported by the following stores: beef roasts were excessive in 65 stores, beef steaks in 35 stores, pork roasts in 31 stores, and offal products were excessive in 10 stores. The handling of the prepackaged meat in the display case was the principle cause of rewrapping. Of the 153 observations made on the cause of rewraps, 123 reported handling. One hundred and five of these 123 rewraps were reported on three items; large beef roast 49, large pot roast 44, and beef steak 12. Leakage was reported as a cause for rewrapping fresh meats in 13 cases, offal products in seven cases and poor sealing accounted for three cases. The percentage of rewrap in the 97 stores was 1.9 percent. The range of rewrap was from less than 1 percent to over 5 percent.

Cost of Packaging

The initial cost of installing self-service is of prime importance to most retailers. The information included in Table XI will give the retailer a rough estimate of the equipment costs which must be incurred in this type of operation.[27]

The three case installation may be considered a reasonably small operation. Some self-service stores have only two display cases and others possess only one case. Aside from the cost of the case, the investment required for other facilities and equipment is not significantly different if the operation has one, two or three cases.

The three case installation would be adequate for a store doing two to four thousand dollars per week in meats. The five case installation would

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27 W. J. Shafer, Op. Cit.

TABLE XI

INVESTMENT REQUIRED FOR SELF-SERVICE MEATS*

	Three Cases		Five Cases		Nine Cases	
	Number Units	Approx. Cost	Number Units	Approx. Cost	Number Units	Approx. Cost
RECEIVING AND STORAGE		$2,500		$3,500		$4,000
Meat Cooler-Knockdown, Installed Rails and Scales	1	2,500	1	2,500 1,000	1	3,000 1,000
CUTTING AND TRIMMING		1,730		2,160		3,445
Meat Blocks	1	90	2	180	3	270
Cutting Table	1	150	2	300	3	450
Electric Saw	1	650	1	650	2	1,300
Grinder	1	300	1	450	1	450
Slicer	1	350	1	350	1	650
Cube Steak Machine	1	150	1	150	1	150
Knives		15		25		50
Platters and Pans		25		35		75
Dollies (for pans)		-	2	20	5	50
WRAPPING EQUIPMENT		410		770		1,154
Wrapping Table	1	100	1	150	1	200
Scales	1	260	2	520	3	780
Hand Sealing Irons	2	15	5	38	10	75
Hot Plate	1	25	2	50	3	75
Cello Tape and Dispenser	1	3	2	5	4	10
Roll Cello Dispenser	2	7	2	7	4	14

TABLE XI, continued

	Three Cases		Five Cases		Nine Cases	
	Number Units	Approx. Cost	Number Units	Approx. Cost	Number Units	Approx. Cost
SUPPLIES		$ 575		$ 1,085		$ 1,720
Labels	150M	150	500M	350	1000M	650
Trays	5M	50	8M	85	9M	95
Backboards (6 sizes)	12M	50	36M	150	36M	150
Cellophane Sheet and Roll		300		450		725
Miscellaneous (Pens, Ink, Pads)		25		50		100
DISPLAY		3,725		5,500		11,080
Cases - Complete and Installed	3	3,700	5	5,500	9	11,000
Identification Tags		15		30		40
Rubber Greens		10		20		40
TOTAL		8,940		13,065		21,399
Frozen Food Case		1,350		2,700		2,700
GRAND TOTAL		$10,290		$15,765		$24,099

*W. S. Shafer, Op. Cit.

cover the store that expects to handle four to six thousand per week, and the nine case installation is most adequate for a ten thousand sales volume in meat per week.

Yardstick For Sales Production and Cost of Operating

Those in self-service want to know if their operation is good, bad, or indifferent; and those who have not converted as yet to self-service are anxious to compare their existing operation figures with those that have converted. The costs in Table XII are considered to be average for retailers in self-service.[28] The dealer who is not averaging as well as figures stated in this thesis should examine his operation carefully and critically, and the dealer who exceeds these stated figures can consider his operation successful.

Obviously any costs that purport to be par for the self-service store are open to question; however, the yardstick is a guide to operation in self-service, not a prediction of success. Any operator that is not breaking even on a particular section of this measurement may be quite successful because this chart is only a guide for the retailer.

Labor Cost and Production

Another way to check an efficient operation is to determine the amount of pounds per hour each man is producing and the cost per pound or package of meat. Tables XIII and XIV give a breakdown of the cost of both skilled and unskilled labor.[29] These charts will also show the production rate per

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28 W. W. Shafer, Op. Cit.

29 Marketing Research Branch, Retailing Prepackaged Meats, Op. Cit.

TABLE XII

HANDY YARDSTICKS FOR SELF-SERVICE MEAT OPERATIONS*

SALES	
Per Linear Foot of Display Case	$100
Per Week Per Man-Hour	$ 2[illegible]
Meat Department to Total Store Sales	3[illegible]%
Cold Cuts to Total Meat	Above 10% Desirable
PRODUCTION	
Per Man-Hour (In Packages)	25
Per Man-Hour (In Pounds)	30 - 35
Packages Per Girl (Including Wrapping, Labeling, Weighing, Pricing)	One per minute
COSTS	
Wages - Percent of Sales	6 - 7½%
Packaging Supplies - Percent of Sales	1 - 1½%
Total Wages and Packaging Supplies	7 - 9%
Packaging Cost Per Package	4 - 5 cents
SPACE REQUIREMENTS	
Cooler Requirements (Based On Product Sold Per Week)	One square foot per 50 lbs. of product
Total Items for Adequate Display	100 to 125
Display Space Per Item	6 inches
Total Space (Including cutting, and Packaging Room)	18% of total store selling area
SELF SERVICE DISPLAY VERSUS SERVICE SPACE	1¼ to 1½ feet per foot of service case

*W. S. Shafer, Op. Cit.

TABLE XIII

LABOR COSTS PER POUND AND PER PACKAGE IN SELF SERVICE MEAT DEPARTMENTS, ACCORDING TO SALES VOLUME*

Volume of Sales (Dollars)	Number	Labor Cost Per Pound			Labor Cost Per Package		
		Skilled	Unskilled	Total	Skilled	Unskilled	Total
		Cents	Cents	Cents	Cents	Cents	Cents
2,000 and under	10	3.7	1.7	5.4	3.6	1.7	5.3
2,001 - 4,000	17	3.4	1.5	4.9	4.1	1.8	5.9
4,001 - 6,000	25	2.5	1.7	4.2	2.9	2.0	4.9
6,001 - 8,000	12	2.4	1.8	4.2	2.8	2.2	5.0
8,001 - 10,000	8	2.4	1.9	4.3	2.7	2.1	4.8
10,001 and over	8	2.4	1.8	4.2	3.1	2.2	5.3
Average of all stores	(3)	2.4	2.8	4.5	3.2	2.0	5.2

Skilled - Managers and Cutters
Unskilled - Weighers, Wrappers, and Others

*Marketing Research Branch, Retailing Prepackaged Meat, Op. Cit.

[redacted]

TABLE XIV

HOURLY PRODUCTION OF SKILLED, UNSKILLED, AND TOTAL LABOR IN SELF SERVICE MEAT DEPARTMENTS, ACCORDING TO SALES VOLUME*

Volume of Sales (Dollars)	Number of Stores	Skilled Labor		Unskilled Labor		Total Labor	
		Pounds Per Man-Hour	Packages Per Man-Hour	Pounds Per Man-Hour	Packages Per Man-Hour	Pounds Per Man-Hour	Packages Per Man-Hour
2,000 and under	10	33.4	34.7	35.1	36.4	17.1	17.8
2,001 - 4,000	17	45.3	37.2	51.3	42.1	24.0	19.8
4,001 - 6,000	25	60.1	51.9	43.3	37.4	25.2	21.7
6,001 - 8,000	12	61.3	51.5	40.1	33.7	24.2	20.4
8,000 - 10,000	8	78.3	70.5	50.0	45.9	30.9	27.8
10,001 and over	8	70.8	56.4	49.0	39.1	29.0	23.1
Average all Stores	(4)	61.9	52.0	45.4	38.7	26.0	22.2

Skilled - Managers and Cutters
Unskilled - Weighers, Wrappers, and Others

*Marketing Research Branch, Retailing Prepackaged Meat, Op. Cit.

man-hour for both types of labor in pounds and in packages produced. The breakdown of these charts is in dollar volume per week.

Gross Profit

Gross profit is probably the most inconsistent figure in the whole picture of prepackaged meat. If the retailer is able to operate close to the previously cited yardstick, he will find that his operation will compare with that of the service operator. Many operators report lower gross profits on the self-service operation when beginning in this type of retailing.[30] For those who have pulled all parts of their operation down to the yardstick figures, the operation of prepackaging is successful.

Advantages of Self-Service

The main advantage of self-service is customer acceptance. Over three-fourths of those in self-service, say that sales are higher; 17 percent say that sales are the same; and only 6 percent say that sales are lower.[31]

A survey by the E. I. du Pont de Nemours Company gives more conclusive figures on the increased sales when conversion of the meat counter occurs. The following facts are presented to the retailer by this survey:

1. In markets with service meat departments, 8.7 percent of all purchases were meat or .75 meat items per customer.

2. In markets with 100 percent prepackaged meat, 10.3 percent of all purchases were in the meat department or 1.05 meat items per customer.

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30 W. S. Shafer, Op. Cit.

31 Ibid.

3. There are .3 items more meat sales in self-service meat counters than service counters. This is 300 more meat items per thousand customers.

4. More volume means more dollars and more profit for the retailer.

This survey continues to tell the overall store advantage of installing self-service meats. The contention of this survey is that in stores with service type meat departments shoppers bought an average of 8.6 items in the store. In meat departments with self-service shoppers bought on the average of 10.3 items or 1.7 more items per shopper. This means that 1,700 more items were bought per thousand shoppers in self-service meat stores.

Customer Preference

The following reasons for the purchasing of prepackaged meat were given in the survey, "The Pros and Cons of Prepackaged Meat". Out of 100 percent the following percentages were listed.

Reason	Percent of Total Replies Who Like Prepackaging
Convenience	37.8
Store Influence	27.9
Like Package	10.0
Good Experience	9.8
Variety	9.6
Can Inspect Meat Closely	8.0
Good Quality	6.9
Independent Selection	5.9
Cleanliness	4.4
Others, Price, Freshness	8.5

Again, as in Chapter II, the fact that some customers do not buy prepackaged meat should not be overlooked by the retailer. Even though self-service is put into effect, the customer who does show objections must have some reason for not buying the prepackaged items. These reasons the retailer should discover and try to eliminate.

CHAPTER IV

SUMMARY AND CONCLUSIONS

The information presented to the reader in the body of this thesis pertains to the facts and considerations that need to be reviewed before a retailer converts from service type meat and produce departments to self-service meat and produce. The author at this point would like to express the caution that the reader should use this material only as a supplementary guide. The retailer will find that the tables which are included are merely a guide for forming an evaluation of his existing type of operation and to determine the advisability of converting to self-service. After an evaluation is made, the retailer may realize that he will obtain a smaller percentage of profit by increasing the volume of merchandise sold.

Many additional facts influence the retailer's decision to convert to self-service. For instance, the following factors selected from many considerations should be analyzed thoroughly: customer reaction, volume of business, investment needed, space and layout needed, supplies and personnel.

Customer acceptance. Many surveys on customer acceptance have been conducted by various organizations. Some surprising facts about Mrs. Housewife's reaction to prepackaging were discovered. One of the most complete surveys on this subject of prepackaged produce was made by the United States Department of Agriculture, Washington, D.C., in conjunction with the Great Atlantic and Pacific Tea Company in Columbus, Ohio. This survey proved conclusively that the longer a prepackaged operation existed in a particular locality, the greater the percentage of customer acceptance.

It also gave indication that families of three and four members preferred prepackaged articles to a greater extent than did consumers from families of one and two members.

The most complete survey on customer acceptance of prepackaged meat is "The Pros and Cons of Prepackaged Meat", conducted by the E. I. du Pont de Nemours Company of Wilmington, Delaware. This study revealed that the acceptance of prepackaged meats was dependent upon the age group of the customers. The older group of consumers preferred the butcher type of service and the younger group of buyers preferred prepackaged meat.

Thus, from facts sighted in the body of this thesis, the retailer should realize the necessity of analyzing the trading area from which his customers will come. In retailing any commodity to the critical public, the consumer is the one who will either accept or reject a particular type of retailing.

Volume of business. The second factor that needs the attention of the retailer is his proposed and present volume of business. In prepackaging, the larger the operation, the more easily profit can be made. Prepackaging is a production line operation and is most efficient if specialization is possible. In the prepackaging of produce, American Stores Company of Philadelphia, Pennsylvania, has been quite successful because a centralized prepackaging operation is used. A cost figure analysis of this operation is used. A cost figure analysis of this operation is shown in Table II. This table shows a labor breakdown according to the number of hours of skilled and unskilled labor needed in a store of a designated dollar volume. Table XIII shows the cost per package and per pound of meat in stores of different sizes. Here, the efficiency rose as the number of pounds of meat handled increased. In both the prepackaging of produce and meat, the efficiency

increased as the volume of merchandise handled increased. Very few small operations which have converted have been successful and those that were successful were influenced by extraordinary circumstances. Consequently, prepackaging is more likely to be successful if the store under consideration is doing a considerably large volume of business.

Investment required. The third factor that the retailer must consider is the initial investment needed to convert from a service type to a self-service type operation. In produce, this investment will be relatively small because most of the display equipment will be the same. The back room equipment will be about the same as that of a service operation with the exception that more space for the operation will be needed and a few additional pieces of equipment such as; the major part of the retailer's investment will be in supplies that will be needed in the actual packaging operation.

However, in the prepackaging of meat, the investment in equipment will amount to a sizeable outlay. Table XI gives the amount of equipment and the investment needed for the various sizes of operations.

Space required. The fourth factor that will need the retailer's attention is the space that the new type of operation will require and the layout that can be used in the space that is available. For produce, a prepackaging sample layout is explained in Chapter II. For meat prepackaging operations, a number of different types of layout are explained in Chapter III. Figure 1 presents a complete floor plan of the separate cutting and wrapping rooms. The determining factor as to which type of layout the retailer can most advantageously use will be based on the space that is available.

Supplies needed. The sixth factor that needs consideration is the amount of supplies that will be needed in a self-service type of operation. In both produce and meat self-service operations, the investment for supplies will be large. The various types of supplies that will be needed in this new type of operation are discussed in detail in Chapters II and III. Other additional information that is needed can be obtained from the source of the supplies.

Personnel. The last consideration made is the personnel needed. Under this subject the cost of labor, work schedules, training of personnel for the various tasks such as weighing, wrapping and supervising are considered in both Chapters II and III. Very little attention has been given to this function other than the distribution of the costs involved in the various steps of prepackaging. Table XIV shows that the success of the packaging operation will depend, to a great extent, on the successful control of labor expenses. Again, the volume of business that is done will be the determining factor as to whether the retailer will be able to keep the cost of a prepackaging operation as low as the costs of the service type operation. The larger the operation is, the more effective it will be. Many equipment companies have store planning departments to assist retailers to train and lay out their prepackaging operation.

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