INVENTORY CONTROL TECHNIQUES FOR A GROCERY WAREHOUSE

Thesis for the Degree of M. A.

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Frank Wordley Tuppeny

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This is to certify that the

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INVENTORY CONTROL TECHNIQUES
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INVENTORY CONTROL TECHNIQUES FOR A GROCERY WAREHOUSE

By

Frank Wordley Tuppeny

A THESIS

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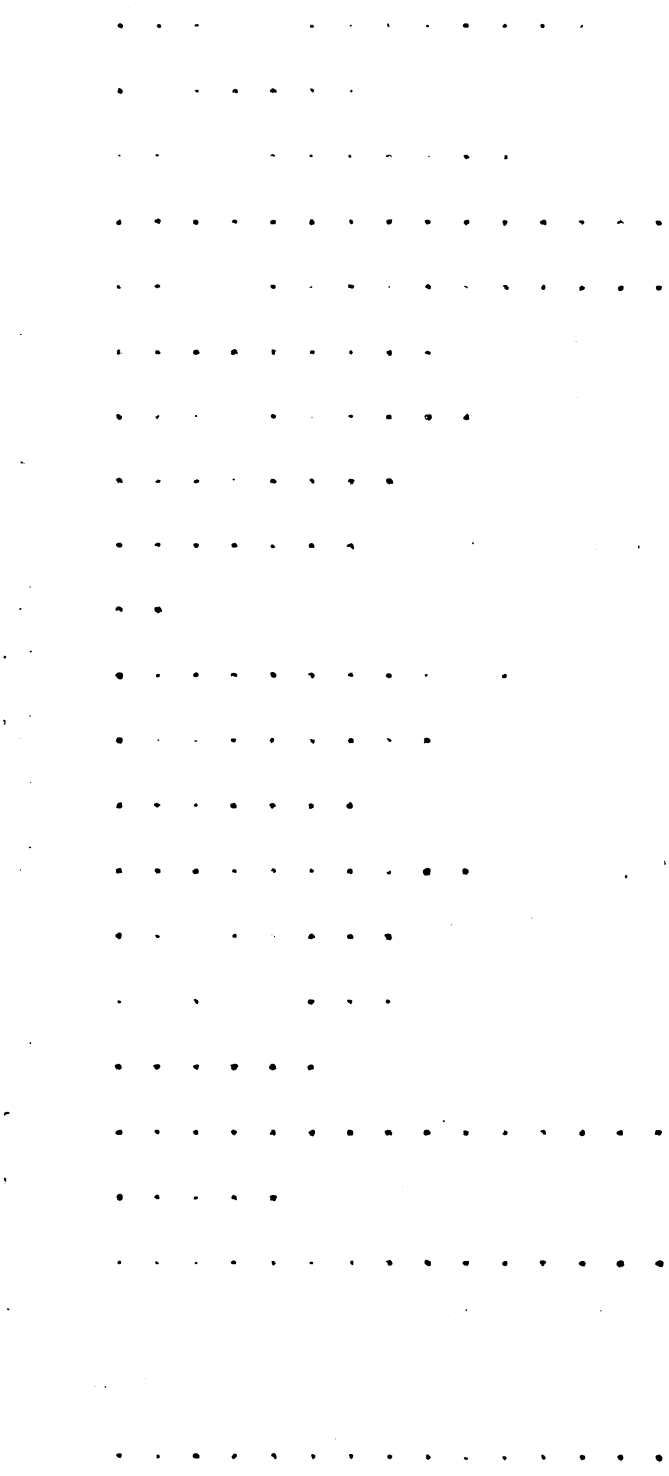

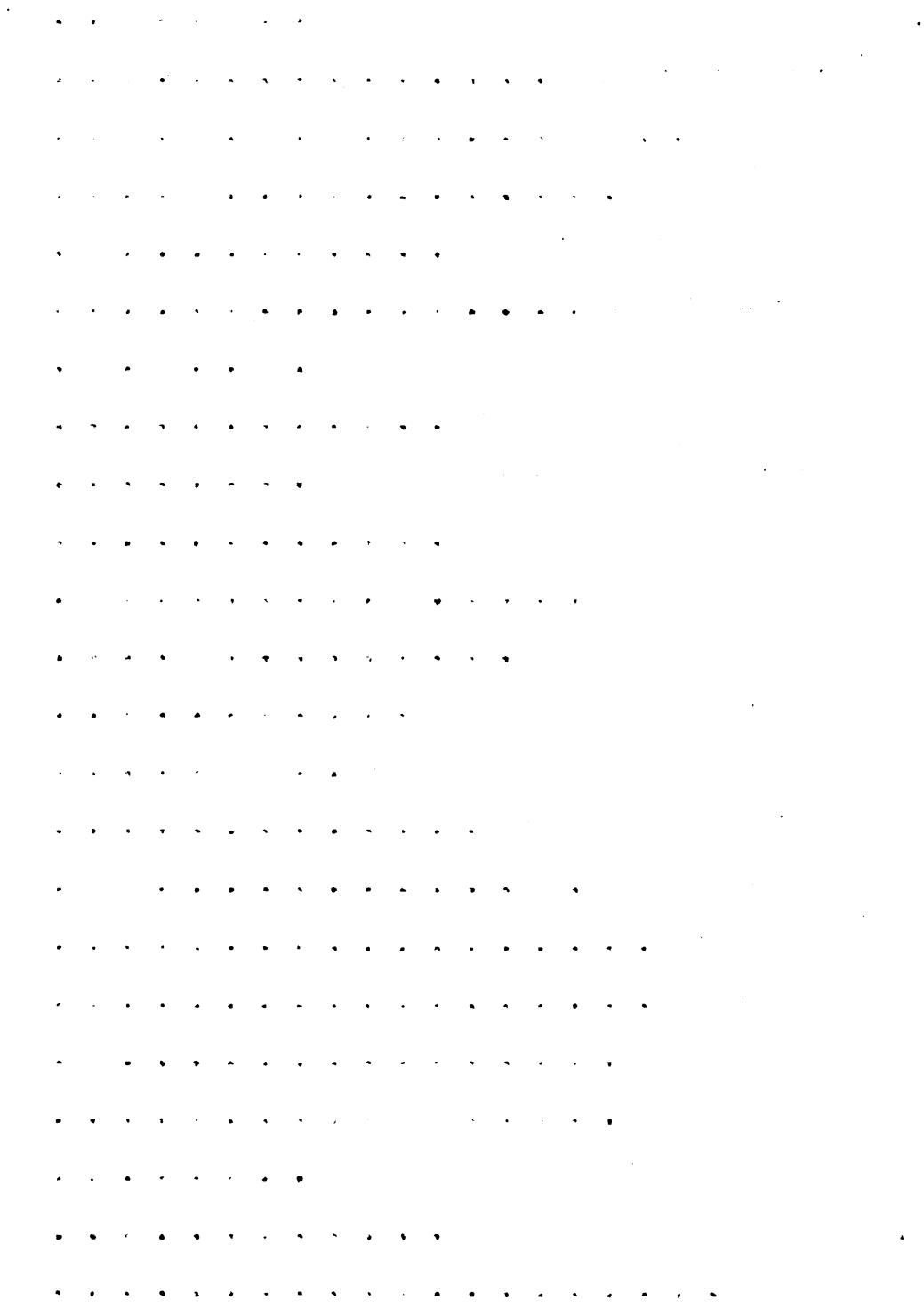

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CHAPTER I

INTRODUCTION

Prior to World War I, the management of many retail food companies seemed content to remain somewhat in the dark concerning their supply of goods on hand. Needless to say, this changed rapidly, due in large part, to the Federal Income Tax Law of 1913. Currently the Bureau of Internal Revenue and also the state regulatory bodies demand accurate inventory statistics. In addition, there are other groups who are interested in accurate inventories such as bankers requested to extend credit, investors contemplating the purchase of stocks, underwriters considering the sale of securities, and auditors called in to examine the companies' books. However, even these various groups did not change the thinking of management completely and, until a decade ago, inventories were still being called "the graveyard of American Business."

Purpose of this Study

Many times inventories have been allowed to grow to unwieldy and impossible size. Also, they have contained an ill-assortment of poorly chosen or obsolete goods which have suffered tragic losses in value or proved quite unsalable.

Every dollar added to or subtracted from the total value of the inventory is reflected in like amount in the profit and loss account. Therefore, since mercantile concerns frequently

show over half of their assets in the form of inventories, the problem of inventory control is a highly important one.

Much has been written on this problem in terms of systems but the focal point of all these various books and articles pertains to the manufacturing industry. Very little seems to have been written which applies directly to the food distribution industry and, what has been written, is mainly concerned with material control systems. Any term such as material control system, perpetual inventory, or stores control systems seems to imply impersonal matters such as forms, systems, and procedures. Granted that forms, systems, and procedures are a highly necessary part of inventory control, they are still written in terms of the staff or accounting point of view.

Therefore, the primary purpose of this study is to make available some techniques of inventory control to the line personnel who are directly responsible for the control of inventories in grocery warehouses.

Need for Such an Analysis

It is extremely difficult to disassociate the purpose and the need for inventory control and, therefore, the need was briefly mentioned in the previous section. However, a few points need further elaboration.

Assuming that the control of inventories is actually a line function, then the amount of material available to line personnel in the grocery warehouse is practically non-existent.

The various forms, systems, and procedures are the tools of inventory control and must be operated by people. The grocery warehouse supervision, especially the foremen or first line supervisors who are directly responsible for the control of the inventory, are probably one of the most important groups operating these tools and yet are relatively uninformed on inventory control matters. Therefore, there is a definite need for information on inventory control from a line rather than a staff point of view. In addition, a study of this type will provide the accountants and other staff personnel with a better appreciation of the inventory control problems as the line functionaries see them.

In short, there is a definite need for a study which will provide the warehouse supervision with a view of the office problems and conversely provide the staff people a view of the warehouse problems.

Scope and Limitations

This study is concerned primarily with the problems of inventory control within the confines of the grocery warehouse. However, one chapter is devoted to the punch card or tabulating machine systems. This was done because it is the heart of the inventory control system and it is felt that a thorough understanding of the machine system of record keeping is of prime importance to the warehouse supervision. Without such knowledge, the warehousemen cannot fully appreciate the office

problems and, therefore, may be reluctant to cooperate on certain matters.

The text of this study is necessarily limited in some other respects, the first of which is the type and size of the warehouse. Since one-story warehouses are generally recognized as being the most efficient, this study is limited to one-story grocery warehouses. It is further limited to those warehouses which are large enough to utilize modern materials handling equipment such as fork lift trucks and pallets.

A second limitation is in the field of accounting. No mention is made of the valuation of inventories, the preparation of financial statements, or the determination of costs as related to capital investment. It is felt that they are not a part of inventory control per se but rather are end products of a properly functioning control system. In fact, the title itself limits the study accounting-wise since it suggests the study of techniques of inventory control and not accounting for inventories.

It is limited further to the machine system of record keeping since the warehouse that is large enough to use mechanical handling equipment is usually able to utilize efficiently a mechanical record system.

Finally, this study is limited in viewpoint to a certain extent. As mentioned previously, this is written from the warehouseman's point of view and, therefore, it is concerned primarily with control in terms of the physical handling and movement of the merchandise.

Procedure

The grocery warehouse is a distribution center for the retail outlets served by it. Its primary function is to provide a temporary storage place for large amounts of various items purchased by the buying department. This merchandise is stored until needed by the retail units at which time, a store order is assembled and delivered via motor truck.

The flow of merchandise from the receiving dock to the shipping platform follows a definite pattern and requires considerable control en route. It would seem logical then, in a study such as this, to follow this flow of merchandise and discuss, step by step, the inventory control problems as they would naturally arise.

In addition, a chapter is devoted to the machine tabulation section of the accounting department since it is the function of the tabulating section to process the store orders and maintain all inventory records.

Finally, a chapter is included which covers the periodic physical inventory process since it is the warehouse personnel who are responsible for the physical count and/or weight of the goods.

CHAPTER II

THE RECEIVING DEPARTMENT

Physical inventory control becomes a reality when the truck backs up to the receiving platform or when the seal is broken on the railroad freight car door.

The purpose of the receiving department is to get the merchandise from the carrier to the selection line or storage area as quickly and economically as possible. In conjunction with this function of materials handling, is the control of the merchandise being received from a quantity and quality standpoint.

The role played by the receiving department in this control function is brief but highly important. Perpetual inventory records are meaningless if a clerk mischecks the merchandise or places the wrong item code number on the receiving ticket.

The Receiving Clerk

The king-pin of the whole receiving operation is the receiving clerk. It is the clerk's duty to see that the merchandise is unloaded and handled in a manner consistent with company policy and practice. It is the responsibility of the receiving clerk to see that the incoming items agree with the shipper's invoice both in description and amount. Any excess, shortage, or damage must be so noted on the receiving record.

Since the majority of warehouse operations use pallets[1] for the handling of merchandise, the goods are unloaded directly onto these pallets. Therefore, the clerk must keep some form of tally on the number of pallet loads as they move out of the truck or railroad car. Space is provided for this tally on the six narrow lines at the bottom of the receiving record shown in Figure 1. In addition, the clerk should mark each pallet load in some manner[2] indicating the item code number and date received. This marking facilitates quick identification and rotation of the stock so that a first-in, first-out inventory procedure can be practiced.

Inspection is also one of the functions of the receiving clerk. Obviously, the clerk cannot open every case and package, but a spot check of a few cases will usually give a good indication of the physical condition of any particular shipment. If company policy is such that samples are required for laboratory testing, then the clerk can combine the physical inspection with the withdrawal of samples.

As indicated by the foregoing discussion, the job of the receiving clerk is a highly important one in the inventory control procedure. Therefore, the individual clerk must be an intelligent, well-trained and reliable person. In addition,

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1 A Pallet is a legless platform on which goods are placed for handling and storage purposes.

2. Black crayon or white chalk seems to be the easiest and fastest method of marking pallet loads of merchandise.

RECEIVING RECORD

BUYER'S COPY

3301

WHSE. 7

WHSE 14

252 Whse. 7-10M-10-51 □

COST
MDSE.
FRT.

Name of Shipper: S. GIOVANNI A TEDUCCIO S.S. CONSTITUTION B/L #14 PIER 84 N.R.

Date: 2/21/52

Rec'd from R. R. Express, Storage, Motor Truck, Etc.: ZUIDEMAN BROS.

Car No.: —

Rec'd By: Minchik

QUANTITY	PACKAGE	BRAND AND COMMODITY, MARKS, WEIGHTS, ETC.	CONTENTS	SIZE	CODE NO.	COST
100	c/s	CANS. CIRIO ITALIAN PEELED TOMATOES 65#	24	36oz.	3249	
300	c/s	CANS. CIRIO ITALIAN PEELED TOMATOES 63#	48	17oz	3250	
1	——	32-32-32-4				
		32-32-32-32-32-32-32-32-32-32-12				

Figure 1. An example of a grocery warehouse receiving record

the clerk must possess the ability to write clearly and legibly since one of the most important features of the job is the recording of the data on the proper forms.

Motor Truck Receiving

Motor truck receiving is commonly known by such names as odd lot, small lot, and less-than-carload receiving. As the name indicates, truck receiving is usually associated with small and/or mixed shipments. To a large extent, this is still true since the motor truck lends itself to this type of cartage. However, it is evident that the motor truck is making larger inroads into the field of transportation and consequently, is hauling ever increasing amounts of carlot shipments.

The problem of control in relation to small and/or mixed shipments is increased due to the fact that:

1. The truck driver does the unloading.
2. The small lots are unloaded rather rapidly as compared with a full truck or carload.

The receiving clerk, then, must instruct the driver as to the correct pallet pattern or block[3] to use and in addition, he must do the same amount of paper work for each and every shipment regardless of size. This means that the clerk has less time to count, inspect, and record each small lot.

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3 A pallet pattern or block is a definite pattern used when stacking goods on a pallet so that the most economical use can be made of the pallet in terms of the number of cases per pallet and so that each item is uniformly palletized to facilitate counting.

The number of trucks that the receiving clerk can handle efficiently is limited by the factors mentioned above. As found by one company, three trucks seem to be the optimum number for the average receiving clerk. Any number above three increases the possibility of errors which can cause the downfall of any inventory control procedure.

Railroad Receiving

Essentially the railroad receiving function is the same as the truck receiving and the duties of the receiving clerk are very similar. The two important differences are:

1. Warehouse employees unload the cars.
2. There is usually not more than two or three different items in any one car.

Because of these two factors, it is possible for one clerk to take care of the entire railroad receiving operation in most food chain store warehouses provided that:

1. A reliable employee in each car keeps a tally of the number of cases or packages unloaded.[4]
2. The sole duty of the clerk is the inspection of the merchandise and the recording of the receiving.

Since damage tends to be more prevalent in rail shipments as compared to truck shipments, it is highly important that any damaged merchandise be properly recorded. This aids both rapid filing of damage claims and the accuracy of the perpetual inventory record.

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[4] See Figure 2.

AMERICAN STORES CO

CAR UN-LOADING RECORD

WHEN USED AS A LOADING RECORD CANCEL THE UN

Warehouse / Bakery } No. _____ Name of R.R. _____ Date Unloaded / Date Loaded _____ 19 ___

Kind of Car _____ Initial _____ Car Number _____

Seals, East Side _____ Seals, West Side _____

Ice in Bunkers, North End _____ Ice in Bunkers, South End _____

Condition of Car, Car Floor, Roof, Etc. _____

Seals broken by _____ Checker _____

DESCRIPTION OF GOODS	LOAD TRUCKS UNIFORM QUANTITIES—SHOW NUMBER OF PACKAGES ON EACH TRUCK												TOTAL

WRITE DETAILS OF SHORTAGES, LOSS OR DAMAGE, BELOW

Signature of R. R. Representative Covering Shortage, Loss or Damage, as above _____

Date _____ 19 ___

ORIGINAL (White) To Traffic Dept., Main Office
DUPLICATE (Pink) To Cost Dept., Main Office
TRIPLICATE (Canary) To _____ R. R.
QUADRUPLICATE (White) Warehouse Copy

Note carefully the condition of every package. Do not use the terms "Bad Order" or "Damaged" to describe damages. A full definite account of the character and extent of the damage must always be given. State if damage was caused by improper loading, nails in car, defective or insufficient packing or crating, leaky or dirty car. If damage or shortage is great report to Traffic Department.

Form 300-- 2M L 12-47

Figure 2. An example of a railroad car unloading record

Methods of Receiving

The present emphasis on operating efficiency in food warehouses has led to the development of low cost, high-speed receiving operations. Pallets, electrically powered hand jacks, electric and gasoline fork lift trucks, roller and skate conveyors, power belt-conveyors, and other types of materials handling equipment have all helped to increase the speed and efficiency of the receiving operation. A recent study[5] listed thirty-five different ideas on receiving methods and there are many more besides those listed. However, the method of physical handling is not as important as the speed and efficiency since these two factors go hand in hand with good inventory control. Two of the prerequisites of an inventory control system are that:

1. The receiving record be as accurate as possible.
2. The receiving record be transmitted to the tabulating department immediately upon completion.

Therefore, an efficient receiving operation can be of great assistance to the inventory control system if it is to work properly.

Another factor in the receiving operation which can aid inventory control immeasurably is standardization. Regardless of what method is used to receive the merchandise, the important thing to remember is that the established pallet pattern for the various size cases should be used consistently and also,

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5 Kaylin, S. O. Receiving...35 Ways to Avoid Bottlenecks. Chain Store Age. 27(August, 1951), p. 132

there should be no deviation from the warehouse regulations regarding the number of layers per pallet. This standardization enables the receiving clerk to make a fast, accurate tally of the goods as they are unloaded. In addition, it saves a good deal of time and expense during the periodic physical inventory checks. Nothing is more frustrating to a person taking a physical inventory than to have to count a large number of pallet loads of a given item when the pallet pattern and number of layers on each pallet varies.

This consistency in palletizing is so important both from a materials handling and inventory control standpoint that some companies have worked out a set of standards regarding palletized merchandise. The Benner Tea Company even made up a chart which was mounted in the receiving departments so that it served as a useful reminder to the workers.[6] Figure 3 is a partial example of such a chart.

Since all warehouses do not use the same size pallets, this chart should not be taken as a guide. Rather it is presented as an example of one of the ways to standardize the receiving operation.

The Receiving Record

The primary receiving document is the receiving slip.[7] The information contained in the receiving slip is vital to

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6 Ibid, p. 139.

7 See Figure 1.

Size of Can	Number in Layer	High
24 No. 2 cans	11	4
24 No. 2½ cans	8	4
48 No. 1 cans	8	4
24 No. 303 cans	15	4
6 10 lbs. sugar	5	8
12 5 lbs. sugar	7	6
12 46 oz. cans	8	5
12 No. 303 glass	11	7

Figure 3. Established Standards for Palletizing Merchandise in the Benner Tea Company Warehouse.

the proper operation of any perpetual inventory system. Any inaccuracies in the receiving information will be reflected throughout the entire system. Therefore, the receiving record must be a medium of communication that effectively transmits clear and concise information to the various departments concerned, such as purchasing, tabulating, and accounting.

Five adverbs can be used in determining the information to be contained in the receiving record: who, when, what, where, and why.[8]

Who? The form would answer such questions as: Who is the vendor? Who is the receiver? Who is the shipper? This is necessary in order to establish responsibility.

When? The year, month, and the day the item was received is necessary to fit into the planned time schedule of the inventory control procedure.

What? This is the heart of the receiving document. What was the item received? What quantity? What type package? What brand? What size? This is the place for standardized code numbers and abbreviations.

Where? This adverb may pertain to the specific receiving department handling the merchandise. It also may apply to certain companies who use location codes.

Why? Why were only ninety-seven cases received when the invoice called for one hundred? Questions such as this are

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8 Melnitsky, Benjamin. Management of Industrial Inventory. New York and Chicago: Conover-Mast Publications, Inc., 1951, p. 80.

extremely important to the various departments concerned with inventory control. An explanation on the receiving ticket should eliminate much confusion and unnecessary communication with the receiving department.

To assist the clerk in filling out the receiving record speedily and accurately, it is highly important that a catalogue of merchandise descriptions be kept in the department. Since practically all items carried in the warehouse are found on the store order form, it is possible to supply the clerk with a copy of this form to use as a guide for code numbers and descriptions. However, this form reflects only the items currently in stock in the warehouse and since there is a constant fluctuation in the variety of items carried at any one time, the receiving department should also keep a master catalogue of all items that were ever handled.

It is extremely important that the receiving records be forwarded to the tabulating or accounting departments as quickly as possible. This is necessary because the receiving must be recorded in the proper manner before the merchandise can be shipped to the retail outlets. This is a crucial point, particularly in the case of an out-of-stock item, since the confusion resulting from a shipment of an item for which the billing department has no receipt is tremendous.

The question now arises as to how the record can be transmitted to the accounting or tabulating departments. Where the receiving departments and the office are adjacent, or close

together, it is very simple for a clerk to deliver the completed records periodically. However, where the two departments are a considerable distance apart, it may prove economical to install a pneumatic tube system similar to those found in large department stores. In so far as inventory control is concerned, this pneumatic tube is probably the most satisfactory method since each record can be forwarded immediately upon completion.

Cooperation

As stated by Melnitsky, "lacking the active cooperation of other departments, receiving must travel an extremely rough and bumpy road - a trip which contributes little to the ease and comfort of its inventory control passenger."[9]

This cooperation is important within the warehouse itself. When the receiving department has an extremely heavy day, arrangements should be made so that they have extra men and machines. Otherwise, overtime work may be necessary, the men become overly tired, and as a result, the work is careless and mistakes are made more easily.

Even more important is the cooperation necessary between the buyer or buyers and the receiving department. The buyer should attempt, whenever possible, to schedule incoming shipments so that the receiving work load is leveled out.

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9 Ibid, p. 167

In addition, the buyer should insist that all essential documents accompany the shipments, especially the packing slip. The inclusion of the shipping documents greatly expedites the receiving operation.

CHAPTER III

MATERIALS HANDLING

After the merchandise has been received, it must then be moved to the storage and selection areas. This movement comes under the heading of materials handling. As the term materials handling implies, it refers to the transportation or movement and handling of materials. In this case, the materials are the several thousand grocery items normally carried in a warehouse and the transportation and handling is limited to the movement within the confines of the grocery warehouse.

The modern warehouse uses mechanized handling systems to move the merchandise throughout the plant and the following list shows some of the equipment most commonly used.[1]

1. Pallets and skids
2. Fork trucks
3. Low lift and high lift platform trucks
4. Motorized pallet hand trucks
5. Continuous overhead chain conveyor or towline
6. Four wheel hand trucks
7. Pallet racks
8. Mechanized and gravity floor conveyors

Much has been written on the subject of materials handling so, rather than to become involved in a discussion of

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1 Park, David M. Warehouse Materials Handling in the Food Chain Industry. Unpublished M.A. thesis. Michigan State College, 1951, 91 numb. leaves, 8 figures.

pure materials handling, an attempt has been made to touch on this subject only as it relates to inventory control.[2]

There are four major movements or processes involved in transporting the merchandise from the receiving area to the shipping platform and each will be discussed in the sequence in which it is performed.

Movement to the Storage Area

The merchandise has been palletized by the truck driver or the company employees in the receiving department. If it is a large shipment, the bulk of it must be put into the storage area with possibly a few pallet loads being placed on the selection line. Sometimes, in the case of small shipments of one or two pallet loads, it is possible to place the entire shipment on the selection line. This presupposes that the stock on the selection line has been sufficiently depleted to permit the placement of new stock. If it is not, then the inventory control system is not functioning properly or the buyer is (intentionally or not) overbuying.

The full pallet loads are moved to the storage and/or selection area by several methods, the two most important being the fork lift truck and the "train" of four wheel trucks. The difference between these two operations is primarily in the amount of equipment involved. The fork lift truck

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2 For an excellent discussion on this subject, see Park, David M. Warehouse Materials Handling in the Food Chain Industry. Ibid.

completes the movement and storage of the full pallet loads as one continuous operation. In other words, when just a fork lift truck is used by itself, it performs both the transportation and storage functions. The warehouse "train", on the other hand, is merely a transportation device. The pallet loads are placed on four wheel trucks which are coupled together and motivated by a gasoline or electrically powered tractor which corresponds to a railroad locomotive. This train then requires a fork lift truck to place the pallets on the trucks and, when it reaches the allotted storage space, another fork lift truck must remove and stack the pallet loads.

A certain degree of care must be exercised to prevent damage while the merchandise is in transit. Any sudden starts, stops, turns, or accidents which cause the merchandise to be damaged are costly both in terms of money and inventory control. If this damage problem is not carefully supervised, the merchandise might possibly end up in the waste can. The result of this action would be an overstatement of the perpetual inventory record. The resulting discrepancy between the book and physical inventory can cause the buying department to underbuy and possibly result in an out-of-stock item. This effect of damage on the inventory control system may possibly be somewhat exaggerated but the point is that this could happen under certain extreme conditions and, therefore, the discussion helps to illustrate the necessity for keeping damage to a minimum.

In the storage or reserve area, the layout is highly important to good inventory control not to mention efficient materials handling. Obviously, the most efficient use of the reserve area from a pure storage point of view would be to eliminate all aisles and utilize every cubic foot of space. However, it must be kept in mind that this storage is only temporary and the selection line must be replenished from the reserve stock. Therefore, it is necessary to provide easy access to all merchandise in the storage area.

Certain items require, because of their high turnover, that a very heavy inventory be maintained while others, in the low turnover class, may only require that one pallet load be held in reserve. This presents a problem in terms of layout since the space provided for a heavy inventory item may be completely unsatisfactory for storing one or two pallet loads of a given item. By way of illustration, suppose that no section is provided in the reserve area that is less than six pallet lengths deep (that is, six pallet lengths from aisle to aisle). Assuming that the pallet loads can be stacked four high, then there will be twenty-four pallet loads in each row. Now suppose that several items are received consisting of two pallet loads each. In order to utilize the storage space to the fullest extent, it is necessary to put these three or four items of two pallet loads each in the space provided for twenty-four pallet loads. As more items are received, they are also put into this same section with the result that the items in

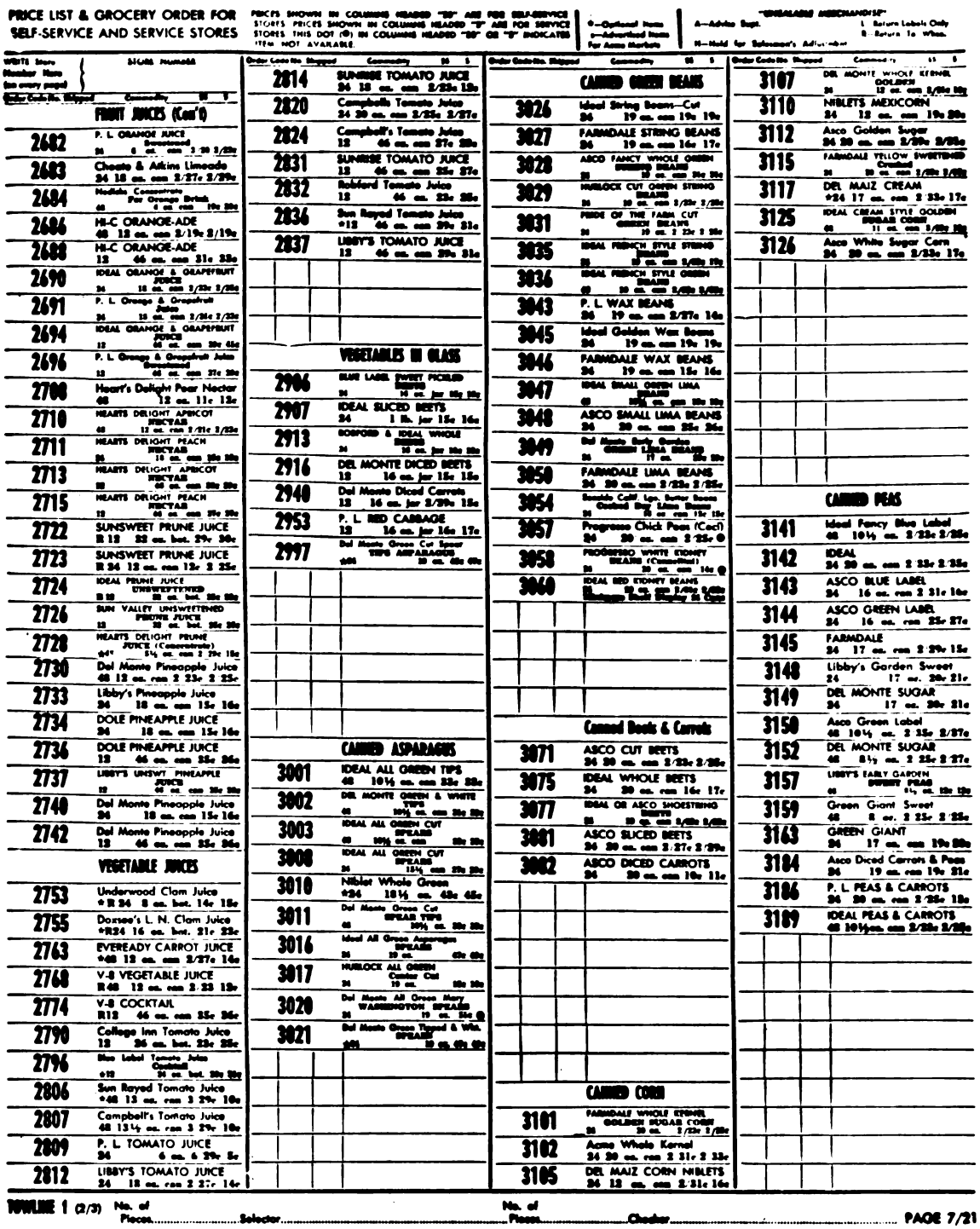
the center of the section are "buried". Now suppose that one of the "buried" items is needed in the selection area. The resulting confusion in first trying to find the item and second, in moving eight or ten pallet loads to reach it, is tremendous. Not only is this type of operation costly but it may also result in a temporary out-of-stock situation during the time it takes to locate and remove the item. It is also possible that the "buried" item will not be found for a prolonged period of time and possibly not even during the periodic inventory.

As was pointed out by the illustration, the solution to this problem lies in a sensible storage area layout. Space must be provided not only for the heavy inventory items but also for the "odd lot" (as the small receivings are called) merchandise.

Movement to the Selection Area

The selection area is the assembly line of the grocery warehouse. It is here that the order for the retail outlet is selected by a warehouseman usually termed a selector or order-picker. For convenience and rapidity of selection, a small portion of each item (usually one or two pallet loads depending on the turnover) is arranged in code number sequence along an aisle or series of aisles. The order-picker or selector then takes the store order or portion thereof and proceeds along the selection line assembling the items called for on the order.

The selection line requires replenishment from time to time and this is usually done by a fork lift truck. The



PRICE LIST & GROCERY ORDER FOR SELF-SERVICE AND SERVICE STORES

PRICES SHOWN IN COLUMNS HEADED "SS" ARE FOR SELF-SERVICE STORES. PRICES SHOWN IN COLUMNS HEADED "S" ARE FOR SERVICE STORES. THIS DOT (•) IN COLUMNS HEADED "SS" OR "S" INDICATES ITEM NOT AVAILABLE.

•—Optional Items
p—Advertised Items Per Area Markets

A—Advice Dept.
H—Hold for Salesman's Advice

"UNSALABLE MERCHANDISE"
L Return Labels Only
R Return To Store

Order Code No. Shipped | Commodity | SS | S

FRUIT JUICES (Cont'd)

2682	P. L. ORANGE JUICE Sweetened 24 6 oz. can	2/29c	
2683	Choate & Atkins Limeade 24 18 oz. can	2/27c	2/29c
2684	Nadiska Concentrate For Orange Drink 48 6 oz. can	19c	20c
2686	HI-C ORANGE-ADE 48 12 oz. can	2/19c	2/19c
2688	HI-C ORANGE-ADE 12 46 oz. can	31c	33c
2690	IDEAL ORANGE & GRAPEFRUIT JUICE 24 18 oz. can	2/23c	2/25c
2691	P. L. Orange & Grapefruit Juice 24 18 oz. can	2/26c	2/25c
2694	IDEAL ORANGE & GRAPEFRUIT JUICE 12 46 oz. can	30c	45c
2696	P. L. Orange & Grapefruit Juice Sweetened 12 46 oz. can	27c	30c
2700	Heart's Delight Pear Nectar 48 12 oz.	11c	12c
2710	HEARTS DELIGHT APRICOT NECTAR 48 12 oz. can	2/21c	2/25c
2711	HEARTS DELIGHT PEACH NECTAR 24 18 oz. can	30c	33c
2713	HEARTS DELIGHT APRICOT NECTAR 12 46 oz. can	30c	33c
2715	HEARTS DELIGHT PEACH NECTAR 12 46 oz. can	29c	30c
2722	SUNSWEET PRUNE JUICE R 12 23 oz. bot.	29c	30c
2723	SUNSWEET PRUNE JUICE R 24 12 oz. can	12c	2 25c
2724	IDEAL PRUNE JUICE UNSWEETENED R 12 23 oz. bot.	30c	33c
2726	SUN VALLEY UNSWEETENED PRUNE JUICE 12 23 oz. bot.	25c	28c
2728	HEARTS DELIGHT PRUNE JUICE (Concentrate) 6+1 5½ oz. can	2 27c	15c
2730	Del Monte Pineapple Juice 48 12 oz. can	2 23c	2 25c
2733	Libby's Pineapple Juice 24 18 oz. can	15c	16c
2734	DOLE PINEAPPLE JUICE 24 18 oz. can	15c	16c
2736	DOLE PINEAPPLE JUICE 12 46 oz. can	25c	26c
2737	LIBBY'S UNSWT. PINEAPPLE JUICE 12 46 oz. can	30c	33c
2740	Del Monte Pineapple Juice 24 18 oz. can	15c	16c
2742	Del Monte Pineapple Juice 12 46 oz. can	25c	26c

VEGETABLE JUICES

2753	Underwood Clam Juice +R 24 8 oz. bot.	14c	15c
2755	Doxsee's L. N. Clam Juice +R24 16 oz. bot.	21c	23c
2763	EVEREADY CARROT JUICE +48 12 oz. can	2/27c	14c
2768	V-8 VEGETABLE JUICE R 48 12 oz. can	2 23	13c
2774	V-8 COCKTAIL R12 46 oz. can	25c	26c
2790	College Inn Tomato Juice 12 26 oz. bot.	23c	25c
2796	Blue Label Tomato Juice Cocktail +12 24 oz. bot.	20c	22c
2806	Sun Rayed Tomato Juice +48 13 oz. can	3 29c	10c
2807	Campbell's Tomato Juice 48 13½ oz. can	3 29c	10c
2809	P. L. TOMATO JUICE 24 6 oz.	6 29c	5c
2812	LIBBY'S TOMATO JUICE 24 18 oz. can	2 27c	14c
2814	SUNRISE TOMATO JUICE 24 18 oz. can	2/23c	15c
2820	Campbells Tomato Juice 24 20 oz. can	2/25c	2/27c
2824	Campbell's Tomato Juice 12 46 oz. can	27c	28c
2831	SUNRISE TOMATO JUICE 12 46 oz. can	25c	27c
2832	Rexford Tomato Juice 12 46 oz. can	23c	25c
2836	Sun Rayed Tomato Juice +12 46 oz. can	29c	31c
2837	LIBBY'S TOMATO JUICE 12 46 oz. can	29c	31c

VEGETABLES IN GLASS

2906	BLUE LABEL SWEET PICKLED BEETS 24 16 oz. jar	15c	16c
2907	IDEAL SLICED BEETS 24 1 lb. jar	15c	16c
2913	ROSEFIELD & IDEAL WHOLE BEETS 24 16 oz. jar	16c	18c
2916	DEL MONTE DICED BEETS 12 16 oz. jar	15c	15c
2940	Del Monte Diced Carrots 12 16 oz. jar	2/29c	15c
2953	P. L. RED CABBAGE 12 16 oz. jar	14c	17c
2997	Del Monte Green Cut Spear TIPS ASPARAGUS +24 20 oz. can	40c	49c

CANNED ASPARAGUS

3001	IDEAL ALL GREEN TIPS 48 10½ oz. can	33c	38c
3002	DEL MONTE GREEN & WHITE TIPS 48 10½ oz. can	35c	39c
3003	IDEAL ALL GREEN CUT SPEARS 48 10½ oz. can	18c	20c
3008	IDEAL ALL GREEN CUT SPEARS 24 15½ can	27c	30c
3010	Nibler Whole Green +24 18½ oz.	42c	45c
3011	Del Monte Green Cut SPEAR TIPS 48 10½ oz.	18c	20c
3016	Ideal All Green Asparagus SPEARS 24 20 oz.	42c	48c
3017	HURLOCK ALL GREEN Center Cut 24 10 oz.	18c	20c
3020	Del Monte All Green Mary WASHINGTON SPEARS 24 19 oz.	34c	●
3021	Del Monte Green Tipped & Wht. SPEARS +24 20 oz.	40c	42c

CANNED GREEN BEANS

3026	Ideal String Beans—Cut 24 19 oz. can	19c	19c
3027	FARMDALE STRING BEANS 24 19 oz. can	16c	17c
3028	ASCO FANCY WHOLE GREEN STRING BEANS 24 19 oz. can	20c	20c
3029	HURLOCK CUT GREEN STRING BEANS 24 20 oz. can	2/23c	2/25c
3031	PRIDE OF THE FARM CUT GREEN BEANS 24 20 oz.	2 22c	2 25c
3035	IDEAL FRENCH STYLE STRING BEANS 24 19 oz. can	2/25c	15c
3036	IDEAL FRENCH STYLE GREEN BEANS 48 10 oz. can	2/25c	2/25c
3043	P. L. WAX BEANS 24 19 oz. can	2/27c	14c
3045	Ideal Golden Wax Beans 24 19 oz. can	19c	19c
3046	FARMDALE WAX BEANS 24 19 oz. can	15c	16c
3047	IDEAL SMALL GREEN LIMA BEANS 48 10½ oz. can	20c	22c
3048	ASCO SMALL LIMA BEANS 24 20 oz. can	25c	26c
3049	Del Monte Early Garden GREEN LIMA BEANS 24 19 oz.	25c	28c
3050	FARMDALE LIMA BEANS 24 20 oz. can	2/23c	2/25c
3054	Seaside Calif. Lge. Butter Beans Cooked Bag 24 oz.	15c	15c
3057	Progresso Chick Peas (Ceci) 24 20 oz. can	2 25c	●
3058	PROGRESSO WHITE KIDNEY BEANS (Cannellini) 24 20 oz. can	16c	●
3060	IDEAL RED KIDNEY BEANS 48 16 oz. can	2/25c	2/25c

Canned Beets & Carrots

3071	ASCO CUT BEETS 24 20 oz. can	2/23c	2/25c
3075	IDEAL WHOLE BEETS 24 20 oz. can	16c	17c
3077	IDEAL OR ASCO SHOESTRING BEETS 24 20 oz. can	2/25c	2/25c
3081	ASCO SLICED BEETS 24 20 oz. can	2/27c	2/29c
3082	ASCO DICED CARROTS 24 20 oz. can	16c	11c

CANNED CORN

3101	FARMDALE WHOLE KERNEL GOLDEN SUGAR CORN 24 20 oz.	2/23c	2/25c
3102	Asco Whole Kernel 24 20 oz. can	2 31c	2 33c
3105	DEL MAIZ CORN NIBLETS 24 12 oz. can	2 31c	16c
3107	DEL MONTE WHOLE KERNEL GOLDEN 24 12 oz. can	2/29c	30c
3110	NIBLETS MEXICORN 24 12 oz. can	19c	20c
3112	Asco Golden Sugar 24 20 oz. can	2/29c	2/29c
3115	FARMDALE YELLOW SWEETENED Cream 24 20 oz. can	2/25c	2/25c
3117	DEL MAIZ CREAM +24 17 oz. can	2 33c	17c
3125	IDEAL CREAM STYLE GOLDEN SUGAR CORN 48 11 oz. can	2/25c	25c
3126	Asco White Sugar Corn 24 20 oz. can	2/33c	17c

CANNED PEAS

3141	Ideal Fancy Blue Label 48 10½ oz.	2/23c	2/25c
3142	IDEAL 24 20 oz. can	2 23c	2 25c
3143	ASCO BLUE LABEL 24 16 oz. can	2 31c	16c
3144	ASCO GREEN LABEL 24 16 oz. can	25c	27c
3145	FARMDALE 24 17 oz. can	2 29c	15c
3148	Libby's Garden Sweet 24 17 oz.	29c	31c
3149	DEL MONTE SUGAR 24 17 oz.	29c	31c
3150	Asco Green Label 48 10½ oz.	2 25c	2/27c
3152	DEL MONTE SUGAR 48 8½ oz.	2 25c	2 27c
3157	LIBBY'S EARLY GARDEN SWEET PEAS 48 8½ oz.	18c	19c
3159	Green Giant Sweet 48 8 oz.	2 25c	2 25c
3163	GREEN GIANT 24 17 oz. can	29c	30c
3184	Asco Diced Carrots & Peas 24 19 oz. can	19c	21c
3186	P. L. PEAS & CARROTS 24 20 oz. can	2/25c	25c
3189	IDEAL PEAS & CARROTS 48 10½ oz. can	2/25c	2/25c

TOWLINE 1 (2/3) No. of Pieces..... Selector..... No. of Pieces..... Checker..... PAGE 7/21

Figure 4. A page from a preprinted store order form

SHIP ADJ.	ORDER	CODE	ORDER	PK-SIZE	DESCRIPTION	ACME RETAIL	ASCO RETAIL	CODE
					CANNED SHRIMP			
		5168		24 5OZ	PL SM WET SHRIMP	29	29	5168
		5179		24 5OZ	IDL LG SHRIMP	34	34	5179
					CANNED HERRING			
		5221		50 3¾OZ	PL KIP SNACKS	10	10	5221E
					CANNED SARDINES			
		5234		50 3¾OZ	P L IN OIL	29	29	5234
		5237		50 4OZ	UNDERWOOD IN OIL	15	15	5237E
		5238		50 3¾OZ	P L IN OIL	13	13	5238
		5241		50 3⅜OZ	PL IN MUSTARD	13	13	5241
		5246		50 3¾OZ	P L NOR IN OIL	18	18	5246
		5247		50 4OZ	UNDER MUST SARDN	15	15	5247
		5249		48 10OZ	UNDERWD SARDINES	20	20	5249
		5251		48 8OZ	PL TOM SCE	16	16	5251E
		5254		48 15OZ	TOMATO SCE	19	19	5254
		5256		48 15OZ	PL NATURAL	15	15	5256
					CANNED CLAMS			
		5306		24 8OZ	DOX NECK CLAMS	38	38	5306E
		5307		24 8OZ	DOX MINCE CLAMS	28	28	5307E
		5309		24 7½OZ	SNOW MINCE CLAMS	25	25	5309E
					COD FISH			
		5332		24 4OZ	BRD SHRD COD PKG	19	19	5332
		5352		12 5OZ	GORT FIBER COD	17	19	5352E
		5358		24 10OZ	GORT COD CAKES	22	22	5358E
		5364		24 10½OZ	BEARD COD CAKES	21	21	5364
					CANNED SALMON			
		5402		48 7¾OZ	BUMBLE BEE	54	54	5402
		5404		48 7¾OZ	MCGOWAN STEAK	57	57	5404E
		5405		48 7¾OZ	PL RED	48	48	5405E
		5408		48 8OZ	ICY POINT RED	48	48	5408
		5411		48 7¾OZ	PL PINK	33	33	5411
		5420		48 16OZ	ICY PNT RED SALM	83	83	5420
		5425		48 1LB	IDL RED	76	76	5425
		5430		48 16OZ	PL PINK	55	55	5430
		5434		48 1LB	PL CHUM	42	42	5434E

NO. UNITS | X-COL 6 O-COL 7 | WHSE. DEPT. | TOWLINE 2

STORE NO. | NO. PIECES | STORE STAMP

SEL. CHK.

PAGE NO. 34 PAGE NO. 34

Figure 5. A page from a store order form printed with an IBM accounting machine.

operator must check his line, note what items are needed, and then proceed to the reserve area to obtain them.

The lift truck operator is an important cog in the inventory control system since he is responsible for putting the merchandise in its proper place on the selection line. As previously noted, the receiving clerk placed the item code number on each pallet load and this number aids the lift truck operator in finding the correct item. However, the receiving clerk is not infallible and, therefore, each fork lift operator should be supplied with a current catalogue of all the merchandise so that a doubtful item or an item without a number can be easily checked. A close control here can be a real help to the inventory control system since a misplaced item on the selection line will cause an understatement of one item and an overstatement of another on the book inventory. In other words, the physical stock of the misplaced item will be depleted while the book inventory remains constant and the book inventory of the item code number under which the merchandise has been placed will be depleted while the physical stock remains constant. In addition, the store will not get the merchandise ordered and conversely, will get merchandise not ordered.

Selection of the Store Order

It was noted previously that the selector proceeds along the selection area aisles assembling the individual store orders. William H. Meserole of the United States Department

of Commerce stated that "this is the job of pulling down, case-by-case, the block of goods which have been kept intact because of commodity likeness, and building it up into a new block having destination likeness."[3] Each block of goods has an item code number prominently displayed above it which corresponds to the item code number on the store order form. In the majority of chain store grocery warehouses, the selection of the order is done entirely by these code numbers. That is, the selector determines the amount ordered for any particular commodity on the order form and then locates this commodity by means of the code number displayed above it. To facilitate this process, the merchandise is arranged in code number sequence which corresponds to the arrangement on the order form. The warehouseman gets the goods from the stack, places them on a four wheel hand truck, and pushes them to the shipping dock. There are some variations in this process, since some warehouses make use of chutes, conveyors, and other mechanical devices to aid or replace the four wheel truck. However, no matter how the order-picking job is done, the goods have to be handled case by case.

The problem of inventory control in the area of order selection is increased due to the fact that it is a manual job performed by people and people tend to make mistakes. One of

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3 Meserole, W. H. Streamlined Wholesale Grocery Warehouses. United States Department of Commerce. Washington, D. C., Industrial Series No. 18, 1945, p. 64.

the most common errors is the selection of the wrong item. This may seem rather picayune since each commodity is designated by a large code number and all the selector needs to do is find the number corresponding to the one on the order form. However, it seems to be very simple for a selector, especially one whose mind is preoccupied, to look at the correct number and then walk to the wrong pallet load. A variation of the same mistake occurs when the selector looks at the wrong number on the order form and then proceeds to select that item. When pallet racks or stands are used so that one pallet load may be placed above another without impeding the selection, it is very easy for the selector to take a case of merchandise from the top pallet when he actually wanted one from the bottom and vice versa. Another common error is in the case of "broken-package" or "split-case" merchandise. These are commodities which are packaged in units too large for the retail unit to handle and, therefore, must be broken down into a reasonably sized multiple. For example, three ounce cans of sardines are usually packed one hundred per case. If the shipping unit is fifty cans, then the case must be split in half for the stores ordering one unit. It is not inconceivable that the selector might put a full case of one hundred cans (two units) on the hand truck when the store order called for one unit. Finally, when the selector places the commodity on the hand truck, the descriptive label should be in plain view and it must be so arranged that every case can be easily counted. If

the case has no label or if it is such an odd shape that it is not practical to place it with the label showing, then the selector should mark the item code number on the case where it can be seen. This facilitates the checking operation and eliminates the need for handling the merchandise while checking it. It also opens up a new field for errors since the selector may mark the wrong number on the case. This can cause no end of confusion to the checker who checks the merchandise against the store order or invoice prior to shipment to the retail store. Before proceeding with the discussion on checking, it may be well to present some suggestions for improving the inventory control system on the selection line. First, there is a need for a good sound training program to instruct the selectors in the basic fundamentals of the order selection system. Second, the assembling line itself must be intelligently arranged and maintained not only to increase the efficiency of the operation, but also to reduce the possibility of errors. Finally, the first line supervision should aim at developing a team-spirit attitude in the warehousemen as one way of increasing the efficiency and accuracy of the selection process.

Checking the Store Order

The checking operation is usually a purely clerical job. Therefore, it does not normally include a physical handling of the goods. This is the process which supposedly eliminates any and all errors which were made during one or more of the warehouse processes.

As the order is assembled on the four wheel hand trucks, it is moved to the shipping dock. Here it is aligned in a designated spot so that after checking, it can be loaded directly into the carrier without further movement. The checker counts the number of items on the truck and compares his count with the selector's count which is indicated in an appropriate spot on the order sheet. If they agree, the load is then assumed to be correct. If they do not, then the load must be checked item for item against the invoice or order sheet to determine where the mistake has been made. This method is called the piece-count system. A variation of this method is used by some warehouses and while it requires more time, it is probably more accurate. This is the item by item check of each commodity. However, at a recent Warehousing and Delivery Clinic of the National Association of Food Chains, it was found that the majority of companies represented did not check by items.[4] Some of the reasons given were 1) "It is all in the company"; 2) "costs too much to check"; and 3) "watch and spot check for dishonesty". Theoretically, at least, the piece-count system should be sufficient if all the other operations are relatively free from error. However, many times this is not the case and, therefore, from a pure inventory control point of view, the item check would be the better system.

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4 National Association of Food Chains' Summary Report on the Warehousing and Delivery Clinic. National Association of Food Chains, Washington, D. C., January 15-17, 1950, 37pp.

After each truck is checked and all errors are corrected, the checker writes the number of pieces on that truck on one of the cases and also on the order sheet. When the complete order is finished, the checker writes the total number of pieces on the order form. This final, total count enables the truck driver to be certain that he has the entire order and it enables the store manager to do likewise when the order is delivered to the retail outlet.

The completed order is now fully checked and ready for delivery to the store which completes the handling of the merchandise within the confines of the grocery warehouse.

The perpetual inventory record has been mentioned several times in this chapter and the preceding one and will be fully discussed in Chapter IV.

CHAPTER IV

THE PUNCHED CARD SYSTEM

Some method must be employed which will provide a close control over the physical stock in the warehouse and also provide accurate statistical information concerning the warehouse inventory.

As mentioned previously, the grocery warehouse that uses modern materials handling equipment is usually able to efficiently utilize a mechanically operated perpetual inventory record. These mechanical systems, then, provide the necessary data for the control of grocery warehouse inventories.

The Tabulating Card

The tabulating card is the basis of the mechanical accounting system. Information from source documents, such as receiving records and store orders, is transcribed into tabulating cards in the form of punched holes in predetermined positions on the card. All necessary data such as quantity, item code number, description, pack, size, et cetera are incorporated in one of these cards for each item in the warehouse. International Business Machines Corporation cards contain eighty columns while Remington Rand cards contain ninety columns. Figure 6 is an example of an eighty column card. The tabulating cards are divided into "fields" which define a section of the card where one particular type of information will always appear.

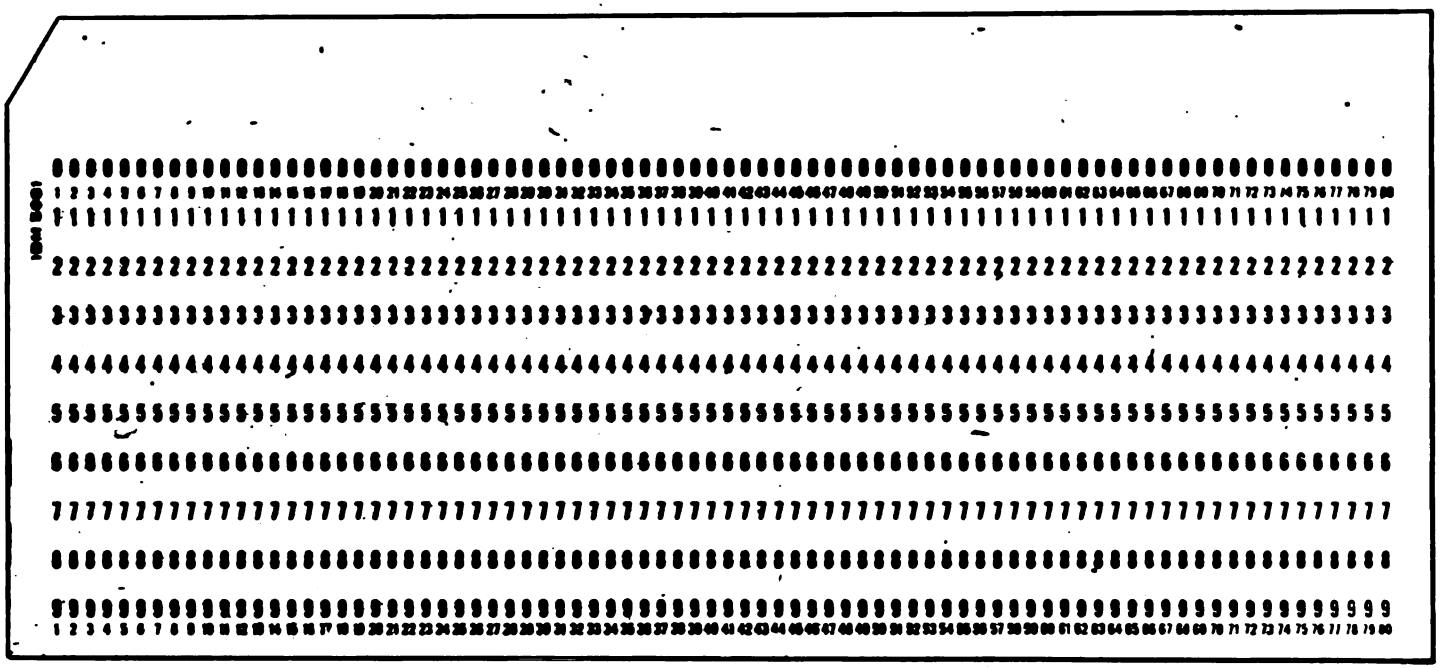

Figure 6. An example of an eighty column tabulating card (actual size)

In order to compile the facts that are recorded in these cards, they are placed in one of a group of machines depending upon the type of information desired. A contact is made through the punched hole which activates the machine so that it prints the desired information.

There are two systems which employ tabulating cards currently being used to control grocery warehouse inventories, the tub file system and the electronic calculator system.

The Tub File System

In this system there is a master record card[1] on file for each commodity carried in the warehouse. This card contains a complete description of the commodity including the code number, pack, size, and weight. In addition, space is provided for posting the quantity of merchandise received, date, card numbers, and current cost. This master record card is manually prepared and is filed in a compact visible rotary file. In addition to the master card, a commodity pattern or setup card is also filed in the rotary file. The pattern card is prepared by a key punch machine operator who reads the source document (master card) and by depressing keys, automatically converts the information into punched holes in the tabulating card.

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1 See Figure 7 for an example of some of the various types of cards used in the tub file system.

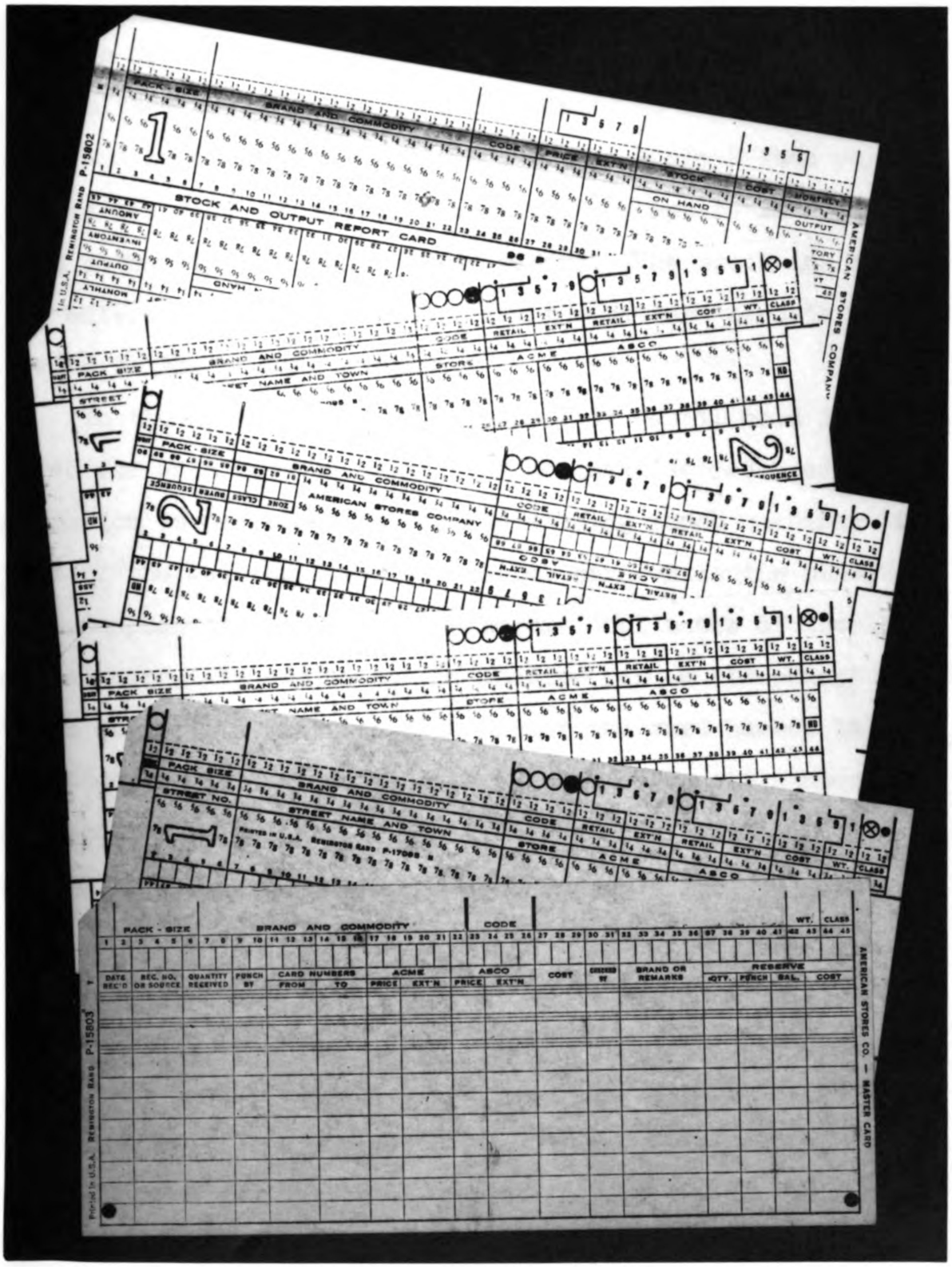

Figure 7. Tub file cards. (Top to bottom) (a) stock and output card; (b)(c)(d) commodity detail cards; (e) pattern card; (f) master card.

As mentioned in Chapter II, the receiving record is transmitted to the accounting department as soon after the merchandise is unloaded as is possible. A clerk then pulls the master card and pattern card from the rotary file for each commodity on the receiving record. The receiving data are entered on the master card and the pattern card is forwarded to the machine section.

In the machine section, a commodity detail card is prepared for each case or package of merchandise received. This operation is performed on the reproducing punch machine. One unit of the machine reads the master card while the other unit punches blank cards which become duplicates of the master card. In addition, the machine has an attachment which end prints the item code number and card number in bold print on the left end of the card. The cards are numbered consecutively from one to whatever number of units of the commodity were received.

The decks of numbered commodity detail cards are filed on end so that the code and card number are uppermost in a tub file from which this system gets its name. The file is actually a large table with sides so that a shallow tub is formed. The tub is divided into sections which run across the table and are just wide enough to hold a tabulating card standing on end. Each group of commodity detail cards representing the amount of every item in the warehouse is arranged in the tub file from the lowest item code number to

the highest. This arrangement is the same as the arrangement of the store order form and is usually the same as the warehouse selection line setup. An index card separates each commodity group and contains a brief description of the commodity and the item code number. The commodity detail cards are filed in front of the index separation card in strict numerical sequence with the high number card next to the index card.

Additional supplies of merchandise are usually received before current stocks are depleted. Each receipt is handled in the manner mentioned above. Commodity detail cards are reproduced from the pattern card and are numbered starting with the number one again. These cards, representing the new merchandise, are filed in front of the commodity detail cards representing the current stock and are separated by a high divider card.

When very heavy receipts are made by the grocery warehouse such as a year's supply of Campbell's Tomato Soup, it may not be practical to reproduce a commodity detail card for every case of merchandise. Therefore, only enough cards are reproduced for current needs and the balance to be punched is entered on a punch up notice which is filed in the tub file in lieu of the commodity detail cards. When additional cards are needed, they are reproduced thereby reducing the balance on the punch up notice.

Signal cards are placed at proper intervals for each commodity. They are the minimum stock signal, danger signal,

and out-of-stock signal cards and are removed successively as the commodity cards are selected for billing. These cards are separated and listings are made of all the items that have reached the reorder point, danger point, and out-of-stock point. These listings are then forwarded to the buying department for appropriate action.

The tub file actually represents a very compact miniature warehouse since every case or package of merchandise in the warehouse is represented by a commodity detail card in the tub file.

The inventory for any particular item may be easily calculated in this tub file system simply by referring to the highest numbered card next to the index card. This number represents the book inventory. If more than one receipt of merchandise is represented in the tub file for a commodity, it is necessary to add the highest numbered card next to the index card to the highest numbered card next to the high divider in order to obtain the inventory amount.

In the tub file system, the tabulating cards used in preparing the retail outlet invoice must be manually selected. The preprinted order form showing the quantities of merchandise desired by the retail outlet is either mailed to the office or brought to the office by the truck driver who made the last delivery to that store. In the accounting department, the order is given to a clerk who selects the

cards used in preparing the invoice. The clerk pulls a card from the tub file for each unit of every commodity on the order sheet, always pulling the highest numbered card first. When the commodity detail cards have been pulled for the entire order, the proper store address card and invoice number card are selected and the entire pack of cards is forwarded to the machine section.

In the machine section, the prepunched cards are fed into a tabulating machine. This machine is a combined adding, subtracting, and printing mechanism. As the cards pass through the machine, they actuate various counters and printing mechanisms which reproduce the number of units ordered, item code number, description, and retail price in printed form. This part of the invoice is sent to the warehouse to be used in selecting the order for the store. There is also a stub part of the invoice form which is detached and kept as an office record. The information that appears on this stub is the number of units, item code number, retail and cost value of each unit.

The basic document prepared in the tub file system, in so far as inventory control is concerned, is the report on the movement and current inventory of each item in the grocery warehouse. This report is usually prepared weekly or monthly in the following manner.

A card is key punched for each receipt and contains the quantity, item code number, description, and cost value.

Then the high number cards for each item are pulled from the tub file and these cards together with the receipt cards and cards representing the beginning inventory from the previous period are run through the tabulating machine. The tabulator adds the receipts to the beginning inventories and subtracts the high number commodity detail cards to get the movement for each commodity. The tabulating machine prints this information together with the amount shown on the high number commodity detail card which represents the ending inventory. Before refiling the high numbered detail cards, they are reproduced so that they can be used as the beginning inventories for the next period.

Copies of this report are given to the buyers and other persons concerned with the control of warehouse inventories such as the branch manager and warehouse superintendent.

The two principal advantages of the tub file system are:

1. Inventory control. It provides a comparison of warehouse count with file count.
2. Buying control. It makes possible a low inventory investment and a reduction of out-of-stock items.

The Electronic Calculator Machine System

The usual procedure for inventory control and billing is the prepunched unit inventory file mentioned in the previous section. However, where the size of the inventory is large, this system is rather cumbersome. Therefore, an

entirely new method of billing and inventory control has been developed by the International Business Machines Corporation.

In the new system, the prepunched unit inventory file is replaced by a small file of single inventory cards, one for each commodity. Each inventory card contains all the necessary description and inventory data such as:[2]

code number
description
inventory quantity
current inventory
valuation
year-to-date issues
current unit cost
unit retail
unit tax
on order quantity
minimum balance
date of last transaction

The inventory card also serves as a master card for billing extensions.

The inventory master cards are processed through the calculating punch machine with the detail transaction cards which are key punched from source documents for the following

2 Anon. IBM Application Report-604 Electronic Calculation Punch for Billing and Inventory Control. New York: International Business Machines Corporation, 1950, p. 1

types of transactions:[3]

warehouse receipts

warehouse receipts (damaged)

return to vendors

purchase orders

credit billing

regular debit billing

special debit billing

Since the greatest majority of cards which must be manually key punched are regular debit billing cards, only a minimum of key punching is necessary. The reason for this is the fact that the debit billing cards are used in conjunction with the inventory master cards which already contain all of the pertinent information. Therefore, it is only necessary to key punch the item code and quantity into the cards.

Prior to the calculating punch runs, all the detail transaction cards are sorted into item code number sequence and merged behind the inventory master cards. Then a blank inventory trailer card is collated behind each commodity group. The cards are then processed through the electronic calculating punch machine where the retail, cost, and tax extensions are calculated, checked, and punched on billing

3 See Figure 8 for an example of some of the various types of cards used in the electronic calculator system.

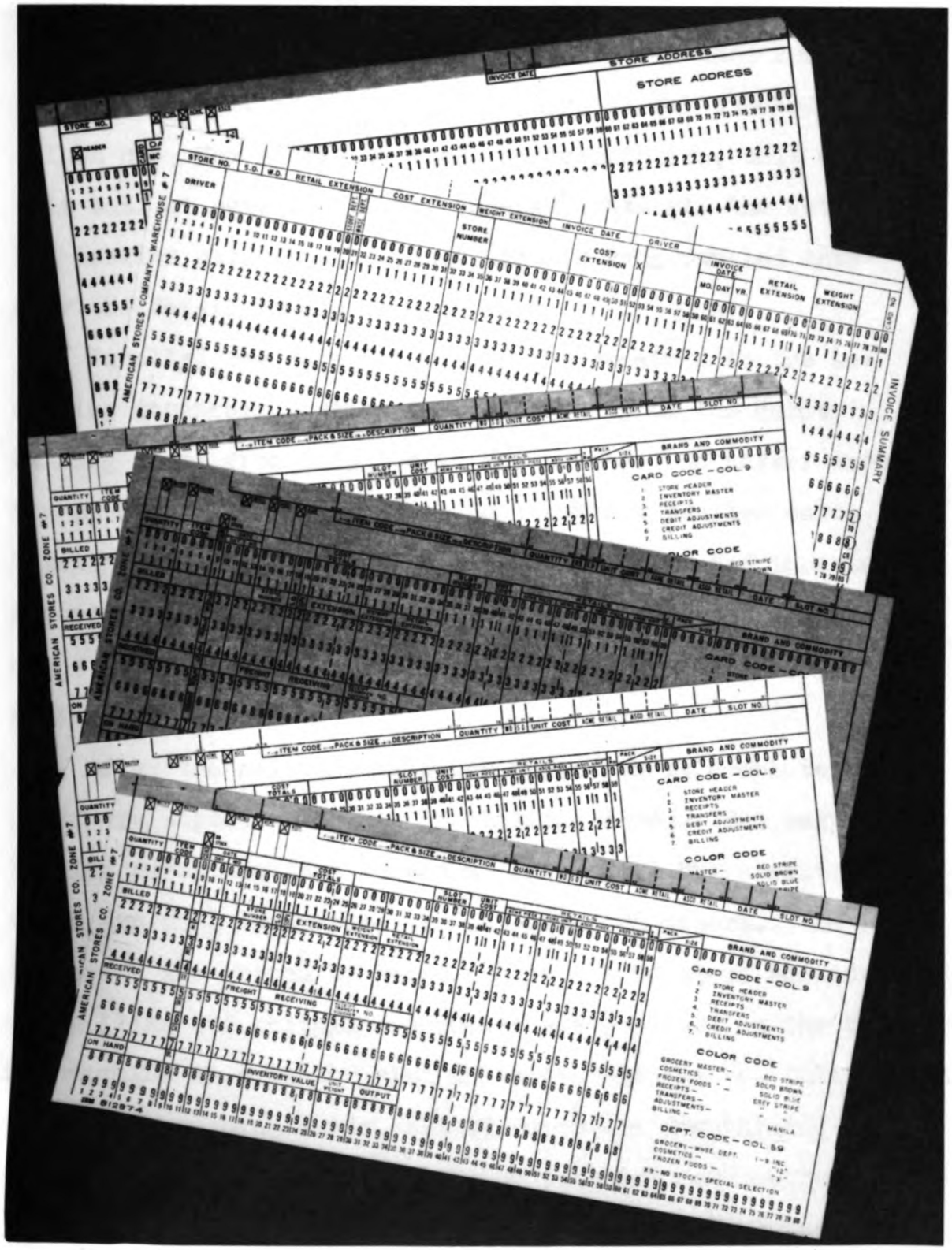

Figure 6. Electronic calculator cards. (Top to bottom) (a) store address card; (b) invoice summary card; (c) receipt card; (d) frozen food card; (e) billing card; (f) master card.

cards. (If there is not sufficient stock on hand for any particular item, then the billing card is "x" punched in column one, "no stock".) Then the description, unit retail, unit tax, et cetera are gang punched[4] into all the detail and trailer cards but the unit cost is gang punched into only the detail transaction cards.

Finally, the calculator adds the receipts to the beginning inventory, subtracts the quantity on the debit billing cards from this total, and punches the answer into the inventory trailer card. The inventory trailer card, containing all descriptions and the newly calculated inventory figure at the completion of the calculating punch run, becomes the new inventory master card for the next day's transactions.

After the calculating punch operation is completed, the cards are sorted to obtain the billing cards. The regular billing cards are then sorted to select all "no stock" cards which are used to compile the out-of-stock report. The remaining cards are sorted by store number behind store heading cards and billing and shipping documents are prepared on the tabulating machine in a manner similar to that in the tub file system.

The remaining cards, all of which are non-billing cards, are processed on the electronic calculating machine for

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[4] Gang punching is the term used to describe the operation whereby information contained in master cards is repeated or transferred to each succeeding card.

current inventory totals and the following calculations are punched into the trailer cards:

new inventory quantity

new inventory valuation

new unit cost

new issues year-to-date

new on order

If the sum of the new inventory quantity, plus the new on order quantity is less than the minimum reorder point, the reorder control "x" is punched. This item would then appear below reorder point on the daily inventory report. The final step is the punching of the trailer card to identify it as the new master card and the old master card is "x" punched in the card code column so that it may be sorted.

All the cards are separated into various groups and the trailer card is filed as the current inventory and is used as the master card for the next day's transactions.

After the new (or ending) inventory master card is developed, it is merged with the old (or beginning inventory) master card and all the receipt, transfer, and adjustment cards for every commodity in the warehouse. These cards are then processed in the tabulating machine to develop the stock and output report. This document (sometimes called a stock status report) is compiled on both a daily and a weekly basis. It is a summary of the day's or the week's transactions and contains the unit cost, item code number, pack,

abbreviated description, opening balance, receipts, balance, shipments, minimum reorder point, and stock available. Whenever the letters "CR" appear after the amount in the last column, it means that the amount shown is that much below the minimum reorder point. Carbon copies of this report are made and distributed to those persons who are vitally interested in the amount of stock on hand, such as the buyers and the warehouse superintendent.[5]

In one food chain, the tabulating department is divided into three sections and the procedure described above is actually the function of one of these sections- the machine section. This machine section cannot proceed with its function until all the necessary data are supplied to it in the form of punched cards. The other two sections then, are the cost section and the key punch section whose function it is to provide the necessary data for the operation of this electronic calculator punch system. Therefore, in order to provide a complete picture of this system, the functions and duties of the cost section and key punch section are discussed below:

Cost Section

1. Records quantity ordered and purchase order numbers on stock record cards.

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5 See Figure 9.

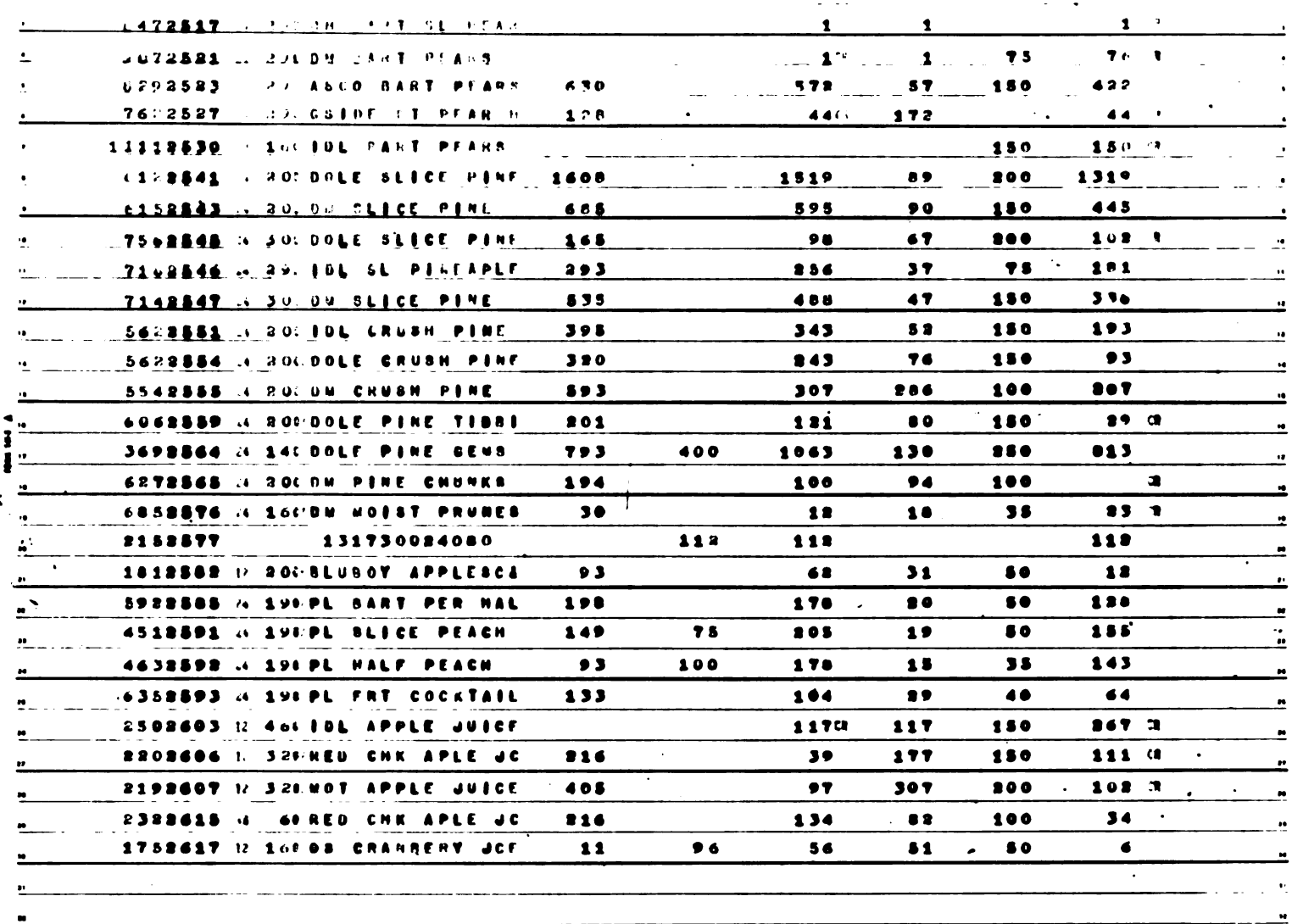

Figure 9. A page from a stock status report

2. computes the cost of the merchandise received and enters the total cost and freight charges on the receiving ticket.

3. Checks the code number, description, pack, size, and cost shown on the receiving ticket against the stock record card.

4. Records quantities received, unit cost, total cost, date, and receiving ticket number on stock record card.

5. Notifies buying department of any change in cost, pack, or size of the latest receiving.

6. Sets up stock record cards for new items received.

7. Forwards the receiving ticket to the key punch section.

8. Enters item code, unit cost, and total cost on all merchandise transfers and forwards transfers to key punch section.[6]

9. Maintains records of spot checks taken by the warehouse.

10. Makes up adjustment vouchers to correct any discrepancies between the physical and book count.[7]

Key Punch Section

The general function of the key punch section is the punching of cards which reflect the movement of merchandise

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6 See Figure 10.

7 See Figure 11.

78772

AMERICAN STORES COMPANY
TRANSFER

DATE SHIPPED ____/____/5__
FROM ____
LOCATION ____
VIA ____

CHARGE TO ____

QUANTITY	PKG.	DESCRIPTION	UNITS	PRICE	PER	AMOUNT

CHARGED BY ____ TOTAL ____

RECEIVED BY ____ DATE / /5

OFFICE COPY (Yellow). Have customer sign and forward to Main Office.
If rail shipment, attach to Bill of Lading and forward to Main Office.
CUSTOMER'S COPY (Pink).
WAREHOUSE COPY (White). This copy is to remain in the warehouse or Department making shipment.

ALWAYS REFER TO THIS NUMBER

78772

Figure 10. An example of a merchandise transfer

2301

ADJUSTMENT MEMO.

Store No. _____

AMERICAN STORES CO.

Date Shipped _____

QUANTITY	UNIT	RETAIL PRICE	COMMODITY	DR.		CR.	
			CHARGE				
			CREDIT				
			TOTALS				
			NET				

Form 264T—
24M 12-47

Original (Canary)—Office Copy Duplicate (Pink)—Stores check and return to Office Triplicate (White)—Store Copy

Figure 11. An example of an adjustment voucher

into and out of the warehouse. The documents from which these cards are punched are receiving tickets, transfers and adjustments, and store orders.

1. Receipts. The receiving tickets are given to the key punch operator who punches a card for each item on the ticket. The following information is punched into each card:

quantity received
item code number
card identification number
date of receiving
freight charges
total cost of merchandise
receiving ticket number

After the cards have been key punched, they are verified and any incorrect cards are returned to the key punch operator for correction.

All cards that have been punched and verified are forwarded to the machine section. The receiving ticket is stamped to indicate that cards have been punched for the items on it and the tickets returned to the cost section for filing.

2. Transfers and adjustment vouchers. The cost section forwards the transfers and adjustment vouchers to the key punch section where cards are punched for each item on the document. The information punched into each card includes:

quantity
item code number

card number

date

total cost

transfer or voucher number

The cards are then verified and forwarded to the machine section and the documents are stamped the same as the receiving tickets and returned to the cost section where they are checked with the transfer and adjustment register and filed.

3. Store orders. When the orders arrive in the office, they are sent directly to the key punch section where they are checked in.

Two sets of prepunched store header cards containing the store number, store department, store address, and card number are reproduced for each day's delivery. The first set of store header cards are put in time card racks and pulled out when the store order is ready to be punched. They also serve as a visible check on missing orders since the cards remaining in the racks indicate which orders are not yet received. The second set of store header cards remain in the tabulating room to be used for running special shipping memos.

When an order from the store is ready to be key punched, a store header card is pulled from the rack and is given, together with the actual store order, to a key punch operator. The operator places the store header card in the card stacker of the key punch machine and punches one commodity detail card for each item ordered. The necessary information that must

be punched for each item is 1) the number of units ordered; 2) the item code number; and 3) the card number. When the operator has completed the key punching of an order, the order is stamped to indicate that it has been punched and it is forwarded to the mail room where it is mailed back to the store.

Advantages of the Electronic Calculator System

There are many advantages to this method of billing and inventory control as compared to the prepunched unit inventory file system. They include:

1. The preparation of daily inventory reports.
2. The reduction of manual filing.
3. Simplification of price changes (only the inventory master card need be changed instead of the whole group of commodity cards).
4. Savings of floor space (eliminates the space necessary for the tub file).
5. Reduction of card costs (only the small inventory file is necessary and a single card for each commodity is all that is required for billing purposes).

Probably the first two advantages are the most important ones to the inventory control system since the daily inventory reports provide a constant, easily accessible source of information for those persons most vitally concerned with inventory control. In addition, the reduction of the manual

filing should help to eliminate any errors due to the human element involved in pulling store orders.

Relative Merits of the Two Types of Equipment - IBM and Remington Rand

Basically the IBM and Remington Rand systems differ in that IBM is an electrical system and Remington Rand is a mechanical one. That is, IBM makes electrical contact through the punched holes in the cards by wires and brushes while Remington Rand makes a mechanical contact with piano wire in flexible tubes and the contact through the punched hole is metal on metal. The plug board or control panel, which controls the reading of the information from the card and the printing of this information, differs considerably between the two systems. Remington Rand's control panel operates on a mechanical principle and is made at the factory. Thus, a separate plug board must be used for each operation that is performed. IBM's control panel is an electrical one and, therefore, more flexible since it can be changed at will.

Some other interesting points of comparison are:

1. Speed. With the advent of electronics, IBM seems to have the advantage.

2. Dependability. Both types of equipment seem to be well engineered and well built. With ordinary servicing, they give dependable production.

3. Flexibility. As mentioned above, IBM has the advantage due to the fact that the control panel is more flexible. However, Remington Rand has the advantage in card capacity having ninety columns to IBM's eighty columns.

4. Acquisition. IBM equipment can only be rented while Remington Rand equipment can be rented or purchased. With reasonable care, tabulating equipment should last considerably longer than the standard life expectancy of seven years. Therefore, purchased equipment can become, in effect, rent free after the seventh year. However, obsolescence is a major deterrent to the purchase plan.

CHAPTER V

THE PERIODIC PHYSICAL INVENTORY

The perpetual inventory does not adjust itself automatically to pilferage, unreported damage to merchandise, or to mistakes made in the shipment of store orders. Therefore, there must be some means for checking the book inventory against the physical stock in the warehouse.

The physical inventory is the term used to describe the periodic counting, weighing, measuring, and listing of all merchandise. It is usually taken at the end of a fiscal period such as quarterly, semi-annually, or annually. It is interesting to note that at the 1951 Warehousing and Delivery Clinic of the National Association of Food Chains, 75 per cent of the chains represented took inventory on a quarterly basis.[1]

Inventory Forms

Usually the count will be taken by means of cards affixed to each lot of merchandise. These cards are regular punch cards and are mechanically reproduced from the inventory master cards so that they require but a minimum number of postings. The information that must be posted on these cards is usually limited to the quantity that was counted and the initials of

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1 National Association of Food Chains' Summary Report on the Warehousing and Delivery Clinic. National Association of Food Chains, Washington, D. C., January 15-17, 1950, p. 9.

the person who counts the item (the counter) and the person who verifies the count (the verifier).

The cards are serially numbered to insure that all of them will be returned to the office upon completion of the inventory. Since the individual items in the warehouse may be located in several different places, it is necessary to reproduce more than one card for each item.

When the cards arrive in the office, they are sorted by serial number and machine-listed to detect any missing ones. After all cards have been accounted for, the quantities and extensions are punched into the cards. The cards are then tabulated to obtain the required accounting totals.

One company uses a variation of the card system which is termed the "book form". In this system, cards may be used but are not necessary since they merely provide a convenient place for the counter to record quantities and code numbers. If cards are not used, the counter records the item code number and count on the merchandise in a conspicuous place with black crayon or white chalk.

As the term "book form" indicates, books are used to record the inventory instead of cards. The books are prepared by tabulating machines using the current stock and output cards. All sections of the tabulator are blocked out except the code number, pack, size, and description. The books are prepared in code number sequence on forms shown in Figure 12. Six books should be sufficient for any warehouse and to insure that all

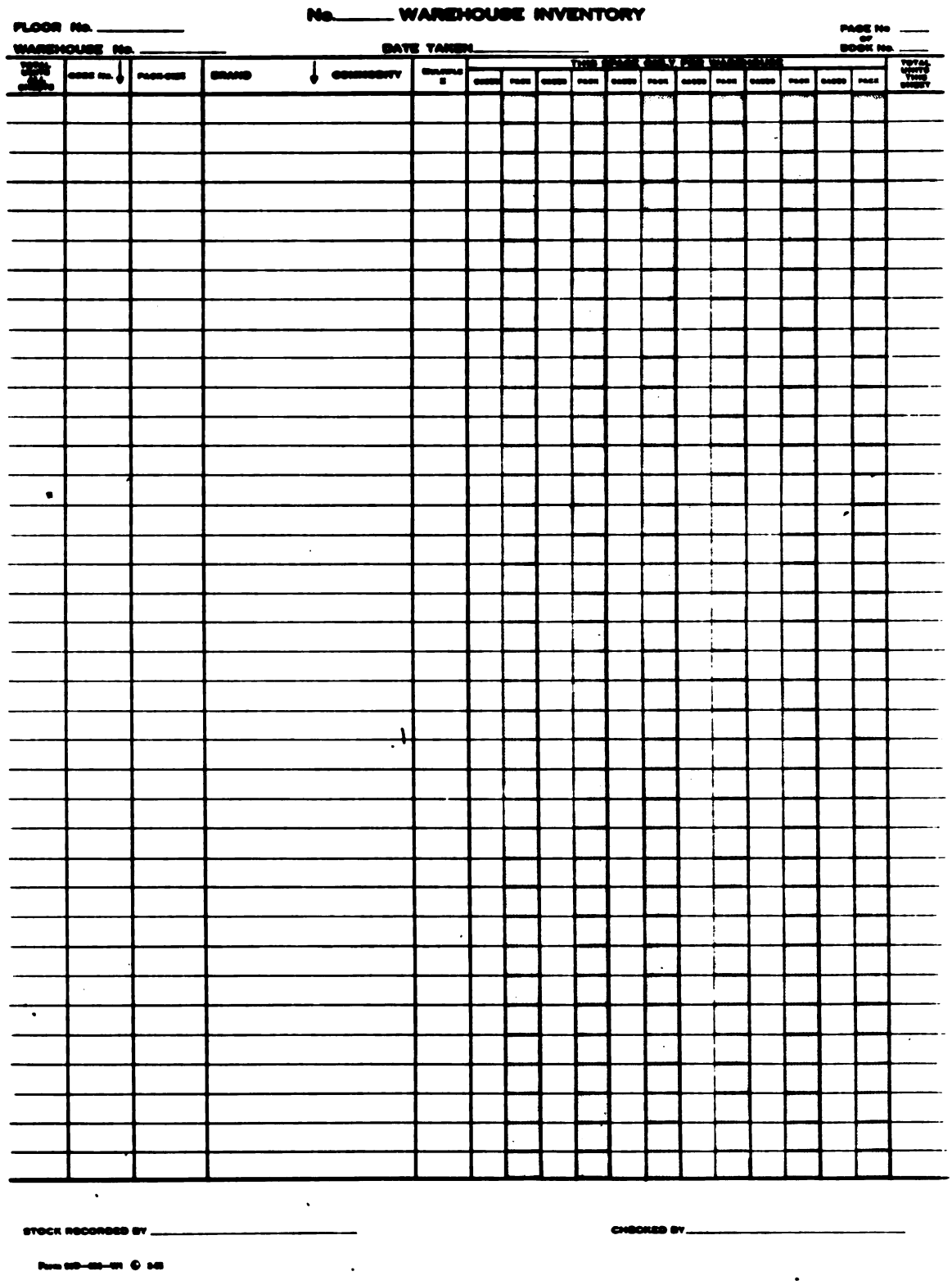

Figure 12. A page from a warehouse inventory book

books are returned, each book and page is numbered. The books are issued to recorders who follow the counters and record the quantity of each item in the space provided.

In addition to the warehouse inventory books, another form is prepared from the same deck of cards and is termed the tub inventory. This form is a tabulation of the stock on hand from the perpetual inventory records and is used to check against the actual physical count.

As indicated by the above discussion, the preparation of forms and records, regardless of the system used, involves a considerable amount of work and ample time should be allowed for the completion of these forms prior to the inventory date.

Date and Time Schedule

The inventory should be dated as of the end of a month so that it may be tied in with financial records. In addition, the fiscal period should be arranged so that the inventory will be taken during the slack season when stocks are normally at their lowest point. Since holidays are very busy periods in the food business, it is not practical to take an inventory during such a month as December. Two of the better months seem to be March and September, provided it is taken after Labor Day.

Regardless of when the inventory is taken, it still involves a warehouse shut-down in most cases. With proper preparations, however, the shut-down should only be for one day.

Cut-off dates for both receiving merchandise and shipping store orders are extremely important in order to provide proper co-ordination between the inventory and the books of account. In some cases, it may prove helpful to notify all shippers and vendors that the warehouse will be closed for inventory on a certain date and will not accept any shipments. This will avoid any confusion as to whether the merchandise received on inventory day was included in the inventory or not. However, ample notification must be given to all shippers so as to avoid any confusion or hard feelings. As a further insurance against the exclusion of received merchandise from the inventory, a record should be made of the number of the last receiving ticket written prior to taking the inventory. Upon completion of the inventory, the receiving ticket numbers should be checked against the receiving book to determine whether or not any items were received.

The cut-off date for shipment of merchandise to the stores is usually at the end of a particular day's shipment. For example, if Friday is the day selected for the physical inventory, then there are several solutions for co-ordinating the cut-off point with the selection of store orders. However, before listing the possible cut-off methods, it is necessary to clarify a point regarding the selection of store orders. In the majority of grocery warehouses, all or almost all of the orders are selected on one day and delivered the following day. Therefore, the cut-off time may be arranged by:

1. Telescoping five days delivery into the four days, Monday through Thursday. This will usually necessitate overtime work by the warehouse personnel.
2. Eliminating Friday's delivery entirely.
3. Arranging the delivery schedule so that the store can receive the same amount of merchandise with fewer deliveries thereby reducing the number of orders that must be selected prior to inventory.

All these solutions presuppose that the orders for Monday, which are usually selected on Friday, will be selected, or at least part of them selected, on Saturday.

This same cut-off procedure which applies to the warehouse must also be applied to the perpetual inventory records. Checks must be made to insure that all receivings are properly recorded and that final billing procedure with its consequent reduction of the book inventory has taken place.

The proper organization and execution of a time schedule is one of the main aids to a smoothly flowing physical inventory procedure. Therefore, it would be very unfortunate to minimize the importance of it as an integral part of the whole operation.

Organization of the Personnel

The first consideration in the personnel aspect of the physical inventory is that someone should be in charge of the inventory as a whole. Usually the person selected is an

accountant or an internal auditor from the company's main office. This individual should have complete authority and also he should be held responsible for the entire inventory procedure. After the inventory chief has been selected, then the rest of the organization such as warehouse superintendents, assistant superintendents, department heads, foremen, inventory team captains, and other workers should be chosen. In large organizations, it may prove helpful to prepare and post an organization chart. An example of such a chart is shown in Figure 13.

The keynote to success in taking the inventory lies in the thorough organization of the personnel who actually do the card hanging, counting, verifying, and recording. This should be arranged so that:

1. There shall be no division of responsibility and each person shall know to whom he is to report.
2. No one shall be placed in sole charge of reporting the inventory of stock normally in his custody during the regular operation of the business. ... .[2]

Plans for the organization of the personnel who are to take the inventory should be worked out by the various officials in cooperation with each other. A sufficient number of men must be on hand to complete the physical count at all locations within a specified period, usually one day. The men are

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2 Broad, Samuel J. Methods of Planning and Taking Physical Inventories. National Association of Cost Accountants. Editor. The Control and Valuation of Inventories. New York: National Association of Cost Accountants, 1941, p. 308.

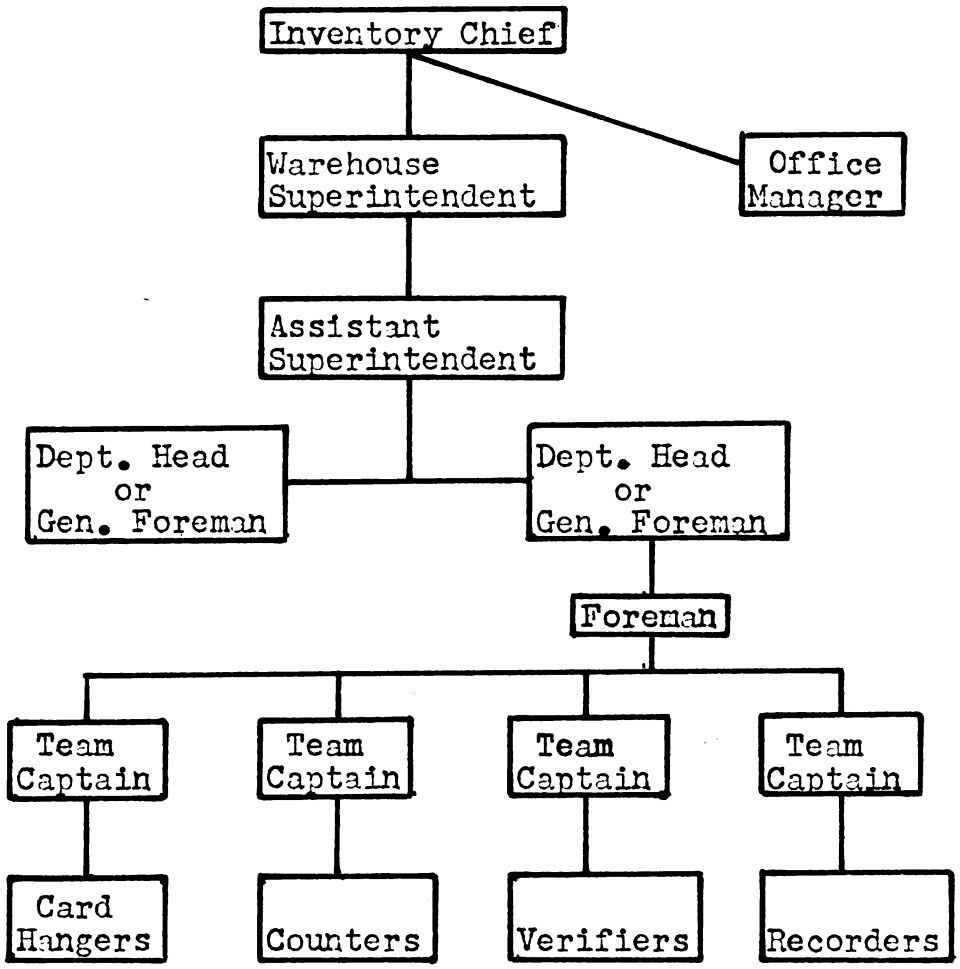

Figure 13. An Example of an Organization Chart for the Physical Inventory.

divided into "teams" of two or more depending on the work to be done and one of the men is assigned as the captain. Usually, the captain is one of the higher paid men in the warehouse such as the order checkers or fork lift operators. These men are, in most cases, the longer service employees, and consequently, are more familiar with the warehouse operation and may be already thoroughly familiar with the physical inventory procedure.

The various teams to be organized are very similar in both the card system and the book form. Therefore, the discussion will be limited to just one system, the book form. There are three types of teams to be chosen. They are: 1) the card hangers; 2) the counters and checkers; 3) the recorders. The officials must decide how many teams will be necessary. This depends, among other things, upon the size of the warehouse, the amount of stock to be counted, and the number of eligible employees. The officials must then decide which men are best suited for each particular team.

The selection and organization of personnel for the inventory teams are extremely important and preparations should be made well in advance. One method which has proved very useful is to have a series of meetings prior to inventory and include all those officials who are responsible for the inventory, down to and including the foremen. The foremen should be an integral part of these meetings since they are the ones who are best able to pass on the capabilities of the men under their supervision.

Secondary to the organization of the personnel in sequence but hardly secondary in importance are the instructions that must be given to the people involved in the physical inventory. The instructions should outline the general procedure to be followed and will include:

1. How the count will be taken. That is, in shipping units or full cases.
2. The duties of the personnel
3. The desired method of recording the count.
4. The disposition of all cards, forms, and records.
5. A few choice sentences or paragraphs on the importance of the inventory and why it is being taken.

Copies of the instructions should be distributed to all personnel and a meeting, or several meetings if necessary, should be held to insure that all instructions are completely and thoroughly understood.

Other Preparations

A plan of the warehouse should be drawn showing the location of every section where inventory is to be taken and the nature of the stock or merchandise in each section. This diagram will serve as a "plan of attack" and will facilitate the assignment of the inventory teams to the various sections of the warehouse. From this plan, the officials will be able to determine the approximate length of time required in each section and, therefore, they can assign the necessary inventory

teams. In addition, the plan will aid the movement of the teams from one section to another and thereby prevent any lost time or confusion and permit the inventory to be completed as rapidly as possible.

Additional preparation should be made in regard to the merchandise to be counted. All merchandise on pallets should be neatly arranged in rows or piles so that the count will be a series of multiplications instead of a laborious and time consuming tally of each individual case or package. Also, all "buried" items must be exposed so as to insure their inclusion in the inventory. Stock that is not on pallets should also be systematically arranged to facilitate counting. All surplus stock, damaged cases, obsolete items, and other odds and ends should be disposed of to avoid any confusion. Finally, a complete inspection should be made of the warehouse to insure that each pile of merchandise has an identifying item code number written on the face of it. This number enables the counters and recorders to fill in the cards and forms rapidly and with less chance of error.

Taking the Inventory

On the appointed day, the serially numbered cards are issued to the card hangers or if the book form system is used, the books are issued to the recording team captains. It may be good insurance against the possible loss of book pages or cards to record in a ledger, the various card or book page

numbers together with the name of the person to whom they are issued.

If possible, it would be very helpful to hang some cards the night before. In this way, the counters could start immediately and no time would be lost while the counters wait for the card hangers to get ahead of them.

The card hangers attach a card for every commodity at each location in the warehouse. The item code number is written on each card together with the pack per case. The pack refers to the number of cans, jars, bottles, or packages per case and is extremely important since there may be some variation in the pack of any particular item. Therefore, it would be rather naive to make any assumptions whatsoever regarding the pack per case since the valuation of five hundred cases at twelve units per case instead of twenty-four would cause a tremendous understatement of the inventory.

The counters are assigned to specific sections of the warehouse and each team is under the direction of a captain. The counter determines the number of pallet loads of each item and multiplies this by the number of units per pallet. At this point, it can be easily seen how important standardization is because any variation in the number of units per pallet would eliminate the simple multiplication type of count and would necessitate the additive type. When the total count is ascertained, the counter then enters it on the card and initials the card in the space provided.

The checkers follow the counters and repeat the counting process, verifying at each step, the item code number, pack per case, number of units per pallet, number of pallets, and the total count. If the two counts agree, then the checker initials the card beside the counter's initials. If the two counts do not agree, then the counters must be called back to recount the commodity until the correct total can be determined.

If the card system is being used, then at this point, the cards are collected and returned to the office. However, in the book form, there is one more warehouse process before the office receives the final count and that is the recording of the physical inventory.

The recorders work as a two-man team. One man is the captain and the other is the caller. The captain is the writer and locates the item in the inventory book by referring to the code number. The caller then calls off from the card, the description of the item, size of can or package, total number of cases, and the pack per case. The captain records the total cases and pack per case and they move on to the next commodity. After the captain and caller make certain that all counts have been recorded in their particular section, they turn in the books and cards to the office. Whoever receives the books and cards must check the ledger to be sure that every page is returned since a lost card or book page can cause no end of confusion.

While the actual counting is in process, the inventory chief should spot check here and there to be sure that the count is being taken accurately. A certain number of items may be selected for spot checking purposes, possibly twenty-five. The items selected should cover as many families of products as possible and should represent the high value merchandise of each group such as cigarettes, vegetables, fruit, canned fish, canned meat, and candy.

When the inventory chief is satisfied that the whole physical inventory is as complete and as accurate as possible, he should then allow the warehouse to proceed with its normal functions.

Continuous Physical Inventory

One food chain, at the National Association of Food Chains' Warehousing and Delivery Clinic, held January 15-17, 1951, mentioned that they were experimenting with "taking inventory all the time." This procedure is based on the theory that the continuous physical inventory does not disrupt operations of the warehouse as a whole and that it is generally less painful to take the inventory procedure in small doses. Instead of shutting down the warehouse and taking a complete inventory, a small percentage of items are taken each day or each week or at some other specified period.

This system has certain shortcomings of which the main one seems to be that it does not provide an overall picture

of stock on hand. If the records provide an accurate picture of the stock on hand at any particular time, as they should, then this shortcoming would be eliminated and it is conceivable that the continuous physical inventory could replace the periodic physical inventory.

In fact, at the present time, the continuous physical inventory is being used in a modified form by another food chain as a periodic check on the book records as compared to the actual physical inventory. The procedure used is termed a spot check and is very similar to the spot check conducted during the periodic physical inventory. The conditions under which the spot checks are conducted are exactly the same as those under which the periodic inventory is taken in that cut-off times, instructions to personnel, and other preparations are necessary in order to insure an accurate count. The main difference between the two is one of magnitude. The periodic inventory involves all the merchandise and personnel while the spot check involves only a few items and several people.

At first, these spot checks were taken only on certain items which, according to the records, were known to be out of line. The procedure was not standardized to any degree and spot checks were taken only when a perusal of the records deemed it necessary. Therefore, since records determined which items were to be checked, it was found that certain items were overlooked and any mistakes which had been made were not discovered until the annual or sem-annual inventory. To

correct this situation, a plan was developed whereby every item in the warehouse would be checked at least once and usually twice during the interval between the periodic inventories. A small group of consecutively numbered items beginning with item code number one were counted each day until every item had been checked. Enough items were taken each day so that the overall spot check would take approximately three months.

This system parallels the continuous inventory so closely that it is not inconceivable to imagine that some day in the near future, there may be a trend away from the periodic physical inventory.

CHAPTER VI

SUMMARY AND CONCLUSIONS

The inventory control system in the grocery warehouse is concerned primarily with four major warehouse functions - receiving, storing, selecting the store order, and checking.

An accurate and efficient receiving operation is extremely important to the inventory control system since it is the initial grocery warehouse process. If a mistake is made in the receipt of an item, the perpetual inventory records become utterly useless. Therefore, to guard against the possibility of errors and to insure that the inventory control system gets off to a good start, it is first necessary to have an honest, efficient, well-trained, and reliable receiving clerk. Secondly, the method of receiving must be standardized so that each and every item will be uniformly palletized according to its particular size or shape. That is, each pallet load of any particular item will always contain the same number of units. This is very necessary for rapid, accurate future counts such as spot checks and physical inventories. Third, the receiving record must accurately reflect the description and quantity of the commodities that are received. To do this, the form should answer such questions as who, when, what, where, and why. Finally, the cooperation accorded the receiving department in terms of extra men and equipment during rush hours and the cooperation of the buying department in seeing that all

essential documents accompany the shipments will do much to expedite the receiving operation and consequently the inventory control system.

The storage function performed by the warehouse is brief but necessary. The most economical type of purchase is usually the larger or carlot unit. Therefore, the warehouse must store these large amounts of goods until needed in smaller quantities by the retail outlets.

The actual storage itself presents very little in the way of inventory control problems. The basic prerequisite to controllable storage is that the storage area must be arranged so that every item is visible and easily accessible. The actual control problems are found in the movement to and from the storage or reserve area.

Movement to the storage area generally consists of newly received merchandise. The inventory control problems here are damaged merchandise, caused by reckless fork lift truck operation, and the placing of merchandise in a section of the storage area which is completely unsuitable for that particular item. Close supervision in this phase of the warehouse operation is very valuable to the inventory control plan.

The merchandise taken from the reserve area is, in the majority of cases, used to replenish the selection area. The fork lift truck operator must be very careful not to misplace an item on the selection line since all selecting is done by means of an item code number and the wrong commodity under

the number will cause no end of errors. To guard against this possibility, each pallet load of every item should have the code number written on it and each lift truck operator should be supplied with a master catalogue for checking questionable commodities.

The order for the retail outlet is assembled by a warehouseman (selector) who moves through the selection area picking up the items called for on the order sheet. Assuming that the selection line is properly arranged, then the selector's job is merely one of finding the item code number above the commodity which corresponds to the code number on the order form, note the quantity desired, and put it on a four wheel hand truck. However, carelessness and lack of proper training cause a great deal of grief to those persons charged with the responsibility of inventory control. The selector may take too many or too few units of a certain item; he may select the wrong item; or he may write the incorrect code number on a case of merchandise which lacks a descriptive label. A good, sound selector training program, plus an intelligently arranged assembly area, plus the development of a team-spirit attitude should add up to, not only an efficient selection process, but also to a sound inventory control procedure.

Theoretically, a good inventory control system should eliminate the need for checking the merchandise against the store order before it is loaded into the motor truck. However,

people tend to make mistakes and, therefore, the checking operation becomes a necessary part of the inventory control procedure.

There are two basic methods of checking; the piece count and the item by item. The piece count is merely a check against the number of units on the hand truck while the item by item is an actual check of each item against the store order. The latter method seems to be more accurate. However, the majority of food chains use the piece count system, probably because it is more rapid.

Some form of book records must be kept of the inventory on hand if there is to be any sort of inventory control system. Otherwise, the physical count becomes meaningless since there is no way of checking the accuracy of the physical inventory or spot check.

Judging by its acceptance in the food distribution industry, the punched card system of inventory control seems to be the most practical for one-story grocery warehouses.

Two systems are currently in use which employ the punched tabulating card. They are the tub file system and the electronic calculator machine system. In both systems, all pertinent inventory data are key punched into tabulating cards and these cards are run through a variety of accounting machines in order to obtain the required invoices and inventory reports.

The basic difference between the two systems is that the tub file contains one prepunched card for each unit of merchandise in the warehouse while in the electronic calculator system, the tub file is replaced by a small file of single inventory cards, one for each commodity. For example, if there are one hundred units of a particular item on hand, then there will be one hundred prepunched cards in the tub file but only one card with the quantity one hundred punched into it in the file for the electronic calculator system.

Both systems are efficient and reliable. However, for a warehouse shipping over 75,000 units per week, the electronic calculator system seems to be more adaptable.

The final step in the inventory control procedure is the periodic physical count. This is a necessary function since the perpetual inventory is not automatically adjusted to take care of errors and unreported damage.

Two of the physical inventory procedures currently being used by the food chain industry are the card system and the book form or written inventory. The card system involves the hanging of prepunched cards on each pile of merchandise; entering the quantity on the card; returning the cards to the office; key punching the totals in cards; and tabulating the required inventory reports. The book form is similar except that the recorders enter the quantity of merchandise and pack per case on a prepared inventory form. The forms are then

returned to the office where cards are key punched and reports are run.

Regardless of the method used, however, it is extremely important that adequate preparation be made if the inventory is to be conducted efficiently and accurately. Date and time schedules must be arranged so that the inventory will be taken at the most opportune time. Adequate time must be allowed for the preparation of all cards and forms and arrangements must be made to have adequate personnel on hand to complete the inventory in one day. In addition, the personnel must be thoroughly instructed as to the methods to be employed and the system that will be used. Other helpful preparations are a plan of the warehouse showing all the sections where inventory is to be taken and a general "housecleaning" during which all odds and ends are cleaned up and the merchandise neatly arranged.

One food chain is experimenting with a continuous physical inventory. Instead of shutting down the warehouse for a complete count, they inventory a few commodities each day or each week so that each item is counted at least once every quarter. This continuous physical inventory, if properly conducted, may possibly replace the periodic physical inventory.

An inventory control system if properly installed and supervised will provide many advantages. The two basic

advantages however, are:[1]

1. Financial Economies. The control of the physical size of stocks, by the development of the most economical quantities and varieties to be carried promotes more rapid turnover and minimizes the investment in inventories. This results in reduced taxes, insurance, storage and handling expense, and minimizes losses from falling prices, obsolescense and physical deterioration.

2. Operating Economies. By assuring an available supply of merchandise when needed, the cost of idle time is minimized and better service can be provided for the retail outlets.

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1 Policyholder Service Bureau, Metropolitan Life Insurance Company. Inventory Control Methods. New York: Metropolitan Life Insurance Company, 1951, p. 2.

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