AN ECONOMIC ANALYSIS OF PREPACKAGED MEAT MERCHANDISING WITH PARTICULAR EMPHASIS UPON SALES, CONSUMER REACTION AND OPERATIONAL EFFICIENCY

by

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ROBERT CHRISTIAN KRAMER

ABSTRACT OF THESIS

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By

Robert Christian Kramer

One of the most recently introduced ways of retailing fresh meat is the 100-percent self-service method. Retailers using 100-percent self-service operate their meat department as follows. Carcasses and wholesale cuts are delivered to the store as usual. In the store the meats are cut into retail cuts, then the employees wrap, heat-seal, weigh, price, and display these cellophane wrapped packages of meat in open-top refrigerated meat cases. Shoppers select their meats from these cases and do not have to talk with the butcher or his helpers.

Merchandising meat by self-service has developed very fast since World War II. On April 1, 1946 there were 28 100-percent self-service meat stores in the United States. On April 1, 1951 there were 3,972 such stores in the United States. This study was designed to analyze this new method of retailing meat.

The analysis was divided into three parts. The first part consisted of a comparison of meat sales, meat wages and total store sales in two self-service meat stores and two butcher-service meat stores for a period of one year. The second part was an analysis of customer reactions to prepackaged meat. The data for the second part was obtained by questionnaire from 1,100 families who had shopped in one of four 100-percent self-service meat stores. The third part was an efficiency analysis of the labor force which was employed in one self-service meat store.

It was found that the stores which shifted to prepackaged meats increased their sales of meat and other foods. New customers were attracted to these stores. However, the labor cost of merchandising meat in packages was not reduced as had been expected. It remained about the same in self-service and butcher-service stores.

The respondents in this study definitely preferred self-service over butcher-service. They liked self-service because: 1) They could shop quicker; 2) The weight and price were given on each package of meat; and 3) They could pick up the package and examine the meat more closely than if they bought meat from a butcher. Not all of the customers liked prepackaged meat, and from some of those that did, several complaints were received. Some respondents said packaged meat was not as fresh, some had been fooled by excess fat or bone hidden in the package, and some objected to different sizes, thicknesses and types of cuts in the same package.

This study showed that labor efficiency could be increased 25 to 30 percent with no change in the physical layout of the processing room in a self-service meat store. It was thought that labor efficiency could be further increased if the physical layout in most stores were rearranged.

Approved:

Lawrence Witt

Major Professor

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CHAPTER I

INTRODUCTION

Research in the marketing of agricultural products has been conducted for a number of years. It started because farmers thought that their share of the dollar which consumers spent for food was too small. Many farmers feel this way today. The early research was naturally, it seemed, done on agricultural products in the marketing channel between the farm and the processor. Many improvements resulted from this original research, but as our United States' economy progressed, more and more services were required to satisfy the desires of the consumer. The economies which were developed from the early research were offset by the increased demand for services. So, despite the good results of many earlier research projects the farmer continued to receive about the same share of the consumer's dollar spent for food.

Immediately after World War II new demands were expressed for more research on the marketing of agricultural products. Realizing that prospects for improving the marketing of farm products from the farm to the processor were limited, researchers and administrators pointed to the other areas in the marketing channel which were virtually virgin territory. They said research was needed in the processing industries, in wholesaling and in retailing.

Next to the returns to producers retailing takes the largest share of the consumer's dollar. This does not mean that the greatest inefficiencies exist in this area of distribution; the retailer performs a great number and variety of marketing services. Consumers demand these services, which determine to a large extent the costs of retailing.

It was because retailing did take such a large share of the consumer's dollar that the writer was interested in doing work in this area. It appeared that the introduction of self-service merchandising of prepackaged meats offered possibilities for reducing the expenses of retailing meat and still permit the retailer to make his usual profit. With possible reduced retailing expenses the consumer as well as the producer should benefit. This leads us to the problems studied.

The problems studied. This study was divided into three parts. One dealt with the change in meat sales that was evidenced when a super-market converted its meat department from service to self-service meat merchandising. To make the comparison two super-markets within the same organization were chosen. Data were obtained from each store by weeks for a period of one year, before the one store was converted to prepackaged meat merchandising. These data included weekly meat sales, weekly total store sales, and the labor bill in the meat departments of each store. Then, after the one store converted, weekly data were collected on all the meat products purchased and sold from the two stores. These two stores were as alike as it was possible to obtain.

The second part dealt with consumer reactions to prepackaged meat. Consumer likes and dislikes for prepackaged meats were studied as were some sociological and economic factors which possibly influenced family meat buying behavior. Reactions of 1100 families who patronized four super-markets which sold all meat prepackaged were analyzed for this section of the study. One of these super-markets was in Lansing, Michigan, and the other three were in Detroit.

The third part of the study dealt with operations in the meat department of a store which packaged and merchandised prepackaged meat. This store was a 100-percent prepackaged meat store. In other words, all meat that was sold was packaged ahead of the time of sale and displayed in an open refrigerated meat case. The term used in this study to denote a store with the usual method of meat merchandising was service store. The service store has a butcher and/or meat clerks behind an enclosed meat case. The customer asks the butcher or clerk to show him a piece of meat and if the customer decides to purchase the meat, the butcher or clerk weighs it, wraps and prices it while the customer waits and watches.

The typical 100-percent self-service meat store. In the typical 100-percent self-service meat store, there is a meat cutter, a hostess, and one or more wrappers. The meat cutter is always a man but the hostess and wrappers are usually women. The meat cutter does all the heavy lifting. He breaks the sides of beef, carries and opens the boxes of meat, and does the cutting. In large stores the head meat cutter usually has an assistant, a man, who has the classification of butcher and the butcher does the same type of work as the meat cutter. Figure 1 shows the head meat cutter and the butcher preparing meat for the wrappers.

The hostess spends most of her time stocking the meat case, rearranging packages after the customers have pawed through them, and advising customers on meat buying and meat preparation. See Figure 2.

The wrappers put the cut meat on backing boards or in trays, then wrap and seal the packages. They then label, weigh, mark, and price each package. When they have prepared the package for sale, they usually

Figure 1. Head Meat Cutter and Butcher Preparing Meat for Wrappers.

Figure 2. Hostess Stocking Meat Case.

carry the packaged meat to a holding cooler. Figure 3 shows the wrappers wrapping, sealing and pricing meat. Figure 4 shows a holding cooler where the packaged meat is kept on aluminum trays before it is taken by the hostess to the meat cases.

Importance of meat in the U. S. economy. Meat is the basic food around which most meals are prepared. In Figure 5 one can see that during the past ten years over 20 billion pounds of meat has been produced each year. Meat is a perishable food and all meat that is produced moves into consumption at some price. If necessary, prices of meat are adjusted so that the supply will be taken. Some meat is frozen and stored for short periods by commercial concerns but the amount is negligible, only one-half billion pounds per year. The United States has a small import balance of meats and this balances the loss of weight from shrinkage and spoilage in our domestic production. So, domestic meat production equals domestic consumption.

The problem presents itself. If efficiencies can be found for our meat distribution systems, savings can be had for our consumers--if we actually have a competitive economy. The writer believes that the meat distributive industry, especially the meat retailing industry, is very competitive. Look at the savings for the economy if the cost of retailing meat could be reduced only one penny per pound; over $200,000,000 per year. If two cents could be cut from the retailing charge, over $400,000,000 could be saved each year.

Retailing is the most costly function in moving meat from the producer to the consumer. Of course, returns to producers is the largest single item in the cost of a dollar's worth of meat, but retailing is the most costly marketing function. The retailing margin is larger when prices are low. In 1932, 33 cents of each consumer meat dollar went for

Figure 3. Wrappers Working in the Processing Room of a Self-Service Meat Store.

Figure 4. Holding Cooler for Prepackaged Meat.

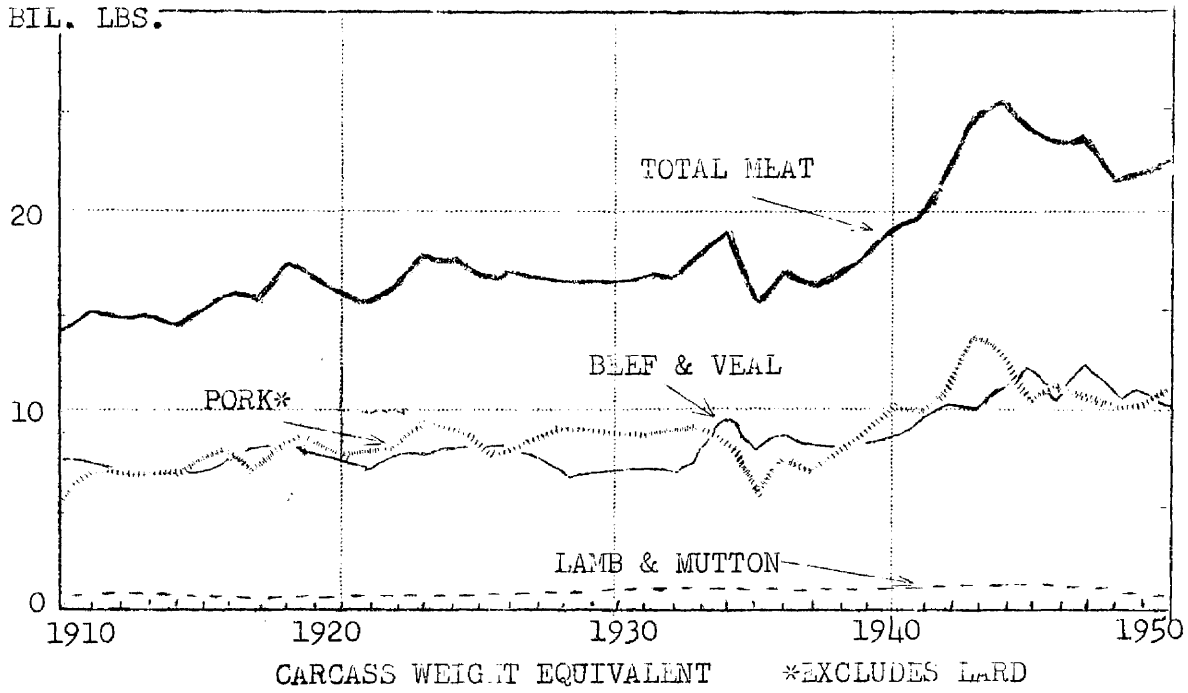

Figure 5. Meat Production in the United States, 1910 - 1950.

retailing. In 1939, nearly 26 cents of each consumer meat dollar went for retailing. In 1947, only 16 cents went for retailing. The retailing margin shrinks as the price level rises but so do all other marketing margins. Returns to producers increase as the price level rises and make up for much of the decrease in the marketing margins. Figure 6 shows these relationships. It was because retailing takes such a large share of the consumer's meat dollar that this study seemed very important.

Importance of meat in the family diet. For the past fifty years each person in the United States has consumed about 150 pounds of meat per year. In 1908, the year of the largest meat consumption, 163 pounds was the per capita meat consumption. The low year in the last half-century was 1935 when 117 pounds were consumed. Beef and pork are the two meats which make up the major share of the total meat consumed. Sixty to seventy pounds of both beef and pork are usually consumed by the average person each year. In Figure 7 one can see the trends in the consumption of all meats.

In the United States from 25 to 30 percent of the total disposable income is spent for food for human consumption. About one-fourth of the amount spent for all foods goes for meat. Meat, then, is very important in the family budget--about six percent of the total disposable income of the average family is spent for meat.

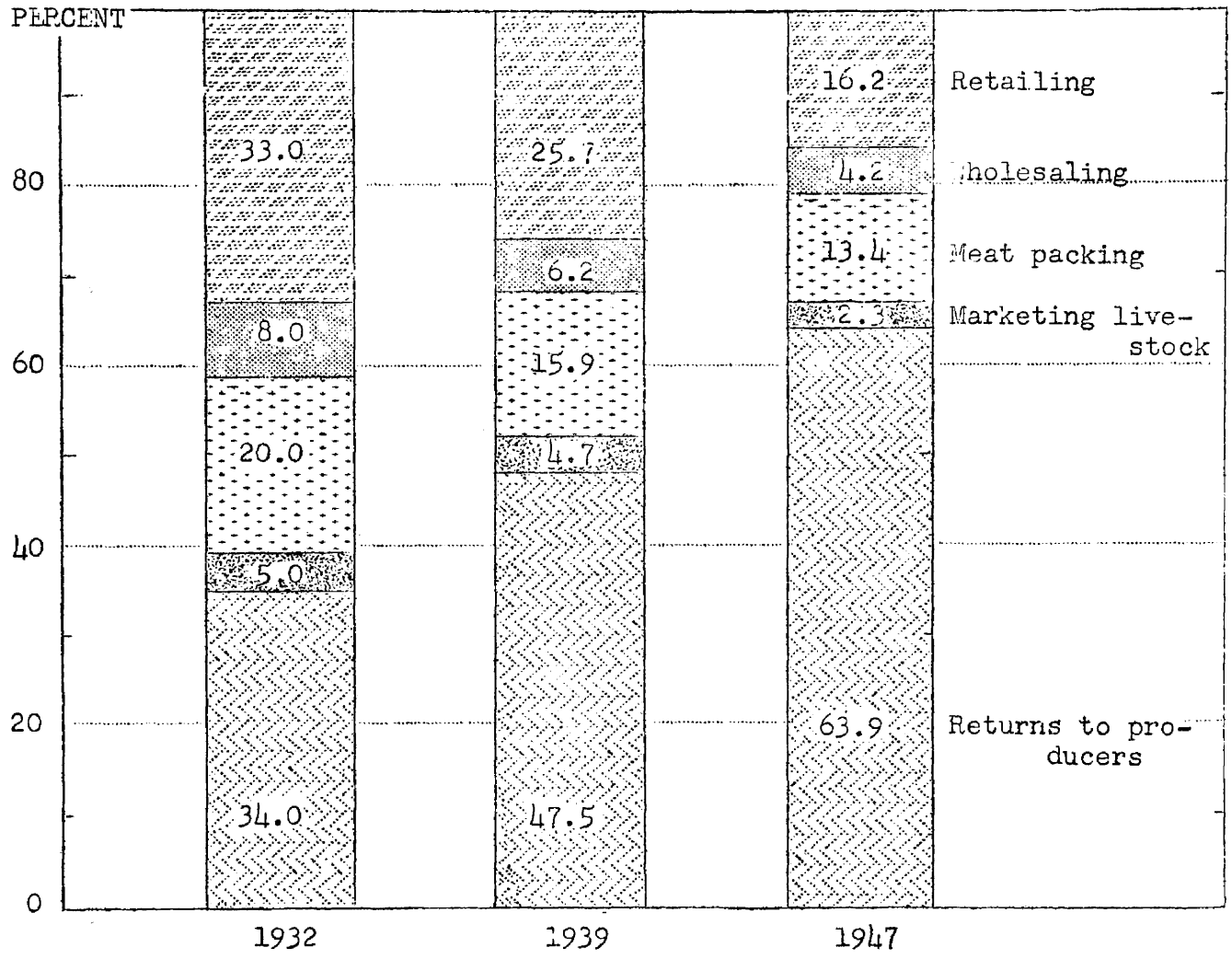

Figure 6. Percentage Distribution of Consumer's Meat Dollar at Low, Medium, and High Price Levels, 1932, 1939, and 1947.

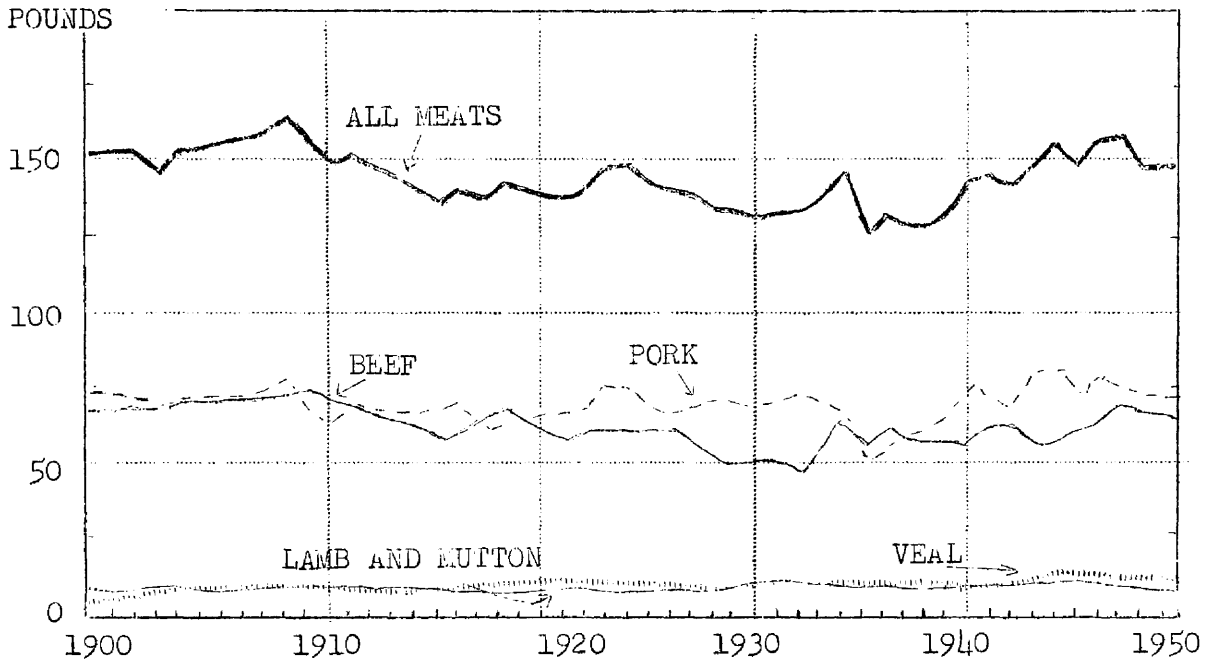

Figure 7. Meat Consumed per Person, 1900 - 1950.

CHAPTER II

REVIEW OF LITERATURE

While this report is primarily concerned with the economics of prepackaged meat merchandising, it is helpful to consider some of the earlier methods of selling meat and changes which have occurred over the years. The ancient and early American methods will be reviewed as a backdrop for the substantial changes which have occurred in the last 100 years. The literature pertaining to prepackaged meat will be considered under the heading "Recent American" and, of course, receives major emphasis.

Meat merchandising in ancient times. We must go back to Biblical history to trace the ancestry of our present retail meat merchant. Schueren[1/] says that Adam was perhaps the first real butcher. He was the predecessor to the old time "butcher", who precedes our modern retail meat merchant.

Primitive man found it necessary to kill wild game to provide meat for his family. As the people grouped together in little villages, organized hunts were started in which the meat was consumed on a share and share alike basis. Domesticated animals came with civilization. The appearance of villages and towns and the division of labor brought on the need for industrial production and the distribution of meats. According to Corey[2/] in ancient civil-

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1/ Arnold C. Schueren, Meat Retailing, Vaughn Company, Chicago, 1927.

2/ Lewis Corey, Meat and Men, The Viking Press, New York, 1950.

ization the slaughter houses were located in the crowded city streets with the waste products being allowed to flow into the gutter. This became a public nuisance and in Rome, by Nero's time, the slaughter houses had been grouped together in one of the city's most imposing market structures. The live animals were transported to the slaughter houses where they were slaughtered and sold to the public. One of the purposes of the construction of the ancient Roman Forum was that it should be used as a public market place where the city population could buy meat and other food. The meat consumed in Rome was often of bad taste and had to be flavored with spices.

Schueren[3] said that the meat production and distribution industry was very important and profitable in Western Europe. The herdsmen drove the livestock to the public market places where they were sold to the butcher or public. Many of the same market places are in use today.

In Florence, in the fifteenth century, there were 70 butcher shops and 8 shops which retailed fowl and game.[4] These shops bought the livestock which the herdsmen had driven into the city, slaughtered it, and sold it to the people.

In Paris, until the year 1818, when model slaughter houses were built, the animal slaughtering and meat merchandising had taken place on the principal streets as in the early civilization

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3/ Op. Cit. Chapter I.

4/ Corey, op. cit., Chapter II.

times. The gutters contained waste products which contaminated the atmosphere as they flowed on to the River Seine, while weary, noisy animals blocked the traffic. Conditions were not much better in London. Meat and other products were sold from street markets or by peddlers.5/

Early American. The early colonies produced their own livestock and meat merchandising was strictly a local business. But in 1662, John Pynchon found it profitable to pack hogs and ship the meat from Springfield, Massachusetts to Boston, because the countryside around Boston did not produce enough meat for the growing city and the supplying of ships.6/

The early meat packers packed cuts of pork and beef in barrels of brine. They had no refrigeration to keep the meat from spoiling until the action of the salt had cured it so their operations were confined almost entirely to the winter months. They piled the barrels outside their plants on the ground and sold them in the spring.7/ During the winter months, farmers supplied plentifully the larger towns with fresh pork by slaughtering one or more hogs at a time and hauling them to town. This method is still used in sections of the South today and in many less developed parts of the world.

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5/ Ibid.

6/ Edwin L. Heckler, The Meat Packing Industry, Bellman Publishing Company, Inc., Boston, 1944.

7/ Ibid, Chapter I.

Before modern transportation was available, the small livestock producer had to sell his products as best he could. When cities and towns grew too large to be supplied entirely by local farmers, the "drover" became important. The drover went out into the country and bought a steer at one farm and a cow or bull at another farm. He collected together a small group of cattle and drove them to the city where they were sold to the butcher or to the public. The drover provided an outlet to the farmer and a source of meat to the consumer. It was not unusual for the drover to drive cattle over a route 800 miles long. The cattle grazed along the way on the trip to market. As late as 1840 livestock fouled most American cities, including New York.8/

The butcher had his slaughter house in back of his shop. Later, for sanitary reasons he was forced to move his slaughter house outside of the city or buy livestock already slaughtered. Such well-known names as Armour and Swift had their origins in these humble butcher shops and slaughter houses.

Intermediate American. The great development of the meat production and distribution industry came after the Industrial Revolution, the spread of the factory system and free enterprise. The development of railroads and other means of transportation furnished better methods of meat distribution which was largely limited to the merchandising of cured meats. It was not until 1852 that any attempt

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8/ Corey, op. cit., Chapter II.

was made to ship cattle by rail even in an experimental way. The Civil War caused more livestock to be shipped this way -- meat being necessary to feed the soldiers.

The refrigerated car, a very important factor in retail meat distribution, made its appearance about 1870. This greatly influenced a change in the distribution of meat. If the butcher did not want to buy dressed meat from his local slaughter house or packer, he could buy it from other packers who operated quite some distance away.

The old time eastern butcher did not favor "western dressed" beef, and in certain eastern cities even today, some retailers still have objections toward western dressed beef. They proudly display their signs reading they sell only "city dressed" beef.

About the same time that the refrigerated car appeared, mechanical refrigeration was installed in ships and in storage warehouses. Meats could be held or shipped around the world and the quality was maintained.

Another important discovery at this same period was the method of hermetically sealing meat in tin cans. The first canned meats were better than no meat at all - they were not very good. With all these developments the functions formerly performed by the "master" butcher were now being done by the packer and the butcher only merchandised the meat.9/ The many small, unsanitary slaughter houses were replaced by a centralized, well equipped, refrigerated abattoir.

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9/ Schueren, op. cit., Chapter I.

Recent American. When the "master" butcher devoted all of his time to retailing meat, he found one of his major problems to be that of displaying the products he had for sale. During cold weather, quarters of beef were hung in store windows or out on sidewalk stands, to show the type of merchandise offered for sale. When the meat was hung in quarters, the customer had little choice as to the kind of cut he would get. If he arrived when steaks were being cut, he got a steak, when chucks were cut he got a chuck roast; in other words, he got the next cut exposed. It is easy to understand that the customer had a very limited selection with this type of merchandising.

With the development of health regulations, the unprotected hanging of meat was stopped and the retailer was required to protect his products from dirt and filth. This brought about the development of the meat counter or case. The first meat cases were very crude; they were enclosed on two sides with glass and usually had a stone or metal bottom. Later, the cases were entirely enclosed and were refrigerated with ice. Refrigerated glass cases were adopted by the most progressive meat retailers around 1920.[10/] These were more sanitary and the customer had a much wider choice of cuts. The butcher cut up his meat into retail cuts ahead of the rush hour and stored it in the cases. The development of refrigerated meat cases proved to be a great milestone in meat merchandising.

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10/ Anonymous, The National Provisioner, January 24, 1920.

In 1920, a new idea in meat retailing was experimented with by the Rittenhouse Bros., Philadelphia, Pa.[11/] They sold meat in their retail markets at a uniform profit of a penny per pound. They thought they could run a meat market successfully on that margin of profit. They offered the best grades of meats on a cash and carry basis. The meats were arranged on large platters in quantities which had been weighed and priced. When the customer selected some meat, it was put in a bag and handed to her. If she doubted the weight of it, she could weigh it on the scales provided for that purpose. The writer thinks this was the forerunner of our modern self-service meat markets.

Grocery stores did not retail meat, except cured meats as an unprofitable sideline, until after World War I when chain stores made their great development. The merchandising of fresh meats was left to the local butcher.[12/] Chain stores were able to realize a profitable margin on meat retailing because they made a more efficient utilization of labor, coupled with the fact that consumers wanted a one-stop store.

During the depression years of the 1930's, the chain store organizations developed self-service merchandising. With this type operation the customer served himself. Self-service merchandising was first used for dry groceries that had a long shelf-life and few

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11/ Anonymous, The National Provisioner, January 17, 1920.

12/ Anonymous, The National Provisioner, February 25, 1920.

storage problems. Later it grew into fruit and vegetable sections with the development and production of open refrigerated cases.

Evidently the experiment tried by the Rittenhouse Brothers in Philadelphia was not successful because they are not mentioned again in the literature. They were not the only ones who thought meat could be merchandised the self-service way, however. Meat Merchandising[13/] gives an excellent discussion of the early experiments with self-service meat merchandising:

> "As far back as 1923, pre-packaging of meats imported from France was tried by Hudson Bay Company in Winnipeg, Man., Canada. The meats were wrapped in cellophane and sold by service clerks, but the experiment was shortly discontinued.
>
> "This operation had been conducted by Mr. T. R. Ronaldson. Five years later, he still thought the idea was good, and convinced Frank L. Parsloe of H. C. Bohack Co., Brooklyn, N. Y. By 1929, this firm was serving pre-wrapped meats to 50 stores from a central plant.
>
> "The stores were those too small to have full meat departments, and the pre-packed meats were sold by clerks, generally from dairy cases. A number of factors caused this attempt also to be dropped: improper refrigeration and display equipment, lack of meat knowledge by the clerks, inadequate wrapping materials, and a high percentage of returns to the central plant.
>
> "In the early '30s similar experiments in Philadelphia and Detroit areas by A & P were likewise not continued because of the same difficulties.
>
> "About 1933, Sam Slotkin of Hygrade Food Products Corp. conceived the idea of putting pre-cut meat into cardboard bread trays and over-wrapping them with cellophane on a bread-wrapping machine. A packaging plant was set up to serve a store in New York City and it was hoped to have other stores in New York as well as in Chicago.

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13/ Anonymous, Meat Merchandising, Meat Merchandising, Inc., St. Louis, Mo., 1949.

"But again the project was defeated by inadequate wrappings, excessive returns from the store, and the difficulty of gauging demand from a remote plant.

"The next experiment, also unsuccessful, was about 1935 by the Loblaw chain in Canada, which tried a fixture with a display top and stock drawers below, somewhat similar to some candy cases. The refrigeration was unable to do the job.

"By 1938, Sanitary Grocery Co. of Washington, D. C. was pushing a cod-fatted rolled roast with an outer cellophane covering. The cellophane held the cod fat in place and was not to be removed before cooking. It was called a "Cello-Roll Roast" or a "Self-Basting Roast" and advertisements proclaimed that the cellophane forced the fat into the meat to make it juicier and tastier.

"This meat product became successful in Washington, and was likewise featured in Boston by First National Stores, Economy Grocery Co., and A & P. Charles Adams (then head of the A & P meat department at Boston, and since retired) and Walter Zink, merchandised legs of lamb, wrapped in cellophane and placed on top of meat cases. This created much comment from customers and stimulated lamb sales tremendously. Pre-wrapped roasts were selling well.

"Finally, in 1940, it was decided to pre-pack chickens and a variety of items in addition to the roasts. The selected store in the well-to-do Belmont district enjoyed good sales on pre-wrapped meats - from a service case.

"It was but a step to a full-scale self-service test. The store at 467 Center Street, Jamica Plain, was chosen -- principally because it was in a neighborhood where customers were likely to be exceedingly critical.

"Pre-wrapped meats were sold in this store for a month or more before the historic day - February 4, 1941 - when the first self-service meat case went into operation.

"It was an old fish-and-delicatessen case . . . hurriedly readjusted to what seemed to be proper design. In the first week, 1400 packages of pre-wrapped meat were sold from the self-service case - and A & P decided the idea was good! The test store showed a 30 percent meat volume increase without additional labor cost, a figure which was fairly well upheld in later operations.

"Things happened rapidly after that. Plans were drawn, and a few cases ordered to specifications -- which refrigeration men refused to hook up, because they thought open cases couldn't possibly do a job.

"A & P in Boston was ready to go to 100-percent self-service meat, but the war interfered. At Pittsburg, A & P ordered 123 cases for self-service meat. In Schenectady, N. Y., Empire Markets opened a self-service meat department which was described and pictured in the July, 1941, issue of Meat Merchandising.

"This period marks the beginning of efforts by manufacturers to develop open-type, refrigerated cases especially adapted to the display, preservation and sale of self-service meats.

"Their engineering efforts have been successful. The case makers take their place in the industry with the makers of transparent films as the pioneers without whose work this new selling system could never have succeeded.

"The self-service meat idea was picked up by Caler's of Los Angeles in 1942. Once it hit the fertile imaginations of independent West Coast retailers, the idea spread quickly. Nelson of Inglewood, Lewis of Riverside, Berk and Sage of San Bernardino established it early as a means of meeting war-time labor shortages.

"These west coast merchants carried the ball faster and farther than others. During the war years when only an occasional market in the Middle West and East established self-service meats, the system made rapid strides in California."

The first non-industry analysis of retailing prepackaged meat was made by Franklin W. Gilchrist.[14/] Gilchrist's Journal article[15/] states that consumers did prefer to buy their meats prepackaged, stores using self-service for merchandising meats experienced increases in meat sales in almost all instances, and operating costs for stores

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14/ Franklin W. Gilchrist, An Analysis of Pre-Packaging and Self-Service as a Means of Lowering Costs of Retailing Meat and Delicatessen Products, with Special Reference to Southern California. This was a dissertation presented to the faculty of the Department of Economics, University of Southern California, in June, 1948.

15/ Franklin W. Gilchrist, "Self-Service Retailing of Meat," The Journal of Marketing, Volume XIII, January, 1949.

using self-service were lowered as a result of savings in labor and space following conversion. One limitation to Gilchrist's study was that he did not study the records of stores with meat departments which had weekly meat sales under $3,500. In other words, he studied only larger meat departments. Gilchrist stated: "More data are needed before a final appraisal of the efficiency of Pre-Packaged, Self-Service is possible."16/

Armour and Company has been very interested in the developments taking place in the United States in the merchandising of prepackaged meats. In 1943 Armour and Company started research projects dealing with the preparation and packaging of meats for self-service sale. C. K. Wiesman, Director of Development and Quality Control in Armour Laboratories, guided the research in the technical field. In 1947 Armour published its first technical report, "Technical Aspects of Self-Service Meats". It was reported that this manual was well received by the trade. In 1949 "Technical Aspects..." was revised and brought up to date. The rapid progress made in the general area necessitated another revision which was published in 1950. The 1950 edition was also entitled, "Technical Aspects of Self-Service Meats."

In 1948, Armour published its first of four nation-wide surveys of self-service meat operations. The 1948 manual, Pre-Packaged Self-Service Meats, 36 pp. dealt with whether self-service was

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16/ Ibid., p. 304.

successful, whether consumers liked self-service and what happened when retailers went into self-service. This report stated that in most cases self-service was successful, most consumers liked self-service meat merchandising, and in most cases stores going into self-service experienced an increase in meat sales.

The 1949 Armour report, Prepackaged Self-Service Meats, 31 pp., concerned itself with the growth of the merchandising of meats by self-service, improvements in production and layout, ways and means of reducing costs and more efficient and better controlled operations in every phase of self-service.

The 1949 Armour report stated that all but two states had 100-percent self-service meat stores on April 1, 1949 and that there were 878 100-percent stores spread over the United States. The report stressed the fact that meat departments should be organized on a continuous-flow basis to utilize labor and equipment most efficiently. Also, that costs per pound of meat seemed then to be a little higher in the self-service stores. Consumers continued to prefer self-service and many stores were converting their meat departments to self-service because of competition.

In 1950 and 1951 Armour again published reports on self-service meats. These reports gave the results of nation-wide studies of the developments in meat retailing. The 1951 study showed that the number of 100-percent self-service meat stores was continuing to increase. Figure 8 shows the growth of 100-percent self-service meat stores in the United States. The 1951 Armour report estimated

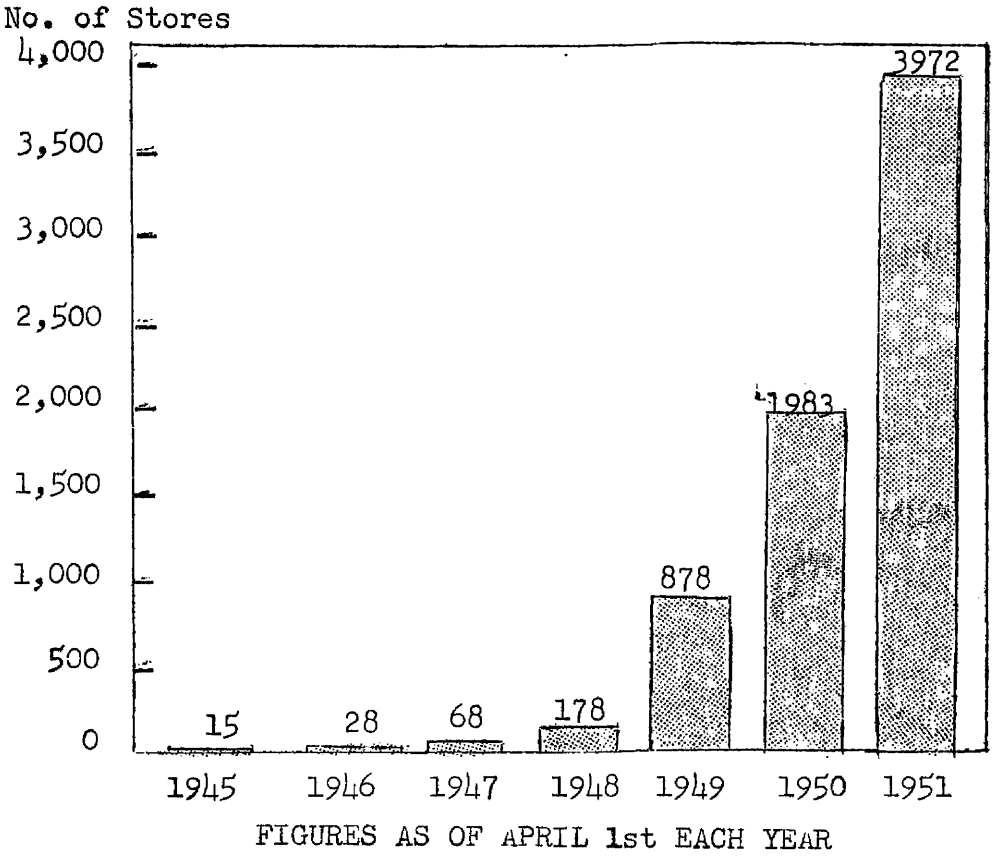

Figure 8. Growth of Complete Self-Service Meat Stores

that there were over 4,000 100-percent self-service meat stores in May, 1951.

On April 1, 1951, every state had at least one self-service meat store. Michigan, at that time, had 127. New York led all the other states with 346 self-service meat stores. California, which led the states in 1949, was sixth on April 1, 1951, with 191 stores. The 4,000 self-service meat stores represented only about two percent of all stores handling fresh meats but these stores did a little over ten percent of the total retail meat business in the United States. Nevada was the last state to add a self-service meat store.

The discussion has been on 100-percent self-service meat stores but there are also partial self-service meat stores. These stores sell part of their meats from the usual service meat cases where the customer asks to see a particular cut of meat, and if he decides that it is the cut he wants, the butcher or clerk weighs and wraps the meat while the customer waits and watches. Partial self-service stores have these service meat cases and also self-service cases. The customer can serve himself to some meat items but has to deal with the butcher for the others. The 1951 Armour report said that on April 1, 1951, there were 10,362 of these partial self-service meat stores.

3 Armour and Company did an excellent job for the meat industry and especially for meat retailers. Their reports were very readable and kept the public up to date on the changes and new developments in the field of prepackaging and self-service of meats. Their non-

technical reports showed the growth of self-service in meats, reported consumer reaction to prepackaged meats, and gave hints to meat retailers as to procedures they should follow in merchandising their meats. The technical reports discussed packaging, quality retention, and physical layout of the cutting and wrapping rooms in a self-service meat store.

The Consumer Service Department of Armour and Company devoted a lot of research to polling and interviewing consumers about their likes and dislikes of prepackaged meats. Ester Latzke, Director of Armour's Consumer Service Department delivered papers to the Super Market Institute and contributed to the Armour non-technical reports mentioned above. One paper[17] showed that women in general did like self-service meats but they did not like to be fooled or gyped by shady merchandising practices.

All of the national food chain organizations and many of the local food chains have their research departments busily engaged in research on problems of packaging or merchandising prepackaged meats. The Kroger Company and the Kroger Food Foundation have both conducted numerous research projects into the problems involved in selling prepackaged meats. George Garnatz gave a paper to the 1949 Super Market Institute.[18] He discussed the technical problems in pack-

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17/ Ester Latzke, "Self-Service Meats From the Woman's Standpoint", a paper read to the Super Market Institute, 1949. Miss Latzke is Director of Armour's Consumer Service Department.

18/ George Garnatz, "A Review of Packaging in Connection with Retailing Meats." Mr. Garnatz is with the Kroger Food Foundation and presented this paper to the 1949 Super Market Convention.

aging the various types and cuts of meat. James Cooke read a paper to the same Institute.[19] He related experiences which his company had had in merchandising prepackaged meats. He said that there were many customers who did not like prepackaged meats because of non-freshness, excessive waste, and complaints on size and type of cuts. He stressed the merchandising of fresh meat.

Swift and Company has also done research on prepackaged meats. In the opinion of the writer, Swift lagged behind Armour. But Paul Goeser, research laboratories, Swift and Company presented a paper to the 1949 Super Market Institute in Chicago.[20] In this paper he said that each prepackaged meat package must identify itself, price itself, withstand handling, be competitive, and be actively attractive. He said there were four basic facts to consider when merchandising meat in packages: 1) The bright color and fresh appearance of unfrozen meat is best maintained at a temperature of 30 to 31 degrees; 2) Meat that has been aged does not have as long a case life as fresh meat; 3) Meat packages when stacked give increased pressure on the lower packages. Excessive stacking causes unsightly accumulation of meat juices in the lower packages; and 4) No style of packaging improves the original quality or condition of the meat. He summarized his paper with the above four points and said that

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19/ James Cooke, "How to Merchandize Self-Service Meats". Mr. Cooke is with the Penn. Fruit Company. He presented this paper to the 1949 Super Market Convention.

20/ Paul Goeser, "Self-Service Meats Present Several Technical Problems," The National Provisioner, July 2, 1949.

packaging films (cellophane or pliofilm, etc.) vary widely in their moistureproofness, fresh meats need oxygen and a minimum of moisture loss, and cured and table-ready meats discolor when exposed to light in the presence of air.

Most of the industry studies dealt with technical problems. This dissertation deals primarily with economic problems but the technical and economic problems are so closely entwined at points that the complete separation and identification were practically impossible. The brief discussion above was included because this study will later refer to some of the technical problems mentioned. While mentioning industry studies it should be pointed out that all of the paper companies are constantly trying to develop better films to be used for packaging meats. The two leading companies, duPont and Sylvania, have done much research and have worked very closely with the meat industry.

The self-service refrigerated case companies have also done much research. They are constantly trying to design better cases. Some of the leading companies are: 1) Hussman Refrigeration, Inc; 2) Super-Cold Corp.; 3) Frigidaire - Div. of General Motors Corp.; 4) C. V. Hill and Co.; and 5) McCray Refrigeration Co. One of the most recent developments made by these companies was a self-service meat case which can be re-stocked from the rear. The older cases had to be stocked from the front and restocking was quite a task when there was a large number of customers milling around the meat cases. Figure 9 shows one of the older self-service meat cases and

Figure 10 shows one model of the newer rear fill self-service meat cases.

There have not been many studies on problems involved with merchandising prepackaged meat which were not industry studies. One of the few was published by the Production and Marketing Administration in 1949.[21/] This report was the result of a nation-wide study. Workers from the PMA interviewed owners or managers of 97 stores located in 80 cities in 27 states and the District of Columbia. The survey contacted about 25 percent of the 400 stores in operation at that time, 1948. The report described the meat departments in operation, labor production and costs, packaging materials used, equipment used, case life of meats, consumer acceptance, and merchandising practices in use at that time. This report showed that 100-percent self-service meat stores were increasing in number rapidly and that only 9 percent of the stores had weekly meat sales under $2,000. Almost all meat items except frozen meat and poultry were packaged in the stores. As the dollar sales volume increased so did output per man. Total labor costs of all self-service departments averaged 4.5 cents per pound of meat handled, and 5.2 cents per package. Film MSAT-80 was used by all stores packaging fresh meats and LSAT film was used for luncheon meats. Lastly, handling by customers was the principal cause for rewrapping packages.

21/ A. T. Edinger et. al, Retailing Prepackaged Meats, U.S.D.A., Production and Marketing Administration, Marketing Research Branch, Washington 25, D. C., December 1949, 27 pp.

Figure 9. Typical Front-Fill Self-Service Meat Case.

HUSSMANN

MODEL O-5Y70 and O-11Y70 With High Superstructure—No Lower Storage

MODEL OS-11Y70 With High Superstructure—Rear Storage

Continuous Self-Service Meat Case

SPECIFICATIONS

EXTERIOR FINISH—Front white porcelain and stainless steel trim. Back and ends white Dulux with Stainless Steel Trim.

OUTSIDE DIMENSIONS—Model O-5Y70, 70″ high, 41½″ extreme overall depth (including Bumper Rail), length 5′4-11/16″ without ends. Model O-11Y70, 70″ high, 41½″ extreme overall depth (including Bumper Rail), length 10′9″ without ends. Model OS-11Y70, 70″ high, 43¼″ extreme overall depth (including Bumper Rail), length 10′9″ without ends. Each end 3″ or 6″ for two ends.

DISPLAY SHELVES—30½″ wide, 13.6 sq. ft. per 5′ case, 26.8 total sq. ft. per 11′ with metal bar-type shelves finished in white. Adjustable to three positions. Triple glass front with stainless steel top rail.

LIGHTED SUPERSTRUCTURE—(Overall height of case with superstructure 70″) with sliding one-way mirror or slotted mirror or clear glass.

STORAGE DOORS—Model OS-11Y70, 27⅝″ wide, 19½″ high. Clear opening 23¼″ wide x 15¾″ high. Number of doors 4. Hardware flush with outer panel.

STORAGE COMPARTMENT—Model OS-11Y70, inside dimensions 16″ high, 32″ deep, 10′6″ long. Bar metal sectional floor racks. Available with rack assembly for storage compartment providing three positions (24½″x31″) per door opening for storing prepackaged meat.

REFRIGERATION—New Proven Hussmann forced air circulating system with automatic defrost to give satisfactory temperatures for self-service meat. ¾ h.p. water-cooled or 1 h.p. air-cooled condensing unit is recommended for each 11′ case. 5′ case used in conjunction with 11′ case Model W150FH Condensing Unit or air-cooled or AW Model 150FS Condensing Unit is recommended. See regular condensing unit multiplexing recommendations. (Note price of case does not include condensing unit, this is extra.)

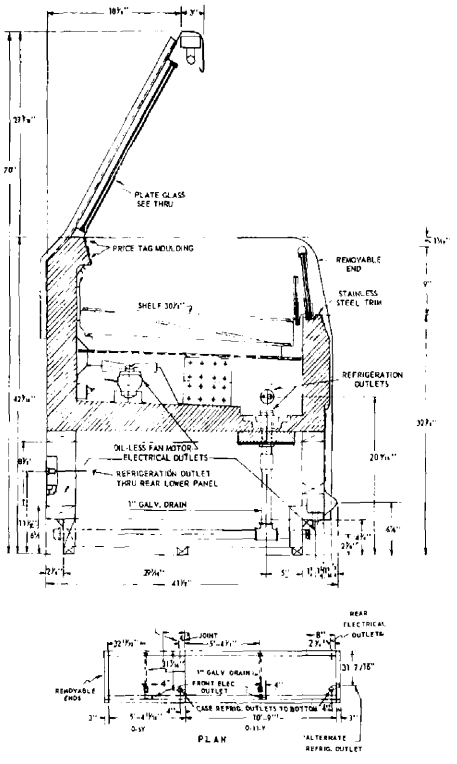
SERVICE CONNECTION—Drain out front and rear. Refrigerant line out end and back. Electrical outlets through rear on Model OS-11Y70, through front and rear on Models O-5Y70 and O-11Y70. See plan for detail.

JOINING SECTIONS—APPLYING ENDS—The joining of cases is accomplished by bolting sections or ends together. Where sections join proper cover strip material is provided.

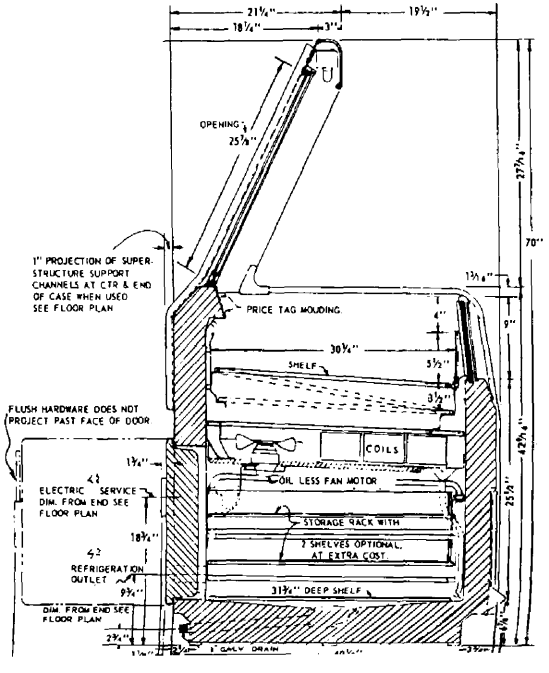
SHIPPING WEIGHTS—Model O-5Y70 approx. 980 lbs. without ends; 1145 lbs. with two ends. Model O-11Y70 approx. 1430 lbs. without ends; 1600 lbs. with two ends. Model OS-11Y70 approx. 1630 lbs. without ends; 1800 lbs. with two ends.

NOTE—"The Seller reserves the right to change specifications from those set forth in its printed literature without liability to purchaser where specified materials are not procurable."

CROSS SECTION AND PLAN MODEL O-5Y70 AND O-11Y70



CROSS SECTION AND PLAN MODEL OS-11Y70



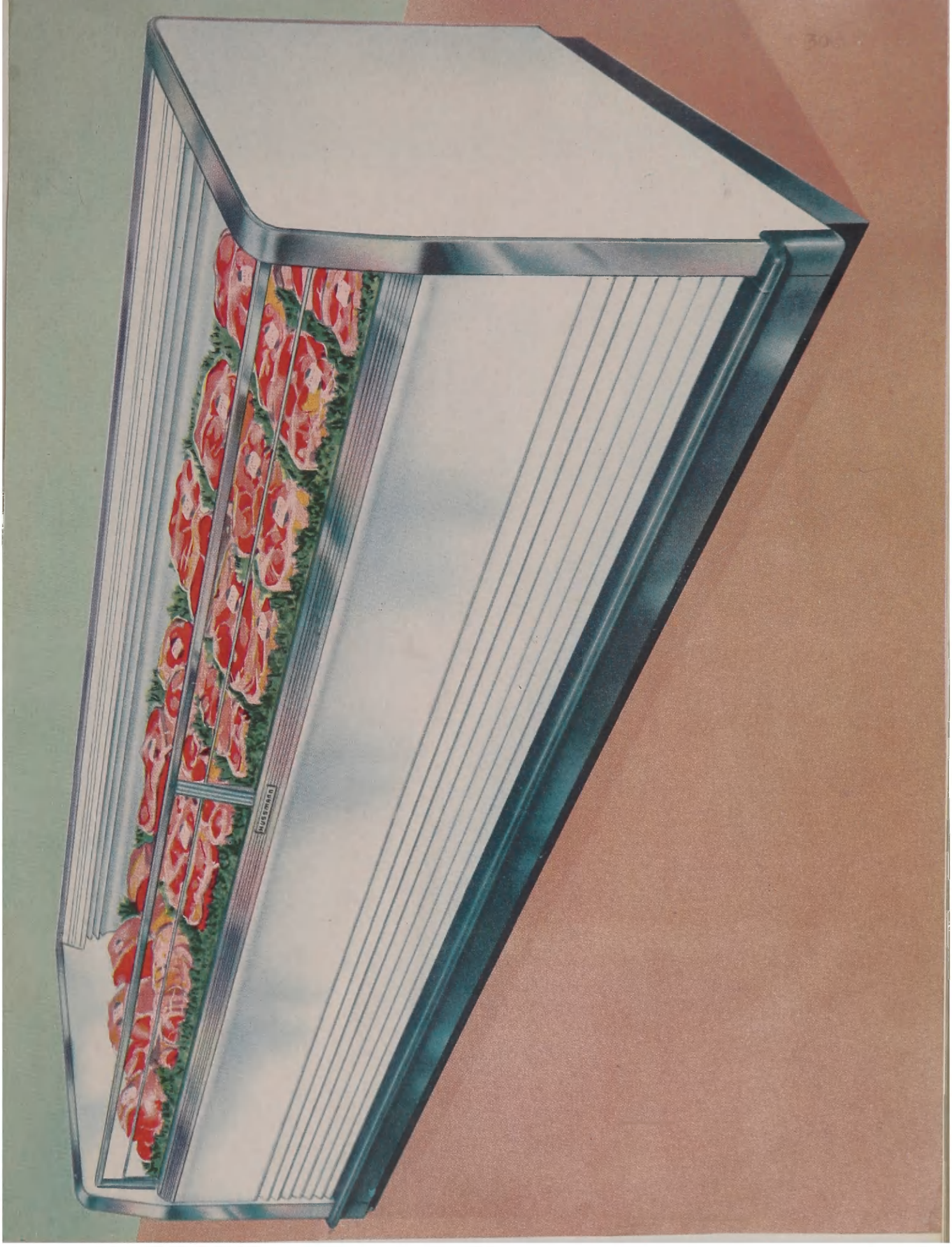


Figure 10. An Example of a Meat Case Which is Filled From the Rear.

Michigan State College was one of the first colleges to do research on problems connected with prepackaged meats. The Departments of Animal Husbandry and Agricultural Economics began work in 1947. They realized the economic and technical problems were closely related and did their research from a joint project outline.

The Department of Animal Husbandry studied wrapping films, the effect of temperature on drip-loss, the bacteria counts on meat handled and packaged under normal retail store conditions, and the relation of bacteria count to case live. Charles C. Chamberlain and L. J. Bratzler[22/] stated that fresh prepackaged meats showed the superiority of DuPont #80 cellophane over DuPont #87 cellophane in tightly wrapped packages and that constant refrigeration at relatively low temperatures is a "must" in case life of prepackaged meats is to be prolonged. Joseph S. Gowland[23/] concluded that aluminum foil was a very efficient wrapping film but its advantages are outweighed because of its non-transparency. Stacking and handling packages increases the percent of shrink or drip loss. Cutting and wrapping should be done in a refrigerated room and if refrigeration is not available the cutting and wrapping should be done with dispatch. Rewrapping and remerchandising are the main problems in self-service

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22/ Charles C. Chamberlain and L. J. Bratzler, unpublished mimeographed report, "Report on Hope-Flanagan Project 1-A, 1947-1948," Michigan Agricultural Experiment Station, 1948.

23/ Joseph S. Gowland, Technical and Operational Problems of Self-Service Meat Merchandising, unpublished Master of Science thesis, Michigan State College, 1949.

meat stores. The average meat purchaser purchased 2.5 packages of meat.

The third study completed in the Department of Animal Husbandry at Michigan State College was conducted by Marvin Voegeli.[24] In his study Voegeli identified the bacteria which are present on all meat and on equipment in meat stores. He showed how rapidly these organisms multiplied unless temperatures were controlled and antiseptic conditions were met. Voegeli concluded that equipment offers the greatest source of contamination for fresh meat and that equipment should be kept clean. During the first three days of display of prepackaged meat the increase of micro-organisms is small, but after the first three days the micro-organisms multiply very, very rapidly, and if meat is purchased after it has been packaged and displayed for three days it should be consumed immediately.

The writer published the results of a consumer reaction study in August, 1949.[25] Customers of one super-market which sold prepackaged meats were polled as to their likes and dislikes concerning prepackaged meats. A majority of those polled in the study espressed a like for prepackaged meats. They gave many reasons why they liked prepackaged meat but the three most important reasons were: 1) The weight and total price were given on the packages;

24/ Marvin M. Voegeli, Flow Sheets of Prepackaged Fresh Meat, an unpublished Master of Science thesis, Michigan State College, 19[illegible] Michigan Agricultural Experiment Station Quarterly Bulletin, August, 1949.

25/ Robert C. Kramer, "Consumer Response to Prepackaged Fresh Meats," Michigan Agricultural Experiment Station Quarterly Bulletin, August, 1949.

2) They could shop quicker; and 3) They could examine the meat more closely than they could when they bought meat over the service meat case. There were some customers who expressed dislikes and these were usually about freshness, the price being somewhat higher, (this point was never proved in a series of interviews which the writer made with retailers) the lack of variety of meat cuts - such as types, sizes, thicknesses, and counts, and being fooled about excess fat or bone which was hidden in the package. More recent studies provide the data for the present report.

The National Provisioner has published numerous articles on prepackaged meat. Most of them were reprints of papers which were presented at annual conventions of the meat industry, and these were reviewed above. This magazine has been a very fertile source of information on self-service prepackaged meat merchandising and is mentioned here as a reference for those interested in keeping in touch with recent developments in prepackaging of meats.

The Progressive Grocer is another good magazine which publishes articles on prepackaged meats. The magazine has articles dealing with all types of foods, so meats receive only their share of the space in the magazine. Those interested in prepackaged meats should review this magazine to keep abreast of recent developments.

Summary. The literature pertaining to meat merchandising is not voluminous. The literature pertaining to self-service meat merchandising is much less since self-service meat merchandising is less than ten years old. This study deals primarily with self-

service meat merchandising and the literature available was almost entirely from reports, articles in trade papers, and from papers presented to industry officials. Armour and Company provided the best source of information on the subject.

Most of the literature was descriptive. Gilchrist's study at the University of Southern California was perhaps the best analytical study found in the literature. There were many problems the industry had not encountered when Gilchrist made his study. To the writer's knowledge Gilchrist was the first college man to make a study in the general area. His study was conducted in 1946 and 1947. Four United States colleges were studying problems in the area in 1950. Most work, however, was on technical problems.

All the recent literature has pointed out gaps in the information and stated that many problems needed solutions. This study was designed to give answers to several of the questions needing answers.

CHAPTER III

THE DATA USED FOR STORE COMPARISONS

The groundwork for the analysis of self-service versus service meat merchandising is laid in this chapter. The methods used in obtaining the data are given as well as a description of that data. The bookkeeping "period" is described. Important data for two stores in the study are compared for the year preceding the conversion of one of the stores to 100-percent self-service. Seasonality of both meat production and consumption are examined as are meat prices for the period under investigation. This chapter could be termed a descriptive chapter. The next chapter contains the analysis of the changes which occurred after the conversion to self-service meat merchandising.

When data were collected. The data which were used for the comparison of meat and total store sales between two sets of two super markets, one which sold all its meats by self-service and the other which sold its meats by the service method, were collected by weeks from October 23, 1948 to October 22, 1949. It was necessary for the writer to visit the central office of one set of two super markets in the study each Thursday and copy from the delivery slips (which the suppliers furnished when meats were delivered) the type of product purchased and the weight of each item. Approximately 200 meat, poultry, cheese, and fish items were purchased and sold by each of the two stores.

Meat, poultry, cheese, and fish items all were included because this organization rang up on their cash registers all these items under meat sales. The other chains rang up cheese sales as dairy sales. So,

for analytical purposes, it was necessary to record purchases of all items which were rung up as meat sales in two stores.

Virtually all super market organizations use the "period" for keeping their books. A period is four weeks and there are thirteen periods in each year. Periods are better than months for record keeping and for comparisons because each period is exactly the same length as the other. This, of course, is not true with months. Periods are better adapted than weeks when making comparisons of purchases and of sales. For example, some meat items can be kept on hand for over a week and so this item may not be purchased each week. Purchases over a period of four weeks average out fairly well and for these reasons the period analysis was used in this study.

Where stores were located. Two of the stores used for this part of the study were located in Detroit; two were located in Lansing. In order to obtain the data used, the writer promised the management of each super market that the identity of his store would not be disclosed. There were four super markets in this part of the study. But the entire report contains data from six super markets. Each store has been given a number designation - Store 1 for example. These number designations are used when the writer speaks of a specific store.

Description of the stores. This part of the study contains data from four stores, Store 2, Store 4, Store 5, and Store 6. Stores 5 and 6 merchandised all of their meats the service way. Stores 2 and 4 were 100-percent self-service meat stores. Stores 2 and 6 are compared as are Stores 4 and 5. A more detailed comparison was made between Stores 4 and 5 than was made between Stores 2 and 6. (See Table I)

All of these super markets were considered large stores. The

Table I. Identification of Stores Used for Various Phases of Study.

	Store to Store Comparison	Consumer Reaction Study	Conducted Time Study	Complete Meat Self-Service
Store 1		X		X
Store 2	X	X	X	X
Store 3		X		X
Store 4	X	X		X
Store 5	X			
Store 6	X			

weekly meat sales from these four stores ranged from five to ten thousand dollars per week. Meat sales varied from 20 to 35 percent of total store sales so these stores each sold around a million dollars worth of foods in a year.

Beliefs and hypothesis tested. The writer believed that efficiencies can be increased in the merchandising of meats. He has pointed out that retailing is the most costly function in the merchandising process and that retailing seemed like the logical point to try and find a better and less costly way of moving meat to consumers. At rush periods in a super market, customers have often spent more time buying their meat supply than in buying all the rest of their groceries. The writer believed that waiting to be sold meat was an unnecessary waste of the consumer's time and that customers often avoided stores which had meats to their liking but required the customers to take a number and stand in line.

It was believed that stores which merchandised their meats prepackaged and used self-service could increase their meat sales and probably

their total store sales and do this with the same expenditure for labor in the meat department as they had before converting to self-service meat merchandising. This was the hypothesis which was tested in this part of the study.

Comparison of Stores 4 and 5 before Store 4 was converted to 100-percent self-service. Stores 4 and 5 were located in the same city; they were owned by the same corporation; they were about the same size; their customers were from similar stations in life, and there was about the same amount of traffic in front of each store. In other words, these two stores were similar in all characteristics which were observed. Store 4 had a slightly larger volume of business than Store 5.

The collection of weekly data started October 23, 1948 as this was the date Store 4 started merchandising prepackaged meat. To get an idea of the volume of business done by each store before the conversion of Store 4, the writer went to the central office and obtained dollar meat sales, meat wages and total dollar store sales for 1948 from January 10 up to October 23. It might be pertinent to add that Store 4 was open for usual business all the time its meat department was being converted to self-service.

At this point it should be added that there is a seasonal variation in meat purchases by consumers - not only in meat purchases but also in production. In Figure 11 it can be seen that the variation in production through the year is more pronounced than is consumption and it can also be seen that more meat is consumed at the beginning and end of a year than in the summer months.

It was not possible to get the actual pounds of meats sold but dollar meat sales were available. These gave a good comparison because

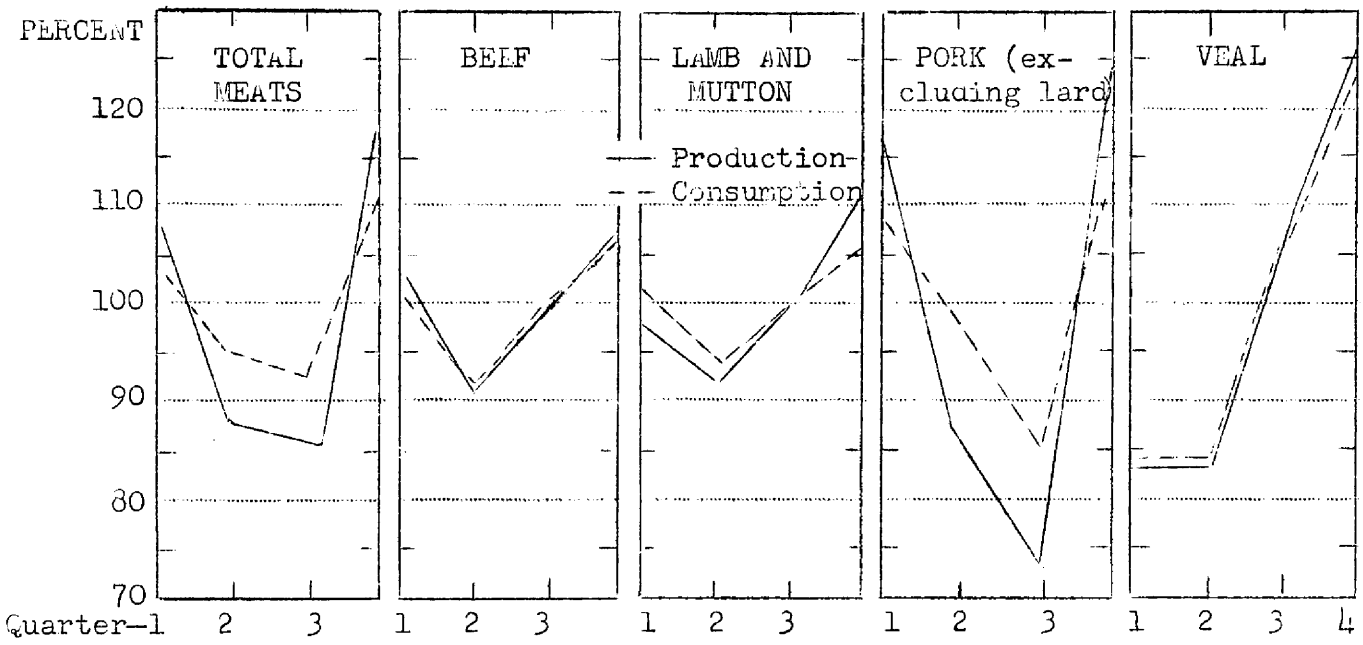

Figure 11. Seasonal Variation in Production and Consumption of Meat, United States, by Quarter-Years.

the pricing system used in both stores was identical as were the other important characteristics mentioned above. Before comparing dollar sales in one year with dollar sales in another year, an index of retail meat prices was studied. These index figures showed there was very little difference in the yearly average level of meat prices in 1948 and 1949 (see Figure 12) but the monthly variation was large. Yearly sales seemed to be better for comparison than monthly.

There is a seasonal variation in the average retail prices of meats in the United States. Meat prices normally reach their low point in March and their peak in September. Figure 13 shows this annual variation in retail meat prices.

In 1948, before Store 4 converted to self-service, there was the usual variation in meat sales in both Stores 4 and 5. After the first part of the year, when meat prices are normally low and consumption normally increases, there was an increase in meat sales in both stores. These meat sales increased at the end of the year to a figure higher than at the start of the year. Although Store 4 was converted to self-service for the sale of its meats by October 23, the company did not advertise this fact until after the first of the next year so there was not a large influx of new customers in 1948. Figure 14 shows the 1948 meat sales in Stores 4 and 5.

Total store sales follow about the same pattern through the year as meat sales. When plotted on a graph, total store sales are high at the beginning and end of a year, and low in the summer months. These facts were true for Stores 4 and 5 as is shown in Figure 15.

Meat wages do not vary through the year as do meat sales. The main reason for this is the fact that meat personnel want steady employment

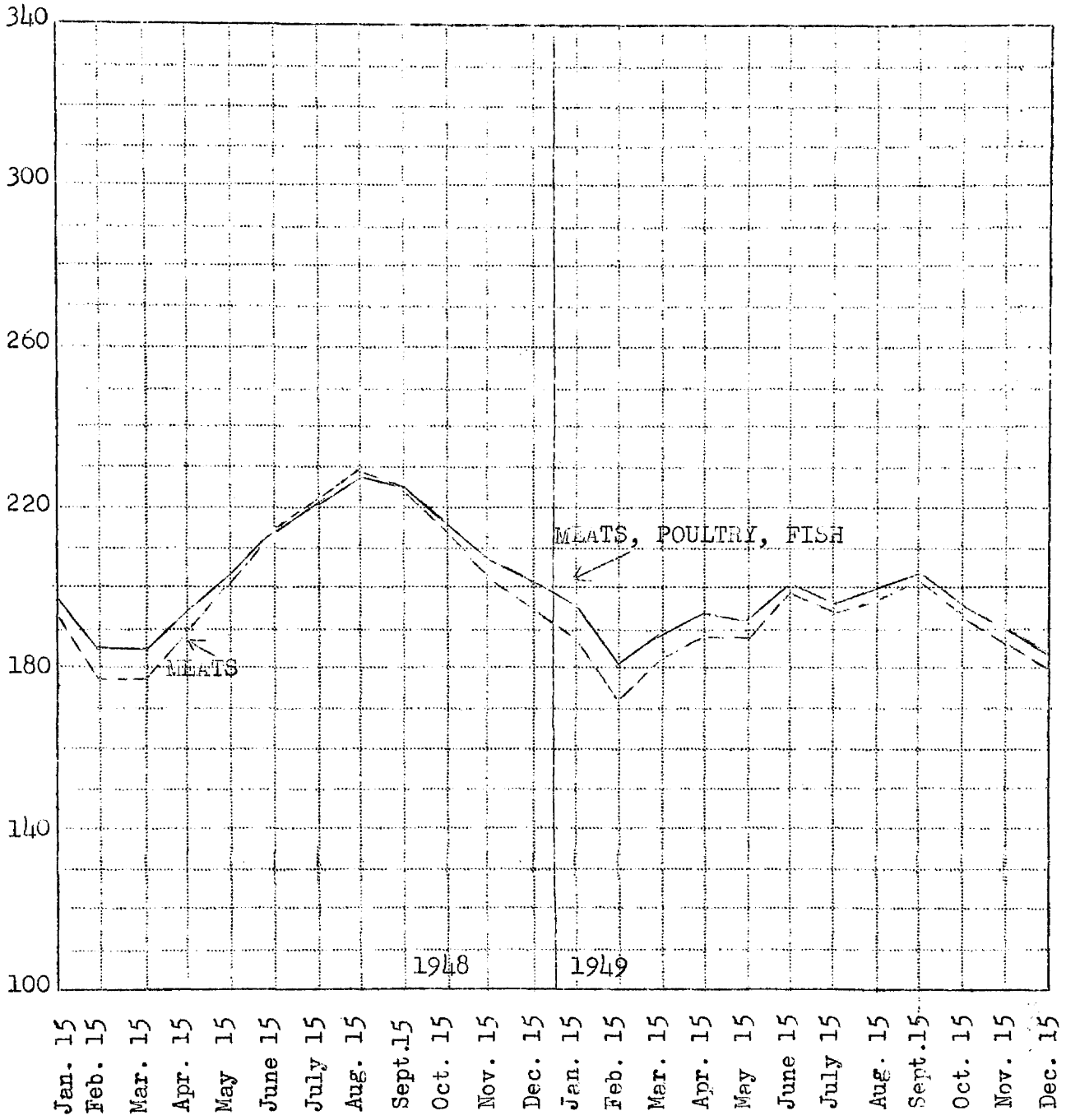

Figure 12. Consumers' Price Indexes for Meat and Competing Products Based upon Sales to Moderate Income Families for Large Cities Combined, by months, 1948-49.

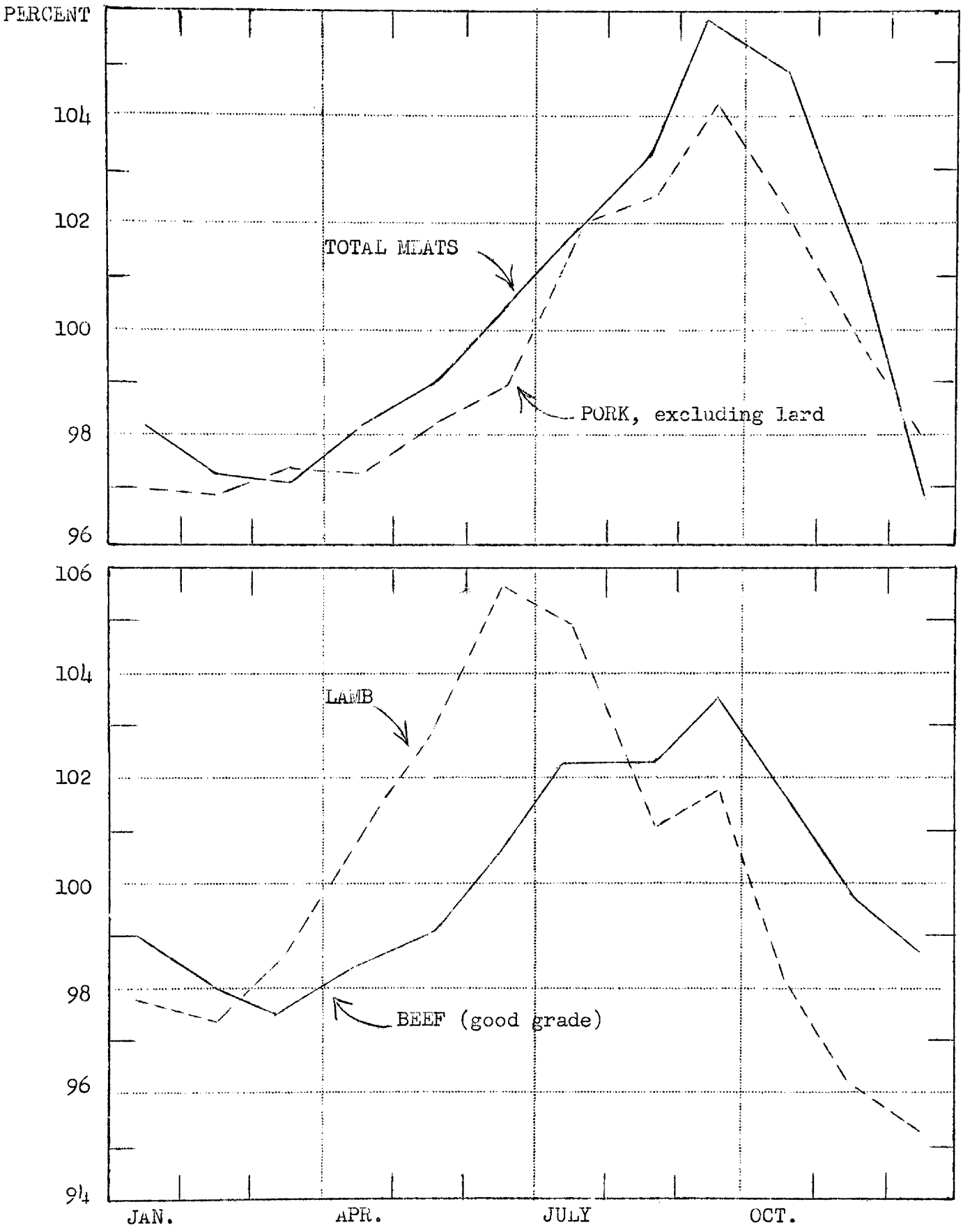

Figure 13. Seasonal Variation in Average Retail Prices of Meats, United States.

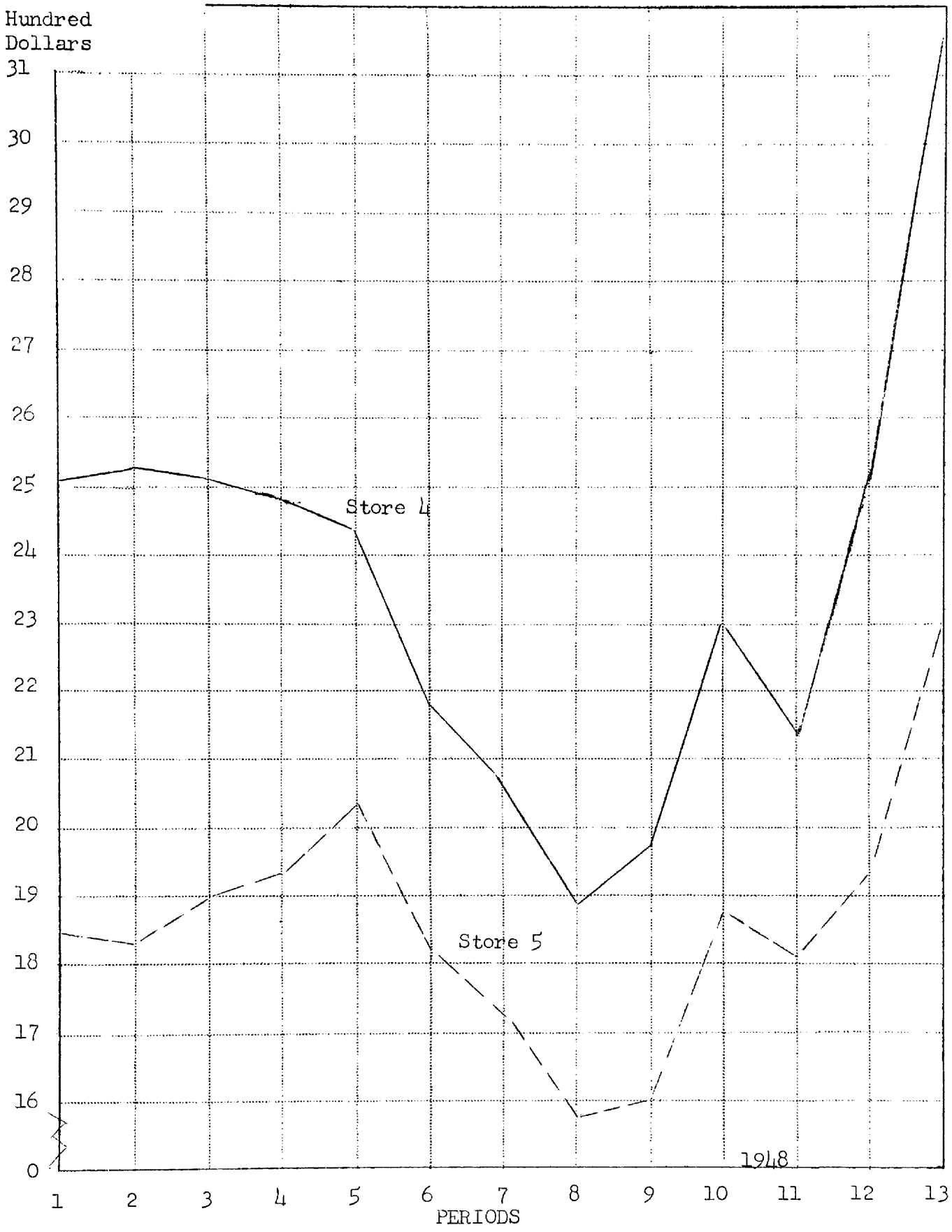

Figure 14. Total Meat Sales in 1948 by Periods in Stores 4 and 5.

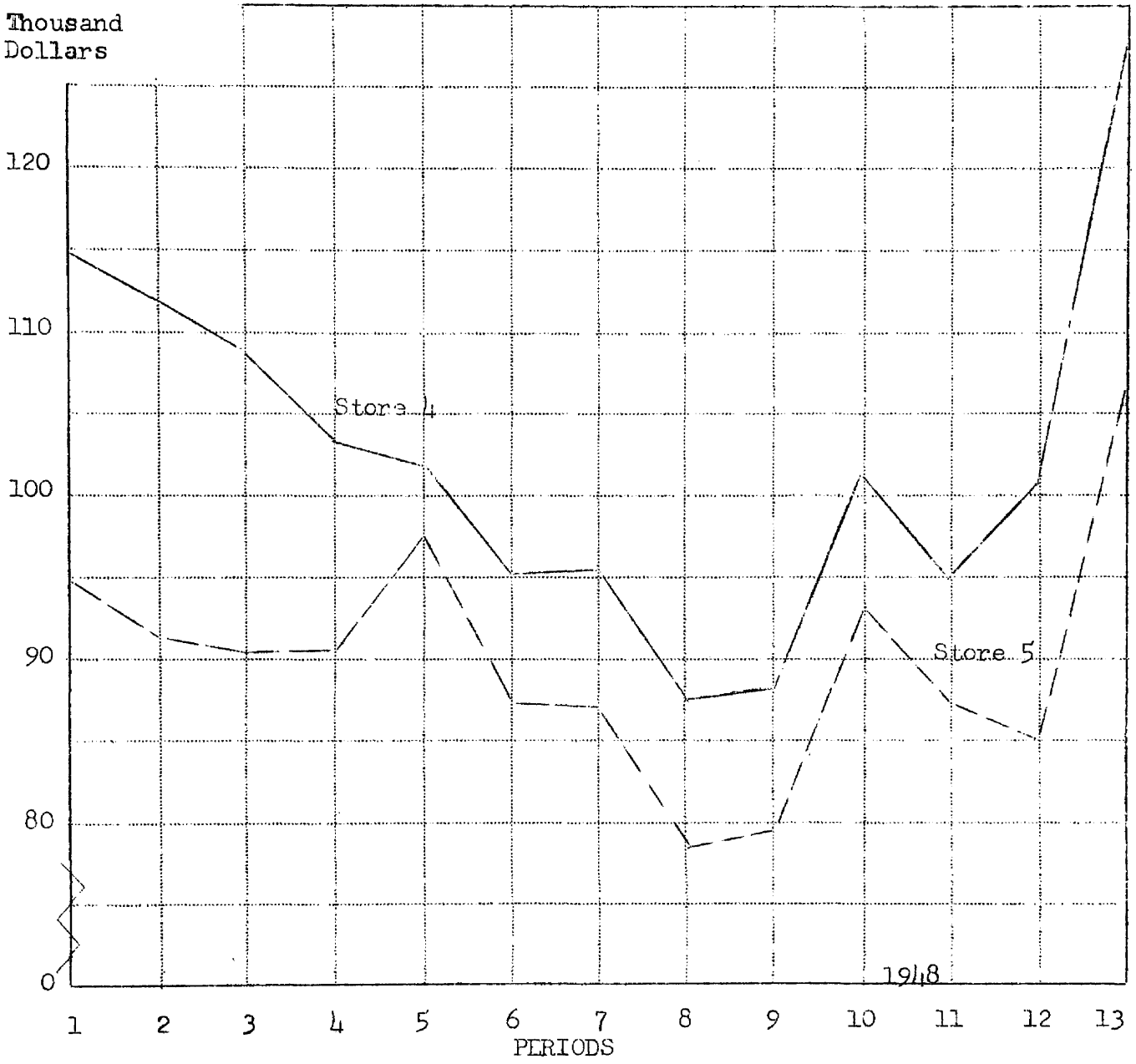

Figure 15. Total Store Sales in 1948 by Periods in Stores 4 and 5.

and look for a job where there is steady employment. Store managers do not like to train a labor force then lay it off in slack times because the trained laborers would probably not come back to work even if they were not employed. For these reasons, there are often times when the employed laborers are not kept actively working during their forty-four or forty-eight hour week. Employers have over-time to contend with if the regular employees are worked more than their contract calls for.

The labor bill in the meat department of Store 5 in 1948 was fairly constant as can be seen in Figure 16. Store 5 did not merchandise as much meat as Store 4 and the labor bill was consistently lower. Store 4 had a labor bill which fluctuated somewhat more and at the end of 1948 when the merchandising of prepackaged meat was begun, the labor bill went up quite sharply.

Description of Stores 2 and 6. Stores 2 and 6 were owned by the same corporation, were approximately the same size, were in similar income areas and were patronized by the same class of customers. Data were not available for a comparison of meat and store sales for the periods prior to the conversion of Store 2 to self-serving of meats.

The data that were collected from the two stores covered exactly the same periods as was collected from Stores 4 and 5, after Store 4 was converted to self-service, October, 1948 to October, 1949. Using data from the four stores, an inter-corporation analysis between prepackaged, self-service operations was possible, as was an inter-corporation analysis between service operations.

The data collected from Stores 2 and 6 were not as detailed as were the data collected from Stores 4 and 5. It was not possible to get

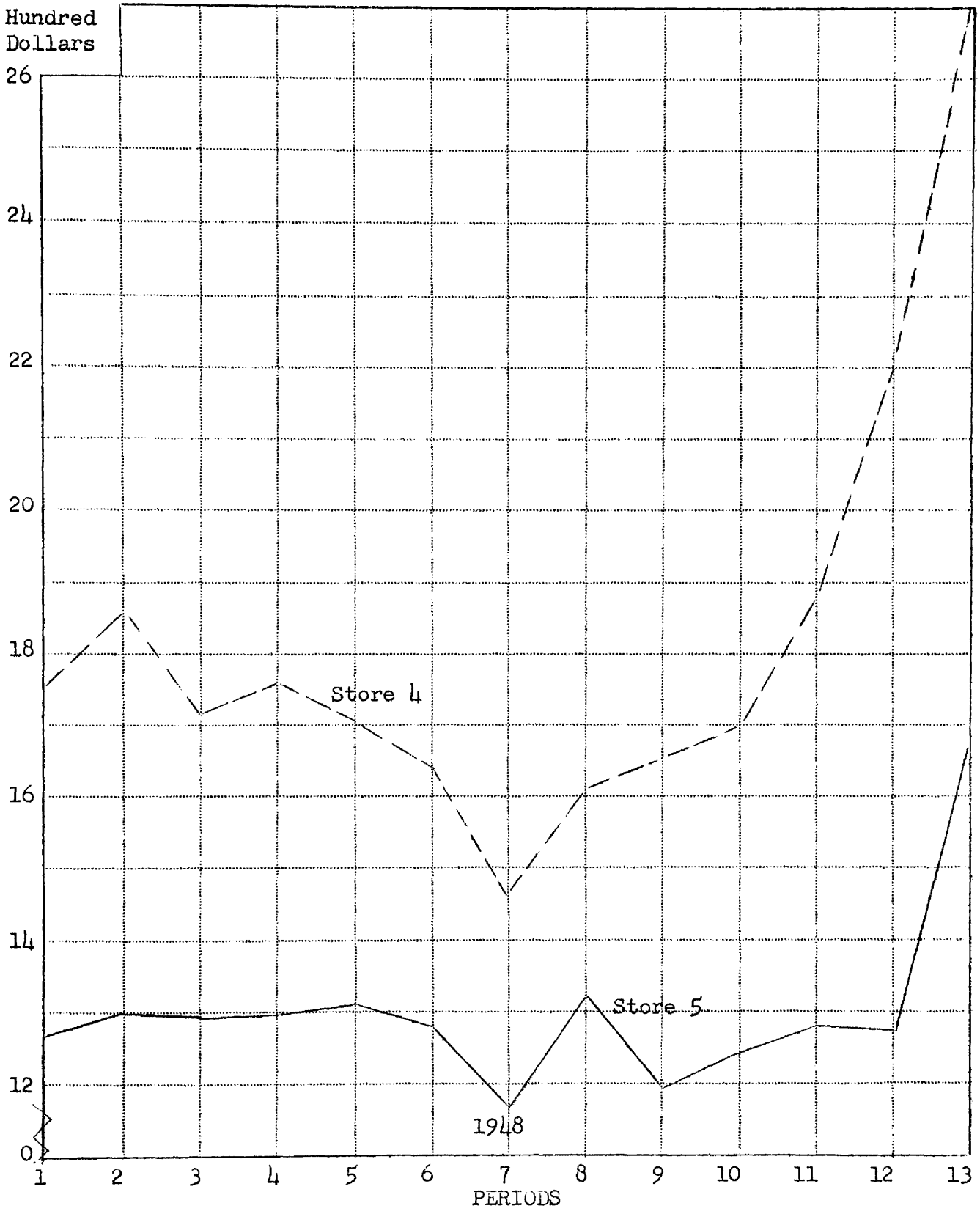

Figure 16. Wages Paid per Period in Meat Departments of Stores 4 and 5 in 1948.

an itemized list of meat purchases from Store 6. In all four stores, total meat purchases in pounds was obtained.

Equipment in the stores. Almost all open meat cases used for self-serving packaged meats are eleven feet long. Thus, the meat display in self-service meat stores is usually some multiple of eleven. When Store 4 was converted, the management had 66 feet of meat cases installed. Store 4 included cheese sales with its meat sales and one case was used almost exclusively for cheese. There were therefore, five cases or 55 feet of display cases used for fresh and cured meat.

Store 2 did not ring cheese sales as meat sales. It had the same amount of display cases, that is, five for meat and one for cheese. Therefore, both of these self-service stores had 55 feet of display cases for fresh and cured meats and eleven feet of display for cheese items. But, Store 4 included cheese sales with meat sales while Store 2 did not. Both stores had a six-foot frozen meat case.

Each store had the usual equipment found in self-service meat stores. Table II gives the equipment found in the average self-service meat store. The investment in equipment in each of these self-service stores was around $12,000.

The original investment in equipment in each of the service stores (5 and 6) was approximately $10,000. The only large difference in equipment that these stores had was the type of meat cases. They had the meat cases usually found in a regular butcher shop.

Identification of periods used in the study. It was mentioned earlier that many food chains use the period for bookkeeping purposes. Each period is four weeks long and therefore, there are thirteen periods in each year. Table III gives the period numbers and the dates included

Table II. Equipment Required for Self-Service Meat Store with Five Meat Cases.

Items	Number of Units
Receiving and Storage	
Meat Cooler	1
Overhead Rails and Scales	1
Cutting and Trimming	
Meat Blocks	2
Cutting Table	2
Electric Saw	1
Grinder	1
Slicer	1
Cube Steak Machine	1
Knives	8
Platters and Pans	20
Dollies (for Pans	(?)
Wrapping Equipment	
Wrapping Table	1
Scales	2
Hand-Sealing Irons	6
Hot Plate	2
Cello Tape and Dispenser	2
Roll Cello Dispenser	2
Supplies	
Labels	500,000
Trays	8,000
Blackboards (6 Sizes)	36,000
Cellophane (Sheet and/or Roll)	
Miscellaneous (Pens, Ink, Pads)	
Display	
Display	5
I. D. Tags (Beef, Veal, etc.)	50
Rubber Greens	25

Table III. Periods Used in This Study.

Year	Period Number	Dates
1948	11	October 3 - October 30
"	12	October 31 - November 27
"	13	November 28 - January 1
1949	1	January 2 - January 29
"	2	January 30 - February 26
"	3	February 27 - March 26
"	4	March 27 - April 23
"	5	April 24 - May 21
"	6	May 22 - June 18
"	7	June 19 - July 16
"	8	July 17 - August 13
"	9	August 14 - September 10
"	10	September 11 - October 8
"	11	October 9 - November 5

in each period for the latter part of 1948 and most of 1949.

This chapter has given data for Stores 4 and 5 for the year prior to Store 4's conversion to prepackaged meat merchandising. The four stores used in the study were described and the dates of study were given. The equipment and its total cost which was used in a self-service meat store was given. It was pointed out that there was a seasonal variation in the production, consumption, and price of meats and that the price level was not constant. With the above background information we can now move into the next chapter which discusses the changes which were observed during the year of the study.

CHAPTER IV

COMPARISONS BETWEEN SERVICE AND SELF-SERVICE STORES

In this chapter service and self-service meat merchandising are compared and an analysis is made of the changes which were observed in the purchase and sale of particular meat items. It was assumed in this study that all meat purchased by each store was sold by that store. A description of the labor used in the four stores is given and the labor cost of merchandising meat both ways is discussed.

Amount of non-merchandisable product. Assuming that the pounds of meat purchased was equal to the pounds of meat sold was not entirely correct but the differences were so small, and since it was impossible to get an accurate set of data on pounds sold, this assumption was used. To get an idea of how much poundage was lost in preparation of meat for sale two meat managers kept gross records during one month of the study. During this month, Stores 4 and 5 recorded the pounds of bones, suet, fat and scraps sold to renderers. Store 4 purchased 44,524 pounds of meat during this month and sold 2,764 pounds of bones, suet and fat to renderers. There were 2,009 pounds of bone and 755 pounds of fat, suet and scraps, making up the material sold to renderers. Store 4 was a self-service store and Store 5 was a service store. To see if a self-service store trimmed more closely or removed more bone, Store 4 data were compared with Store 5. During this same month Store 5 bought 25,811 pounds of meat. It sold 1,283 pounds of material to renderers. There were 1,120 pounds of bones and 163 pounds of fat, suet and scraps.

In Store 4, 6.2 percent of its meat purchases was sold as bones, suet and fat to renderers. In Store 5, 5.0 percent of its meat purchases was sold to renderers. Of the total pounds sold to renderers, 73 percent was bones, 17 percent was fat and 10 percent was suet in Store 4. In Store 5, 87 percent was bones, 8 percent was fat and 5 percent was suet. These percentages lead one to conclude that this self-service store was not able to merchandise quite as much of its purchases as the service store, 1.2 percent less. Also, the self-service store had to remove more bone than the service store. The service store, contrariwise, was able to leave more fat and suet on its meat cuts and sell them at meat prices.

The bones, suet and fat which these stores sold to renderers brought a little less than two cents per pound. The 2,764 pounds that Store 4 sold to renderers brought $51.19 and the 1,283 pounds Store 5 sold brought $19.20. With approximately five percent of the meat stores' meat purchases sold to renderers at two cents per pound and with the average cost around 45 cents per pound one can see one reason why the retailer must charge a price higher than the one he paid for the product.

From the above discussion we saw that assuming that the meat purchased is all retailed was in error by about five percent. But, we also saw that there was only one percent difference in the pounds of material sold by the self-service store and the service store. And since the purpose was to note the trends or changes in meat volume when a store converted to self-service, no corrections were made in the actual data collected--it did not seem necessary.

Labor supply per store. Stores 4 and 5 were not unionized and

each employee worked a 48-hour week. Stores 2 and 6 were unionized and regular employees worked 45-hour weeks. Stores 4 and 5 did not normally hire part-time help. Store 2 regularly hired two part-time employees. Store 6 did not usually hire any part-time help. All these stores were open six days a week. The normal store hours were from 9 a.m. until 6 p.m. but on Thursday and Friday nights all these stores stayed open until 9 p.m.

In all of these stores the employees worked five days a week--they were off one working day and Sunday each week. The usual schedule called for the regular employees to work Mondays, Thursdays, Fridays and Saturdays. The days off were taken either on Tuesday or Wednesday of each week.

Store 2 had a head meat cutter, a meat cutter, a butcher (all men), a hostess, three wrappers who worked full time and two wrappers who worked part time. An average of 370 man-hours were worked each week in Store 2. There were variations through the year, of course, which were caused by several factors.

Store 4 had a head meat cutter, a meat cutter, a hostess, and five wrappers. Store 4 was able to utilize more female help because it was not unionized. An average of 380 man-hours were worked each week in Store 4.

Store 5 had a head meat cutter, a meat cutter and four female clerks. An average of 290 man-hours were worked each week in Store 5.

Store 6 had a head meat cutter, a meat cutter and three clerks. An average of 240 hours were worked each week in Store 6.

The union wage scale for unionized workers in late 1949 was as

follows: Head meat cutter - $1.83 per hour; meat cutter - $1.55 per hour; butcher - $1.10 per hour; hostess - $1.03 per hour; and wrappers - $1.03 per hour.

Changes noted in meat volume in Stores 4 and 5. For both Stores 4 and 5 the weights of all cuts of beef, veal, pork, lamb and mutton that were purchased during the year of the study were collected each week as were the weights of all sides and carcasses. The weights of sausages, cheese, poultry and fish purchased were also collected each week for one year. Gross classifications of different types of meat were found to be very cumbersome to handle in the analysis, so groupings were made. Tables showing weekly purchases of these meat items are placed in Appendix B, see Table 1. In this chapter are shown period purchases of these same items.

It seemed appropriate to show total meat sales in both Stores 4 and 5 on the same graph for both 1948 and 1949 and this was done in Figure 17. In this graph one can see that total dollar meat sales for Store 4 were above total dollar sales for Store 5 in 1948 before Store 4 converted to self-service meat merchandising. But, after period 11 in 1948 when Store 4 converted, the spread widened between Store 4 and Store 5 total meat sales. The largest difference occurred in February, 1949. During February, 1949, Store 4 conducted an extensive advertising program which told of the self-service merchandising of meats. Prior to February the radio and newspaper ads had not mentioned that Store 4 had converted although the conversion had actually been accomplished the previous October. After February, 1949, meat sales and purchases showed a downward trend. This trend was caused by at least three reasons. Wholesale and retail meat

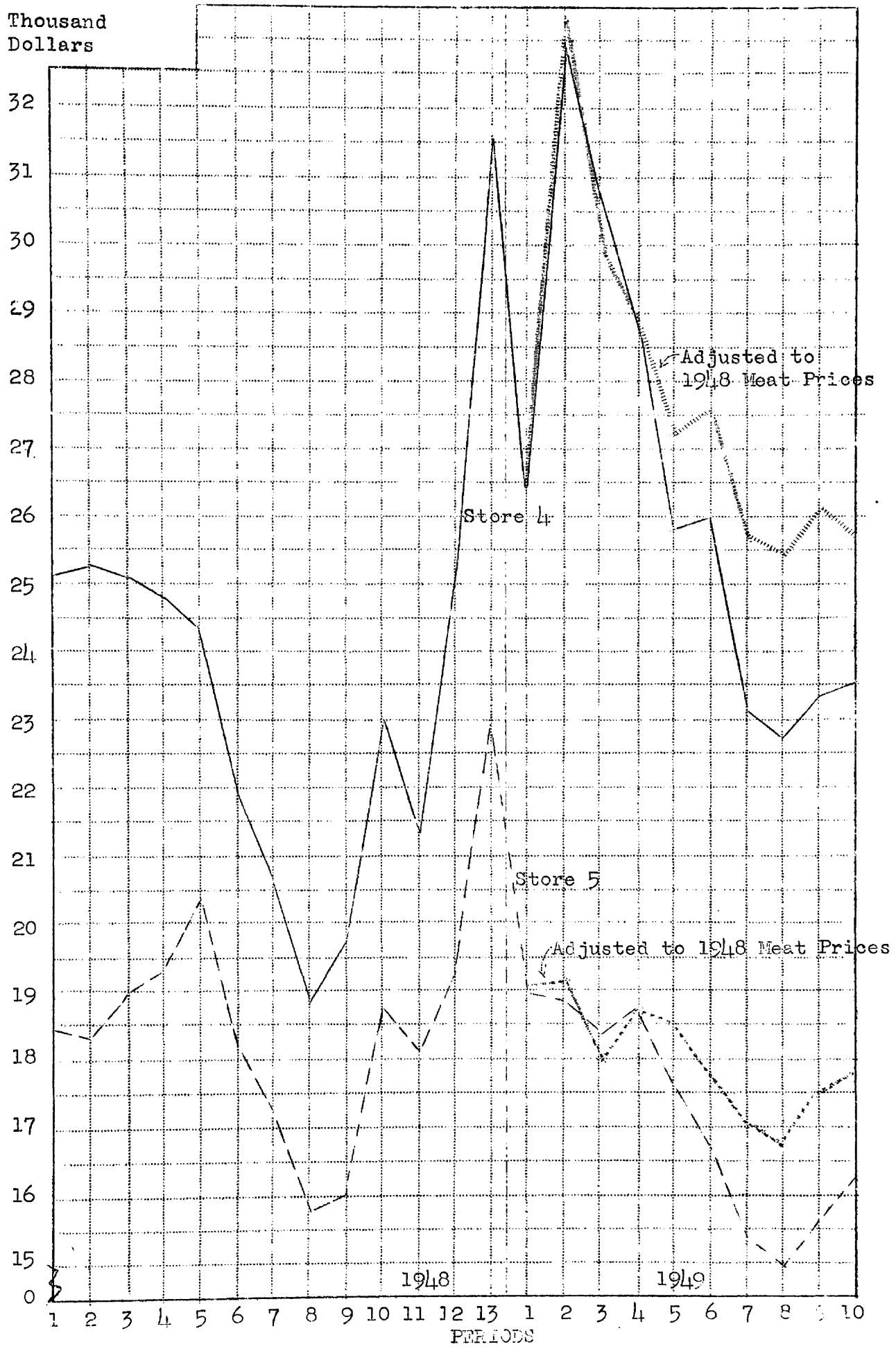

Figure 17. Total Meat Sales by Periods for Stores 4 and 5.

prices began rising, Store 4's advertising campaign was lessened, and Store 4 experienced difficulty holding meat quality up to previous levels. Despite the downward trend, Store 4 continued to sell more meat than it had prior to conversion.

Tables IV and V show a grouped breakdown of the meats that Stores 4 and 5 purchased during the year of the study. When one compares the purchases at the end of the year's study with those at the beginning he will notice that Store 5 was selling about the same amount of meat as before while Store 4 was selling more at the end than at the beginning despite the fact that apparent large gains in volume had partially evaporated.

Perhaps graphs showing meat purchases are more appropriate for actually showing differences apparently brought about by the merchandising of self-service meats. Figure 18 shows how the purchases of the different meat items varied through the year under study. One can notice increased purchases of beef as the large difference. However, a close examination will show that more veal and lamb were also sold. The other meats remained about the same. Figure 19 shows that there was not nearly as much variation in the meat purchases by Store 5 during the year. After the initial increase in purchases, there was a general downward trend and at the end of the year total purchases were almost exactly the same as they were at the beginning.

Changes in selected items in Stores 4 and 5 during the year studied. For the year as a whole, pork made up between 35 and 40 percent of the meat purchased and sold in Stores 4 and 5. Beef was a close second and made up between 30 and 35 percent. In Figure 20

Table IV. Period Purchases of Meats for Store 4.

	Periods					
	12	13	1	2	3	4
All Beef	8,674	12,335	15,765	22,598	17,707	13,188
All Pork	12,339	18,429	12,628	16,975	18,388	20,945
Veal	1,208	1,391	1,380	1,798	2,090	1,880
Lamb and Mutton	416	466	276	752	467	288
Sausage	5,876	9,156	7,746	9,029	8,309	6,995
Poultry	1,837	3,531	2,358	2,496	2,702	3,094
Fish	556	1,427	1,848	2,558	2,584	3,404
Total	30,906	46,735	42,001	56,206	52,247	49,794

	Periods					
	5	6	7	8	9	10
All Beef	14,954	11,916	10,476	11,314	16,646	11,957
All Pork	11,985	14,041	14,790	13,904	12,280	12,079
Veal	1,779	2,011	1,680	1,906	1,753	1,630
Lamb and Mutton	365	297	270	264	325	402
Sausage	8,340	7,556	7,164	7,447	7,864	7,598
Poultry	2,784	4,048	2,958	2,617	3,793	2,738
Fish	1,334	1,166	860	931	1,251	2,737
Total	41,631	41,035	38,198	38,383	43,912	39,141

Table V. Period Purchases of Meats for Store 5.

	Periods					
	12	13	1	2	3	4
All Beef	8,099	9,581	11,707	12,807	11,303	9,247
All Pork	9,696	14,198	11,261	10,137	11,505	12,985
Veal	1,024	1,181	801	1,025	477	969
Lamb and Mutton	195	213	303	235	134	84
Sausage	5,053	6,523	5,980	6,215	6,451	5,458
Poultry	2,471	2,284	1,430	1,544	1,912	1,361
Fish	66	978	786	1,029	1,684	1,918
Total	26,604	34,958	32,268	32,992	33,466	32,022

	Periods					
	5	6	7	8	9	10
All Beef	11,477	10,350	6,825	8,077	8,262	7,870
All Pork	11,317	10,474	10,166	10,013	8,592	9,101
Veal	925	1,325	856	857	1,057	663
Lamb and Mutton	66	0	68	97	176	186
Sausage	6,172	6,049	5,002	5,594	5,521	5,299
Poultry	1,937	2,344	1,262	1,180	1,872	2,037
Fish	666	340	522	599	528	655
Total	32,560	30,882	24,701	26,417	26,008	25,811

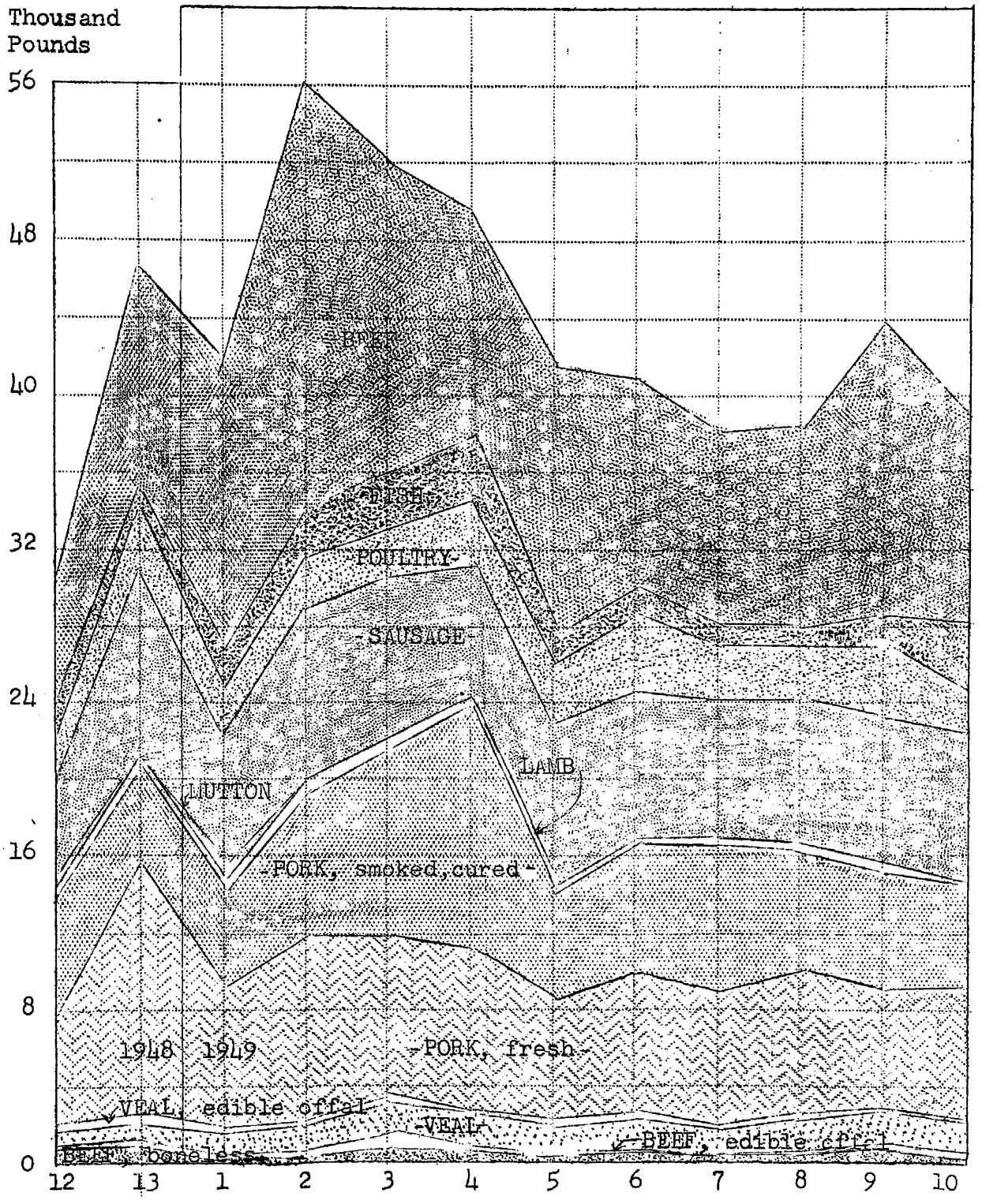

Figure 18. Total Meat Purchases by Periods for Store 4.

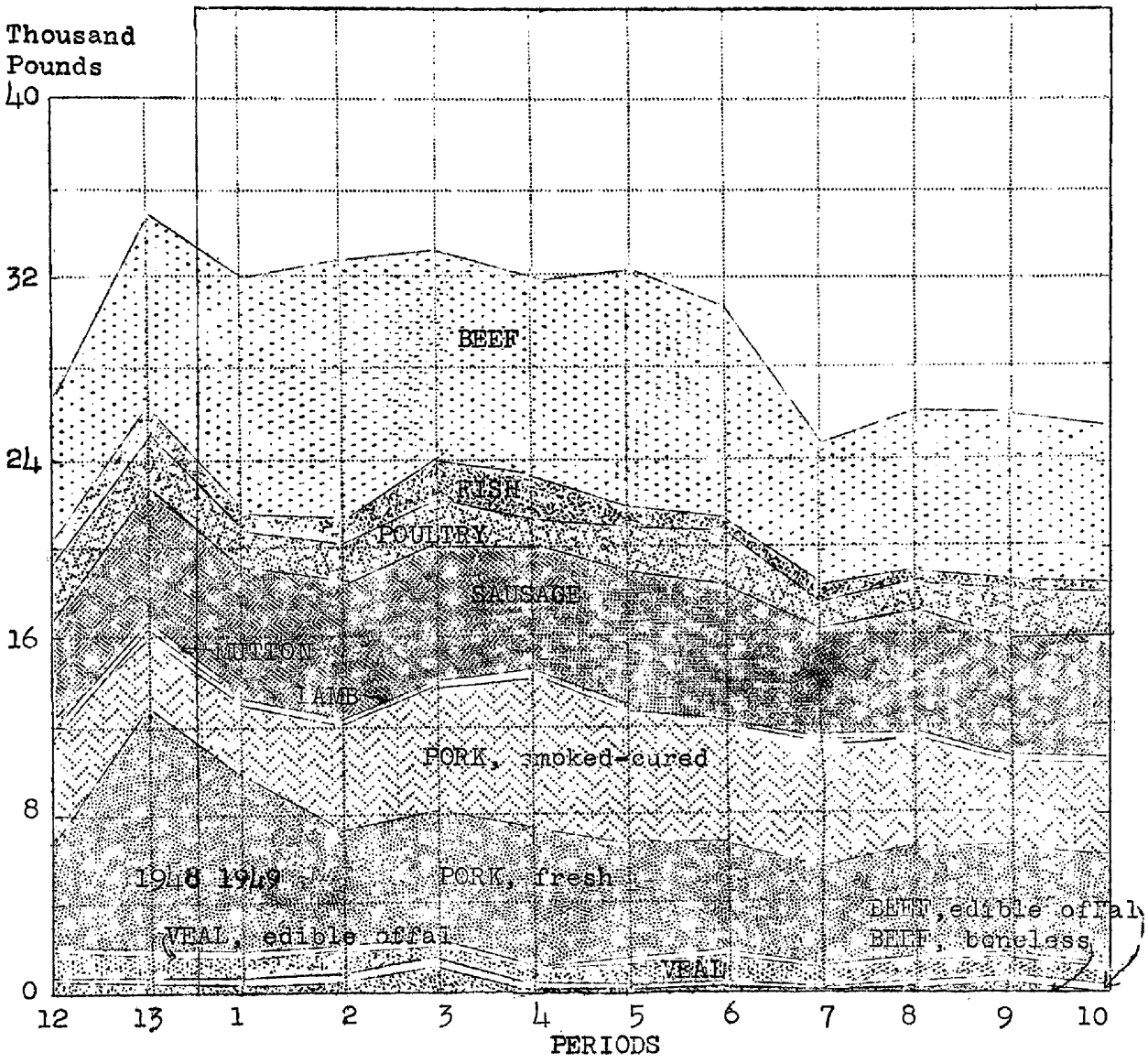

Figure 19. Total Meat Purchases by Periods for Store 5.

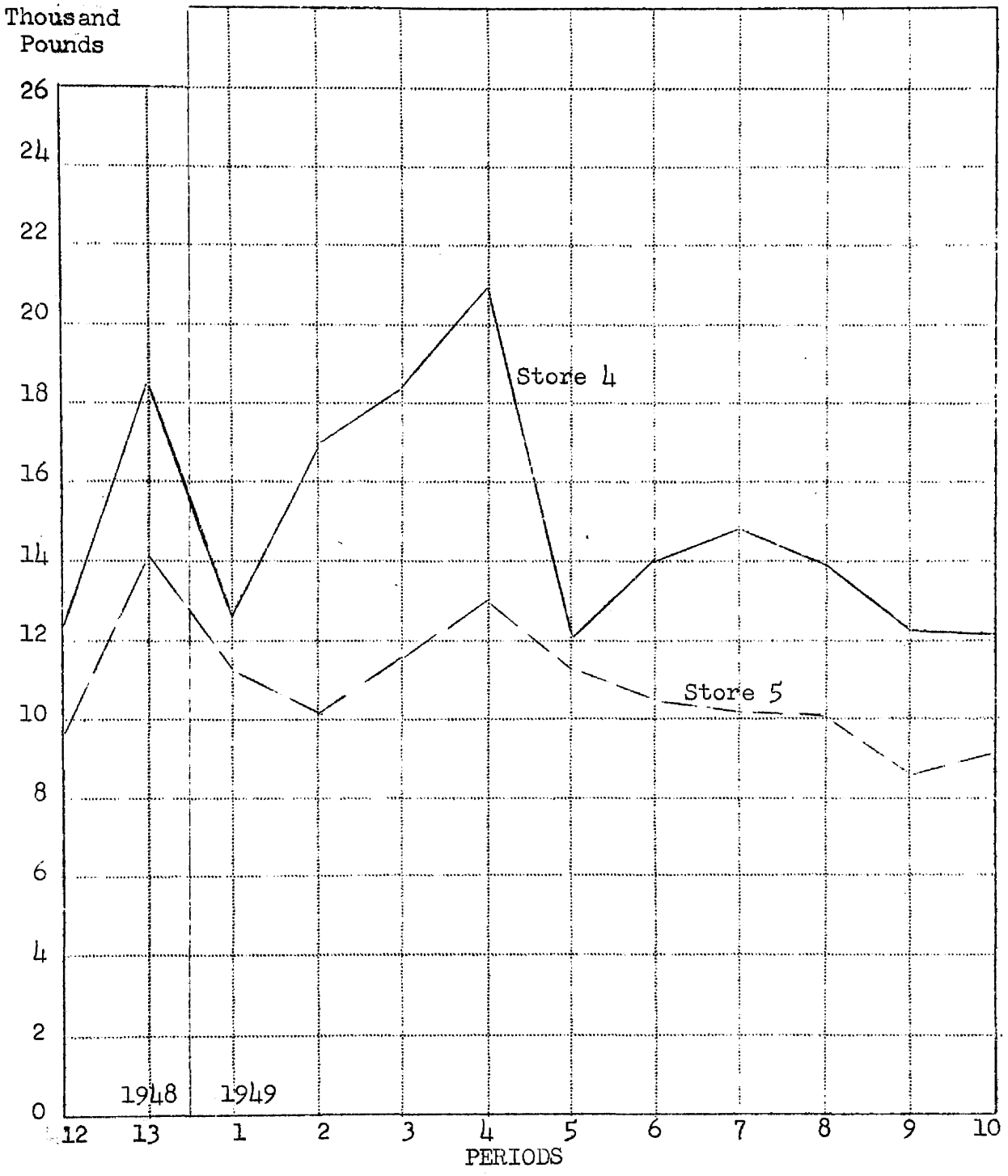

Figure 20. Period Pork Purchases for Stores 4 and 5.

we can see that there was more variation in the pork purchases by Store 4 through the year than in the pork purchases by Store 5. The pork purchases at the end of the year by Store 4 were almost exactly the same as at the beginning, while the pork purchases by Store 5 at the end of the year were almost 1,000 pounds less per period. From these data one cannot say that the self-serving of pork increased the sales of pork.

In Figure 21 are shown period purchases of all beef by Stores 4 and 5. Again there was more variation in the purchases of beef by Store 4 than by Store 5. The data in the case of beef would lead one to conclude that more beef was sold in the store which merchandised prepackaged meat and the graph shows that almost 4,000 pounds more beef were being sold per period at the end of the year than at the beginning. In Store 5, however, the same amount was being sold at the end of the year as at the beginning.

The third largest meat item in terms of tonnage was sausage. From 15 to 20 percent of the total tonnage of meats sold in Stores 4 and 5 was called sausage. This group includes all of the luncheon meats, bolognas, salamis, weiners and frankfurters. Someone once estimated that there are over 200 different sausage items. In Figure 22 one can see that the variation in sausage purchases in both Stores 4 and 5 was much less than for either beef or pork. One can also notice that both stores were selling more sausage when the year ended than when it began. Both these stores had large sausage sales prior to this study. It appeared, however, that Store 4 had a larger increase in sausage sales than did Store 5, and this was probably due to the conversion to 100 percent self-service.

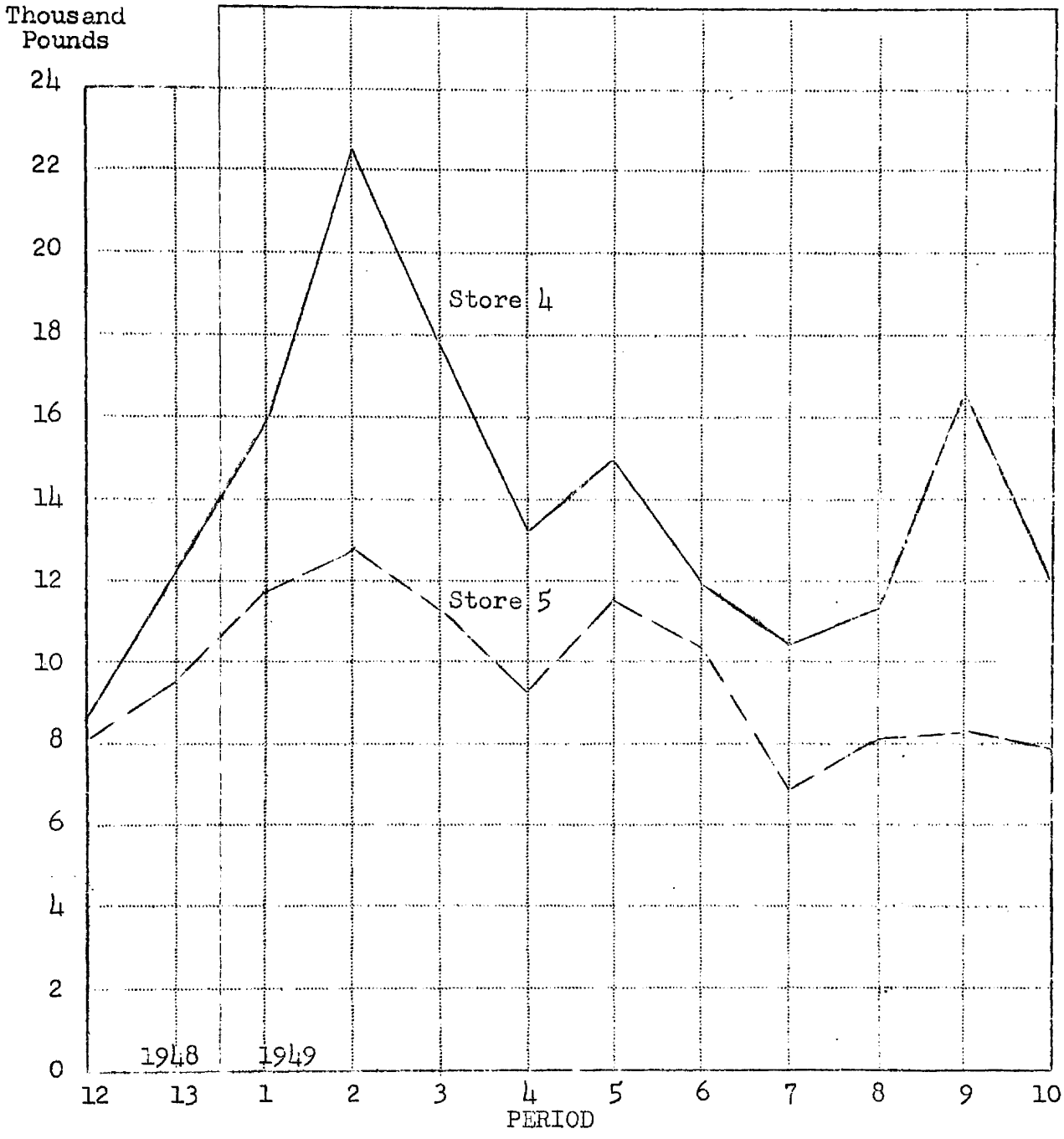

Figure 21. Period Beef Purchases for Store 4 and 5.

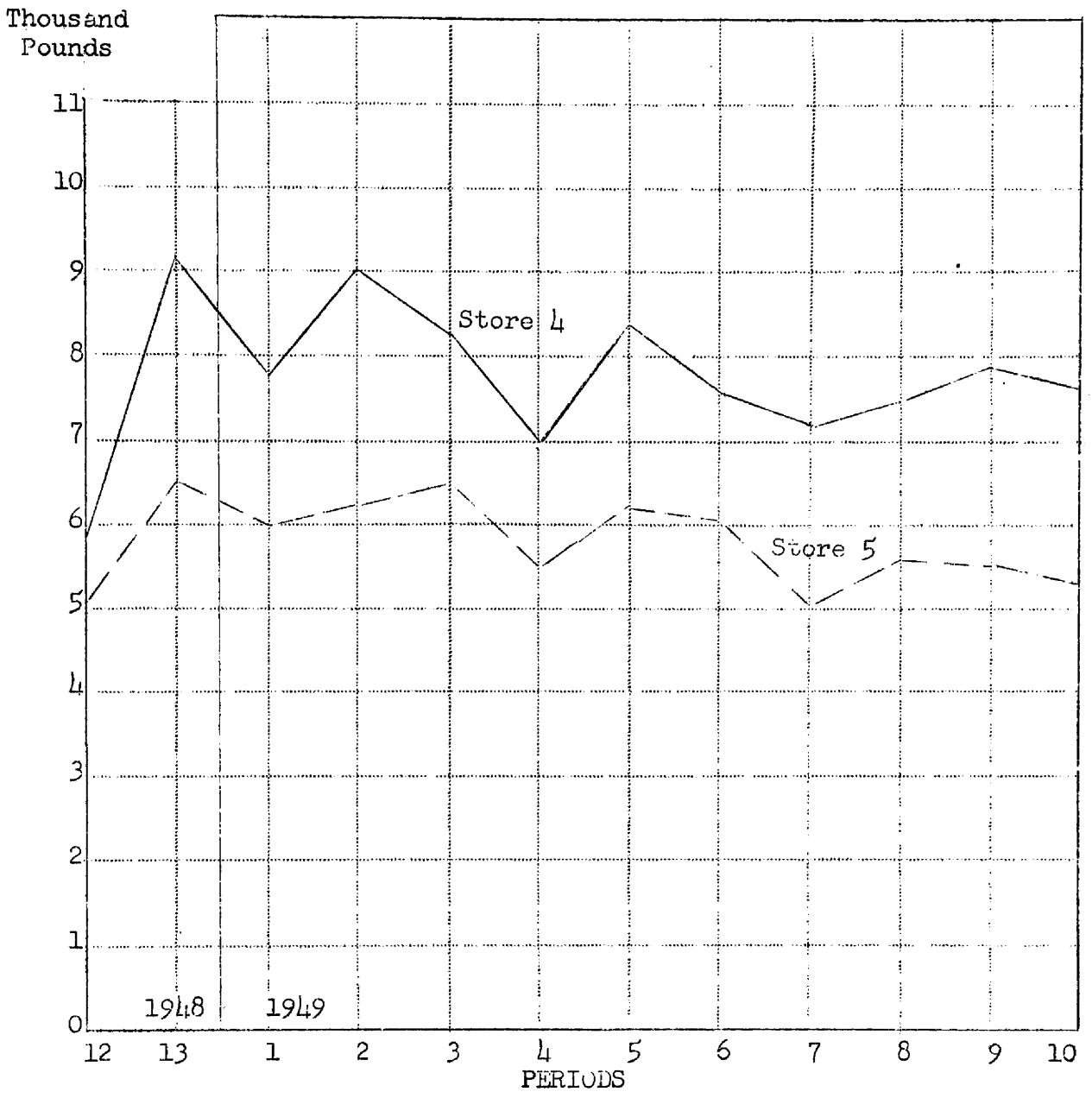

Figure 22. Period Sausage Purchases for Stores 4 and 5.

Particular notice should be made that the vertical index on the beef, pork and sausage graphs was in thousands of pounds and that the following graphs have vertical indexes in hundreds of pounds. In Figure 23 it can be seen that fish purchases had wide variations through the year in both stores. It appeared that fish sales were higher in both stores at the end of the year than at the beginning, yet they were much higher in Store 4 than in Store 5. It is therefore concluded that the store merchandising meat prepackaged sold more fish than did the service store.

Individual pieces of poultry can easily be merchandised in a self-service store. This practice was followed in Store 4 after its conversion. In Figure 24 one can see that Store 4 had an upward trend in its poultry purchases while Store 5 had a downward trend. There did not seem to be any other conclusion to draw here but that the self-service store purchased and sold more poultry than did the service store. The writer would like to reiterate that the same pricing policies were followed in both Stores 4 and 5.

Veal sales in the two stores were less important than poultry sales; however, Store 4 sold almost a ton per period and Store 5 sold almost one-half ton per period. In Figure 25 it can be seen that veal sales held about steady in Store 5 while there was an upward trend in veal sales in Store 4. As with poultry, it appeared that the introduction of self-service meat merchandising caused veal sales to increase.

Lamb and mutton sales in most stores in the midwest are usually very small. The annual per capita consumption of lamb and mutton in the United States averages about five pounds. People in the New

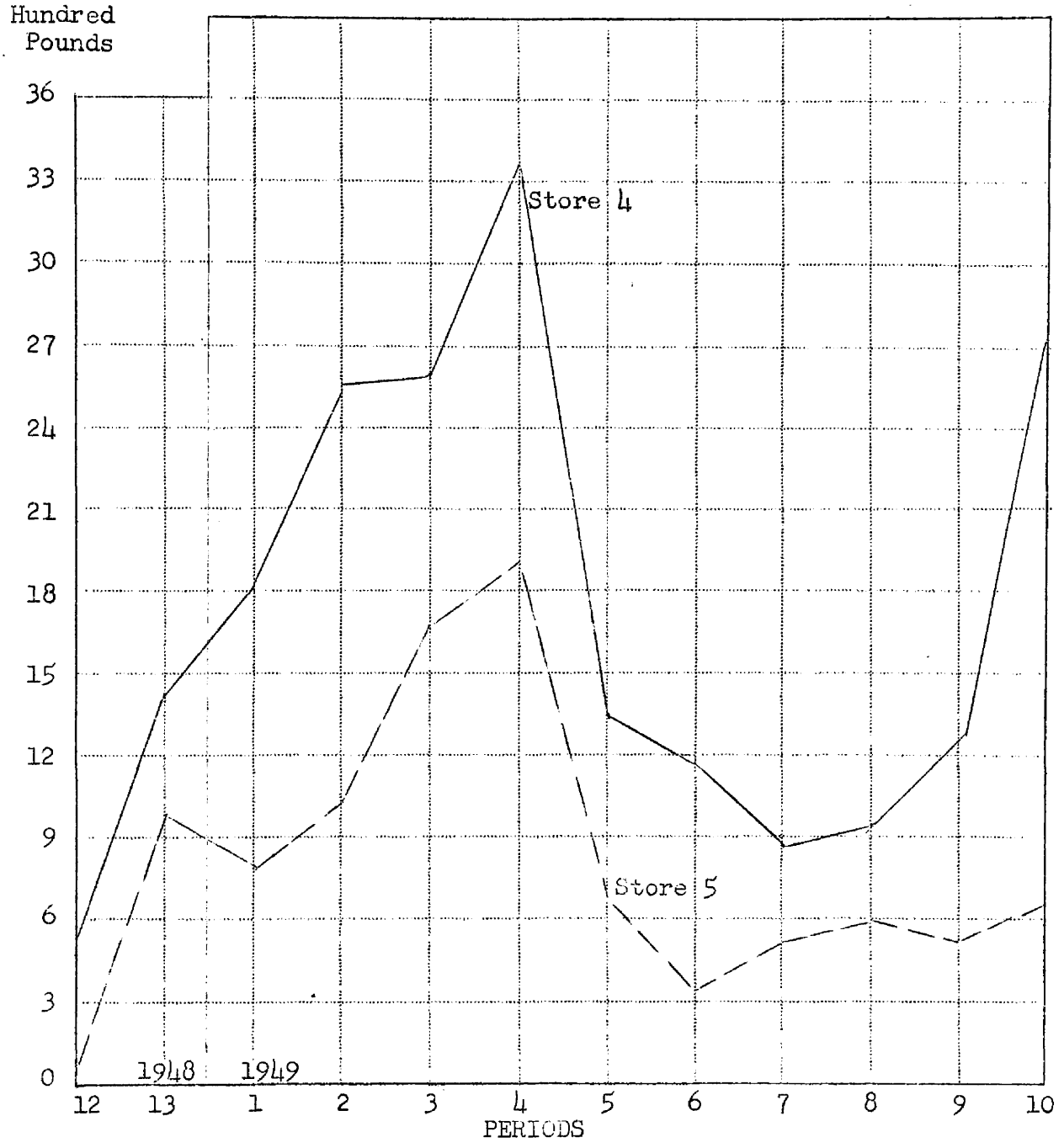

Figure 23. Period Fish Purchases for Stores 4 and 5.

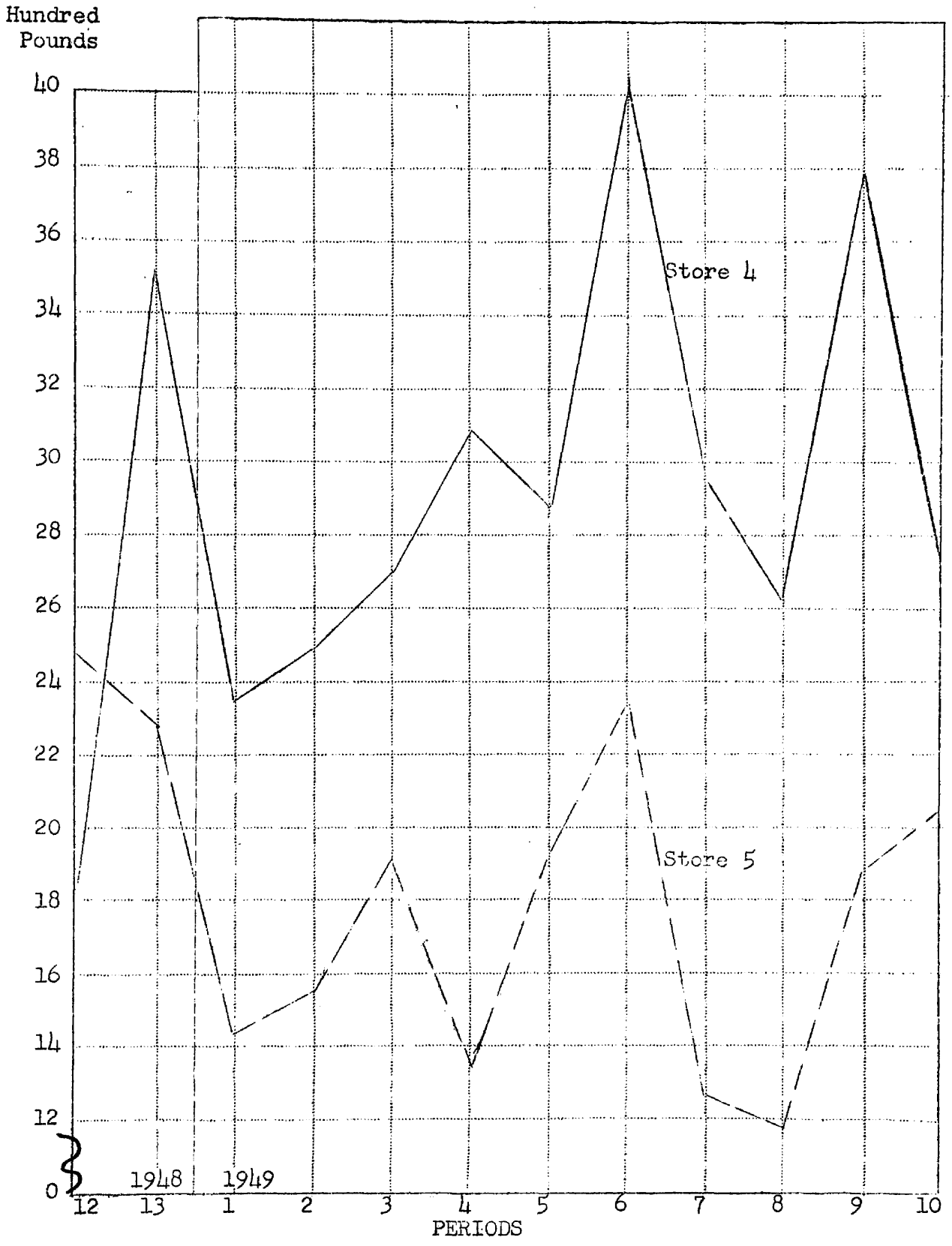

Figure 24. Period Poultry Purchases for Store 4 and 5.

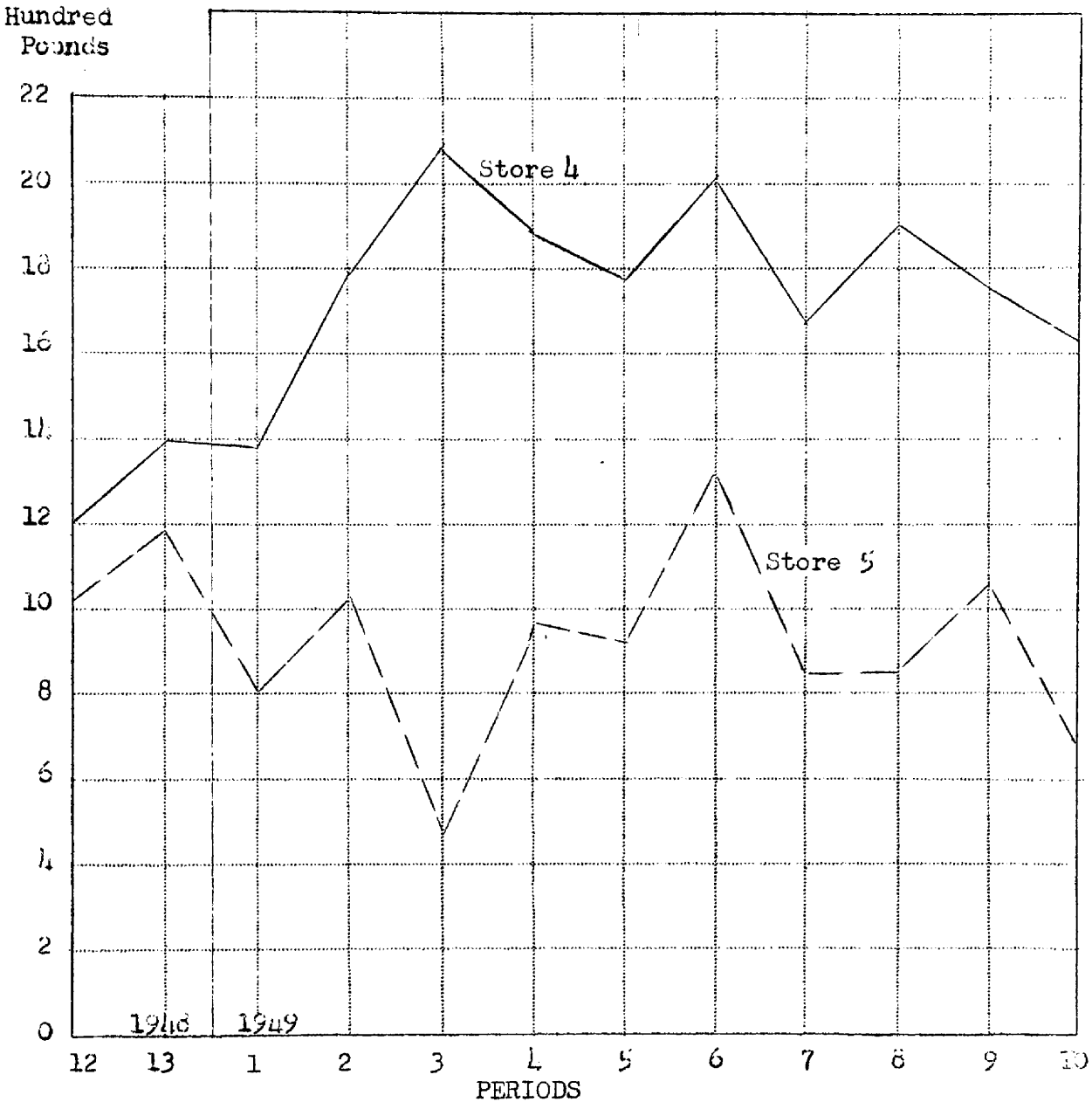

Figure 25. Period Veal Purchases for Stores 4 and 5.

England States and in the Pacific northwest eat about three times as much lamb and mutton as the national average so one can easily see that not much lamb and mutton are consumed in Michigan.

Stores 4 and 5 did sell lamb and mutton as can be seen in Figure 26. Each store was selling practically the same amount at the end of the year as at the beginning. The trend of purchases by Store 5 was slightly downward while in Store 4 there was no decided trend. The conversion to self-service meat merchandising did not seem to have any significant effect on lamb and mutton sales.

Weekly data for the year were collected for all cheese items. When all of the processed and glass cheeses are enumerated, one has a long list. It was apparent that cheddar cheese made up the bulk of the cheese purchases and that both cured and processed cheddar cheeses were important. The three cheeses which bulked large in the total cheese purchases were longhorn, flat and American processed. These three were used to portray the trend in cheese sales for the year studied.

The purchases plotted in Figure 27 show cheese purchases to be quite erratic through the year. Both stores purchased increasing amounts of these cheeses during the first period of the study; then purchased less the next period. There were peaks and troughs in the purchases by Store 4 through the year, but less variation in purchases by Store 5. There did not seem to be important trends in the purchases by either store and the conversion of Store 4 apparently had no significant effect on cheese sales. Both stores were selling more cheese at the end of the year. It might well be remembered that processed American cheddar cheese is packaged in 1- and 2-pound

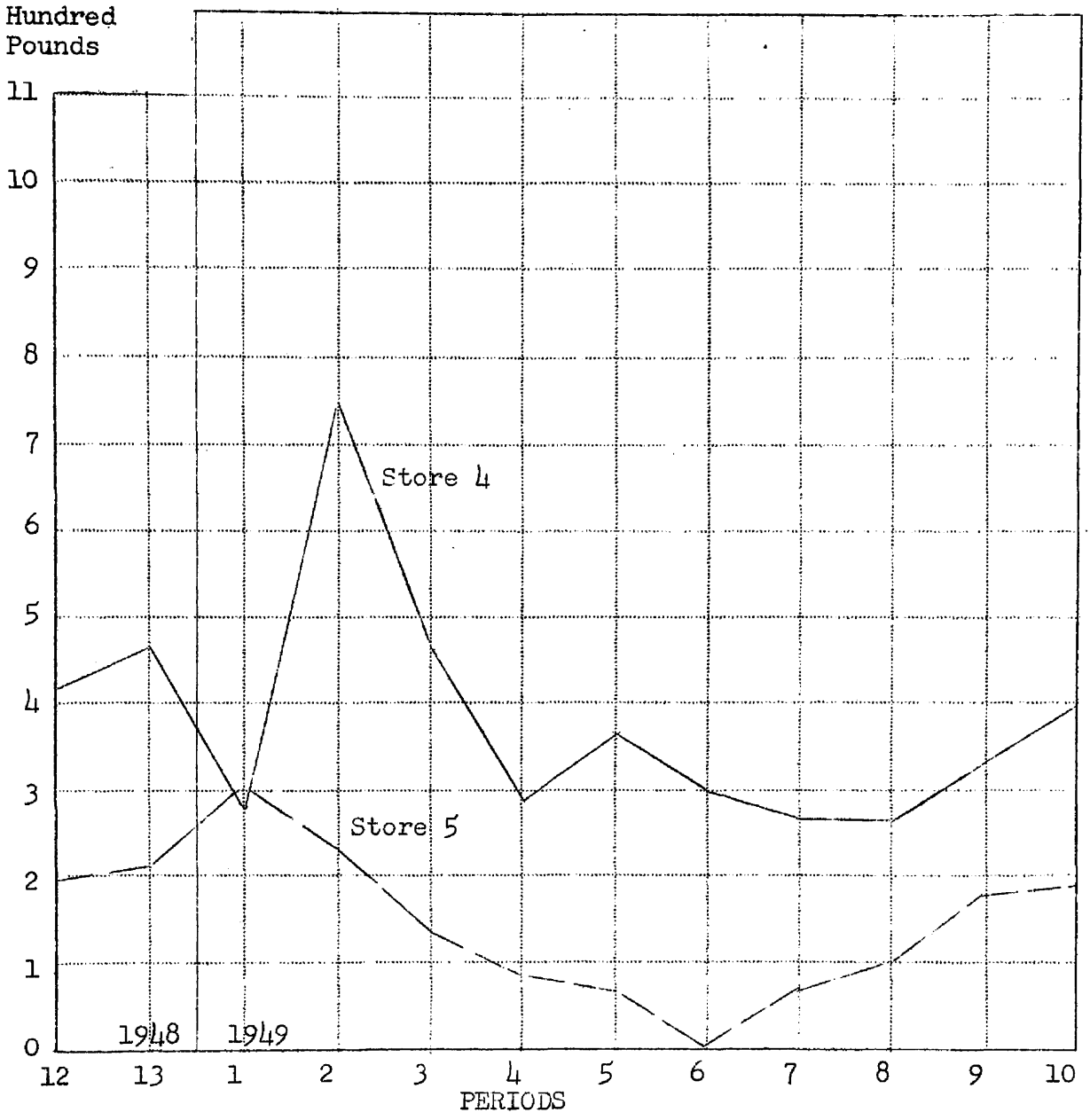

Figure 26. Period Lamb and Mutton Purchases for Store 4 and 5.

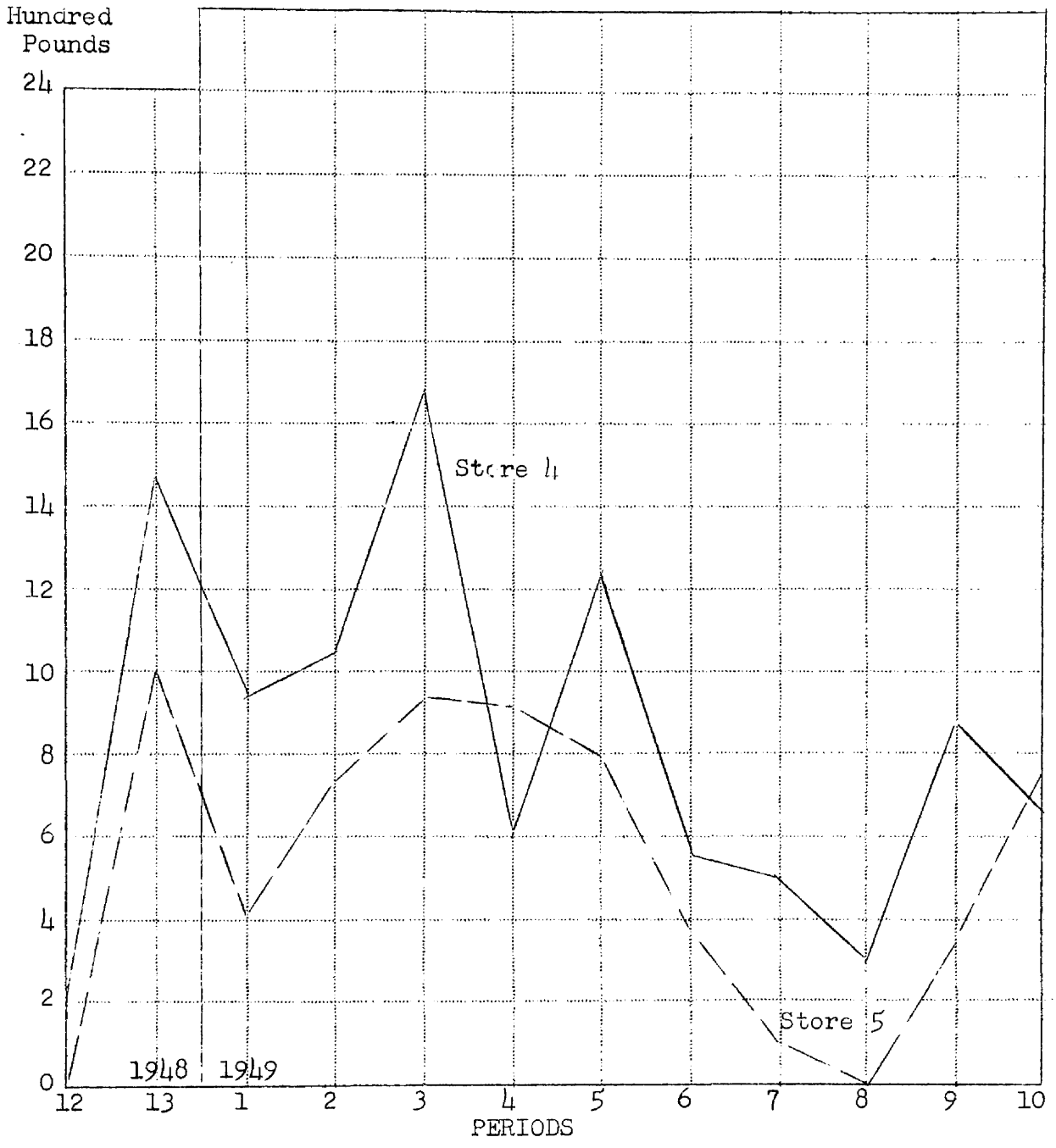

Figure 27. Period Cheddar Cheese Purchases for Stores 4 and 5.

boxes and almost all stores self-serve it. Also, this particular cheese accounts for most of total cheese sales and it has a fairly long shelf life.

One seldom thinks of fresh cheese or cottage cheese as being very important either in pounds or dollar sales in a meat department. When considered with beef or pork, cottage cheese is much less important but Figure 28 shows that Store 4 sold almost one-half ton in period 3. Figure 28 also shows that Store 4 sold much more cottage cheese during the year than did Store 5. Most of the gains made during the middle of the year were lost at the end of the year, but it appeared that self-service increased cottage cheese sales considerably.

In most of the above graphs Store 4 seemed to have made large gains during the first six months that it had self-service meat merchandising. After the first six months, purchases and consequently sales dropped off. Whether the newness to some customers had worn off and they returned to their old shopping patterns or whether they were discouraged with quality and made their purchases elsewhere was not determined. The writer thought that meat quality did fall when Store 4 was merchandising its largest meat volume and that this fact was one of about three which caused sales to decline. With a product like cottage cheese the quality should have remained the same, and the only explanation which seemed to explain the year-end decrease in sales of cottage cheese and some of the other items was that some customers just were not returning to purchase meat and therefore were not making a special trip to buy meat products and cheeses.

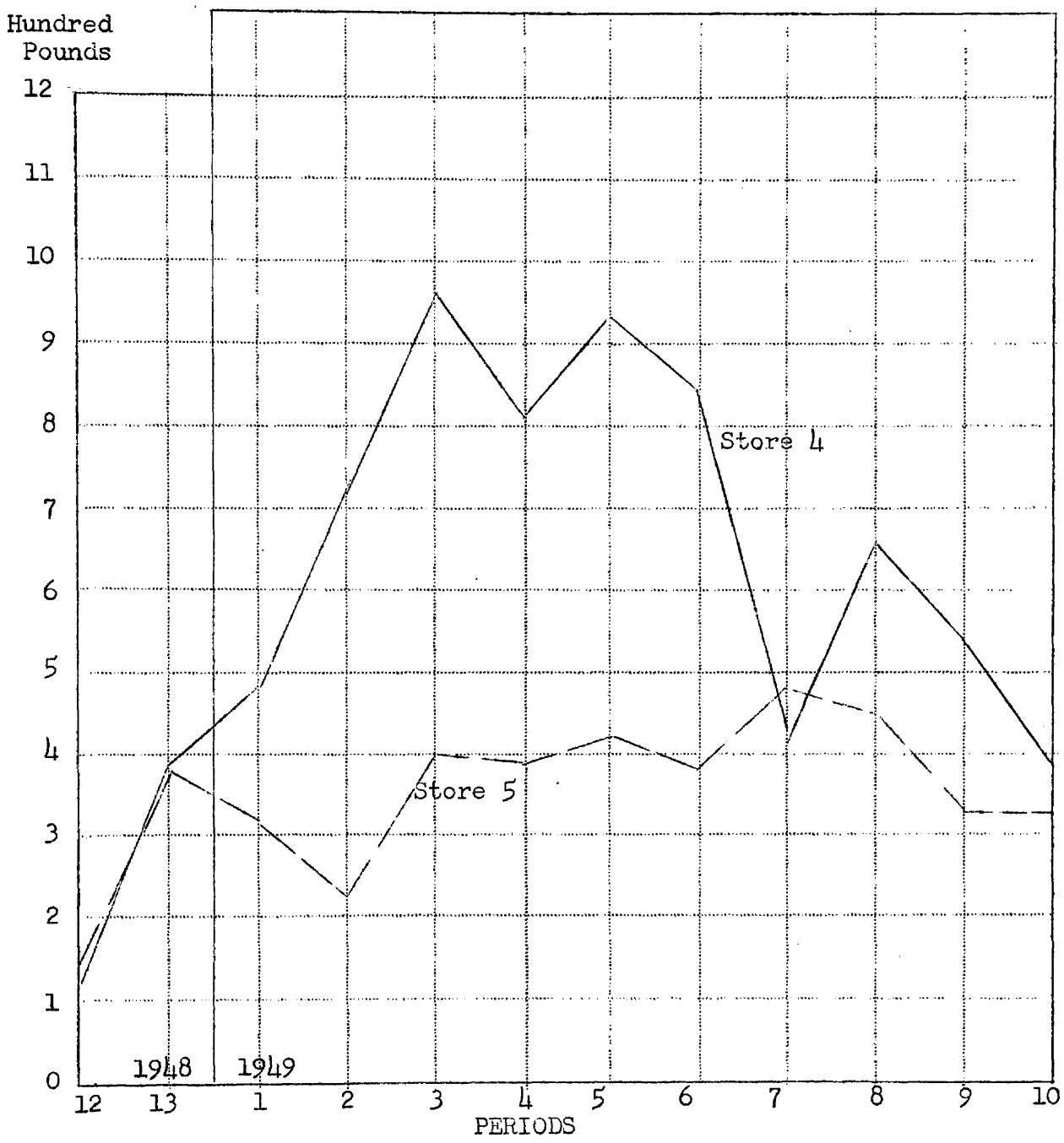

Figure 28. Period Cottage Cheese Purchases for Stores 4 and 5.

In Figure 29 purchases of bacon are shown. For both Stores 4 and 5 bacon purchases fluctuated widely. Store 5 was buying just about the same amount of bacon at the end of the year as at the beginning. Store 4, though, was buying more bacon at the end of the year than at the beginning and the trend for the year was up. With bacon, as with several other products, purchases declined near the end of the year of the study, which was October. The chart in Chapter III showed that meat production and consumption was normally lowest in the second or third quarter of the calendar year. So, a drop in purchases for most of the products discussed above in periods 4 to 9 could have been seasonal. But, for the same product sold by two stores within the same organization and in similar areas in the same city dissimilar patterns in purchases were probably caused by the difference in merchandising methods, namely self-service versus service.

The meat packers now package many products so that these products can be self-served. Two products which packers package in consumer size units are bacon and lard. We saw where Store 4 increased its purchases of bacon the first year it had complete self-service merchandising and the writer attributed the increase to its new merchandising method. Lard purchases were charted in Figure 30 and there we see a slightly different picture. In Figure 30 both stores were selling more lard at the end than at the beginning of the year. The self-service store had two peak purchase periods but no conclusion could be drawn saying that self-service increased lard sales.

Changes in sales and wages in Stores 4 and 5. Figure 17 showed total dollar meat sales in 1948 and in 1949 for both Stores 4 and 5.

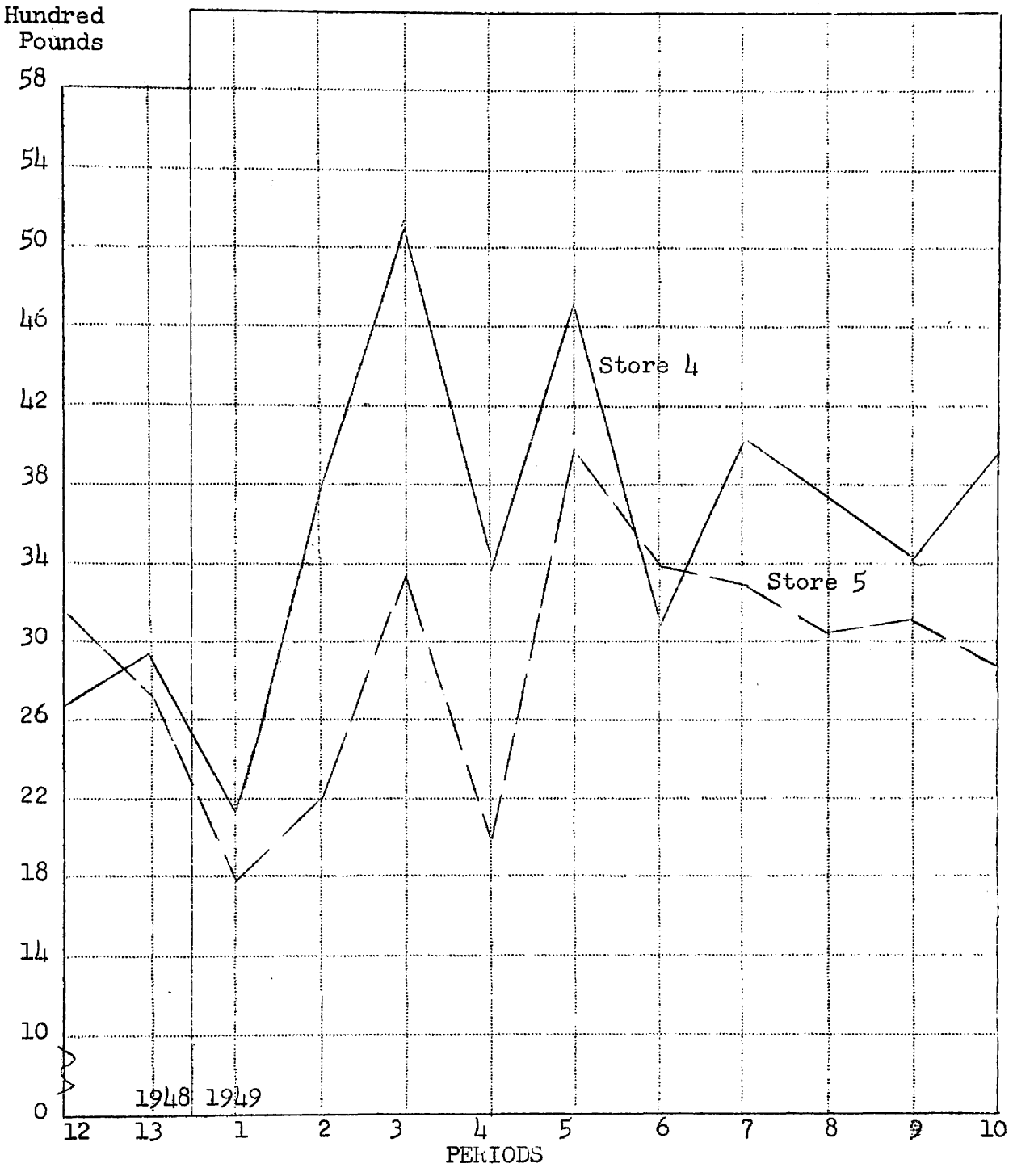

Figure 29. Period Bacon Purchases for Stores 4 and 5.

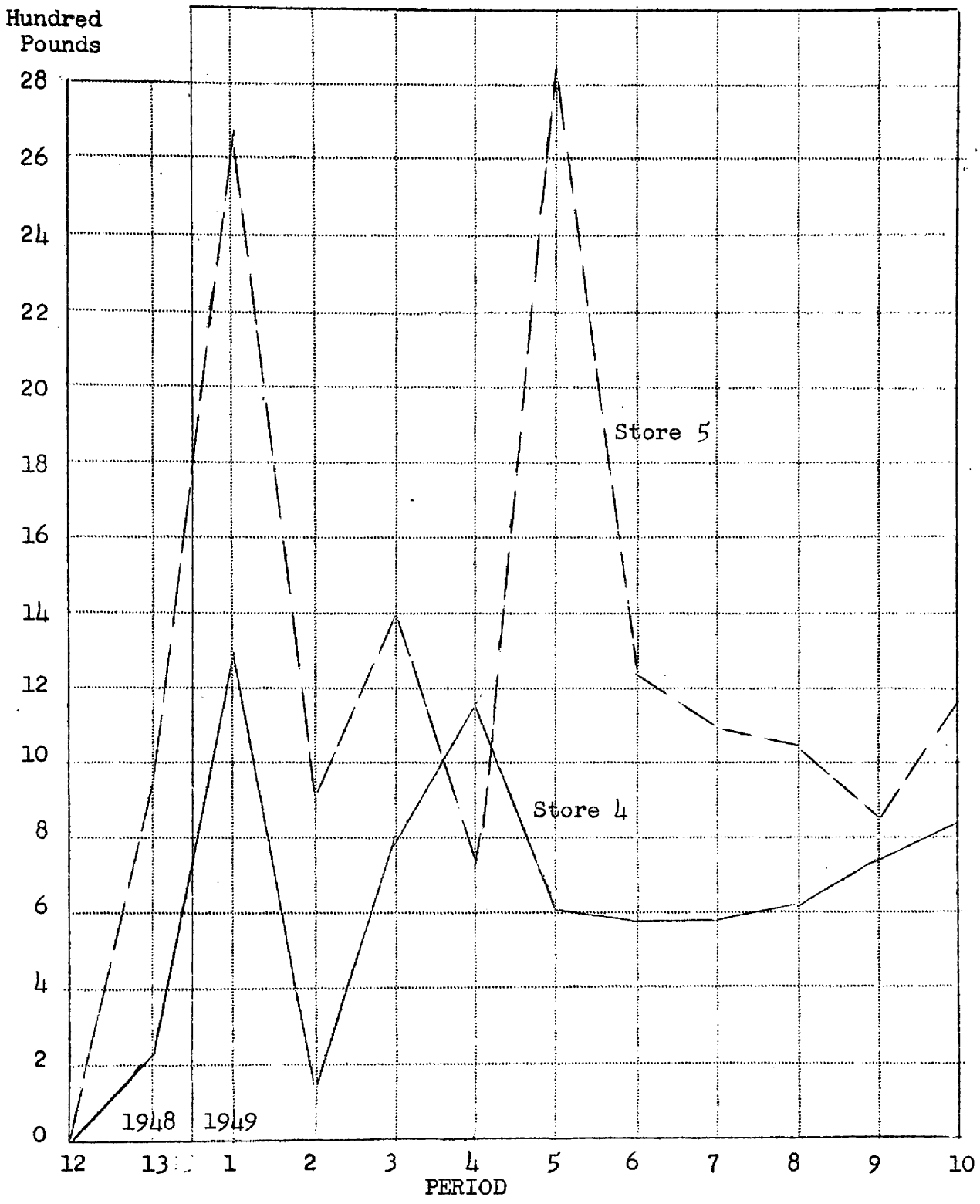

Figure 30. Period Lard Purchases for Stores 4 and 5.

This figure showed that Store 4 sold more meat than Store 5 in 1948 before conversion to self-service, and that after converting, its meat sales increased so that the spread was even wider between the two stores. It has often been said that meats are drawing cards in super markets. If customers come to a store to purchase meats, they will probably also buy fruits, vegetables and other groceries. The main reason meat counters are in the back of stores is that in order to purchase meats, customers must pass the fruit, vegetable and grocery counters either on their way back to the meat counters or on their way to the check-out stalls. It seemed important to learn the effect conversion to complete self-service had on total store sales. It has already been shown that Store 4 did sell more meat after conversion and it was expected that total store sales would also show increases.

Figure 31 shows total dollar store sales for both Stores 4 and 5 for 1948, before Store 4 converted, and 1949, after the conversion. The spread in total dollar store sales averaged about $10,000 in 1948 before Store 4 converted in period 11. After period 11, one can notice the increased spread which averaged close to $30,000. These facts lead to the conclusion that the store with complete self-service did experience an increase in total dollar store sales.

To eliminate any influence the changing price level may have caused, the 1949 total store sales were corrected to the 1948 level. These corrected values are shown by the dotted lines in Figure 31. Total dollar store sales in Store 5 averaged about the same in 1949 as in 1948 when corrected to the 1948 level while in Store 4 the average was higher in 1949 although the trend was down after the peak

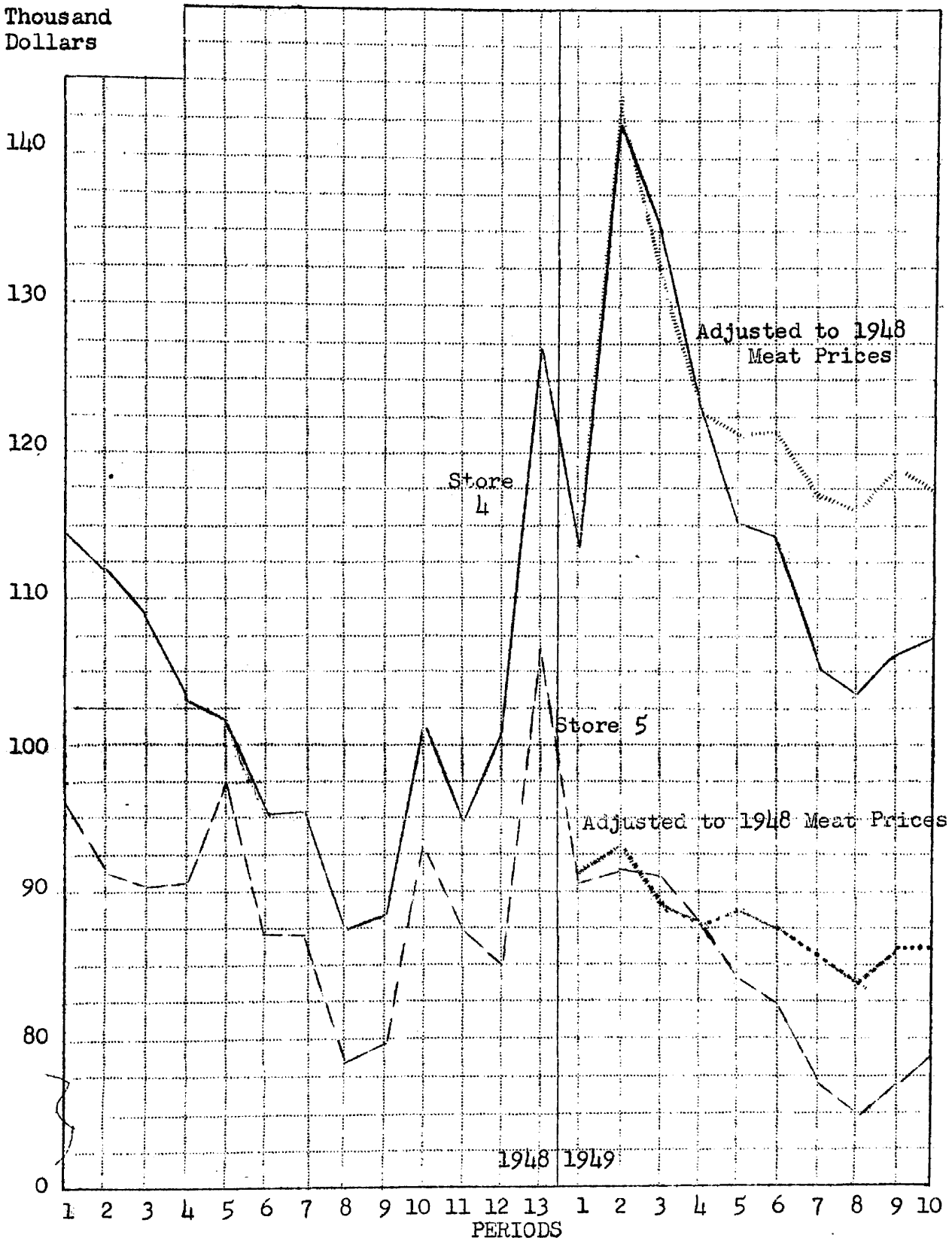

Figure 31. Total Store Sales by Periods for Stores 4 and 5.

in period 2. This was the period when the large advertising campaign was conducted by Store 4.

Wages paid the employees in the meat departments in Stores 4 and 5 were obtained and charted for 1948 and 1949 in Figure 32. Consistent with the tonnage of meat merchandised Store 4's wage bill was always higher in 1948 than the wage bill of Store 5. In period 11, when Store 4 converted, its wage bill rose considerably more than Store 5's wage bill. This was caused by an over-supply of labor and the fact that it was a training period for the employees of Store 4. After the shakedown period, it was found that one employee in Store 4 was not needed. The release of this one employee helped lower the meat wages in Store 4.

The wage bill in Store 4 after conversion was quite a bit higher through 1949 than Store 5's wage bill. Most of the increase was due to the increased volume of meat merchandised by Store 4. The shift to prepackaged meat did not, however, seem to lower Store 4's labor cost per pound of meat merchandised. In 1948 the meat wage bill in Store 4 averaged 7.51 percent of dollar meat sales. Store 5 was more efficient and its meat wages averaged 7.02 percent of its dollar meat sales. After conversion and with an equal increase in wages for the meat department employees of both stores, Store 4's wage bill averaged 8.60 percent of its dollar meat sales and Store 5's wage bill averaged 7.77 percent of its dollar meat sales. Assuming the increase in wages or the drop in meat prices caused the percentage to rise 0.7 percent, Store 4 was still less efficient in merchandising its meat practically all of its first year.

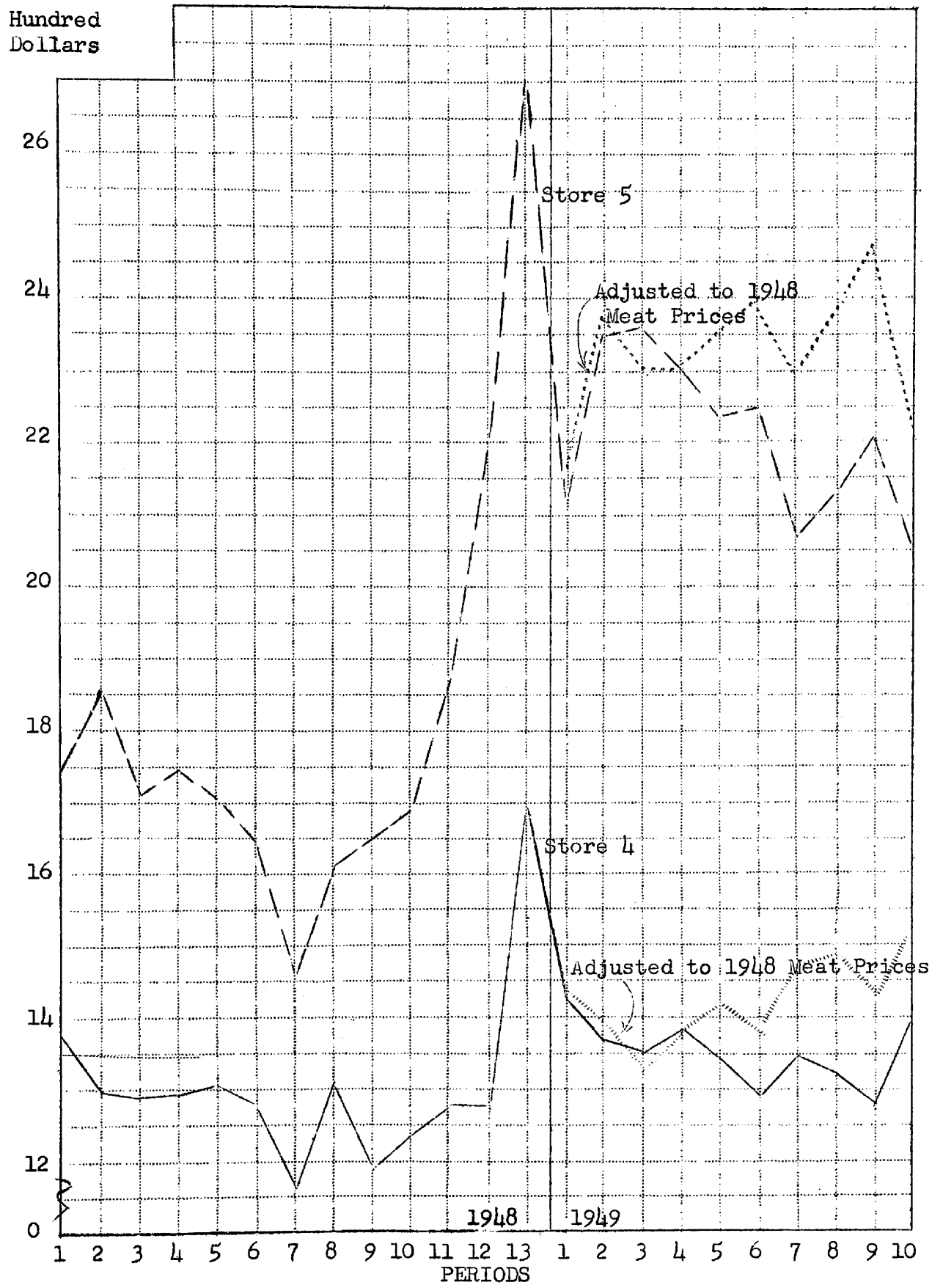

Figure 32. Wages Paid per Period in Meat Departments of Stores 4 and 5.

The physical layout of Store 4's meat department was modernized when Store 4 was converted to merchandise prepackaged meat but most of the modernization dealt with the packaging room only. The location of the holding cooler was not changed nor were two of the meat blocks. The over-all meat department equipment was not arranged for most efficient work. This inefficient layout probably accounted for the increased labor costs. Figure 33 shows the labor cost per pound of meat merchandised in Stores 4 and 5. In the year studied Store 5's labor cost per pound of meat merchandised ranged from four to almost five and one-half cents a pound. When Store 4 first started selling prepackaged meat it had a labor cost per pound of slightly over seven cents. This cost per pound dropped to four and one-quarter cents in period 2 when it merchandised its largest volume of meat. Then it rose to five and one-half cents per pound in period six. From period 6 through period 10 the labor cost per pound fluctuated between five and five and one-half cents.

At the end of the year, Store 4's labor cost per pound dropped below Store 5's labor cost per pound for the first time. The data presented in Figure 33 show that this was probably caused more from rising labor costs per pound in Store 5 than from Store 4 becoming more efficient in its prepackaging operations; however, Figure 33 shows that Store 4 did lower its labor costs per pound from one and one-half to two cents from the time it started prepackaging meat until the end of the year. The year-end labor cost of five and three-tenths cents per pound was eight-tenths cents per pound higher than the four and one-half cents which the P.M.A. found was the average

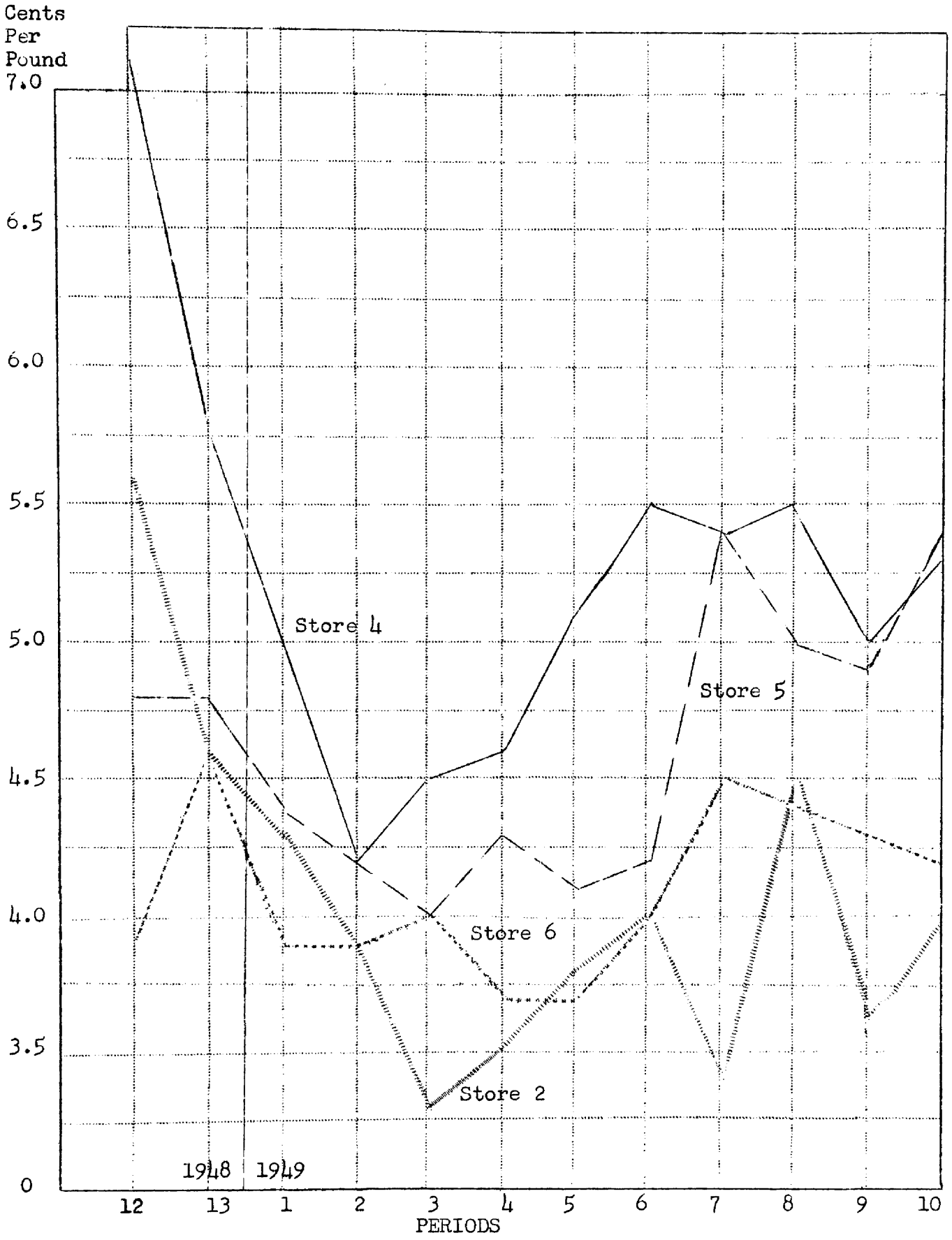

Figure 33. Labor Cost per Pound of Meat Merchandised by Stores 2,4,5 and 6.

of the eighty prepackaged stores included in its study.[26]

Comparison of data gathered from Stores 2 and 6. Stores 2 and 6 were owned by the same organization and were located in similar areas. Store 2 was a self-service meat store and Store 6 was a service meat store. These two stores are compared as were Stores 4 and 5. The data analyzed for these two stores were for the same time periods exactly as those used for the analysis of changes in Stores 4 and 5.

Variations in purchases of specified meat items are shown in Figure 34 for Store 2. There was not as much variation in these purchases as there was in the purchases by Store 4. Store 2 had been prepacking meat for about six months before the collection of the year's data began. This fact probably accounts for the evenness in its purchases. Store 2 had some changes in tonnage purchased but practically all the change could be accounted for by the usual seasonal variation found in the production and consumption of meat.

The gains that are made in dollar meat sales, when meat stores shift to prepackaged meat, have usually come in the first few months after converting. If this were true for Store 2, it was natural that the data presented in Figure 34 would not show any increase in purchases. Meat men have told the writer that holding meat sales up to the level attained during the first few months was the big problem. Store 4 was not able to do this, but Store 2 was. There was not much change in the total purchases at the end of the year. Nor was there any significant change in any particular meat items.

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[26] Edinger, et. al., Retailing Prepackaged Meats, op. cit., p 13.

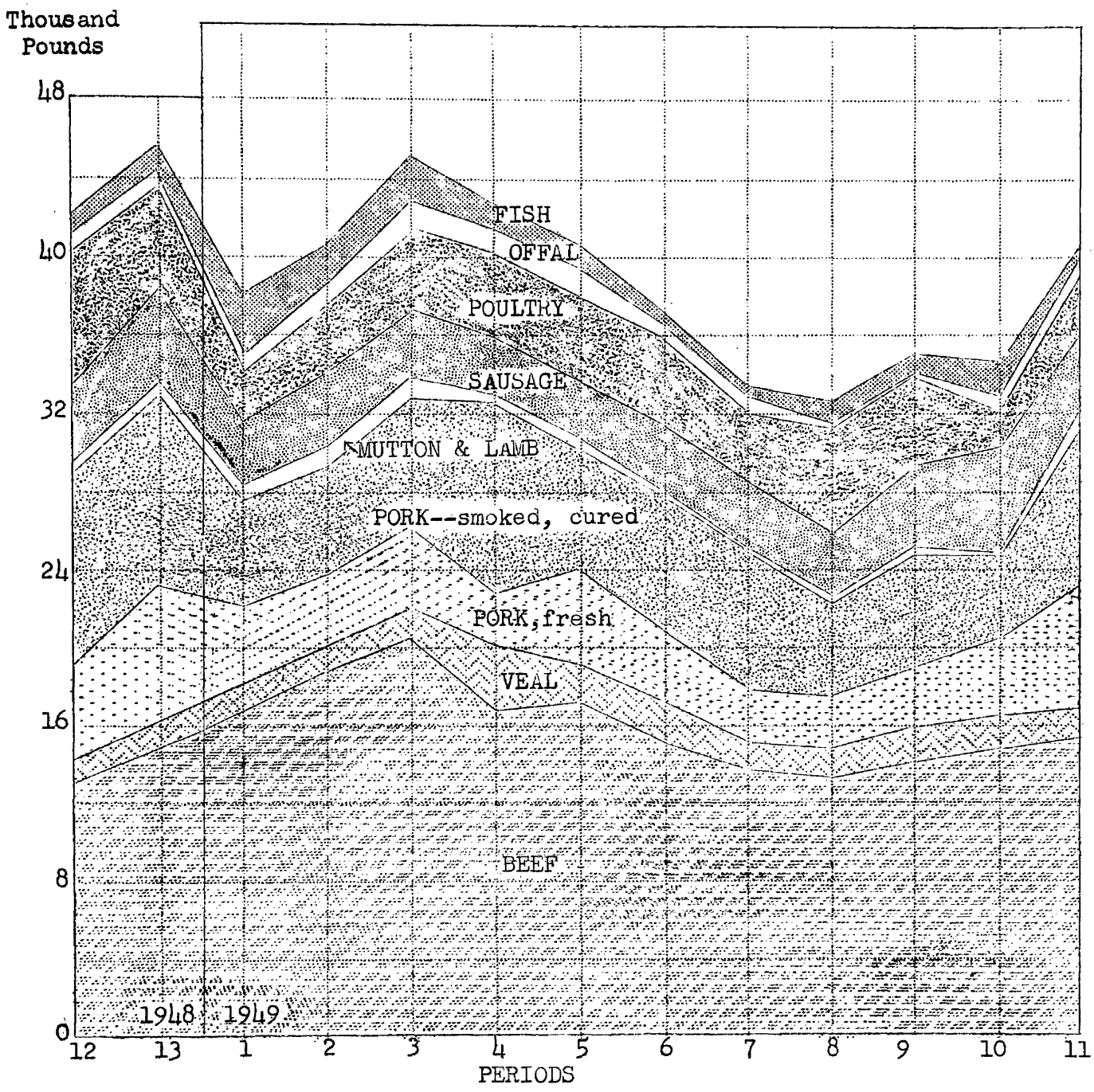

Figure 34. Total Meat Purchases by Periods for Store 2.

Store 6 was a service store. It was not possible to get data on purchases broken down into specific meats. All that was obtained was a series of figures giving total meat purchases by periods for the year. In Figure 35 one can see that total purchases by Store 6 varied very similarly to total purchases by Store 2. At the end of the year, Store 6 was buying less meat than at the beginning. This fact was not true with any of the other three stores in the study and indicated that Store 6 had lost some of its volume. The management told the writer that a surly meat manager in Store 6 had lost quite a few of his customers and that the meat volume suffered because of this. There was a prepackaged meat store in the area which was not in the sample of stores. Business could have been lost to this self-service store. If the surly butcher were the reason for losing business, this points out one of the advantages of prepackaging and self-serving meat. In self-service stores customers do not deal with butchers.

Dollar meat sales, plotted in Figure 36, show that Store 2 maintained about the same volume through the year. Again the 1949 data was converted to the 1948 base and the corrected values are shown by the dotted lines in the graph. Store 6, however, had smaller dollar meat sales at the end of the year, even when 1948 prices of meat were used.

In Figure 37 one can see how total dollar store sales changed through the year. Store 2 had a slightly downward trend in total store sales while Store 6 had a distinct downward trend in total dollar store sales. The reader should notice how closely total dollar store sales vary with total dollar meat sales.

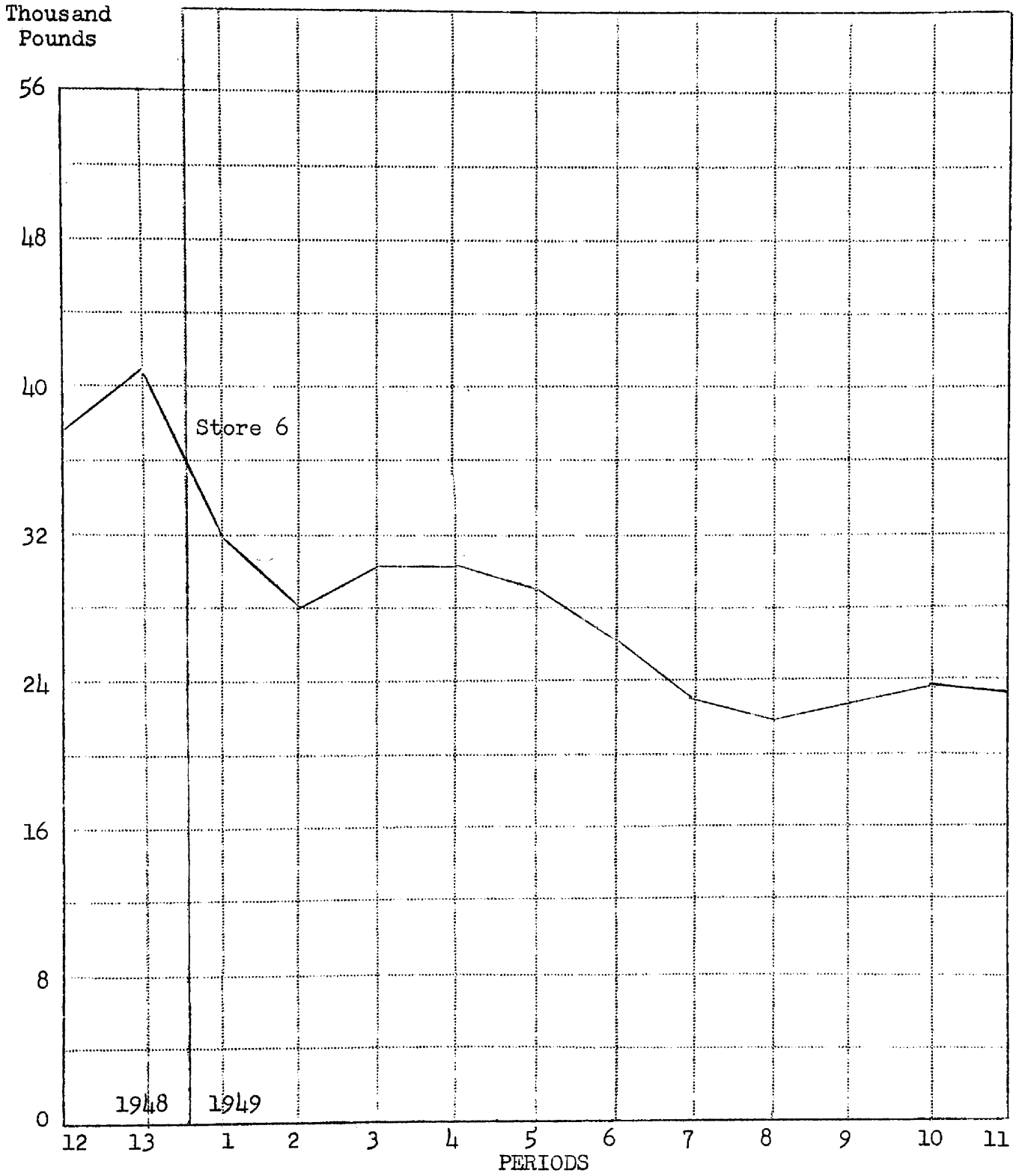

Figure 35. Total Meat Purchases by Periods for Store 6.

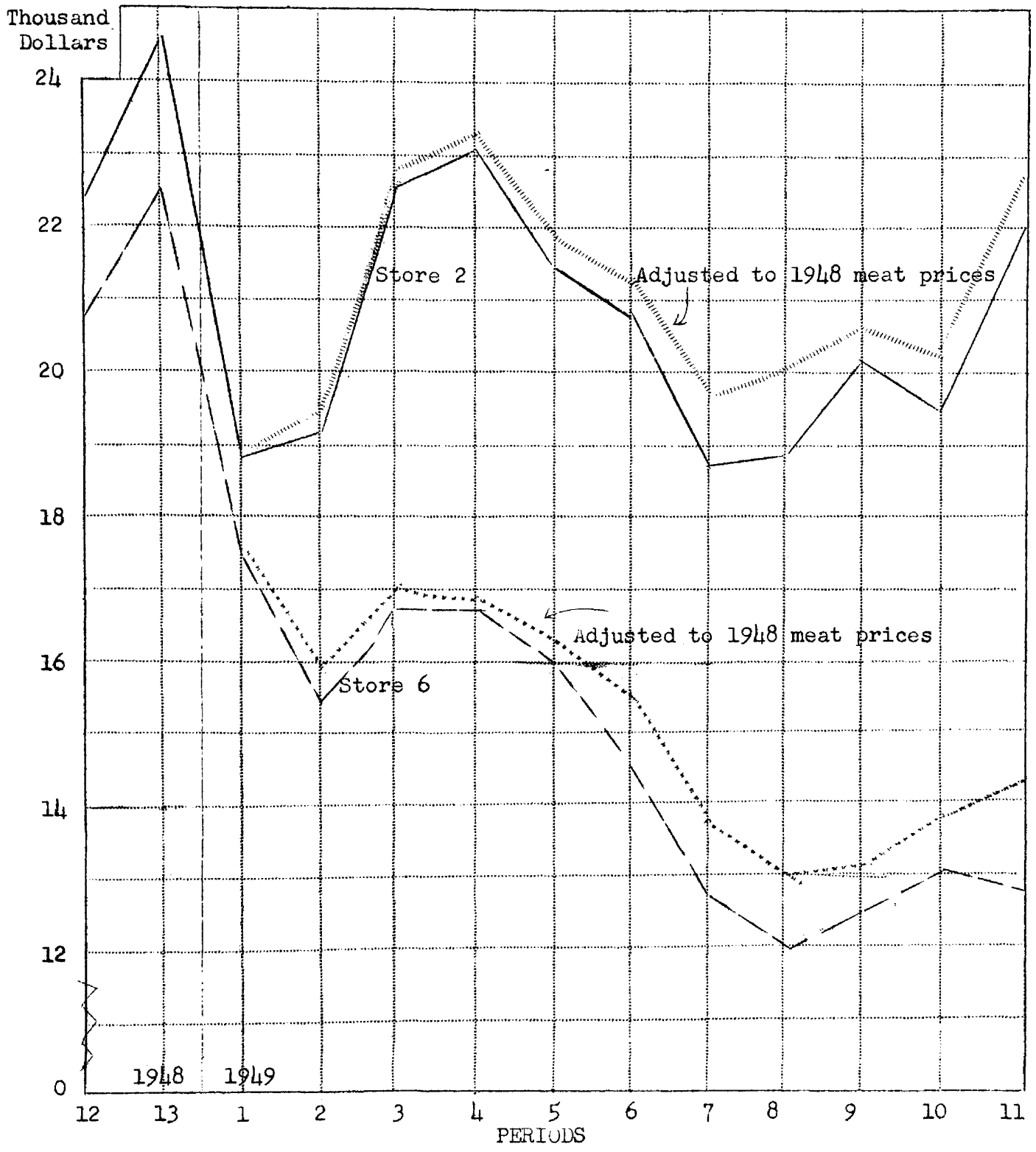

Figure 36. Total Meat Sales by Periods for Stores 2 and 6.

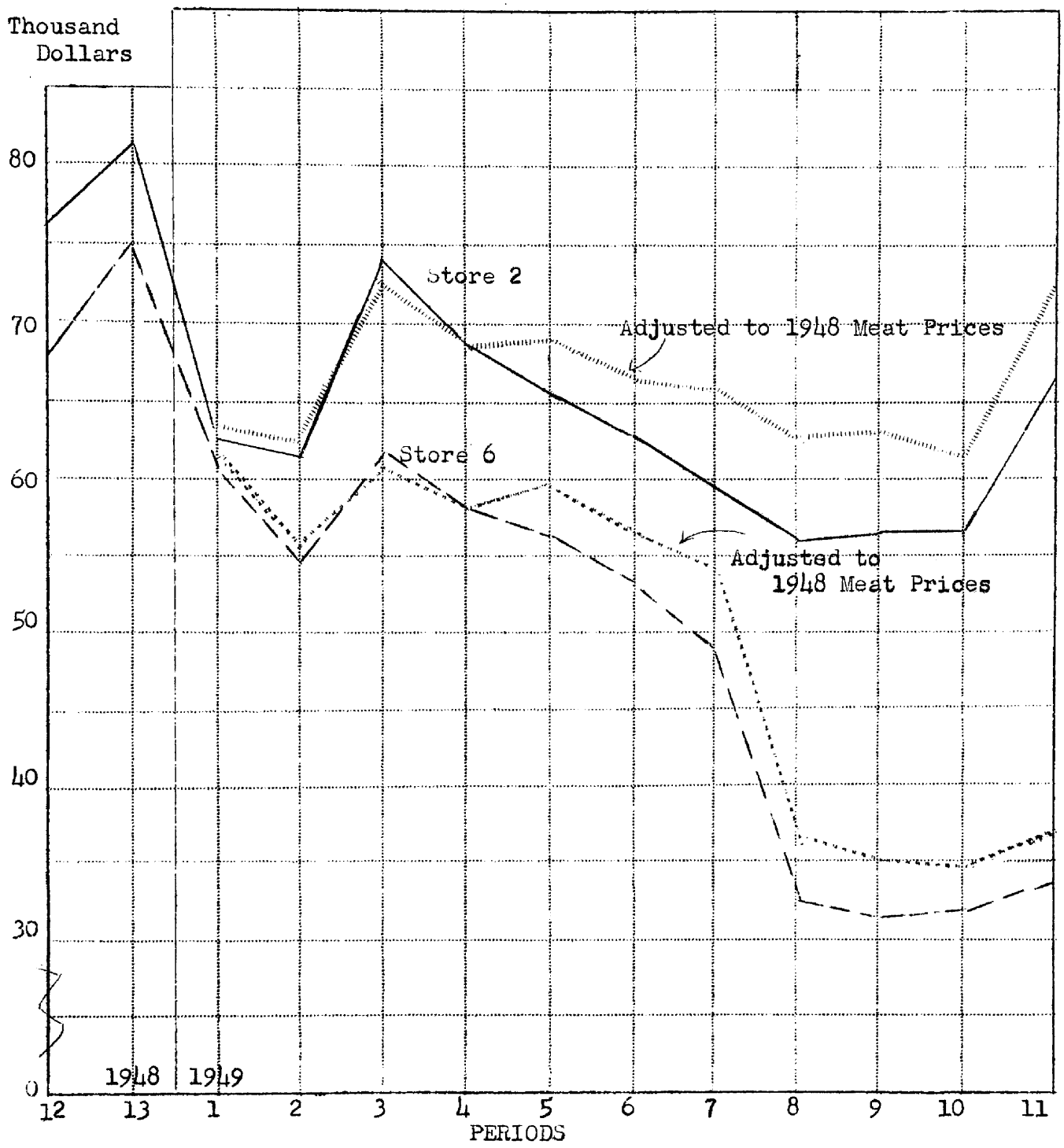

Figure 37. Total Store Sales by Periods for Stores 2 and 6.

Upon re-examination of Figure 33 one thing stands out. It is that Stores 2 and 6 used their labor more efficiently than did Stores 4 and 5. Stores 2 and 6 merchandised a pound of meat about one cent per pound cheaper than did Stores 4 and 5. This indicates that costs are determined in a large part by the way in which the company is administered and not entirely by the method of merchandising the goods.

Comparison of Stores 2 and 4 which were both self-service meat stores. Stores 2 and 4 were operated by different companies and were located in different cities in Michigan. They were both self-service meat stores, they were of approximately the same size and they had similar operating characteristics. The following discussion gives an inter-company analysis of the two self-service stores.

Store 4, after its conversion in 1948, increased its meat purchases, and after period 13, bought more meat during all of 1949 than did Store 2. In period 2 there was a wide spread in meat purchases in favor of Store 2. But, as has been pointed out, Store 2 lost some of its volume and purchases declined. Generally, the trend of total meat purchases in pounds for both stores was quite similar. Figure 38 shows the variations in meat purchases for the two stores.

Total dollar meat sales for Stores 2 and 4 showed even more similar changes as is shown in Figure 39. As would be expected, the dollar meat sales of Store 4 were higher than those of Store 2. Dollar meat sales fell off more for Store 4 than did those for Store 2 but remained larger through all of the periods studied.

Total dollar store sales exhibited similar variations through

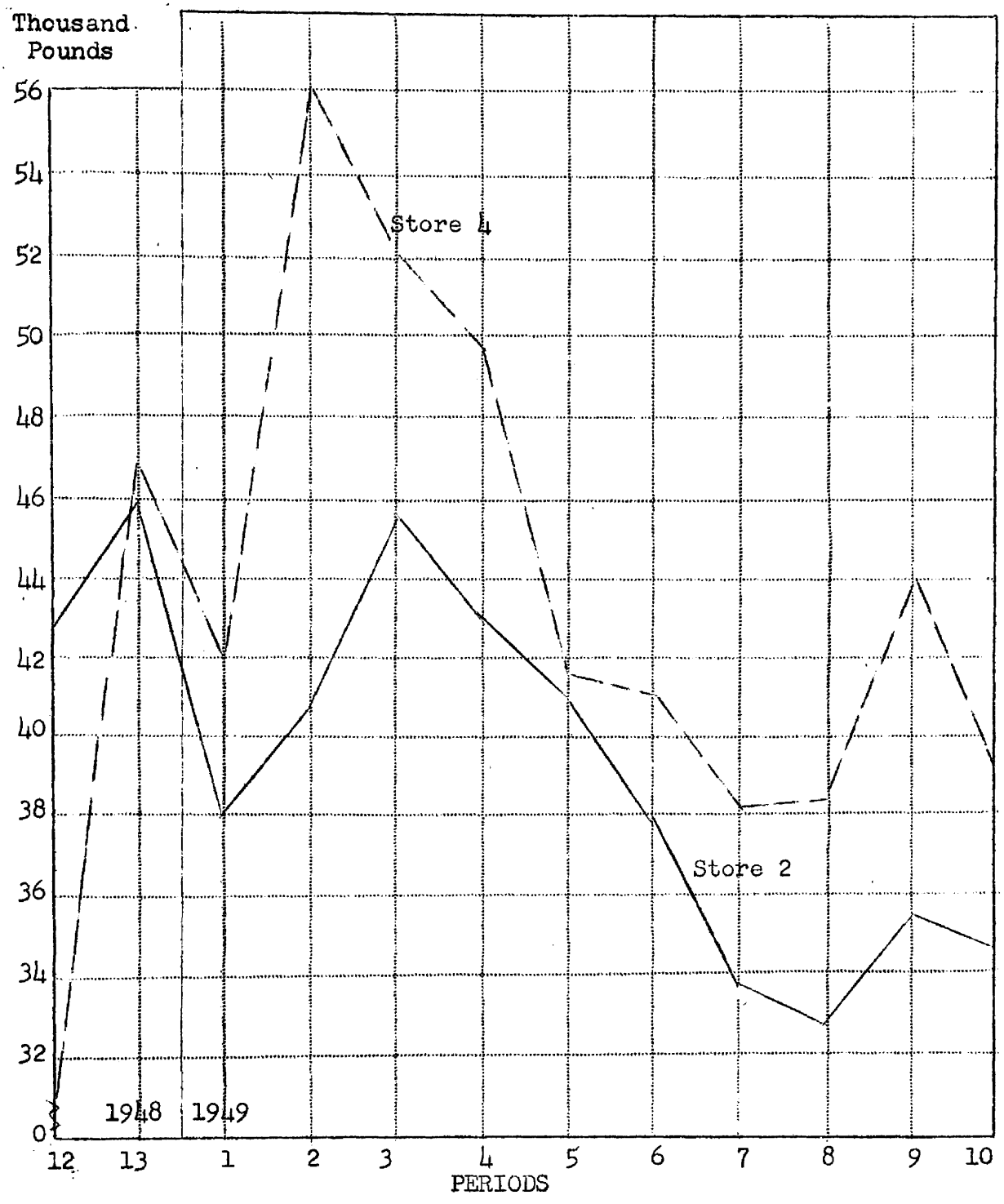

Figure 38. Total Meat Purchases by Periods for Stores 2 and 4.

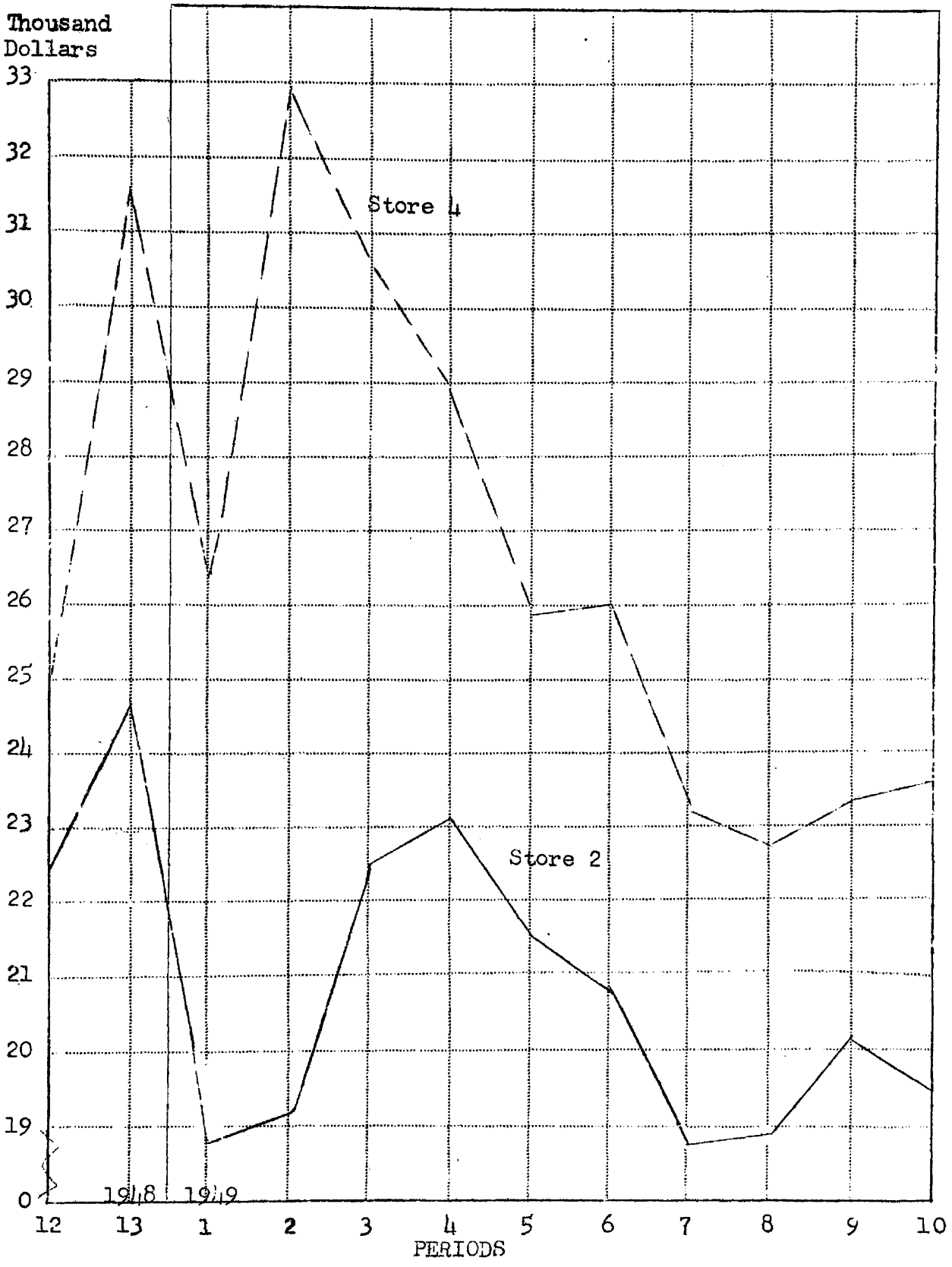

Figure39. Total Meat Sales by Periods for Stores 2 and 4.

the year of the study. But one significant fact stands out in Figure 40. Total dollar store sales were not as variable in either store as were pounds of meat purchased or total dollar meat sales. This meant that other food sales compensated for losses in meat sales at different times of the year and that meat sales compensated for decreases in other food sales in a somewhat similar manner. It should be noticed that total dollar store sales for Store 4 were larger proportionately over Store 2 than either meat purchases or meat dollar sales. This occurred because meat sales were a smaller percentage of total store sales in Store 4 than they were in Store 2. More will be said on this point later.

In Figure 33 the labor cost of merchandising a pound of meat in the four stores was shown. It was pointed out that Store 2 was operating at a lower cost than Store 4. In Figure 41 one can see why this was true. The two stores started out the year paying about the same total meat wages. Store 4 added an employee for one period then discharged that employee. During the rest of the year, meat wages were fairly constant. Store 2, however, showed a downward trend in meat wages for the first nine periods. This was accomplished by releasing employees, both full and part-time, and by eliminating over-time employment. It can easily be seen why Store 2 did have lower labor costs per pound of meat when the total wages and total meat purchases are examined for the two stores.

Comparison of Stores 5 and 6 which were both service stores. Stores 5 and 6 were owned and operated by different companies in different Michigan cities. Both stores had butcher service, were of about the same size and used similar methods for merchandising their

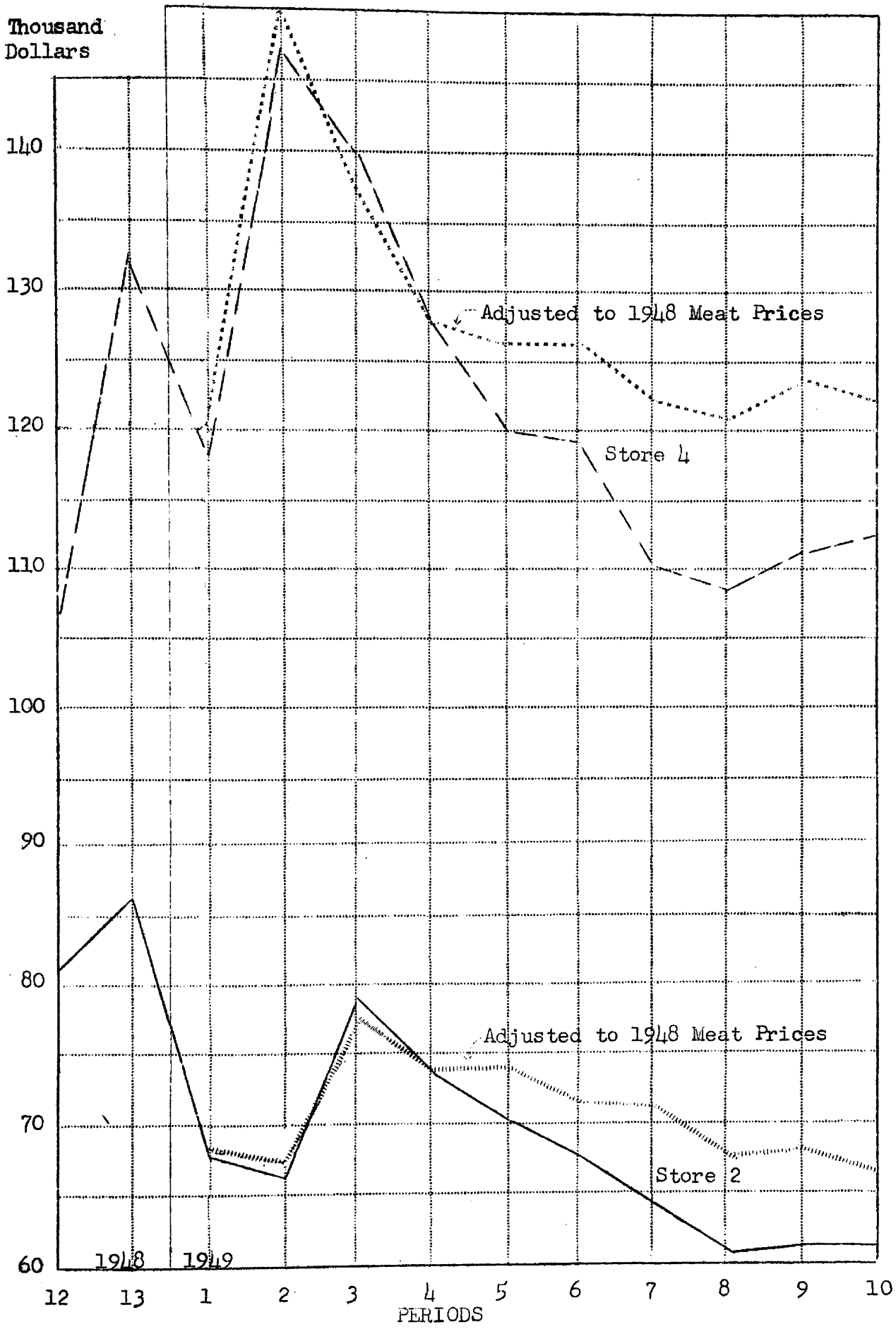

Figure 40. Total Store Sales By Periods for Stores 2 and 4.

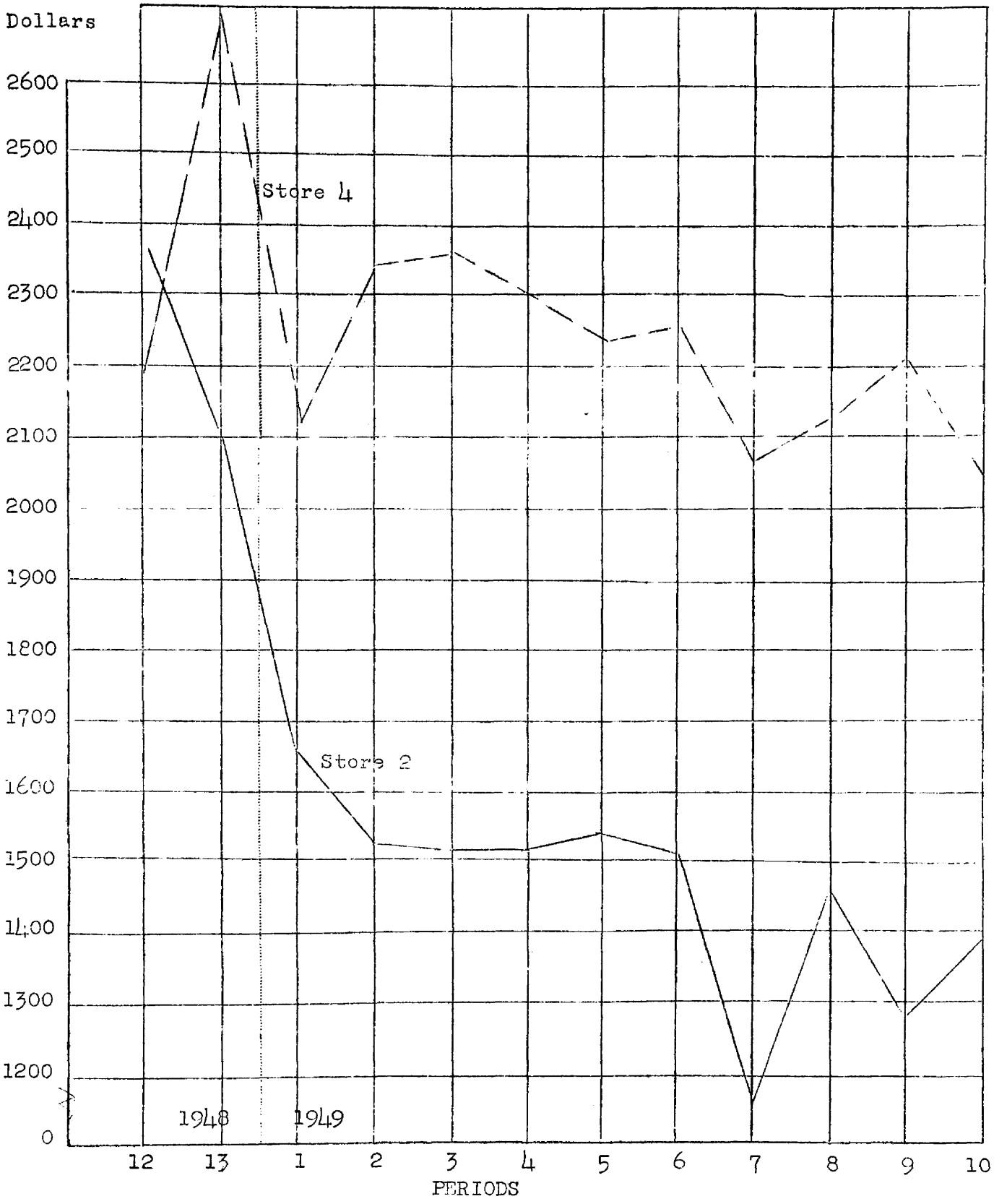

Figure 1. Wages Paid per Period in Meat Departments of Stores 2 and 4.

meats. The analysis that follows is an inter-company analysis.

In Figure 42 one can see the trends in the meat purchases for Stores 5 and 6. Both had increased purchases in the Christmas-New Year period at the beginning of the study. After period 13 meat purchases in both stores fell, but purchases in Store 6 much more than did those in Store 5. It was pointed out above why Store 5 probably lost some customers. After period 2, purchases in the two stores moved consistently together. The trend was downward for both stores.

When one takes a look at total dollar meat sales in Figure 43, he sees again that meat purchases and sales follow similar patterns. In this figure one can see that Store 6 had sharply reduced dollar meat sales. The yearly trend was down but when the dollar sales in 1949 were adjusted to 1948 meat prices much of the losses were corrected.

It appeared that no matter how the writer approached the problem Store 6 went downhill during the period studied. Not only did meat purchases and sales decline but also total store sales as one can see in Figure 44. When Store 5's total store sales were all corrected to 1948 meat prices, there was only a slight difference in total store sales at the end of the year as compared with the beginning. Store 6, however, was taking in only 50 percent of the dollars it took in in 1948 at the beginning of the study.

But even if Store 6 found itself receiving fewer dollars through 1949, it continued to pay out about the same amount for meat wages all through 1949. One less employee was used in 1949, but even so, with the declining volume of business it appeared that even

Figure 12. Total Meat Purchases by Periods for Stores 5 and 6.

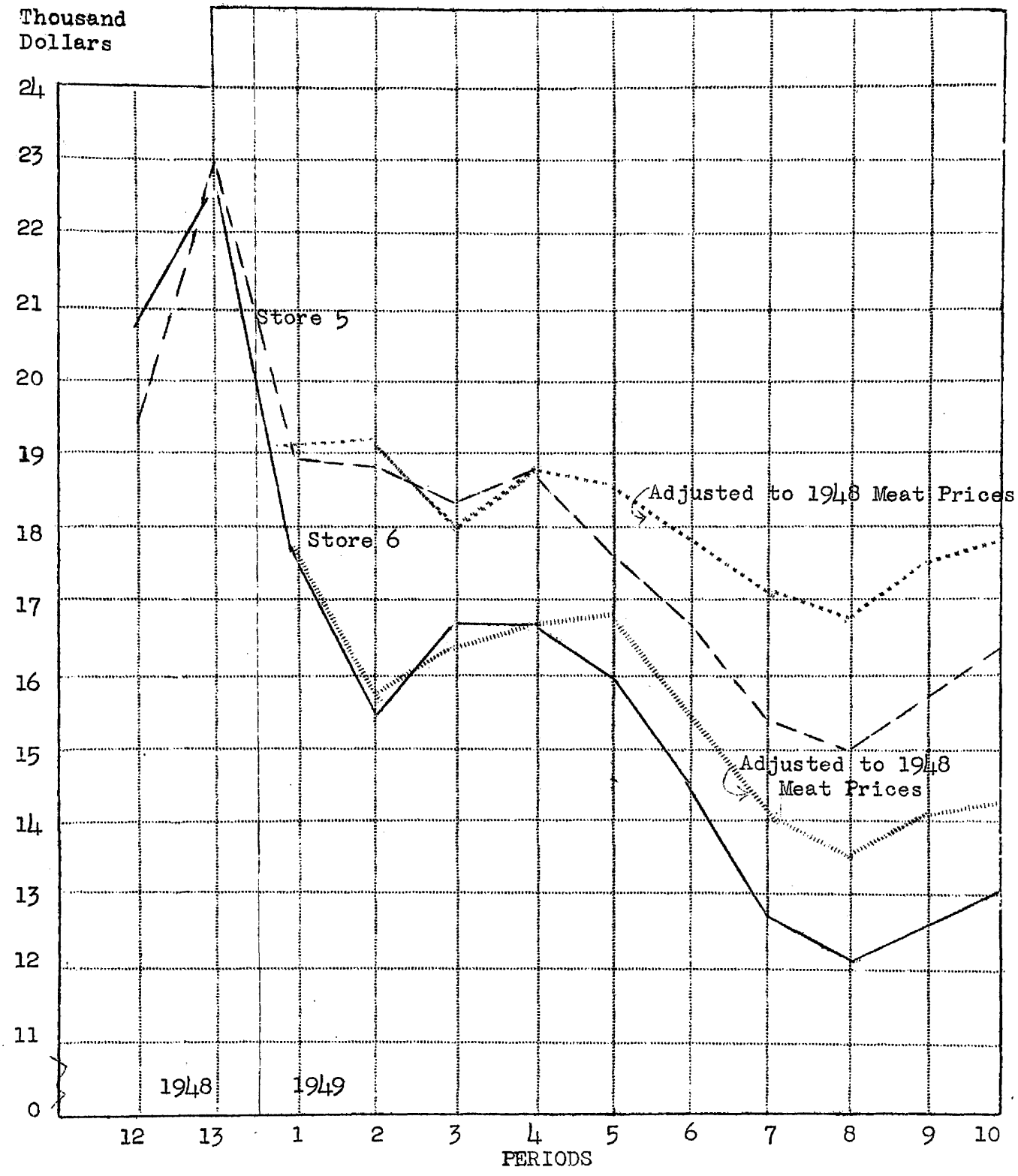

Figure43. Total Meat Sales by Periods for Stores 5 and 6.

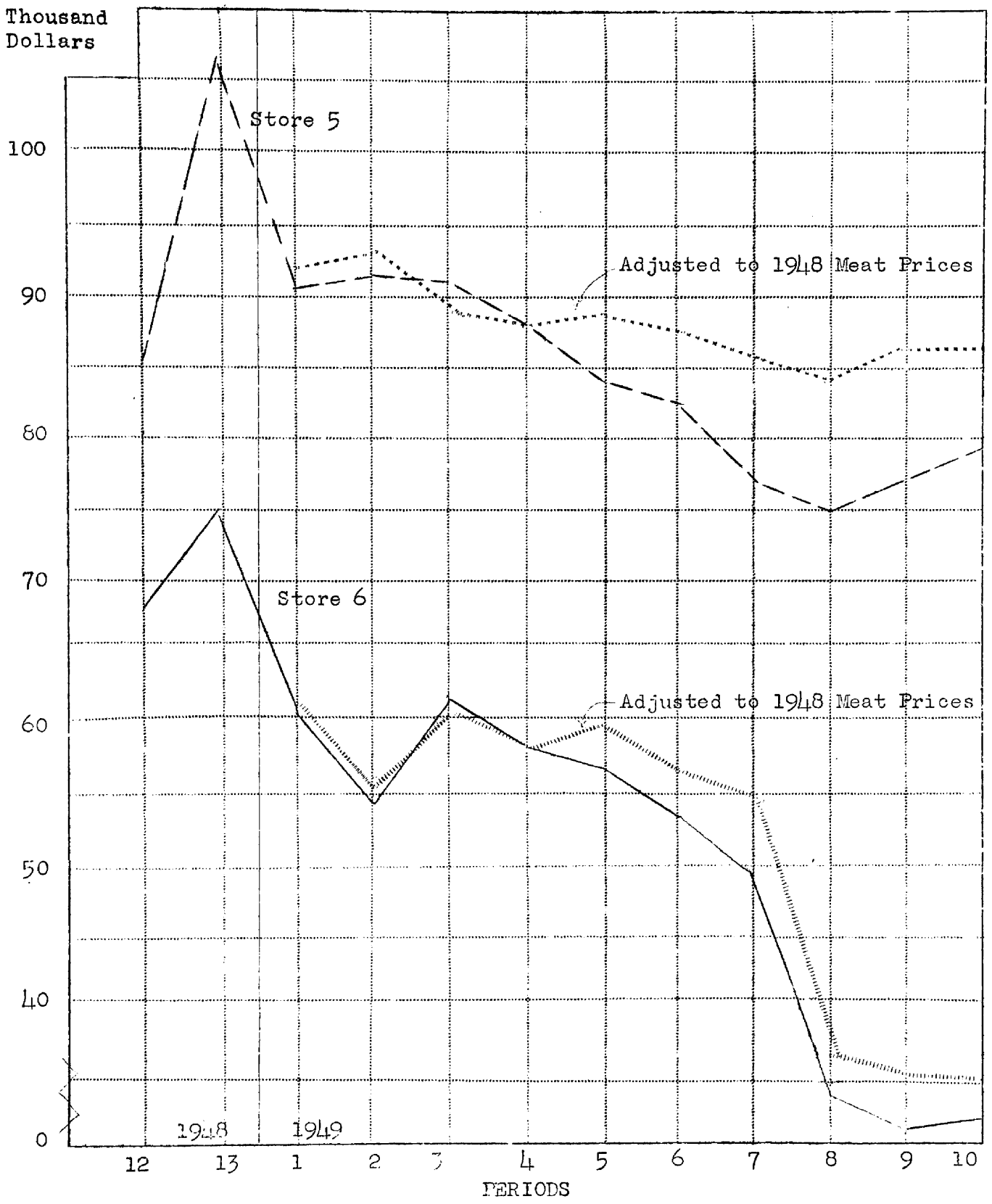

Figure 44. Total Store Sales by Periods for Stores 5 and 6.

another employee should have been transferred. Figure 45 shows the relatively constant meat wages paid in Store 6 after the holidays and after the employee was released. Store 5 had slightly rising meat wages. It, too, should have used its labor more effectively since the volume of meat it handled decreased. Both these stores had increased labor costs on a per pound basis in 1949.

Some comments on the operation of all four stores. Referring again to Figure 33, we can see that the labor cost per pound for merchandising meat varied considerably in all four stores. Stores 2, 4 and 5 made quite a bit of progress reducing labor costs the first four or five periods of the study. Even Store 6 showed some reductions after the first of the year. The latter few periods found the stores having rising per unit labor costs. We must remember that per unit labor costs vary inversely with the tonnage handled, if the labor force is fixed. With a given force and the normal seasonal variation in the consumption of meat the per unit labor cost would naturally change. This seasonal variation in per unit labor cost was present in this study. And not only that, vacations were taken in the summer and fall months. These paid vacations also contribute to the yearly variations. But even if the seasonal variations were adjusted or evened out there would still have been changes in the per unit labor costs through the year of the study. Labor in the self-service stores became more efficient as the year moved along. There was no reason to believe that the labor in the service stores became any more efficient. Another reason for the changes in per unit labor costs was the change in business volume which was not paralleled by a change in the labor supply. Labor in

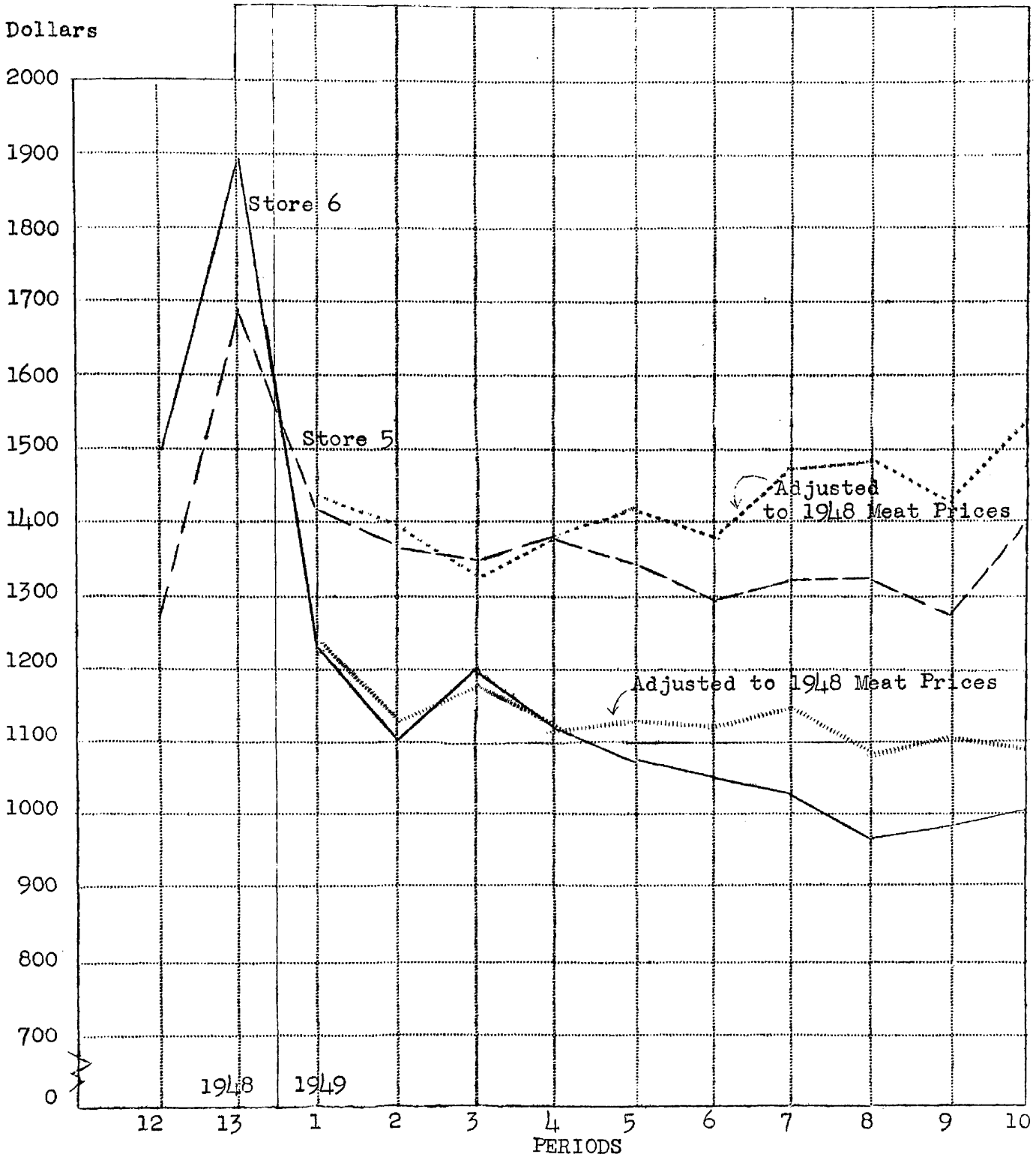

Figure 45. Wages Paid Per Period in Meat Departments of Stores 5 and 6.

a meat market is usually an indivisible factor. The manager usually has to hire a worker for full-time work. Some high school students are employed. But the point is that if the meat tonnage falls 10 percent it is difficult to reduce labor by 10 percent exactly unless 10 persons were employed.

One of the important reasons why Store 2 was more efficient in using labor than was Store 4 was that its meat department was laid out more efficiently. This fact points out the importance of meat department layout and arrangement when a company or manager anticipates conversion to prepackaged meat merchandising. A poor physical layout or arrangement may often prohibit a meat manager from using his labor efficiently. He may even need to keep an additional employee because of this fact, even though he realizes his per unit labor costs are too high. A rearrangement may often be less expensive in the long run than paying for inefficient labor. In the writer's opinion Store 4 could have operated with one less employee if physical layout in the store were better arranged.

The difference in the policies of management were very apparent in this study. There were two companies as has been mentioned. One company stressed meats in its advertisements and to its employees. The other company did not stress any one food line. The company which stressed meats consistently had a higher ratio of meat sales to total sales.

The reader can see the difference in the policies of the two companies by looking at Figure 46. Percentages were obtained for Stores 4 and 5 for 1948 and 1949 but only for the periods of the study for Stores 2 and 6. In 1948 when both Stores 4 and 5 were

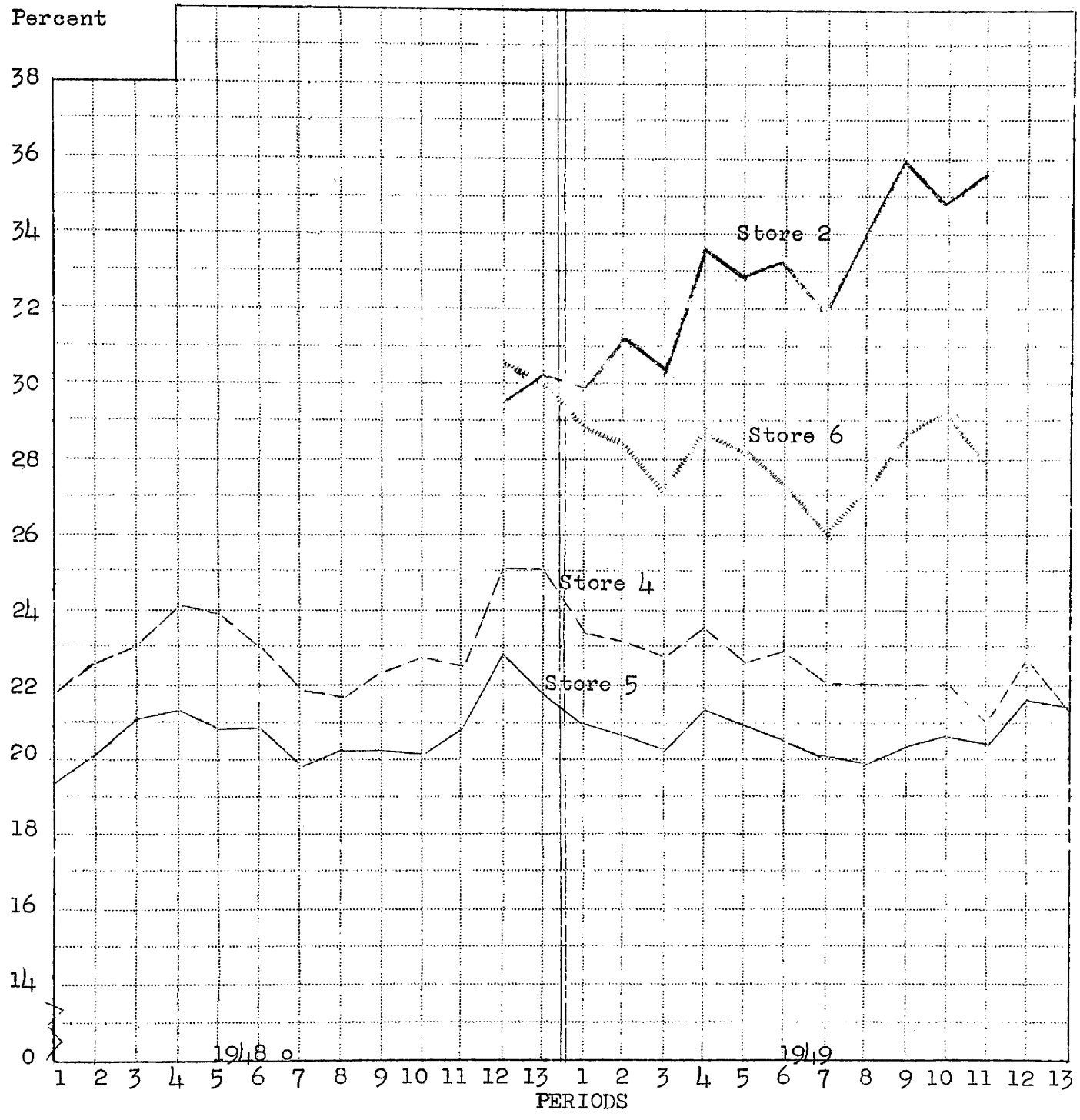

Figure 46. Meat Sales as a Percentage of Total Store Sales in Stores 2, 4, 5 and 6 for 1948 and 1949.

service stores meat sales made up from 20 to 24 percent of total store sales. After the Christmas holidays of 1948, both stores returned to their usual percentages even though Store 4 was a self-service meat store in 1949.

In 1949 Store 2 showed increasing percentages of meat sales to total store sales, but Store 6 showed decreasing percentages. The trend was not down much for Store 6 and this was because total store sales and total meat sales fell about proportionately. We saw earlier that Store 2 experienced some drop in total store sales but that meat sales held steady through the year. These facts account for the rising trend line of Store 2's percentage ratios.

The significant fact here was that both Stores 2 and 6 were able to sell a higher percentage of meat to total store sales than were Stores 4 and 5. Store 6 averaged about seven percentage points above Store 5 and Store 2 averaged about ten percentage points above Store 4. The stress given meat by the management seemed to be the reason why these two companies had different percentage ratios.

In this chapter comparisons between service and self-service meat merchandising have been made. Changes that occurred in individual meat items were examined as were changes in meat purchases, meat sales, total store sales and labor costs. This chapter concludes this section on sales.

CHAPTER V

METHODOLOGY USED TO GET CONSUMER RESPONSE AND GENERAL CHARACTERISTICS OF THE SAMPLE

A new merchandising technique will become a success if the general public accepts it. If the public does not, it is doomed to failure. With little knowledge of their consumer's reactions, many organizations introduced self-service meat merchandising. The conversion of a service meat store to self-service involves an outlay of considerable magnitude. Consumers may prefer self-service but still not like certain practices. This section of the report deals with the reactions of a sample of consumers to prepackaged meat in general and to specific practices in particular. This chapter deals with the methods employed to get the consumer reactions.

Extent of self-service meat merchandising when consumer reaction study was made. Mention has been made of the rapid growth of prepackaging meat. When this study was planned in the Spring of 1949, there were seventeen 100-percent stores in Michigan and these seventeen stores were located in nine cities. These stores probably served less than 100,000 customers. The population in the nine cities was around 3,000,000 so only one person in thirty in these cities have been exposed to prepackaged fresh meat. These facts seemed to rule out any usual sampling procedures because it was felt that not enough people in an ordinary sample would have sufficient knowledge on prepackaged meat to make worthwhile criticisms. It was decided that the people to contact were the ones who were shopping in stores which merchandised prepackaged meats.

Description of the sampling procedure. Four stores offered their cooperation in this study. They were Store 1, Store 2, Store 3, and Store 4. One store was located in Lansing and the other three were in Detroit. The managers of these stores agreed to have their baggers place questionnaires in each shopper's grocery bag for a period of one week. The questionnaires were folded and stuffed in business reply envelopes which were addressed to the writer. When the shopper reached home she found this envelope among her groceries. Accompanying the questionnaire was an introductory letter which told the homemaker the purpose of the questionnaire. Each shopper, regardless of whether meat had been purchased, was given the questionnaire. (See Appendix A)

To decide the number of schedules to prepare each store manager was asked to give us his estimated customer count for the week when the survey was to be made. The combined estimated customer count added to 15,000 for the week which was designated for passing out the questionnaires. In order to make sure that every customer received a questionnaire during the week, 16,000 were prepared and taken to the four stores. Nearly 15,000 were distributed during the week. There was no prize or money incentive offered to the shoppers for filling in and returning the schedule. A statement was made in the introductory letter that data from the returned questionnaires would help a graduate student write a report.

There were actually 14,831 questionnaires distributed. The useable replies totaled 1075 or a 7.2 percent total return. These 1075 gave enough replies in most of the cells for reliable conclusions. There was a return of 11.7 percent from Store 4, 10.3 percent from Store 1, 4.5 percent from Store 2, and 3.8 percent from Store 3. The

questionnaire was pretested by having secretaries and clerks in the department fill it out and make suggestions. After this first pretest, a second pretest was made under actual store conditions with a small sample of homemakers.

Beliefs and hypothesis tested. It was believed that shoppers appreciated an opportunity to spend less time buying their meat supplies. One of the advantages given by store managers who had converted to prepackaged meat was that customers could shop more quickly. One of the purposes of this section of the study was to find out if shoppers thought less time was needed when purchasing their meat in packages.

It was believed that customers would say that they actually preferred to buy prepackaged meat. This was the principal hypothesis which was tested in this section. In the test it was expected that it would be possible to say something about the characteristics of the group which liked prepackaged meat and about the group which stated it disliked prepackaged meat.

In the questionnaire questions were asked about shopping habits of the customers. They were asked how often they shopped, how they stored their meat at home, what mode of transportation they used between their home and the store and other personal questions which were thought might have a bearing on the answers given.

Methods employed in the analysis. All data from the returned questionnaires were edited, coded and punched on International Business Machine (IBM) cards. These cards were checked and verified for accuracy. IBM's were used to sort the cards on each of the punched columns. These first sorts were straight, simple sorts of the answers

to each question on the questionnaires. These sorts gave the general characteristics of the population sampled which are presented as simple frequency distributions. In this chapter the reader is given a chance to examine these characteristics.

Five main questions were asked to obtain the general characteristics. These five dealt with: 1) Size of family; 2) Income; 3) Weekly food expenditures; 4) Weekly meat expenditures; and 5) Age of respondent.

In a later chapter more complete analyses are presented. These were accomplished by cross tabulating or sorting on one column, say income, and then using income as a control, resorting on all the other columns. This two-way frequency distribution permitted conclusions to be drawn regarding the effect that the five basic control factors had upon the answers the respondents gave to the rest of the questions on the schedule.

Size of family. The shoppers in these four super-markets gave the number of children, adults and boarders, who ate at least two meals per day in their home, as the answer to the question regarding the size of their family. Children were counted as adult equivalents. This procedure is open to question but it was impossible to arrive at any satisfactory solution whereby two or three children could be counted as one adult when a food study, as this, was concerned. Do two children age six eat as much as one adult? Or is the age five or eight? There is a great variation among adults and the writer thought an answer to this question was impossible. Probably a satisfactory grouping system can be found for some items and for some foods in particular, say milk.

The respondents appeared to come from representative families. In Table VI it can be seen that families ranging in size from one through nine people answered the questionnaire. It should be mentioned here that there were a very, very few families having a total of more than nine people. Because of the small number and the difficulty of sorting IBM cards on two columns, families of nine or more were grouped together.

Eighty percent of the families had either two, three or four people in them. There was no significant difference between any two stores nor between any store and the combined total. It was concluded that the respondents were typical in regards to family size because the average American family has between three and four members.

Average weekly income. The four stores which were chosen were in middle income areas and were chosen as representative of super-markets frequented by families earning average size incomes. The questionnaires were distributed in the Spring of 1949 so the income data pertains to that year.

The families were asked to give their incomes, after tax and retirement deductions, which included the income by everyone in the family. Four income divisions were tabulated. As Table VII shows the 60 to 89 dollar class contained the largest percentage of the families in Stores 1, 2, and 3. In Store 4 there were a few more families in the 30 to 59 dollar class than there were in the 60 to 89 and also a few more in the lowest income class. These facts indicated that the customers of Store 4 had lower incomes on the average than did the customers in the other three stores; however, using statistical tests the difference was not significant and was probably due to chance.

Table VI. Percentage Distribution of Number of People in Family.

Number of People in Family	Store 1	Store 2	Store 3	Store 4	All Stores Combined
	percent	percent	percent	percent	percent
1	1	0	0	3	2
2	26	19	28	32	28
3	29	30	39	22	27
4	27	30	19	24	25
5	13	16	8	12	13
6	3	3	3	4	3
7	0	0	2	3	2
8	0	2	0	0	Less than 1
9 and over	1	0	1	0	Less than 1

Table VII. Percentage Distribution of Average Weekly Income.

Average Weekly Income	Store 1	Store 2	Store 3	Store 4	All Stores Combined
	percent	percent	percent	percent	percent
Under $30	1	1	0	10	3
$30-59	12	9	14	40	20
$60-89	44	58	48	36	45
Over $90	43	32	38	14	32

The chi-square test was used.

The net income of the average of all the families was between $4000 and $4500. The income figures again substantiate the assumption that the families shopping in these stores were average middle income families.

Amount spent for food per week. In the United States the average family spends between 20 and 30 percent of its disposable income for food. The percentage varies through the years as the price level and food prices change. It averaged 23 percent in the 1935-39 period but rose to 28 percent in both 1947 and 1948.

Table VIII shows the percentage distribution of weekly food expenditures in the four stores. Eighty-seven percent of all the respondents spent from 11 to 30 dollars for food per week. Assuming 25 to 30 percent of the disposable income were spent for food would lead us to expect the two classes 11 to 20 and 21 to 30 dollars to have the two highest percentages. Again, the sample seemed to give the representative data which were desired.

Amount spent for meat per week. The average family spends 25 percent of its food budget for meat. This means that 6 or 7 percent of a family's disposable income is spent for meat in the United States. If the majority of the families in the sample had incomes ranging from 60 to 90 dollars a week, we would expect the expenditures for meat to be about 6 or 7 percent of this range.

In Table IX one can see that over one-half of the families spent between 6 and 10 dollars per week for meat and that one-third spent between 1 and 5 dollars per week for meat. The average expenditure

Table VIII. Percentage Distribution of Average Amount Spent for Food per Week.

Average Amount Spent for Food per Week	Store 1	Store 2	Store 3	Store 4	All Stores Combined
	percent	percent	percent	percent	percent
$ 1-10	1	0	1	13	4
11-20	44	45	52	57	49
21-30	45	47	36	27	38
31-40	8	7	8	3	7
41-60	2	1	3	0	2
61-80	0	0	0	Less than 1	Less than 1

Table IX. Percentage Distribution of Average Amount Spent for Meat per Week.

Average Amount Spent for Meat per Week	Store 1	Store 2	Store 3	Store 4	All Stores Combined
	percent	percent	percent	percent	percent
$ 1- 5	27	24	31	56	36
6-10	65	68	57	40	57
11-15	6	7	12	4	6
16-20	2	1	0	0	1

for meat by the average family in the sample was slightly over six dollars per week. Assuming six percent of the disposable income were spent for meat and knowing that the average weekly expenditure was six dollars, one arrives at a disposable annual income of $5200. This is higher than the above data indicated as the average annual disposable income. If, however, it is assumed that seven percent of the income is spent for meat, we find that the annual income would be a little over $4400 and this figure comes within the range given above. Here again the data given by the respondents appeared to be reliable and conformed to published national averages.

The writer has pointed out why it was impossible to use any standard sampling procedure. This was because too few in the total populations in the cities sampled had had contact with prepackaged fresh meat. To get back enough useable replies using any standard mail sampling procedure would have necessitated a larger budget than was available. It was then shown that the families represented by the returned schedules were middle income families who were of average size. These families spent the expected proportion of their incomes for food and for meat.

CHAPTER VI

CONSUMER REACTION TO PREPACKAGED MEAT

In this chapter the reactions of the respondents to prepackaged meat are given major prominence. Reasons why this sample of customers liked or disliked prepackaged meats are examined. These respondents had ideas about practices which they thought the meat managers should adopt to provide them with better services. These ideas are explored.

The chapter begins with some general characteristics of the respondents. The age of the respondents is examined as are methods of travel used in getting to the stores and the ways meat was stored in the homes. The frequency of meat buying is explored as well as the identity of the meat purchaser.

Age of respondent. Each questionnaire contained a question which asked the age of the respondent. (See Appendix A) The writer felt that older-aged shoppers might have become so adjusted to buying meat the service way that they would not prefer prepackaged meat. There were no published age classifications for the two cities involved and so this factor was not used in the preceding chapter for judging the reliability of the sample.

There were three age groups given to respondents to check. These classes were thought to be representative of the populations and it was hoped that an approximately equal number would fall into each class. However, the returned questionnaires showed over twice as many respondents in the 30 to 50 year group as in either other class. These facts did not rule out the use of the lower and upper age classes.

There were sufficient numbers in each class for reliable reporting of their reactions.

The age of the respondents was used as one of the controls for cross-tabulating. The results of the cross tabulations are presented later in the report. The simple frequency distribution of respondents' ages for the four stores and for all stores combined is given in Table X.

Who did the meat buying. Anyone who stops to notice the customers in a supermarket will see several men doing the shopping. If men are important in food buying for their own homes, this factor should have importance for store managers. Displays that attract women might not attract men and vice versa. To learn who purchased most of the family meat supply this question was included on the questionnaire.

The results from the survey showed that women were still the important family meat buyers. Over four-fifths of the meat shoppers in the sample were wives or homemakers. Sons and daughters were not important meat buyers--they comprised less than two percent of the total. Men, however, made up one-sixth of the family meat buyers. These results showed that men must be considered when meat merchandising methods are established. The simple frequency distribution of meat buyers is given in Table XI.

How often meat was purchased. All who frequent super markets know that the stores have more customers at the end of a week than at the beginning. But do the week-end shoppers buy a week's supply of meat, or a day's supply? To be able to answer this question the shoppers were asked how often they purchased meat.

Table X. Percentage Distribution of Age of Respondents.

Age of Respondents	Store 1	Store 2	Store 3	Store 4	All Stores Combined
	percent	percent	percent	percent	percent
Under 30 years	21	16	26	27	23
30 to 50 years	66	73	59	46	60
Over 50 years	13	11	15	27	17

Table XI. Percentage Distribution of Who Did Most of the Meat Buying.

In Your Family, Who Does Most of the Meat Buying?	Store 1	Store 2	Store 3	Store 4	All Stores Combined
	percent	percent	percent	percent	percent
Son	0	4	0	1	1
Daughter	1	0	0	1	Less than 1
Wife	85	83	87	75	82
Husband	13	12	13	23	16
Single Adult	1	1	0	0	1

The results showed that one-half of the respondents purchased meat only once each week. Forty-five percent of those answering the question said they purchased meat two or three times a week. Only four percent said they bought meat daily. Four percent, however, was larger than many would have thought. Fewer people bought a two-week's supply of meat at one time. Only one percent of the sample fell here. The percentage distribution is shown in Table XII for all stores.

How meat was stored in the home. Another indication that the sample was composed of middle income families was given by the method used for meat storage. The mechanical refrigerator was used by about 90 percent of the respondents from each of the stores. The ice box was the second most important device for the entire sample; yet in two of the stores, the home freezer was more important. The ice box and the home freezer were used by only ten percent of the families in the sample. The window box was still used by some families. Table XIII shows the importance of mechanical refrigeration for storing meat.

Mode of travel used to get to the stores. It was mentioned earlier that the stores which were used in this study were large super markets. Super markets usually draw customers from a large area and the writer wanted to find out how these shoppers got to the stores. Table XIV shows the method used by the respondents who shopped in the four stores.

Over four-fifths of the shoppers drove automobiles to the super markets when shopping. This fact points out the importance for having a large parking area for use of super market customers. Inadequate parking space may cause super markets to lose business they otherwise would get. Customers who walked to the super market comprised the second

Table XII. Percentage Distribution of How Often Meat Was Bought.

How Often Is Meat Bought?	Store 1	Store 2	Store 3	Store 4	All Stores Combined
	percent	percent	percent	percent	percent
Daily	3	2	5	6	4
Weekly	49	52	37	55	50
Two or Three Times a Week	47	45	56	37	45
Every Two Weeks	1	1	2	2	1

Table XIII. Percentage Distribution of the Way Meat Was Stored.

How Is Meat Stored?	Store 1	Store 2	Store 3	Store 4	All Stores Combined
	percent	percent	percent	percent	percent
Mechanical Refrigerator	91	93	94	88	91
Ice Refrigerator	3	1	3	10	5
Home Freezer	6	6	3	0	4
Other	0	0	0	2	Less than 1

Table XIV. Percentage Distribution of Mode of Travel Used to Shop for Meat.

Do You Usually Shop for Meat by?	Store 1	Store 2	Store 3	Store 4	All Stores Combined
	percent	percent	percent	percent	percent
Auto	88	84	86	86	86
On Foot	11	15	16	10	12
Taxi	0	0	0	1	Less than 1
Bus or Street Car	1	0	1	3	2
Bicycle	0	1	0	0	Less than 1

Table XV. Percentage Distribution of Why Prepackaged Meat Was Bought.

Why Do You Buy Prepackaged Meat?	Store 1	Store 2	Store 3	Store 4	All Stores Combined
	percent	percent	percent	percent	percent
Less Bone and Waste	5	5	6	4	5
Larger Selection	8	7	8	12	9
Meat Is Fresher	4	4	4	4	4
Can Examine the Meat	16	15	15	20	17
No Particular Reason	0	1	0	1	Less than 1
Only Kind Sold In Store	3	7	5	7	5
Meat Has Higher Quality	4	3	2	2	3
Weight and Price Are Given	16	16	16	22	17
No Talking With Butcher	6	5	6	6	6
Can Shop More Quickly	16	15	15	22	17
More Sanitary	9	9	9	Less than 1	7
Convenient Selection of Sizes	13	13	14	Less than 1	10

largest group. These customers were undoubtedly ones who lived near the super market. Less than three percent of the shoppers used public transportation when shopping.

Overall preference for meat merchandising method. Since these stores had merchandised prepackaged meat for several months, it was assumed that those customers who bought their meat in these stores had a preference for prepackaged meat. However, all shoppers were given the questionnaire. Those people shopping in these stores who did not like prepackaged meat had their opportunity to give their reasons why they preferred butcher service.

Combining the answers given by all respondents it was found that 75 percent preferred to buy meat prepackaged. Seventeen percent stated they preferred to buy their meat supplies from a butcher. Eight percent said it made no difference to them whether the meat was prepackaged or not. These data prove conclusively that the shoppers in the sample definitely preferred prepackaged meat.

All the customers in the sample were asked if they thought they had to pay a higher price for prepackaged meat as compared with comparable meat sold the service way. Seventy-six percent said they did not think they had to pay more for prepackaged meat while 24 percent said that they thought prepackaged meat cost more.

The writer had talked with several people, before doing the study, who thought stores selling prepackaged meat were charging more per pound than those stores selling comparable meat over the counter. He also talked with chain store executives who said that they were selling prepackaged meat for the same price as service meat. The results of

this study indicate the majority of the shoppers in the sample felt that the chain store executives were correct.

Why respondents like prepackaged meat. All customers given the schedule were asked to state why they liked prepackaged meat. The answers were tabulated and are presented in Table XV. In all four stores three reasons were given the most weight. The respondents like prepackaged meat because: 1) They could examine the meat by lifting out the package and looking at the meat. 2) The weight and price were given on the label on the package. They could easily tell if the cut of meat were large enough by looking at the weight and they could tell if they could afford the cut by looking at the total price. 3) They felt that they could shop more quickly when they bought prepackaged meat.

As one can see in Table XV, one-tenth of the respondents liked the larger selection offered in these self-service stores. One-tenth also liked the displaying of different sized cuts. Seven percent thought that these self-service stores were more sanitary than service stores. Six percent said they preferred prepackaged meat because they did not have to talk with a butcher.

Why some respondents did not like prepackaged meat. The reasons given by the families in the sample as to why they did not like prepackaged meat were not tabulated as were the reasons for liking it. The writer did select three reasons which were given quite often. These three were: 1) Some meats were off flavor; 2) Customers were sometimes fooled about excess fat or bone in the package; and 3) Some packages of chops or steaks had cuts which were not sawed uniformly. So that the reader could see for himself what this group of respondents had to say against prepackaged meat a selected list of actual statements is included here.

"Can't see how, when, or where they've been packaged. Can't trust the weights."

"I have not had good results with the packaged liver. It has not been as satisfactory as freshly cut liver that I have been able to select myself. Also I have found it necessary to have steaks (sirloin) cut thicker and canadian bacon in the piece as these have not been packaged."

"Perhaps the only objection to me is that prepackaging gives to the "just looking" type of customer the opportunity to handle items unnecessarily."

"One can't always get what one wants such as thick pork chops for stuffing (with pockets) and baking. I probably would discontinue buying packaged meats if for instance pork chops were packaged in such a way as to conceal excess fat. Today I bought a package of pork chops 90 cents - 5 unusually small thin chops - I never would have bought them that way, had I seen them cut off. I never would have. Another experience like that and I will buy my meat elsewhere."

"Would like pork chops at least 1 inch thick."

"Most meat is put up in 2 large quantities for small families of 2 or 3 in family. Now take weiners for one item there are 8 or more in a package where 4 or 5 is enough for a family of 2."

"On your standing rib package, I never buy them when the rib is cut. Also I like two ribs better than one."

"The only objection I have to prepackaged meats is that often times the cardboard stiffner on the back of the package hides the fat and other waste that was not evident at the time of purchase."

"Meat is frequently handled too much by customers and wrappings torn badly."

"I find most roasts a little too large for my needs, just 2 of us."

"In packaged meat all the fat is on the bottom and you don't know what your're getting."

"Package smaller amounts of hot dogs."

"I do think, at first, the prepackaged meat was better trimmed than at times later on that I've noticed. In fact several times I did not take loin lamb chops because there was too much fat left on. And they're expensive as is."

"In large pkgs. of chops, (4 to 6), all chops are not same cut. We ladies, I believe, prefer all cuts same in pkg."

"Sometimes the meat lacks flavor."

"My only objection to prepackaged meat is that I am afraid some had stood too long. The open self-serve counters aren't particularly cold."

"Would prefer having the worse side of the meat (roast beef, for instance) placed on top. Several times I have been quite disappointed to find when I arrived home and took the meat out of the package, that all that glitters is not gold. In other words, the packager had placed the sunny side up, and the fat side down and none of us likes fat. How about the cardboard tray - is that taken into consideration when weighing the meat? You might also tell the management we don't like the practice of charging us tax on bottle deposits. It's being done!!!"

"They do not replenish cabinets often enough on heavy shopping days."

"Would like smaller packages of meat such as 2 pork chops and small roasts."

"Prepackaged is preferred -- providing manager of meat dept. is conscientious, having been stung twice now."

"Meat could be prepackaged in smaller amounts for small families."

"Sometimes I like special cutting such as pork chop pockets -- two chops to be stuffed, etc."

"The only objection to prepackaged meat is that you can see only one side, the other side being covered with cardboard."

"We find more fat and bones than when examined while wrapped."

"Would like smaller pieces of live sausage - about 1/2#. Would like smaller pkgs. ground beef - 1/2#."

"Many times, one finds the top piece of meat is very choice, but the meat underneath is cut too thin or it is all bones."

"I would like to see a scale placed so customers can check weight-making allowance for paper in wrapping."

"Can't always get the weight or size wanted."

"The only prepackaged meat I like or buy in your store is chicken. It is the only meat that looks better that way."

"I would like to see both sides of the meat."

"I like prepackaged meats primarily for quicker shopping. I object to them when I need help in selecting good cuts and because I want cuts fresh."

"Only one comment - don't cover up the packages by putting loin chops on top and end cuts underneath. When you get home and find that it is very disgusting. Messes up your dinner plans."

"Don't like to find undesirable pieces of lunch meat or boiled ham between the nice pieces."

"I like to have the butcher cut the meat in front of me. I do not like to see everyone picking up the packages of meat and handling them. I do not think meat should be taken out of the case and fingered and poked and put back again. It should be kept on ice until sold to buyer."

"Often find mistakes in price stamps on pkg."

"I have wondered if the liver was fresh and have questioned buying it for that reason, one package wasn't fresh."

"The only objection I have relates to the practice of making up weight by enclosing slices of fat, ends, etc. between two good looking slices of meat (happens regularly with boiled ham)."

"Cold cuts have been a little less than fresh several times."

"I always like suet with beef roasts and do not like the delay in waiting to ask the butcher for a piece."

"Would suggest that poultry be examined more thoroughly, over Decoration day got turkey that was turning bad. Could not return it because I took some aboard our boat and smelled so bad I could not keep it aboard until Monday to return it."

"Sometimes I can't find the weight I am looking for. The packages are usually larger than we can use for a family of two."

"Suggest smaller packages of beef liver, also hamburger."

"Have found inferior pieces in the bottom of a package such as liver, sandwich meat, etc."

"The counter is usually too crowded and each time you want an article you have to break thru a line."

"Cannot always get large enough roasts."

"Only two complaints - 1. Steaks cut too thick - reason - at present prices of meat and food in general, a family of 5 has to cut corners thinner slices means more individual servings - amount of servings means more to children than thickness. 2. Would like bulk pork sausage packed in smaller amounts 1/4 lb. and 1/2 lb. packages for meat loaf making. Also ground veal."

"I always wonder how long the meat has been packaged. Have had some link sausage that was stale. Other meat was ok. Don't particularly care for packaged meats. I like the poultry packaged. Have found it excellent either frozen or freshly dressed."

"Too expensive--pieces on top look nice but underneath you sure get fooled."

"Does not taste fresh enough."

"I found the fat folded under on the pork chops."

"I like to buy beef and then have it ground for hamburger."

"I don't know how long it has been packaged."

"Backing cardboard can hide excess bone and/or fat not visible on top or on sides of package."

"Meat should be in a larger variety of weights per package."

"I like to see the meat weighed."

"I like to see both sides of what I am getting."

"The packages are too flimsy--I sometimes feel that the meat might get contaminated from so much handling."

"Cannot be completely sure of absolute freshness."

"Has the same impersonality of an automat."

"I like to have advice of the butcher if I know him."

"I never feel sure of its freshness and it does get handled more."

"When packaging chops, it would help if the no. of chops enclosed were also listed on the pkg. Several times I have taken a pkg. I thought contained 5 chops and got home to find only 4 or else six. It doesn't hurt when it is extra, but does complicate things when I'm one shy."

Length of time customers had bought meat in the sample stores. To obtain an idea of how long each shopper had purchased prepackaged meat a question asking this was placed in the questionnaire. This information was wanted because comments and judgements were desired from seasoned prepackaged meat buyers rather than from shoppers who were buying their first packages of prepackaged meat. All of the stores had been merchandising prepackaged meat for six months or more.

Seventy percent of the respondents had purchased meat in the self-service stores for six months or more. There was very little variation between the stores. Fifteen percent had purchased meat from three to six months, nine percent had purchased prepackaged meat from one to three months and only six percent might have been considered new customers having bought prepackaged meat for less than one month.

It appeared that the ninety-four percent who had purchased prepackaged meat for at least one month provided the seasoned shoppers that were desired and in large enough numbers to provide valid comments on prepackaged meat merchandising.

Proportion of meat purchased in the self-serve stores. Not only was the length of time that meat had been purchased in these self-serve stores important but also the proportion of the families' total meat supply that was purchased in these stores. It was found that one-third of the respondents purchased all of their meat supplies in these stores. Thirty-nine percent stated that they purchased most of their meat in the stores. Another one-quarter of the respondents said that they purchased some of their meat in these self-serve stores. Four percent said that they did not purchase any of their meat in the stores.

Comments were desired from this latter group because it was felt that their criticisms indicated why they did not purchase any of their meat in these stores. The writer and the store managers were anxious to learn why some customers were not buying any meat and thought comments by this group might give ideas on weaknesses which could be rectified. By reading the comments which the respondents gave and which are given above it was possible to suggest ways of improving the merchandising of prepackaged meat. These are given later.

Customer meat eating habits since they started buying prepackaged meat. All of these stores witnessed increased meat sales after the conversion to prepackaged meat merchandising. The managers had thought this was all due to an increase in the number of customers. It would necessarily have had to have been this fact or, because the old customers were buying more meat than previously.

Knowing that the impulse factor was prevalent when packages of meat were displayed in open cases the writer asked the shoppers if they were eating more, less or the same amount of meat since they had started buying prepackaged meat. Over four-fifths replied that they were eating the same amount as before. Four percent said they were eating less but fourteen percent said they were eating more. The increased tonnage appears to have come largely from new customers.

Amount of other foods purchased in the prepackaged meat stores. If prepackaged meat attracted new customers into the stores, did they come to buy just meat or did they come to purchase all foods? The results from the returned questionnaires showed that only one-fifth of the respondents said that they purchased all of their groceries in the prepackaged meat store. This percentage was less than that given for

meat purchases. Forty-six percent said they purchased most of the groceries in the same store. Thirty-two percent said that they purchased some of their groceries in the same store. When the total results were compared for groceries and meats there was no significant difference. The shoppers came not only to buy meat but also to buy groceries. Or, if they came only to buy meat, they changed their minds and purchased groceries. These results bear out the findings reported earlier in the study on Store 4. There, not only total meat sales rose, but also total store sales.

The same results were found for fruits and vegetables. The respondents stated that they purchased some fruits and vegetables in the same stores where they bought their meat. Twenty percent said that they purchased all of their fruits and vegetables in the same store. Thirty-six percent said that they purchased most of their fruits and vegetables there. Forty percent said that they purchased some fruits and vegetables there. The same number as with meat, four percent, said that they bought no fruits and vegetables in the self-service meat stores. These results indicated that most customers used the stores in the sample as one-stop stores. When in one of the stores, they shopped not only for meat but also for all other food items.

Number of pork chops preferred per package. When the first self-service meat stores began operations, they usually placed the same number of steaks and chops in each package, they cut all steaks and chops the same thickness and the packaged roasts of about the same weight. The reader has already seen what the respondents have said about these practices. These next pages show what the respondents thought should have been done about packaging various numbers of chops

per package, various weights of roasts, and various thicknesses of chops and steaks.

Of course the number of pork chops that a particular customer desires in a package depends upon the size of the family in most cases. We have seen that the families did vary in size. The number also depends upon the number prepared for each person at each meal. In the next chapter the effect that the size of the family has on the number of pork chops desired per package is examined more fully. Here the simple frequency distribution for the entire sample of respondents is given neglecting size of family and any other factors.

In Table XVI one can see that customers very definitely want packages with different number of pork chops. Four chops per package was the most popular number. There was very little difference between the stores or between any individual store and the average for all stores. The same number of customers wanted three and five pork chops in each package. There were, however, fewer customers that wanted three or five chops per package than there were who wanted six chops per package. These data show that for each package of pork chops that has either, three, five or six chops, there should be three packages containing four chops. For every eight four-chop packages, there should be one two-chop package.

It would not be necessary to package seven chops in a package because the customer could buy two packages containing either three and four, or five and two chops. Of course, practically any combination of numbers can be obtained from two, three and four and one could suggest from this that only three different numbered packages be packaged. However, some customers apparently are not proficient at

combinations. Often, though, one cannot find two packages of say loin chops that have the total number of chops he desires. We have seen how the respondents disliked a mixture of center cut chops with rib chops. The writer suggests that packages containing two through six chops be packaged and in the proportions given above.

Thicknesses preferred for beef steaks. A similar situation existed in the first self-service meat stores in regard to round steaks as was mentioned with pork chops. The butcher in the processing room of the first prepackaged meat stores placed a beef round on the cutting stand of the band saw, set the saw to cut about one-half inch, turned on the saw and proceeded to cut all round steaks the same thickness. They had learned that many customers preferred round steak cut one-half inch thick but they did not know how many preferred other thicknesses.

In Table XVII one can see that round steak one-half inch thick was preferred by two-fifths of the respondents. One can also see that there were preferences for other thicknesses. Round steak cut three-fourths inch thick was next most popular. Slightly over one-fourth of the customers preferred this thickness. Nearly one-fifth of the shoppers wanted round steak cut one inch thick. There were a few respondents who either wanted their round steak one-fourth inch thick or over one inch thick.

The frequency distributions shown in this report may not be applicable to any given store. There was not much variation between the four stores in this sample but it is possible for the customers of a given store to prefer different proportions. The data do show that it is important to vary the thicknesses of the round steaks. The

Table XVI. Percentage Distribution of Number of Porkchops Preferred per Package.

How Many Porkchops Do You Prefer In a Package?	Store 1	Store 2	Store 3	Store 4	All Stores Combined
number	percent	percent	percent	percent	percent
Two	5	9	4	7	6
Three	15	15	10	15	14
Four	47	42	54	42	46
Five	14	15	14	14	14
Six	17	17	14	19	17
Seven	2	2	4	3	3

Table XVII. Percentage Distribution of Preference for Thickness of Round Steak.

How Thick Do You Like Beef Round Steak?	Store 1	Store 2	Store 3	Store 4	All Stores Combined
	percent	percent	percent	percent	percent
1/4 Inch	9	10	8	12	10
1/2 Inch	39	44	34	42	40
3/4 Inch	26	29	31	26	27
1 Inch	19	13	22	15	17
1 1/4 Inches	2	1	2	2	2
1 1/2 Inches	5	3	3	3	4

one-half inch cut should be used the most and the three-quarter and one inch cut should be used regularly, too. Meat managers can readily tell what their customers will take by varying the proportions of the various thicknesses. And since the respondents have shown a desire for different thicknesses, the butcher should be instructed to change the saw setting when cutting the steaks.

The discussion above is equally applicable with loin steaks. In Table XVIII are shown the desires of the respondents regarding beef loin steaks, T-bones and sirloins. The two popular thicknesses are three-quarter inch and one inch steaks. There were one-fifth of the customers who liked these steaks to be cut one-half inch thick. Only fifteen percent of the total wanted their beef loin steaks to be either one and one-quarter, one and one-half or two inches thick. These desires should not be dismissed, however.

Weight preferences for beef roasts. The three pound beef roast was the most popular of the nine weight groups. This weight was followed closely by the three and one-half and four pound roasts respectively. Next most popular was the two and one-half pound roasts. Some respondents wanted to be able to purchase roasts weighing as little as one pound and as much as five pounds. Table XIX shows the frequency distribution of preferences for beef roasts.

Customer reaction to different methods of prepackaging fish. Prepackaged fish in the frozen form have been found in food markets for a number of years. Some firms have attempted to package fish in packages of even weights while some firms have not been concerned about getting exact pound, two pound or even pound weights. The manager of

Table XVIII. Percentage Distribution of Preference for Thickness of Beef T-Bone and Sirloin Steaks.

How Thick Do You Like Beef T-Bone and Sirloin Steaks?	Store 1	Store 2	Store 3	Store 4	All Stores Combined
	percent	percent	percent	percent	percent
1/2 Inch	16	28	23	28	22
3/4 Inch	31	31	29	38	32
1 Inch	32	32	30	29	31
1 1/4 Inch	11	5	9	5	8
1 1/2 Inch	7	3	8	0	5
2 Inches	3	1	1	0	2

Table XIX. Percentage Distribution of Preference for Weight of Beef Roasts.

What Weight Beef Roasts Do You Prefer?	Store 1	Store 2	Store 3	Store 4	All Stores Combined
	percent	percent	percent	percent	percent
1 Pound	1	0	1	2	Less than 1
1 1/2 Pounds	1	2	1	6	3
2 Pounds	8	4	5	10	7
2 1/2 Pounds	12	16	8	15	13
3 Pounds	30	27	28	28	29
3 1/2 Pounds	19	25	20	17	20
4 Pounds	18	18	26	15	19
4 1/2 Pounds	7	3	6	2	5
5 Pounds	4	5	5	5	4

one of the stores had not been able to determine if one method were preferred over the other. A question was included on the questionnaire in an attempt to get the customer reaction to this problem.

The answers given by the respondents are tabulated and presented in Table XX. By observing this table one can see why the manager had been undecided. In none of the stores was there a decided preference for either method. The conclusion here was very evident. Shoppers did not care particularly whether fish were packaged in even or random weights.

This chapter has shown consumer reactions to prepackaged meat and fish. The likes and dislikes have been presented as well as reactions to particular practices. Preferences for different sized packages, different width cuts and different numbers of cuts have been shown. The shoppers in this sample, on balance, preferred prepackaged fresh meats; however, some of them had legitimate complaints about particular practices. The data presented were averages obtained from simple frequency distributions. The next chapter presents the results obtained by cross tabulating the IBM cards. The effects of the five important factors mentioned above are shown.

Table XX. Percentage Distribution of Preference for Buying Prepackaged Fish

Do You Prefer To Buy Prepackaged Fish?	Store 1	Store 2	Store 3	Store 4	All Stores Combined
	percent	percent	percent	percent	percent
Even Weights	30	33	31	0	31
Random Weights	27	27	27	0	27
No Preference	43	40	42	0	42

CHAPTER VII

THE EFFECTS OF FAMILY SIZE, INCOME, AGE, AND FOOD EXPENDITURES ON BUYING HABITS

This chapter is a continuation of the previous chapter. Here, the analysis is based upon the influence that family size, family income, age of respondent, expenditures for all foods and expenditures for meats had upon homemaker's reactions to prepackaged meats in particular and to shopping patterns and food buying habits in general. Using the five factors just mentioned as controls, the IBM cards were cross tabulated to obtain the data presented in this chapter.

Family sizes ranged from one person through nine people. There were only a few families who had more than nine individuals. For ease of computation and analysis families with more than nine members were grouped with those who had exactly nine members. It was felt that the economies realized by larger-scale purchases and larger-scale cooking justified placing these few families in the nine-member cell.

All the respondents were asked to give their family income per week. These incomes were distributed into four groups. These four groups were under thirty dollars, thirty to sixty dollars, sixty to ninety dollars and over ninety dollars. After the IBM cards were sorted on the four income groups as the controls, tabulations were made on the variables.

The influence that the age of the respondents had on their reactions to prepackaged meats and buying behavior was also examined. All of the respondents were divided into three groups. The lowest age group included those under thirty years. The middle group included those between thirty and fifty years. The third group included those over fifty years.

Food expenditures per week were divided into four groups. These four groups were ten-dollar groups: one dollar to ten, ten to twenty, twenty to thirty and thirty to forty dollars. The respondents were asked to include all weekly food purchases, including milk, when they answered this question.

The respondents' expenditures for meat each week were divided into four groups. The lowest group included the expenditures up to six dollars. The second group was six to eleven dollars. The third group was eleven to sixteen dollars. The fourth group was sixteen to twenty-one dollars. There were not enough respondents in the last group for reliable reporting; this group was omitted in the analysis.

Who bought the meat. The wife or homemaker bought most of the family meat supply. Husbands were second in importance. Sons and daughters were, in all cases, unimportant meat buyers. When all of the data were combined, homemakers bought eighty-two percent of the meat, husbands bought sixteen percent and sons and daughters combined bought two percent. As the size of the family increased, homemakers bought a smaller proportion of the family meat supply

and husbands bought a larger proportion. In the seven member families, homemakers bought two-thirds and husbands bought almost one-third of the meat purchased. Husbands in no other case bought such a large proportion of the family meat supply.

In the lower income families husbands bought one-fifth of the meat supply. As incomes rose husbands bought less and homemakers bought more of the family meat supply.

In the older families husbands bought a greater proportion of the meat supply. In the two groups of respondents under fifty years of age the homemakers bought eighty-six percent of the meat and husbands bought twelve percent. In the oldest age group homemakers bought only seventy-five percent and husbands bought twenty-five percent of the meat supply.

In the lowest food expenditure group husbands bought more of the meat supply than in the other food expenditure groups. As would be expected low incomes, low food and meat expenditures were very closely associated. However, there were no significant differences among the groups broken down on meat expenditures as to who bought the meat. Homemakers in the lowest meat expenditure group bought as much of the family meat supply as in the highest meat expenditure group. The family member buying the meat apparently did not influence the amount spent for meat.

The method preferred for buying meat. As family size increased and as age increased there was a decreasing preference for prepackaged meat. As incomes, food expenditures and meat expenditures in-

creased there was an increasing preference for prepackaged meat. The majority in all cases preferred to buy prepackaged meat. In the two to four member families about seventy-five percent preferred prepackaged meat while in the six to seven member families only fifty-two percent favored prepackaged meat. Seventy-eight percent of the respondents in the youngest age group preferred prepackaged meat while only sixty-four percent in the oldest group preferred prepackaged meat.

Frequency of meat purchases. The respondents were asked whether they shopped for meat daily, two or three times a week, weekly or every two weeks. There were over ninety percent of the families who shopped for meat weekly or two or three times per week in every cross-tabulation. Daily and bi-monthly meat buying was done by only a few in every case. An average of four percent shopped daily for meat, and one percent shopped every two weeks for meat.

As family size increased beyond six members, weekly meat buying became less important and buying meat two or three times per week exceeded weekly buying. In the families with one to six members, weekly meat buying was most common.

In the lowest income group weekly meat buying was twice as common as shopping for meat two or three times a week. In the highest income group there were just as many families who shopped for meat two or three times per week as who shopped only weekly.

In the youngest age group over one-half of the respondents said they shopped for meat once a week. In the oldest group fewer

than one-half shopped weekly for meat. It appeared that the older the respondents were the more often they shopped for meat because daily meat purchases increased as did purchases two or three times a week.

As food expenditures rose there was a definite shift from weekly meat purchases to buying more of the meat two or three times a week. There was also a difference in the frequency of meat purchases as expenditures for meat increased. Meat was bought more often as meat expenditures rose.

Mode of transportation used to get to the stores. The automobile was used for shopping much more often than any other form of transportation. Walking to the store was second in importance. Public transportation, taxis and bicycles were not very important in providing transportation for meat shoppers. The fact that an average of eighty-six percent drove automobiles stresses the importance of adequate parking facilities.

The percentage that drove cars increased from sixty-seven percent in one-member families to ninety percent in four-member families then declined to seventy-five percent in nine-member families. Those who walked ranged from a high of twenty-five percent in one-member families to a low of nine percent in five-member families. As incomes rose more people drove cars and fewer people walked when shopping for meat. In the highest income group ninety percent drove cars, nine percent walked and only one-percent used other means of transportation. Taxis were not important in any income group.

There was no significant difference among the age groups in the mode of transportation used to get to the sample stores. From eighty-five to eighty-eight percent of all respondents used automobiles.

In the highest food expenditure group fewer respondents used cars than in the lowest food expenditure group. The one significant fact that stood out in this cross-tabulation was the number of respondents in the lowest food expenditure group which used taxis. Over three times as many, percentagewise, in the lowest group used taxis as in any of the other groups.

Beliefs concerning the cost of prepackaged meat. There was no difference among the families of various sizes in their beliefs about the cost of prepackaged meat. Regardless of the size of the family from two to three times as many families said they did not think they had to pay more for prepackaged meat than for comparable meat not packaged. There was a slightly higher percentage of the oldest respondents who thought prepackaged meat was more expensive. The number was not significant, however.

As income rose there were fewer families who thought prepackaged meat was more expensive. There was no difference among the four food expenditure groups in their beliefs about the cost of prepackaged meat. As weekly meat expenditures rose there were fewer respondents who thought that prepackaged meat cost more than comparable meat not packaged. On the average three-quarters thought there was no difference in the cost and one-quarter thought pre-

packaged meat cost more.

Changes in the quantity of meat consumed. There appeared to be no increase in family meat consumption since these families had begun buying prepackaged meat. There were no indications in any of the groups resulting from the cross-tabulations that more meat was being consumed. Consistently through the analysis there were a few more who thought they were eating more meat than thought they were eating less but the difference was not significant. Over eighty percent in all breakdowns thought they were eating the same amount.

How meat was stored at home. The size of the family seemed to have no significance on the method used for storing meat at home. Incomes were important though. The higher the income the more often mechanical refrigerators and home freezers were used for storing meat. Ice boxes declined in importance as incomes rose. In the lowest income group eighty-two percent used mechanical refrigeration, thirteen percent used ice boxes and five percent used window boxes and other methods for keeping meat. In the highest income group ninety-eight percent used mechanical refrigeration, one percent used ice boxes and one percent used other methods.

There was no difference in the method of storing meat as age varied. Between ninety-four and ninety-seven percent of the respondents in the three age groups used mechanical refrigeration.

As food expenditures and meat expenditures rose more of the respondents used mechanical refrigeration. In the lowest food expenditure group eighty-six percent used mechanical refrigeration. In

the top food expenditure group all respondents used mechanical refrigeration.

Consumer reactions regarding the weight of beef roasts. As family size increased, respondents indicated they wanted heavier beef roasts. This was expected since larger families have a need for more beef in order to give each member a serving equal to that given in the smaller families. The three pound roast was most popular with the smaller families. The larger families favored four and five pound roasts.

Families in the three highest income groups preferred three pound beef roasts over any other weight. Families in the lowest income group preferred two pound beef roasts. This seemed natural because these families had less to spend for beef roasts and the lighter roast cost less. So, except for the lowest income group, an increase in income had no effect on the customer's preference for beef roasts of different weights.

Three pound beef roasts were preferred by all age groups. There was a slight trend toward heavier beef roasts as age increased.

In the three lowest food expenditure groups three pound beef roasts were the first preference. As food expenditures per week increased there was a definite preference for heavier roasts. In the highest food expenditure group three and one-half pound roasts were the first preference. Four pound roasts were the second preference while in the lowest food expenditure group two and one-half pound roasts were the second preference. As weekly meat ex-

penditures increased heavier beef roasts were preferred.

Consumer reactions regarding the number of pork chops per package. Four-chop packages were most popular. The larger families wanted more pork chops in each package than did the smaller families. In the smaller families the four-chop package was the first preference and the two and three chop packages were usually the second preferences, In the largest families the six chop package was the first preference and the four chop package was the second preference.

Income apparently had no effect on the number of pork chops preferred in each package. Nearly one-half of the respondents in each income group said they wanted four-chop packages.

Packages with four pork chops were preferred by almost three times as many respondents as any other number in all three age groups. The middle age group wanted more pork chops in each package than either of the two other groups when the second and third preferences were considered. This seemed natural as this group had the largest families.

As weekly food and meat expenditures increased more pork chops were wanted in each package. Again four chops was the first preference in most groups. The second and third preferences showed the trend.

Consumer reactions toward beef steaks. Two kinds of beef steak were considered: beef round steaks and beef loin steaks, sirloins and T-bones. Thinner sirloin and T-bone steaks were preferred as family size increased. In the smaller families three-

quarter and one inch steaks were most desired. With four or more people in the family one-half and three-quarter inch steaks were most desired.

As incomes rose there was evidence that the respondents wanted thicker T-bone and sirloin steaks. However, there was not a straight line toward thicker steaks as income rose.

Over eighty-five percent of the families in each age group wanted T-bone and sirloin steaks one inch or less in thickness. Age did not influence the respondent's preference for thickness. Three-quarter and one inch T-bone and sirloin steaks were preferred almost equally in the three groups. The one-half inch steaks were the third preference in all three groups.

As family food expenditures increased thinner steaks were desired. Three-quarter inch steaks were the first preference for the three lowest groups. One-half inch steaks were the first preference for the group with the highest food expenditures. The reverse was true when weekly meat expenditures were considered. The three-quarter inch T-bone and sirloin steaks were the first preference in the lower meat expenditure groups. In the highest group one inch steaks were preferred by the greatest number.

One-half inch round steaks were desired by almost all families regardless of size. The three-quarter inch round steak was a little more popular than the one-quarter inch steak but there was no significant difference contributable to size of family.

Regardless of income or age one-half inch round steaks were preferred. Three-quarter inch round steaks were second in preference order.

As expenditures for food and meat increased the respondents shifted from one-half inch round steaks as their first preference to three-quarter inch round steaks. Their preference in both categories was for one-inch round steaks.

// Why respondents bought prepackaged meat. The three reasons given most often why the respondents liked prepackaged meat were: 1) Weight and total price were given; 2) Shopping could be done quicker; and 3) Meat could be examined. The size of the family, income, amount spent for food and amount spent for meat had no apparent effect on the ranking of any of the reasons given for buying prepackaged meat.

The youngest group indicated they were more interested in examining the meat and finding out how much it cost than in shopping quickly. The middle age group liked being able to shop more quickly and they considered weight and price second in importance. The older group considered having weight and price given most important, and being able to shop quicker second in importance. In all the tabulations the convenient selection of sizes was the fourth reason for buying prepackaged meat. Having a larger selection of meats was the fifth most important reason.

Proportion of meat bought in the sample stores. The size of the family had an effect on the proportion of meat bought in the

prepackaged meat store. As family size increased a smaller proportion of the family meat supply was purchased in the prepackaged meat stores in the study. The larger families tended to buy meat more often than the smaller families and it is conceivable that these larger families bought supplemental supplies of meat at the corner grocery store. Therefore, their purchases of prepackaged meat were a smaller proportion of their total meat supply than those families which bought all of their meat prepackaged. As the family size increased a much smaller percentage bought all of their meat prepackaged and a larger precentage said they bought no prepackaged meat in the sample stores.

The lower income respondents bought a smaller proportion of their meat in the sample 100-percent self-service meat stores than did the higher income respondents. This goes along with the fact that the higher income families preferred prepackaged meat more than did the lower income families.

There was no difference among the three age groups as to the proportion of meat bought in the sample stores.

As total food expenditures and meat expenditures rose there was a higher proportion of the family meat supply purchased in the self-service stores.

Proportion of groceries bought in the sample stores. Family size had no apparent effect on the proportion of groceries which these families purchased in these stores. The families did not purchase as large a percentage of groceries in these stores as they did meat.

The lower income families bought a higher percentage of their groceries in the sample stores than did the higher income groups.

There was no difference among the three age groups in the proportion of groceries bought in the sample stores.

As total food expenditures increased a smaller proportion of the family grocery supply was purchased in the sample stores. The proportion of groceries purchased increased as meat expenditures increased.

Proportion of fruits and vegetables purchased in the sample stores. In all cases the respondents purchased a smaller proportion of fruits and vegetables than meats in these stores. Family size did not change this proportion. The lowest income group bought a larger proportion of fruits and vegetables in the sample stores than did the highest income group. The two oldest groups bought a smaller proportion of fruits and vegetables than the youngest group.

As family food expenditures increased a smaller proportion of fruits and vegetables was purchased in the sample stores. There was no difference in the proportion of fruits and vegetables which the respondents bought in the sample stores as meat expenditures changed.

The respondents bought a higher proportion of their meats in the four sample stores than they did groceries, fruits or vegetables. In most cases they bought more of their total grocery supplies than they did fruits and vegetables. Since the stores were self-service meat stores probably more attention was given to meats and the meat manager did a better job of merchandising meats than did the produce

or grocery managers. If the margin on meats were larger, stressing meats was proper. These data indicated that the store managers could have concentrated on their fruit and vegetable merchandising to induce their shoppers, who apparently came to their store primarily for meat, to purchase a larger percentage of their fruit and vegetable supply in the sample stores.

Some observations on the characteristics of the respondents. Several facts stated above were made more clear when four of the controls were used as variables and tabulated with the fifth, food expenditures, as the control. In general the larger families, the higher incomes and the larger meat expenditures were directly associated with higher total food expenditures.

In the lowest food expenditure group over one-half of the respondents were over fifty years of age. Nearly one-half of the families were composed of only two members. Three-quarters of these families earned under sixty dollars a week. One-third earned under thirty dollars a week. All of this group spent under five dollars a week for meat.

In the second lowest group, which spent between ten and twenty dollars a week for all of their food supply, the average family had three members. Over one-half of the respondents were between thirty and fifty years of age and there were more under thirty than over fifty. Nearly half of them earned between sixty and ninety dollars a week and there was the same number which earned over ninety dollars a week as there was which earned between thirty and fifty-

nine dollars a week. One-half of this group spent between six and ten dollars a week for meat and one-half spent under five dollars a week for meat.

In this group which spent between twenty and thirty dollars a week for all food, over two-thirds were in the middle age group. Twenty percent were under thirty years and only ten percent were over fifty years. There was an average of four people in each family. One-half of the families earned between sixty and eighty-nine dollars a week. Over one-third earned over ninety dollars a week and only twelve percent earned under sixty dollars a week. This group, of course, spent more for meat each week. Three-fourths of these families spent between six and ten dollars for meat per week. Eight percent spent between eleven and fifteen dollars for meat each week. Seventeen percent spent under five dollars each week for meat.

In the highest expenditure group, those that spent between thirty and forty dollars, there were almost five members in the average family. Eighty-six percent of the respondents were between thirty and fifty years of age. Over one-half of these families earned over ninety dollars a week. Over one-third earned between sixty and ninety dollars and only five percent earned under sixty dollars a week. In this group only nine percent spent under six dollars a week for meat. One-half spent between six and ten dollars a week for meat. One-third spent between eleven and fifteen dollars and seven percent spent between sixteen and twenty dollars a week

for meat. These data help to explain the respondents' reactions to prepackaged meat and their food buying behavior.

In this chapter cross-analyses were examined. Each of five control factors was tabulated with several other variable factors. A section explaining the outcome of the analyses of the variable with each of the five controls was presented. The writer recognizes that other factors such as education, occupation, nationality and religion may have important bearings on customer preferences.

CHAPTER VIII

INCREASING EFFICIENCY IN PREPACKAGED MEAT STORE OPERATIONS

In an earlier chapter the writer stated that he thought meat retailing was competitive. He also assumed that the profit motive was the main driving force behind entrepreneurs' business decisions. Food store owners, therefore, have converted to prepackaged meat merchandising with one primary end in mind: making larger profits.

One of the easiest ways of increasing profits is to do a job more efficiently. In meat merchandising increasing labor efficiency is probably the key to increasing profits since labor is the major cost in meat selling. Time studies and motion studies are two methods used for determining the efficiency of labor and how that efficiency could be improved. Time and motion studies can show how work methods can be improved and how physical layouts can be improved.

In the first section of this study it was shown how labor efficiency actually decreased during the first few months that a store merchandised all of its meat in packages. The reader saw that labor efficiency improved after the "shakedown" period, but did not improve to the point where the labor efficiency in the self-service store at the end of the year's study was any greater than in the sister service store. The reader also saw that labor efficiency in the stores operated by one company was greater than in the stores operated by the other company.

The writer decided to make a short study of the operations of a self-service meat department. He decided to make the study in the most efficient self-service store in the sample. The objectives were to: (1) Observe the operations and learn just what each of the laborers did; (2) Time the

operations performed and determine average times for accomplishing specific tasks; and (3) Suggest improvements.

Description of the operation studied. The packaging operation studied was in Store 4. This store had a head meat cutter, a meat cutter, a butcher (all men), a hostess, three wrappers who worked full time and two wrappers who worked part time (all women). An average of 370 man hours were worked each week in this store. Records kept in the store indicated that 7,797 packages of meat was the average output per week in this store. This average was based on eight consecutive weeks prior to this study. Dividing the average total output by the total labor input the average output per man hour was obtained. This turned out to be between 21 and 22 packages of meat per man hour.

During the eight weeks when records were kept, Friday was the day when the output of packages was greatest (seven times out of eight). Monday was second in importance. Thursday was third. Saturday was fourth. Wednesday was fifth and Tuesday was sixth. All of the full-time crew worked Monday, Thursday, Friday and Saturday. Each took either Tuesday or Wednesday off. The part-time help worked Thursday, Friday and Saturday. There were about twice as many packages packaged on Friday as on Tuesday.

In a search of the literature it had been found that the average output per worker per hour was around 30 to 35 pounds. This sounded low to the writer so he decided to find out how long it took to perform the various operations as: removing shrouds, opening boxes, carrying carcasses or cuts, breaking, cutting into wholesale then retail cuts, trimming, traying, wrapping, weighing, labeling, marking, moving into the holding cooler and moving out into the meat cases. "Times" were obtained on

each operation. An average of several "times" on the same operation was computed. These averages were then used to hypothetically determine how long it should take to move a given product through the meat market.

Labor required to merchandise a side of beef. A cutting test was conducted in this store on a side of beef. From this cutting test it was found what percent of the carcass each cut represented. These percentages could then be applied to different weight sides or carcasses, within certain limits, to give the number of steaks, roasts, hamburger, etc., to be expected from a particular side or carcass. Table XXI shows the results of this cutting test on a side of beef.

Using the results of the cutting test and the average of the times computed for the various operations a theoretical model was constructed. This model gave the total time that should be used in moving a 270 pound side of beef from the cooler to the meat case. This was done so that the output in this model could be compared with the output found in the literature. It was felt that this one example served the purpose of showing how this time data could be applied to all of the products handled in a self-service meat market.

The percentages from the cutting test were used to determine the weight of the various cuts from the arbitrarily chosen 270 pound side of beef. The weight of the cuts, the arbitrary weight of the packages and the number of packages are given in Table XXII.

For simplicity the times for the various operations performed on each cut were combined. These combined times were applied to the number of packages obtained from each cut. It was possible from this to obtain the total time which the merchandising of this beef side took. The total

Table XXI. Cutting Test on a Side of Beef.

Cut of Meat	Percent Weight of Side
Sirloin Steaks	5.1
Porterhouse Steaks	5.3
Flank Steak	.5
Beef Kidney	.3
Rump Rolled	4.0
Back End Round	1.9
Round Steak	6.6
Round Tip	3.6
Round Swiss	1.6
Square Cut Chuck	12.7
Rib Roasts	7.8
Short Ribs	2.0
Navel, Bone-in	4.5
English Cut	3.3
Hamburg	29.8
Bones, Waste, etc.	11.0
Total	100.0

Table XXII. Theoretical Yield From a 270-Pound Side of Beef.

Cut of Meat	Number of Pounds per Side	Approximate Weight of Packages in Pounds	Number of Packages
Sirloin	13.8	1	14
Porterhouse	14.3	1	14
Flank Steak	1.4	1	1
Beef Kidney	.8	1	1
Rump Rolled	10.8	3	4
Back End Round	5.1	1	5
Round Steak	17.8	1	18
Round Tip	9.7	3	3
Round Swiss	4.3	1	4
Square Cut Chuck	34.3	3	11
Rib Roasts	21.0	3	7
Short Ribs	5.4	2	2
Navel, Bone-in	12.2	3	4
English Cut	8.9	3	3
Hamburg	80.5	1	80
Bones, Waste, etc.	29.7		
Total	270.0		171

time from this example was 220.1 minutes or 3 hours 40.1 minutes, Table XXIII.

There were 171 packages prepared in the 220 minutes or 1.29 packages per minute. This means that 75.9 packages per hour were obtained. This is over three times as much as the average output computed from records kept over eight weeks. It appears that without any change in work methods or in physical layout a much greater output could be obtained.

If we use the average output gleaned from the literature, we get about the same results. It was mentioned above that between 30 and 35 pounds was the average output per worker per hour in self-service meat stores. If the output were 30 pounds per worker per hour it would take exactly nine hours to process this 270 pound side of beef. If the output were 35 pounds it would take 7.7 hours, still more than double the time taken in the model. Why wasn't the output in the sample store greater? This is examined in the next section.

Why production in sample store was not greater. A meat market must be kept clean. Quite a lot of time is spent cleaning the blocks, the saws and the other equipment each day. The packaging room, the coolers and the cases have to be kept clean. Cleaning time was not included in the average times collected. Unnecessary talking consumed a lot of valuable time. Although employees were told that they were to work normally, it was observed that their output was greater when they knew their work was being checked. Time records were kept the first two days spent in the store but these were not used since it was felt they were not typical. Only the records taken at the end of the study were used. These records showed the output to be less than the first two days. The employers were accustomed to being timed and appeared to be working more nearly normally. During the end of the study there was much talking among the employees but it was

Table XXIII. Summary of Time Consumed in Processing and Merchandising One 270-Pound Beef Side.

Cut of Meat	Number of Packages	In Minutes	
		Time per Package	Total Time
Remove Shrouds, Cut into Wholesale Cuts, Move From Cooler to Processing Room			8.8
Sirloin	14	1.6	22.4
Porterhouse	14	1.4	19.6
Flank Steak	1	1.6	1.6
Beef Kidney	1	1.5	1.5
Rump Rolled	4	1.2	4.8
Back End Round	5	1.6	8.0
Round Steak	18	1.4	25.2
Round Tip	3	1.1	3.3
Round Swiss	4	1.7	6.8
Square Cut Chuck	11	1.1	12.1
Rib Roasts	7	2.3	16.1
Short Ribs	2	1.1	2.2
Navel, Bone-in	4	1.1	4.4
English Cut	3	1.1	3.3
Hamburg	80	1.0	80.0
Total	171		220.1
			3 hours and 40 minutes

felt that there would have been much more had we not been there.

Rest periods were not included in the average times used in the model. Rest periods are important but the writer felt that these were abused in the store in the study. Idle periods were observed when the wrappers stood and waited for the butcher or meat cutter to prepare meat for wrapping. Some of this idle time is undoubtedly necessary in an individual store and these idle periods were not timed and used in the averages. Even though the store was supposedly 100-percent self-service, some customers still demanded and received special services. These special services were not included in the average times used in the model.

It was difficult for the writer to justify the great difference between the model and the published standards so a further search was made for possible explanations. It was learned that rewrapping and remerchandising had not been included. Customers sometimes puncture the packages and these have to be rewrapped. Some packages fade and these have to be rewrapped. Sometimes a package does not sell and it has to be trimmed or remerchandised. Of course these have to be rewrapped. During one day of the study 1,314 packages were prepared. Of this total 480 were rewraps. This was not a typical or average day but during this one day 36.5 percent of the output was rewrapped packages. In a large study conducted by the PMA it was found that eight percent of the packages were rewrapped for some reason. Even with eight percent of the packages being rewrapped the writer felt that this did not explain, with the factors mentioned above, the difference between the model and the published average outputs.

Assuming the model was not realistic because it did not include several necessary operations mentioned above, the writer felt that labor could have been used more efficiently in the sample store and in all

other stores which had an output of only 30 to 35 pounds per person per hour, and with the existing physical layout. A more efficient layout is very important and this subject is discussed in the next section.

Physical layout in self-service meat store processing rooms. In Figure 47 the reader can see how the processing room in Store 2 was arranged. The rear door is on the left side of the Figure. The main cooler is in the upper left. The general path of the meat is indicated by arrows. Company officials agreed that the layout in Store 2 was not the most efficient. They have more efficient arrangements in their newer stores.

Packaging meat is a production line process. Specialists do their part in preparing the package for sale. With this in mind it appears that a meat processing room should be set up like an assembly line in a modern factory. This is often difficult in a store that was once a service store, so much time should be devoted to planning the arrangement in a completely new store. It is the belief of the writer that quite a lot could be done to improve the physical arrangement in self-service meat stores which are now operating.

The writer is aware of the fact that operating self-service meat stores have often been training grounds for employees which were to work in new prepackaged meat stores. Training these new employees decreases the efficiency but it is still a necessary and important part of a company's operation.

After all of the possible reasons were examined as to why Store 2 was not producing as much per worker as the model indicated, it was realized that special services, cleaning and rewrapping were very important. It does not seem possible that the factors not included in the model

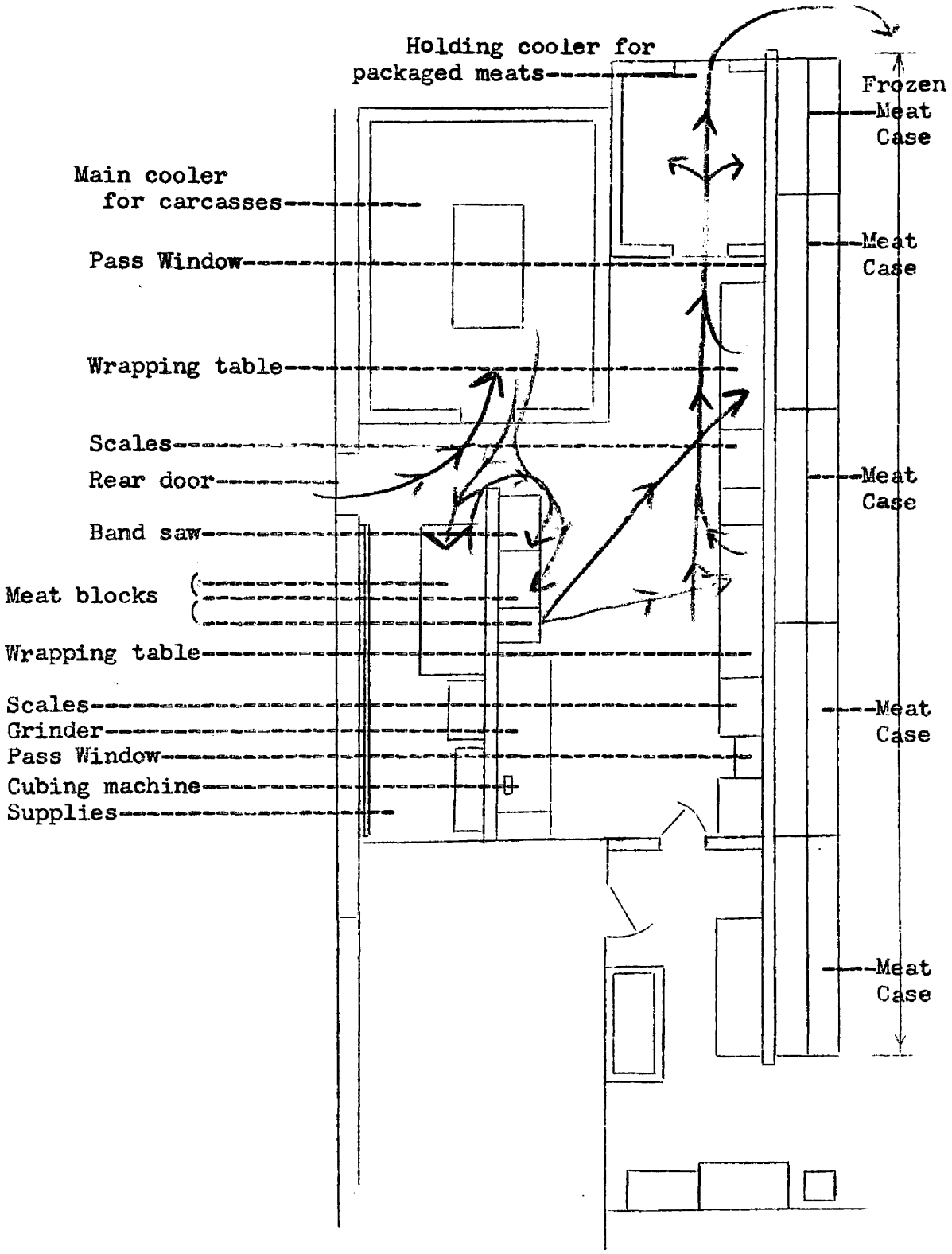

Figure 47. Physical Layout of the Meat Processing Room in Store 2.

were more important than the factors included. If they were equally important, sizeable increases in efficiency still were possible. The conclusion seemed to be obvious: operations in self-service meat stores can be made more efficient. Increases of from 25 to 30 percent seem very possible without unduly driving the workers. Ignoring fatigue and working at top speed would provide outputs two or three times as high as at present, but would not be feasible in terms of worker relations.

A note on centralized meat packaging. Nearly all of the red meat that is sold in packages today is packaged in the store where it is sold. This means that each store has all the equipment necessary for a complete operation. This seems like a waste of resources. It would appear that centralized packaging would be more efficient and a larger profit could be made this way. Machines could be used for packaging, too.

Centralized meat packaging has been tried. The writer visited a centralized packaging operation in Detroit in 1947. Six stores were supplied from this central unit. The central unit was discontinued after an extended time. The problems that arose because of centralized packaging were more than enough to offset any increased efficiencies.

Meat is a perishable product. Changes in temperature and light affect its outward appearance, and meat must have a good appearance to sell well. Handling also causes meat to lose its best appearance.

The meat that was packaged in the central place had to be transported to the stores. Moving the meat out of the packaging room into a truck and then from the truck to the store helped cause the meat to lose its sales appeal. These were the major factors causing the discontinuance of the central unit mentioned above. Also, a practical machine to package all sizes and cuts of meat has not been invented.

Rewrapping, remerchandising and special services are important as outlined above. A store being serviced from a central unit either had to have equipment to do remerchandising and rewrapping or send the meat back to the central unit. If equipment were on hand, this meant duplicate equipment, so that special services could be taken care of. If not, customers would probably be lost. For these reasons centralized packaging exists in only two or three cities in the United States. If the meat technologists could learn how to care for the meat and have the meat keep its saleability, more centralized packaging would be used. Problems in this area are being investigated as this is being written.

Frozen meat could bring great efficiencies in meat distribution. The writer believes that frozen meat is the answer to major reductions in the cost of retailing meat. Meat could be centrally frozen and prepared for distribution. The bones, scraps, and trimmings would all be available for use in some other product. Frozen meat has a much longer saleable life than fresh meat and the problems of rewrapping and remerchandising would be virtually eliminated.

The general public is probably not prepared for a complete switch to frozen meat. Education can do a large part in preparing the homemaker for this switch. Refrigeration facilities are probably not yet adequate or abundant enough in industry or in the homes to take care of frozen meat distribution.

CHAPTER IX

SUMMARY AND CONCLUSIONS

On April 1, 1946 there were only 28 100-percent self-service meat stores in the United States. The number has more than doubled each year since, and on April 1, 1951 there were 3,972 100-percent self-service meat stores in the United States. There are now more than 4,000 100-percent self-service meat stores in the United States. Partial self-service meat stores have also increased in number. On April 1, 1951 there were 10,362 partial self-service meat stores in the United States. Michigan had 127 100-percent self-service meat stores on April 1, 1951. Merchandising meat by self-service is here to stay.

There were four stores which supplied data for making a comparison of self-service versus service meat merchandising. Two stores, both within the same organization, were located in one Michigan city. One was a self-service meat store; the other a service meat store. Two other stores, both located in another city and owned by the same organization made up the four stores. One of these was a self-service meat store and the other was a service store. The service store in each case was used as the control. The self-service meat stores both had larger total store sales and larger meat sales after converting to prepackaged meat merchandising than they did prior to converting. They had larger total store sales and larger total meat sales than their sister service store. Prepackaged meat merchandising increased the stores' meat sales and total sales.

Labor costs per pound of meat merchandised were much higher in the self-service stores than they were in the service store immediately after the conversion. After three or four months, the labor cost per pound of meat merchandised in each of the two self-service stores had dropped to a level equal to or slightly below the cost in the sister service store. However, neither self-service store was using its labor any more efficiently at the end of the year's comparison than was its sister service store. There was a difference in the labor efficiency between the two organizations. One organization was merchandising meat with a labor cost per pound of meat of 5.3 cents. The other organization was merchandising meat with a labor cost of 4.1 cents per pound.

Meat sales as a percentage of total store sales increased in one self-service meat store while it remained constant in the other self-service meat store. There was definitely a difference in the importance placed on meat sales within one organization as compared with the other organization. During the first year after converting to self-service, Store 2's meat sales, as a percentage of total store sales, increased from 30 to 35 percent. Its sister service store, Store 6, had a rather constant percentage of around 28 percent meat sales to total store sales. In the other organization Store 4, the self-service store, maintained about the same proportion of meat sales to total store sales as before conversion. This was between 22 and 23 percent. The similar proportion for Store 5 was between 20 and 21 percent. Meat sales are given different weights

among food chains. An efficient, progressive 100-percent self-service meat store can probably increase its meat sales as a percentage of total store sales by pushing its meats and offering its customers what they desire.

Summaries of consumer responses to a mail questionnaire showed that they liked prepackaged meat. The three main reasons they liked it were: 1) They could examine the meat by lifting out the package and looking at the meat; 2) The weight and price were given on the label on the package; and 3) They felt they could shop more quickly when they bought prepackaged meat. There were several other reasons given but the above three were by far most important. There were some who disliked prepackaged meat merchandising. They said they disliked prepackaged meat because: 1) They had purchased off-flavor meats in packages; 2) They had been fooled about excess bone or fat hidden in the package; and 3) They had purchased chops or steaks in packages that were not cut uniformly. There were also other dislikes, but these three were most numerous.

Four pork chops per package was by far the first choice of the respondents in this sample. Almost one-half of all the respondents wanted four pork chops in each package. The next most popular number was six pork chops per package. One-third as many wanted six as wanted four. Almost as many wanted three and five pork chops per package as wanted six chops per package. Data obtained in this study indicate that for each package of pork chops that has either three, five or six chops, there should be three packages containing four chops. For every eight four-chop packages, there should be

one two-chop package.

Round steaks one-half inch thick were preferred by 40 percent of the respondents. Slightly over 25 percent preferred three-quarter inch round steaks. Seventeen percent wanted their round steak one inch thick. Ten percent wanted round steak one-fourth inch thick. The remaining small percentage preferred one and one-quarter or one and one-half inch round steaks.

Three pound beef roasts were preferred by 29 percent of the sample. Three and one-half pound beef roasts were preferred by 20 percent. Four pound roasts were preferred by 19 percent. Two and one-half pound roasts were preferred by 13 percent. Nine percent wanted beef roasts over four pounds. Ten percent wanted beef roasts two pounds and under.

Homemakers buy about 80 percent of the family meat supply. Husbands buy about 15 percent. Sons and daughters buy the rest of the family meat supply.

Purchasing meat once a week was done by one-half of the respondents in the sample. Buying meat two or three times a week was done by 45 percent of the respondent's families. Four percent bought meat daily and one percent bought meat once in two weeks.

Ninety percent of the families in the study used a mechanical refrigerator for storing meat in their homes. Five percent used ice boxes. Four percent used home freezers. One percent had no mechanical or ice refrigeration for storing meat.

Eighty-six percent of the respondents drove automobiles to the sample stores when purchasing their family meat supplies. Twelve

percent walked when they went to buy meat. Two percent used public transportation when shopping. One percent use either taxis or bicycles when shopping for meat.

The majority of the families in every size group preferred to buy their fresh meat prepackaged. However, as family size increased prepackaged fresh meat was less preferred. As family size increased: 1) Husbands bought a larger proportion of the family meat supply; 2) Meat supplies were purchased more frequently; 3) Heavier beef roasts, more pork chops per package and thinner T-bone and sirloin steaks were desired; 4) There was no difference in the thickness of round steaks that was desired; 5) There was a smaller proportion of meat purchased in the 100-percent self-service meat stores in the sample; and 6) There was no change in the proportion of groceries, fruits or vegetables purchased in the sample stores.

As family incomes rose: 1) There was a stronger preference for prepackaged fresh meats; 2) Meat was purchased more frequently; 3) Fewer thought that prepackaged meat cost more than comparable meat not packaged (the majority did not think it cost any more in any case); 4) Mechanical refrigeration was used more for storing meat in the home; 5) There was no change in the preferences for beef roasts of different weights, the number of pork chops per package or the thickness of round steaks; 6) Respondents wanted thicker T-bone and sirloin steaks; 7) A larger proportion of the family meat supply was bought in the sample self-service stores; and 8) A smaller proportion of groceries, fruits and vegetables was purchased in these stores.

As age increased: 1) Husbands bought a greater proportion of the family meat supply; 2) Meat was purchased more often; 3) There was no difference in the preferences for steaks of varying thicknesses; and 4) There was no difference in the proportion of meats, groceries, fruits nor vegetables purchased in the sample stores.

As weekly food expenditures rose: 1) Husbands bought a smaller proportion of the family meat supply; 2) There was a stronger preference for prepackaged meats; 3) Meat was bought more often; 4) Mechanical refrigerators and home freezers were used by a greater proportion of the families; 5) There was a preference for heavier beef roasts and more pork chops per package; 6) A higher proportion of the family meat supply was purchased in the sample self-service meat stores; and 7) A smaller proportion of groceries, fruits and vegetables was purchased in the sample stores.

As expenditures for meat increased: 1) Meat was bought more often; 2) Fewer respondents thought that prepackaged meat cost more than comparable meat not packaged; 3) Heavier beef roasts and more pork chops per package were desired; and 4) There was no difference among the groups in their belief that they were eating more meat since they had begun buying prepackaged meat.

Labor efficiency in the self-service meat store in the study could have been improved from 25 to 30 percent without making any change in physical layout. Most self-service stores could improve their layout. Much thought should be given to physical layout before building a new 100-percent self-service meat store.

This study did not show that the cost of merchandising meat had been reduced by using self-service. Using self-service was a way of attracting more customers into the store, selling more meat and increasing total store sales. Possible increases in efficiency could reduce meat merchandising costs below the level in service stores.

Customers liked 100-percent self-service meat merchandising and stores using this method are increasing yearly. At this time, however, less than 2 percent of the stores are 100-percent self-service, but these stores retail 10 percent of the meat in the United States.

APPENDIX A

QUESTIONNAIRE USED FOR COLLECTION OF CONSUMER REACTIONS.

Robert C. Kramer
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Agricultural Economics

MICHIGAN STATE COLLEGE
CONSUMER SURVEY - PREPACKAGED MEAT

1. How many people eat at least two meals per day in your home? (Include regular boarders.)
   1. Under six years of age _____.
   2. Over six years of age _____.

2. How often do you buy meat? (Check (✓) one.)
   1. Daily _____
   2. Weekly _____
   3. Two or three times weekly _____
   4. Every two weeks _____

3. How do you store your meat at home? (Check (✓) one.)
   1. Mechanical refrigerator _____
   2. Ice refrigerator _____
   3. Home freezer _____
   4. Other _____

4. About what is the average amount spent for one week's food supply for your family? (Include milk, meat - all the food.)
   $ _____

5. About what is the average meat bill for your family? $_____

6. Please indicate the weekly income, after deductions, in your family by checking one of the groups below. (Check (✓) one.)
   1. Under 30 dollars _____
   2. 30 to 59 dollars _____
   3. 60 to 89 dollars _____
   4. Over 90 dollars _____

7. Do you believe you pay more for prepackaged fresh meat than for comparable meat not packaged? (Check (✓) one.)
   1. No _____
   2. Yes _____

8. Overall, do you prefer to buy your fresh meat: (Check (✓) one.)
   1. Prepackaged _____
   2. Butcher Service _____
   3. No Preference _____

9. In your family, who does most of the meat buying? (Check (✓) one.)
   1. Son _____
   2. Daughter _____
   3. Wife or homemaker _____
   4. Husband _____
   5. Single adult _____

10. Why do you buy prepackaged meat? (Check all reasons that apply.)

1. Less bone ___
2. Larger selection of items ___
3. Meat is fresher ___
4. Can examine the meat ___
5. No particular reason ___
6. Only kind sold in store ___
7. Meat has higher quality ___
8. Weight and total price are given ___
9. No talking with butcher ___
10. Can shop more quickly ___
11. More sanitary ___
12. Convenient selection of sizes ___
13. Other _____ ___
14. Other _____ ___

11. I would like to know your approximate age. In which of the following age groups do you fall? (Check (✓) one.)

1. Under 30 years ____
2. 30 to 50 years ____
3. Over 50 years ____

12. About what proportion of the following do you buy in this store?

Meat	(✓)	Fruits and Vegetables	(✓)	Other Groceries	(✓)
1. All	___	1. All	___	1. All	___
2. Most	___	2. Most	___	2. Most	___
3. Some	___	3. Some	___	3. Some	___
4. None	___	4. None	___	4. None	___

13. How thick do you like steak from a beef round cut? (Check (✓) the nearest one.)

1. 1/4 inch ___
2. 1/2 inch ___
3. 3/4 inch ___
4. One inch ___
5. 1-1/4 inch ___
6. 1-1/2 inch ___

14. How thick do you like T-bone and Sirloin steaks cut? (Check (✓) the nearest one.)

1. 1/2 inch ___
2. 3/4 inch ___
3. One inch ___
4. 1-1/4 inch ___
5. 1-1/2 inch ___
6. Two inches ___

15. How many pork chops do you like packaged in each package? (Check (✓) one.)

1. Two ___
2. Three ___
3. Four ___
4. Five ___
5. Six ___
6. Seven ___

16. What weight beef chuck roast do you prefer? (Check (✓) the nearest one.)

1. 1 pound ___
2. 1-1/2 pound ___
3. 2 pounds ___
4. 2-1/2 pounds ___
5. 3 pounds ___
6. 3-1/2 pounds ___
7. 4 pounds ___
8. 4-1/2 pounds ___
9. 5 pounds ___

17. How long have you bought meat at this store? (Check (✓) one.)

1. Less than one month ____
2. One to three months ____
3. Three to six months ____
4. Six months or more ____

18. Do you usually shop for meat by: (Check (✓) one.)

1. Automobile ___
2. On foot ___
3. Taxi ___
4. Bus or street car ___
5. Bicycle ___

19. How many blocks do you live from the nearest meat market?

_____ blocks

20. How many blocks do you live from a store which sells prepackaged meats?

_____ blocks

21. Do you rent a frozen food locker?
    1. Yes _____
    2. No _____

22. If so, about what proportion of the meat you use comes from the locker? (Check (✓) one.)
    1. Less than 1/4 _____
    2. 1/4 to 1/2 _____
    3. 1/2 to 3/4 _____
    4. Over 3/4 _____

23. Do you prefer to buy prepackaged fish: (Check (✓) one.)

    1. In packages of even weights, for example: 1 pound, 2 pounds, 3 pounds, etc. _____

    2. In packages of random weights, for example: 1 pound 13 ounces, 2 pounds 7 ounces, 3 pounds 3 ounces, etc. _____

    3. No preference as to weights of packages of fish. _____

24. Since you have beenbuying prepackaged meats, has your family been eating: (Check (✓) one.)

    1. Less meat _____
    2. More meat _____
    3. The same amount as previously _____

25. Of the following, check (✓) whether you would like more, less, or the same amount packaged and displayed in the meat case.

	More	Same	Less		More	Same	Less
1. Brains	____	____	____	7. Kidneys	____	____	____
2. Hearts	____	____	____	8. Sweetbreads	____	____	____
3. Pigs Feet	____	____	____	9. Pork Liver	____	____	____
4. Oxtails	____	____	____	10. Pork Neck Bones	____	____	____
5. Suet or fat	____	____	____	11. Beef Bones	____	____	____
6. Spareribs	____	____	____	12. Other_____	____	____	____

APPENDIX B

SUPPLEMENTARY TABLES

Appendix Table 1. Total Meat Purchases in Pounds in Store 4 by Weeks

	Purchases for week ending:								
	Oct.23	Oct.30	Nov. 6	Nov.13	Nov.27	Dec. 4	Dec.11	Dec.18	Dec.25
Kind	pounds	pounds	pounds	pounds	pounds	pounds	pounds	pounds	pounds
Beef	1,876	1,823	2,329	2,004	1,386	1,634	3,214	2,233	1,844
Beef-boneless	---	94	147	198	267	394	345	243	---
Beef-edible offal	51	207	153	21	---	117	53	114	61
Veal	471	225	254	220	145	235	408	146	112
Veal-edible offal	130	101	122	73	92	41	75	85	127
Pork-fresh	2,030	1,551	2,346	844	1,214	1,726	4,237	3,675	1,470
Pork-cured, smoked	1,892	1,288	1,194	1,891	1,713	1,944	728	902	913
Lamb	158	90	73	38	---	104	45	69	124
Mutton	207	182	103	98	---	---	---	---	---
Sausage	1,396	1,720	1,245	1,798	1,364	1,688	2,218	1,753	2,025
Poultry	636	999	603	---	770	405	354	390	1,883
Fish	142	---	362	---	55	275	230	572	229
Total	8,989	8,280	8,931	7,185	7,006	8,563	11,907	10,182	8,788

Appendix Table 1 (continued)

Kind	Purchases for week ending: Jan. 1	Jan. 8	Jan.15	Jan.22	Jan.29	Feb. 5	Feb.12	Feb.19	Feb.26
	pounds	pounds	pounds	pounds	pounds	pounds	pounds	pounds	pounds
Beef	2,083	4,287	4,259	4,023	2,516	4,218	6,929	5,443	5,233
Beef-boneless	---	84	---	30	30	30	30	65	78
Beef-edible offal	---	118	126	146	146	69	178	84	239
Veal	122	300	420	177	282	200	364	459	515
Veal-edible offal	38	94	30	51	26	64	85	42	69
Pork-fresh	2,117	1,275	2,311	2,037	1,630	2,264	2,237	2,783	2,142
Pork-cured, smoked	716	1,406	1,522	1,656	791	861	2,881	1,594	2,212
Lamb	123	31	91	154	---	94	239	177	242
Mutton	---	---	---	---	---	---	---	---	---
Sausage	1,471	1,563	1,634	2,512	2,037	2,025	2,341	2,018	2,645
Poultry	499	406	462	833	657	408	738	742	608
Fish	121	697	190	801	160	540	270	842	906
Total	7,290	10,261	11,045	12,420	8,275	10,773	16,292	14,249	14,889

Appendix Table 1 (continued)

Kind	Purchases for week ending: Mar. 5	Mar.12	Mar.19	Mar.26	Apr. 2	Apr. 9	Apr.16	Apr.23	Apr.30
	pounds	pounds	pounds	pounds	pounds	pounds	pounds	pounds	pounds
Beef	3,657	4,231	4,105	4,081	3,332	3,087	2,525	3,042	3,122
Beef-boneless	280	529	12	149	117	235	119	248	24
Beef-edible offal	240	114	237	72	100	160	60	163	108
Veal	630	---	532	597	335	485	471	325	354
Veal-edible offal	70	134	68	59	122	21	64	57	118
Pork-fresh	1,522	2,462	2,517	1,815	2,112	1,966	2,220	1,842	1,458
Pork-cured, smoked	2,663	2,864	2,408	2,137	2,776	3,000	6,484	545	1,552
Lamb	194	63	98	112	43	39	162	44	125
Mutton	---	---	---	---	---	---	---	---	---
Sausage	2,138	2,763	1,404	2,004	2,044	1,693	1,564	1,694	2,337
Poultry	639	377	991	695	818	672	880	724	603
Fish	1,021	512	851	200	766	518	660	1,460	300
Total	13,054	14,049	13,223	11,921	12,565	11,876	15,209	10,144	10,101

Appendix Table 1 (continued)

	Purchases for week ending:								
	May 7	May 14	May 21	May 28	June 4	Jun.11	Jun.18	Jun.25	July 2
Kind	pounds	pounds	pounds	pounds	pounds	pounds	pounds	pounds	pounds
Beef	4,326	3,523	3,226	2,294	4,107	2,562	2,151	2,234	2,224
Beef-boneless	30	182	22	189	157	30	78	30	15
Beef-edible offal	117	146	128	63	156	53	77	83	---
Veal	245	541	266	491	278	364	498	430	309
Veal-edible offal	110	92	53	276	15	48	41	20	129
Pork-fresh	1,539	1,888	1,524	2,718	1,517	1,643	1,286	1,676	1,718
Pork-cured, smoked	237	1,862	1,925	2,124	1,796	2,010	947	1,898	3,308
Lamb	97	73	70	53	76	74	94	60	47
Mutton	---	---	---	---	---	---	---	---	---
Sausage	2,253	1,920	1,830	2,020	2,126	1,935	1,475	1,967	1,983
Poultry	688	725	858	1,302	901	902	943	857	694
Fish	396	135	503	180	240	506	240	261	150
Total	10,038	11,087	10,405	11,710	11,369	10,127	7,830	9,516	10,577

Appendix Table 1 (continued)

	Purchases for week ending:								
	July 9	Jul.16	Jul.23	Jul.30	Aug. 6	Aug.13	Aug.20	Aug.27	Sep. 3
Kind	pounds	pounds	pounds	pounds	pounds	pounds	pounds	pounds	pounds
Beef	2,691	2,935	3,287	2,431	1,679	3,093	2,442	1,912	8,155
Beef-boneless	63	24	24	226	87	102	68	142	66
Beef-edible offal	97	81	171	28	82	104	177	54	172
Veal	350	379	511	278	546	282	410	377	289
Veal-edible offal	10	53	60	84	63	83	23	26	90
Pork-fresh	1,582	1,837	1,750	1,738	1,535	2,354	1,428	1,314	1,069
Pork-cured, smoked	1,113	1,658	2,398	1,364	1,362	1,403	1,499	1,405	1,860
Lamb	115	47	77	59	---	128	177	---	---
Mutton	---	---	---	---	---	---	---	---	---
Sausage	1,698	1,517	1,701	1,498	2,205	2,042	2,140	1,762	2,024
Poultry	637	770	659	623	575	760	647	1,438	786
Fish	100	349	190	327	184	230	567	150	178
Total	8,456	9,650	10,828	8,656	8,318	10,581	9,578	8,580	14,689

Appendix Table 1 (continued)

	Purchases for week ending:						
	Sep.10	Sep.17	Sep.24	Oct. 1	Oct. 8	Oct.15	Oct.22
Kind	pounds	pounds	pounds	pounds	pounds	pounds	pounds
Beef	2,795	3,705	1,446	2,860	3,224	1,554	3,222
Beef-boneless	332	36	92	144	18	189	227
Beef-edible offal	332	130	92	88	122	20	120
Veal	317	395	312	260	455	252	440
Veal-edible offal	221	40	49	61	58	56	18
Pork-fresh	2,327	1,736	1,717	2,039	1,298	997	1,489
Pork-smoked, cured	1,378	1,397	1,443	1,471	978	980	797
Lamb	147	42	131	198	31	116	113
Mutton	---	---	---	---	---	---	---
Sausage	1,938	2,463	1,298	2,100	1,737	1,661	1,672
Poultry	922	933	572	822	411	543	677
Fish	356	552	189	1,044	952	383	818
Total	11,065	11,429	7,341	11,087	9,284	6,751	9,593

Appendix Table 2. Total Meat Purchases in Pounds in Store 5 by Weeks

	Purchases for week ending:								
	Oct.30	Nov. 6	Nov.13	Nov.27	Dec. 4	Dec.11	Dec.18	Dec.25	Jan. 1
Kind	pounds	pounds	pounds	pounds	pounds	pounds	pounds	pounds	pounds
Beef	1,587	1,834	1,834	1,696	1,457	2,743	1,838	1,831	909
Beef-boneless	345	108	120	149	151	---	160	137	---
Beef-edible offal	110	166	110	57	91	104	58	102	---
Veal	270	264	193	118	247	244	127	202	126
Veal-edible offal	30	66	64	63	30	90	65	20	30
Pork-fresh	588	909	1,510	979	1,402	3,993	2,142	1,090	2,106
Pork-cured, smoked	756	1,259	1,005	1,610	619	480	680	1,130	556
Lamb	44	---	---	---	---	30	50	---	---
Mutton	---	102	44	---	43	40	50	---	---
Sausage	1,155	1,638	1,090	1,062	1,519	1,598	1,108	779	1,519
Poultry	433	522	32	1,299	83	240	358	1,419	184
Fish	---	---	---	50	292	270	290	62	64
Total	5,318	6,868	6,002	7,083	5,934	9,832	6,926	6,772	5,494

Appendix Table 2 (continued)

	Purchases for week ending:								
	Jan. 8	Jan.15	Jan.22	Jan.29	Feb. 5	Feb.12	Feb.19	Feb.26	Mar. 5
Kind	pounds	pounds	pounds	pounds	pounds	pounds	pounds	pounds	pounds
Beef	3,010	3,848	2,679	1,279	2,056	4,780	2,377	2,516	2,338
Beef-boneless	---	148	160	165	12	281	270	226	211
Beef-edible offal	135	173	111	---	36	117	34	102	176
Veal	156	204	142	125	99	292	220	210	171
Veal-edible offal	52	53	35	34	30	66	59	48	---
Pork-fresh	1,477	2,002	1,836	2,420	1,152	1,252	1,667	1,043	1,413
Pork-cured, smoked	565	1,544	636	782	486	2,066	1,534	938	1,554
Lamb	---	54	23	53	58	---	36	59	48
Mutton	---	68	81	22	51	32	---	---	---
Sausage	1,328	1,380	1,608	1,665	1,179	2,104	1,286	1,646	1,740
Poultry	271	323	412	424	297	217	677	354	468
Fish	248	230	308	---	285	405	224	115	538
Total	7,242	10,027	8,031	6,969	5,741	11,612	8,384	7,257	8,657

Appendix Table 2 (continued)

	Purchases for week ending:								
	Mar.12	Mar.19	Mar.26	Apr. 2	Apr. 9	Apr.16	Apr.23	Apr.30	May 7
Kind	pounds	pounds	pounds	pounds	pounds	pounds	pounds	pounds	pounds
Beef	2,818	2,608	1,752	1,920	2,487	1,885	2,438	2,860	3,327
Beef-boneless	261	436	218	15	15	15	30	15	15
Beef-edible offal	214	165	106	70	150	159	63	118	112
Veal	---	---	154	245	327	201	156	335	129
Veal-edible offal	126	26	---	20	---	---	20	20	20
Pork-fresh	1,675	1,366	1,363	1,780	1,523	1,487	1,139	1,062	1,678
Pork-cured, smoked	1,110	1,454	1,570	1,857	1,426	3,085	688	1,660	1,921
Lamb	26	---	60	20	40	24	---	66	---
Mutton	---	---	---	---	---	---	---	---	---
Sausage	1,346	1,718	1,647	1,637	979	1,437	1,405	1,370	1,862
Poultry	219	767	458	527	228	159	447	644	427
Fish	371	775	---	453	335	480	650	525	72
Total	8,166	9,315	7,328	8,544	7,510	8,932	7,036	8,675	9,563

Appendix Table 2 (continued)

	Purchases for week ending:								
	May 14	May 21	May 28	June 4	Jun.11	Jun.18	Jun.25	July 2	July 9
Kind	pounds	pounds	pounds	pounds	pounds	pounds	pounds	pounds	pounds
Beef	2,405	2,348	3,087	3,480	1,766	1,401	982	1,511	1,590
Beef-boneless	30	15	15	139	30	30	89	15	---
Beef-edible offal	83	149	123	94	92	93	34	84	83
Veal	150	251	235	125	206	422	165	133	271
Veal-edible offal	---	20	204	20	93	20	---	28	---
Pork-fresh	1,042	1,436	1,560	1,210	1,480	626	1,133	1,059	1,129
Pork-cured, smoked	1,434	1,084	1,760	1,185	1,602	1,051	1,179	2,100	1,086
Lamb	---	---	---	---	---	---	---	---	34
Mutton	---	---	---	---	---	---	---	---	---
Sausage	1,595	1,345	1,325	1,690	1,779	1,255	1,456	1,063	1,225
Poultry	314	552	756	528	467	593	369	351	182
Fish	35	34	95	100	145	---	210	30	155
Total	7,088	7,234	9,160	8,571	7,660	5,491	5,617	6,374	5,755

Appendix Table 2 (continued)

Kind	Purchases for week ending: Jul.16	Jul.23	Jul.30	Aug. 6	Aug.13	Aug.20	Aug.27	Sep. 3	Sep.10
	pounds	pounds	pounds	pounds	pounds	pounds	pounds	pounds	pounds
Beef	2,350	1,905	1,809	2,021	1,659	2,568	1,353	1,704	1,813
Beef-boneless	30	91	106	147	15	72	---	---	316
Beef-edible offal	57	83	26	109	106	107	104	112	113
Veal	259	142	269	276	160	157	168	230	254
Veal-edible offal	---	---	---	10	---	10	12	24	202
Pork-fresh	1,097	896	1,612	1,232	1,097	999	888	1,266	1,507
Pork-smoked, cured	1,383	1,708	765	1,038	1,667	1,192	1,077	974	689
Lamb	34	37	29	---	31	76	---	43	57
Mutton	---	---	---	---	---	---	---	---	---
Sausage	1,258	1,335	1,494	1,426	1,338	1,419	1,141	1,375	1,586
Poultry	360	345	339	354	142	146	406	885	435
Fish	128	285	62	231	21	235	95	50	148
Total	6,956	6,827	6,511	6,844	6,236	6,981	5,244	6,663	7,120

Appendix Table 2 (continued)

	Purchases for week ending:					
	Sep.17	Sep.24	Oct. 1	Oct. 8	Oct.15	Oct.22
Kind	pounds	pounds	pounds	pounds	pounds	pounds
Beef	1,381	2,727	1,496	1,695	3,025	1,832
Beef-boneless	40	---	---	15	15	165
Beef-edible offal	162	207	70	77	71	144
Veal	151	134	---	332	116	236
Veal-edible offal	---	12	12	22	10	---
Pork-fresh	1,186	1,318	1,451	891	923	1,183
Pork-smoked, cured	1,295	812	1,490	658	367	747
Lamb	---	32	82	72	---	57
Mutton	---	---	---	---	---	---
Sausage	1,380	1,345	1,292	1,282	1,566	1,786
Poultry	618	656	564	199	221	342
Fish	205	124	220	106	160	539
Total	6,418	7,367	6,677	5,349	6,474	7,031

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