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IMPROVED ACCOUNTING METHODS FOR WHOLESALE FOOD DISTRIBUTORS

Cash Journal

Sales Analysis
Accounts Receivable

Inventory

Operating Expenses

Income Statement

Financial Condition

Accounts Payable
Payroll Distribution

Journal Entries

U.S. DEPARTMENT OF AGRICULTURE
Agricultural Marketing Service
Transportation and Facilities Research Division

Growth Through Agricultural Progress

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SUMMARY

This report is based on detailed studies conducted in the accounting departments of seven wholesale food distributors and on observations made in numerous wholesale food distribution businesses in the United States and Canada. Methods are presented for preparing financial statements within 5 to 8 working days after the close of the accounting period, as compared with the 20 to 30 working days with conventional methods. Management will receive data for operational decisions much earlier through the use of improved accounting methods and scheduled assignments for components of financial reports.

The financial and operating statements prepared at the end of each 4-week period on a product sales division basis include: A statement of financial condition (balance sheet), reporting the assets, liabilities, and equity of the company; a statement of income, reporting the sales and other income, operating expenses, and profit or loss for the period; a statement of retained earnings in excess of par value, showing changes in retained earnings and paid-in capital; and a statement of operating expenses, showing the detailed expense items under each major functional expense classification.

Accounting methods in this report provide for separating accounts by functional departments on a sales division basis by products such as groceries, produce, frozen foods, meats, and nonfoods. Allocating expenses on this basis enables management to review cost ratios, gross margin, and net profits by product sales division in order to better isolate problem areas. Provision is also made for reporting product sales division on a territory or sales branch basis.

Improved methods were developed for maintaining the general ledger and preparing financial statements with manual methods, key-driven accounting machines, automatic tabulating equipment, electronic calculating punch, and the RAMAC 305. A suggested method of code construction and account classification is described, with examples of code construction and a description of accounts. Use of a codebook with all accounts is recommended to reduce errors in coding and to simplify coding the daily transactions.

With the procedures described in this report, with a key-driven accounting machine, the time required to maintain the general ledger and to prepare financial statements for one firm with $30 million annual business was reduced from 240 to 33 man-hours. These operations would require 79 man-hours with manual methods and slightly more than 7 man-hours with automatic tabulating equipment. With manual methods, clerical labor was reduced as much as 50 percent by using the one-writing pegboard system of recording original data.

Substantial man-hours were saved in compiling, classifying, and tabulating basic data for income tax returns by using improved accounting procedures. In one company with more than $100 million annual business volume, the time required to prepare 5 U. S. corporation income tax returns and 5 State income tax returns was reduced by more than 257 man-hours.

A method is recommended for distributing home-office or all-products expenses, such as administrative costs, professional services, and dues and subscriptions, to the sales product division. An allocation formula based on sales, inventory, and fixed assets is used to distribute all-products expenses to the sales product divisions.

Use of thirteen 4-week period accounting is recommended. Among the advantages of this method are: (1) More accurate comparison of operations between periods, since each period consists of 4 weeks; (2) fewer adjustments, by eliminating odd days in each calendar month; and (3) easier preparation of accounting information and control of the cutoff dates on sales, inventory, payrolls, and cost of sales, since each period ends on Saturday. These advantages must be weighed against the need to: (1) Prepare 13 instead of 12 financial statements annually; and (2) maintain clearing accounts and accruals to reflect adjustments for fractional periods of a month.

A method of accounting for unmatched receivings (merchandise received at the end of the period without an invoice from the supplier) is described. With this method, it is not necessary to wait for supplier invoices before preparing financial statements; the normal 2- to 3-week waiting period to account for these items is reduced to less than 1 day.

IMPROVED ACCOUNTING METHODS
FOR
WHOLESALE FOOD DISTRIBUTORS

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INTRODUCTION

Accounting in the wholesale food distribution business usually includes all the work necessary to maintain the general ledger, to prepare statements such as the statement of financial condition (balance sheet) and statement of income (profit and loss), to analyze sales by departments, to prepare reports on payroll and inventory for insurance purposes, and to prepare income tax reports. The man-hours required for accounting comprise a major cost in the offices of wholesalers.

The accounting system in this report is designed to help wholesale food distributors to establish more accurately their costs of distribution by product sales division and by combined operations. Uniform reporting can result in improved inventory turnover and accurate reporting of financial and operating results. Concise presentation of such data provides management with information needed to effectively operate the business.

The primary objectives of this study were: (1) To apply the principles of work simplification to assembling, posting, totaling, and balancing the thousands of daily transactions for accumulating and summarizing into the records of account; (2) to develop improved methods of financial reporting to management and a standard simplified procedure for maintaining the general ledger with manual methods, automatic tabulating machine methods, and electronic computers having memory units; (3) to develop a method of providing reports, as byproducts of the accounting system, on productivity in warehousing, selling, and delivery; and (4) to develop a method of accounting and account classification that can be used throughout the industry.

Studies were conducted in accounting departments of seven wholesale food distributors having annual sales volumes of from $4 million to $200 million. Many comments in this report are based on observations of accounting practices and office procedures in wholesale food distribution establishments in various sections of the United States and Canada.

This report includes accounts and related descriptions applicable to the principal activities of wholesale food distributors. The basic function of these distributors is to procure food and related products at a central storage facility and to distribute these products to retail food stores at the lowest possible cost.

There are six major operations in the procurement, temporary storage, sale, and delivery of merchandise to the customer's store. They are: merchandising (buying), selling, warehousing, delivery, administration, and building costs. These operations are fundamental to all wholesale food distribution operations and are treated in this report as functional operations.

A significant trend, developed over the past decade and growing in intensity, is the expansion of services provided and products distributed to retail stores. This trend is evidenced by the addition of new sales departments for perishable foods. The growth of perishable food operations and the types of accounts serviced (retail and institutional) have been recognized in this report and the coding provides flexibility for reporting the operations for each of the following departments: grocery, retail (retail food stores); grocery, institutional (schools, hospitals, restaurants, municipalities, and hotels); produce; meat (direct and warehouse); frozen foods; dairy; store equipment; and nonfood merchandise. Other departments or divisions can be added.

A further development, particularly among voluntary group sponsors, has been to provide, for independent retailers, additional services such as retail accounting, store engineering and layout, training schools, and processing and manufacturing operations. These services are customarily provided on an income producing basis. This study has provided accounts to report the income and costs of these services.

FINANCIAL AND OPERATING STATEMENTS

The financial and operating statements prepared for management review and financial reporting are: statement of financial condition (balance sheet); statement of income (profit and loss); statement of retained earnings; and statement of operating expenses. These statements are illustrated in figures 1, 2, 3, and 4. Data in the figures are illustrative; the ratios to net sales will vary among wholesalers according to sales volumes.

Statement of Financial Condition

The statement of financial condition (balance sheet) reports at a stated date the assets (at cost, depreciated cost, or an indicated value), liabilities (current and long-term), and the equity of the company. This statement may be expanded or condensed. Figure 1 shows the assets and liabilities used by a large segment of the industry.

STATEMENT OF FINANCIAL CONDITION
(DATE)

ASSETS	Amount	Percent to Total
Current Assets		
Cash	$ 220,000	14.20
Accounts receivable, trade	$ 237,500	15.33
Less allowance for doubtful accounts	12,500	.80
	$ 225,000	14.53
Inventories	700,000	45.19
Supplies and prepaid expenses	33,000	2.13
Total current assets	$1,178,000	76.05
Other Investments		
Cash value of life insurance	$ 8,000	.51
Investment in stocks of other companies	12,000	.78
Investment in subsidiary	110,000	7.10
	$ 130,000	8.39
Property, Plant and Equipment		
Property and equipment, at cost	$ 315,000	20.34
Less accumulated depreciation	85,000	5.49
	$ 230,000	14.85
Leasehold improvements, less amortization	11,000	.71
	$ 241,000	15.56
	$1,549,000	100.00

LIABILITIES AND STOCKHOLDERS' EQUITY

	Amount	Percent to Total
Current Liabilities		
Notes payable	$ 37,000	2.39
Accounts payable, trade	374,000	24.14
Accrued compensation	22,000	1.42
Accrued taxes on payroll	15,000	.97
Accrued property taxes	30,000	1.94
Provision for income taxes	85,000	5.49
Total current liabilities	$ 563,000	36.35
Long-term Indebtedness		
$5\frac{1}{2}$% Debentures, due 1970 to 1975	94,000	6.06
Stockholders' Equity		
Capital stock, par value $5.00 per share:		
Authorized, 225,000 shares		
Issued and outstanding, 100,000 shares	$ 500,000	32.28
Capital account in excess of par value	35,000	2.26
Retained earnings	357,000	23.05
Total stockholders' equity	$ 892,000	57.59
	$1,549,000	100.00

Figure 1.--A suggested format for the statement of financial condition (balance sheet).

Statement of Income

The statement of income presents a summary of sales and other income, operating expenses, and profit or loss for a stated period. The suggested method is to prepare two statements of income, one to report the 4-week period or month (current period) and the other, a summary of year-to-date, to report the combined results of operations from the beginning of the accounting year to the end of the period reported. The statement may include a comparison of the current report with the period and year-to-date in the preceding year. Figure 2 shows the basic format of the statement of income.

Statement of Retained Earnings

The statement of retained earnings shows the changes in these earnings and paid-in capital (if any) for the period covered by the financial statement. This information may be shown on a separate statement (figure 3) or as a separate section at the bottom of the statement of income.

Statement of Operating Expenses

The statement of operating expenses shows the detailed items that comprise each of the operating expenses in the major functional expense classifications, including merchandising (buying) and turnover, selling, warehousing, delivery, administration, and building (fig. 4).

CODE CONSTRUCTION AND ACCOUNT CLASSIFICATION

The basic coding for the accounts is easily understood and may be expanded or contracted to meet the needs of any wholesale food distributor, regardless of sales volume. The code classification can be adapted to any method of general ledger record keeping--manual, bookkeeping machine, punched-card, or computer-type electronic equipment. Each account is represented by a 5- to 7-digit number. A minimum of 5 digits is used when the company operates only one warehouse because a location code is not necessary.

The method of coding provides a fixed assignment of digits, with each sequence indicating a definite classification. The coding used in this classification of accounts is as follows: The location code would use the first and second digits, if a location code is needed; the departmental or product classification, the third digit; major and minor control, the fourth and fifth digits; and detail account control, the sixth and seventh digits.

The first two digits designate location. For companies with branch service houses and cash and carry operations, the following method of establishing the location code is suggested:

              10 - Service house #1
              20 - Service house #2
              30 - Service house #3
              40 - Service house #4

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STATEMENT OF INCOME

YEAR ENDED

	Total		Grocery		Produce		Meat		Frozen foods	
	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent
Net sales	$22,800,000	100.00	$12,400,000	100.00	$2,300,000	100.00	$6,900,000	100.00	$1,200,000	100.00
Service fees	467,000	2.04	359,000	2.90	-0-	-0-	108,000	1.57	-0-	-0-
	$23,267,000	102.04	$12,759,000	102.90	$2,300,000	100.00	$7,008,000	101.57	$1,200,000	100.00
Cost of goods sold	22,257,000	97.61	12,337,000	99.50	1,996,000	86.78	6,829,000	98.97	1,095,000	91.25
Gross margin on sales	$ 1,010,000	4.43	$ 442,000	3.40	$ 304,000	13.22	$ 179,000	2.60	$ 105,000	8.75
Operating revenue										
Advertising	45,000	.19	45,000	.36	-0-	-0-	-0-	-0-	-0-	-0-
Retail accounting	4,000	.01	4,000	.03	-0-	-0-	-0-	-0-	-0-	-0-
Printing department	2,000	--	1,000	.01	-0-	-0-	1,000	.01	-0-	-0-
Purchase discounts	196,000	.85	192,000	1.55	-0-	-0-	3,000	.04	1,000	.08
Total, margin and revenue	$ 1,257,000	5.48	$ 664,000	5.35	$ 304,000	13.22	$ 183,000	2.65	$ 106,000	8.83
Operating expenses:										
Merchandising and turnover	$ 149,999	.65	$ 87,000	.70	$ 34,000	1.48	$ 15,000	.22	$ 13,000	1.09
Selling	186,000	.81	72,000	.58	42,000	1.83	52,000	.75	20,000	1.66
Warehouse	273,000	1.19	188,000	1.52	67,000	2.91	7,000	.10	11,000	.92
Delivery income 1/	$ (228,000)	(1.00)	$ (61,943)				$ (43,000)			
Delivery expense	342,000	1.50	105,943				50,000			
Total delivery expense 1/	$ 114,000	.50	$ 44,000	.35	49,000	2.13	$ 7,000	.10	14,000	1.16
Administrative	168,000	.73	109,000	.88	23,000	1.00	21,000	.31	15,000	1.25
Building	27,000	.11	22,000	.17	1,000	.04	2,000	.03	2,000	.17
Total operating expenses	$ 917,000	3.99	$ 522,000	4.20	$ 216,000	9.39	$ 104,000	1.51	$ 75,000	6.25
Net operating profit	$ 340,000	1.49	$ 142,000	1.15	$ 88,000	3.83	$ 79,000	1.14	$ 31,000	2.58
Other expense	111,000	.48	54,000	.44	24,000	1.05	20,000	.29	13,000	1.08
Income before taxes	$ 229,000	1.01	$ 88,000	.71	$ 64,000	2.78	$ 59,000	.85	$ 18,000	1.50
Provision for income taxes	123,000	.54	47,000	.38	35,000	1.52	35,000	.51	6,000	.50
Net income	$ 106,000	.47	$ 41,000	.33	$ 29,000	1.25	$ 24,000	.34	$ 12,000	1.00

1/ Delivery income is reported in the Operating Expenses category when a separate charge is made (cost-plus programs) for delivery to the stores.

Figure 2.--A statement of income (profit and loss).

STATEMENT OF RETAINED EARNINGS
AND CAPITAL IN EXCESS OF PAR VALUE
YEAR ENDED _____

Retained earnings

Balance at beginning of period	$276,000
Net income for the year	106,000
	$382,000
Deduct:	
Dividends paid on common stock	
at $0.25 per share on 100,000 shares	25,000
Balance at end of period	$357,000

Capital in excess of par value

Balance at beginning of period	$ 31,500
Excess over par value received	
from sale of 3,000 shares of	
common stock	3,500
Balance at end of period	$ 35,000

Figure 3.--A typical statement of retained earnings.

STATEMENT OF OPERATING EXPENSES
YEAR ENDED _____

	Total	Grocery	Produce	Meat	Frozen foods
Merchandising and turnover expenses					
Salaries - Officers	$ 10,250	$10,250	$	$	$
- Supervision	27,690	8,000	7,100	9,260	3,300
- Clerical	850	850			
- Compensation insurance	35	10	5	10	10
- Payroll taxes	1,415	450	305	320	340
Traveling expense	3,230	1,000	200	1,410	620
Telephone and telegraph	5,010	1,260	3,050		700
Miscellaneous	700	370	330		
Dues and subscriptions	70	60	10		
Auto rental expense	750	750			
Turnover expense - Interest	40,293	26,048	9,361	1,628	3,256
- Taxes	55,490	35,872	12,892	2,242	4,484
- Insurance	3,217	2,080	747	130	260
Total buying and turnover expenses	$149,000	$87,000	$34,000	$15,000	$13,000
Selling expenses					
Salaries - Officers	$ 6,010	$ 6,010	$	$	$
- Supervision	29,140	10,510	5,850	10,050	2,730
- Clerical	10,250	1,380	1,510	1,570	5,790
- Salesmen commissions	62,090	29,210	11,180	18,140	3,560
- Compensation insurance	450	140	80	180	50
- Payroll taxes	3,050	790	560	1,100	600
Stationery and printing	6,530	350	2,080	3,850	250
Traveling expense	10,810	5,120	1,990	3,380	320
Telephone and telegraph	22,250	2,150	10,600	7,800	1,700
Pricebooks and bulletins	5,180	2,770	1,410		1,000
Dues and subscriptions	860	180	590	80	10
Special promotions	12,010	4,620	3,560	1,390	2,440
Advertising	1,860	170	170	1,460	60
Insurance and fidelity bonds	160				160
Auto rental expense	12,070	6,840	1,440	2,500	1,290
Miscellaneous	2,740	1,640	590	500	10
Promotional allowances	30				30
Licenses	510	120	390		
Total selling expenses	$186,000	$72,000	$42,000	$52,000	$20,000
Warehouse expenses					
Salaries - Supervision	$ 16,883	$ 8,870	$ 8,013	$	$
- Handling	199,091	144,080	43,235	4,825	6,951
- Clerical	7,228	4,340	2,888		
- Health and welfare	7,961	6,050	1,454	199	258
- Compensation insurance	1,962	1,410	436	50	66
- Payroll taxes	4,220	2,820	951	211	238
Supplies	5,813	3,820	1,708	86	199
Demurrage	686	110	576		
Miscellaneous	1,326	360	965	1	
Equipment depreciation	12,119	6,860	3,826	400	1,033
Repairs - machinery and equipment	6,077	5,130	797	82	68
- refrigeration equipment	186		141		45
Outside storage	3,698	410		1,146	2,142
Equipment rental	5,750	3,740	2,010		
Total warehouse expenses	$273,000	$188,000	$67,000	$ 7,000	$11,000
Delivery expenses					
Trucking income: 1/					
Outgoing (Retailer delivery fee)	$ 87,675	$ 87,675	$	$	$
Backhauls	19,245	19,245			
Total income	$106,920	$106,920			

1/ Delivery income is reported in the Operating Expenses category when a separate charge is made (cost-plus programs) for delivery to the stores.

Figure 4.--A detailed statement of operating expenses--continued.

Delivery expenses cont.	Total	Grocery	Produce	Meat	Frozen foods
Expense:					
Salaries - Supervision	$ 11,090	$ 6,000	$ 4,490	$ 200	$ 400
- Truckdrivers	152,000	106,250	30,970	4,925	9,855
- Compensation insurance	1,275	890	260	40	85
- Payroll taxes	2,395	1,705	450	80	160
Tires, gas, oil, and supplies	6,975	4,480	1,865	210	420
Repairs	4,925	3,440	1,005	160	320
Licenses and road taxes	1,160	815	235	35	75
Depreciation	9,610	6,715	1,960	310	625
Truck leasing	15,585	9,365	4,480	515	1,225
Sundry	3,100	2,160	630	105	205
Transfer and drayage expense	12,805	9,100	2,655	420	630
Total expenses	$220,920	$150,920	$49,000	$ 7,000	$14,000
Net delivery expenses	$114,000	$ 44,000	$49,000	$ 7,000	$14,000
Administrative expenses					
Salaries - Officers	$ 21,739	$ 14,104	$ 2,976	$ 2,717	$ 1,942
- Supervision	15,691	10,180	2,148	1,962	1,401
- Clerical	65,470	42,480	8,965	8,183	5,842
- Payroll taxes	1,613	1,046	221	202	144
- Compensation insurance	67	44	9	8	6
Stationery and supplies	10,332	6,703	1,414	1,292	923
Repairs - office equipment	605	392	83	76	54
Travel expense	3,326	2,158	455	416	297
Telephone and telegraph	1,025	665	140	128	92
Postage	1,579	1,025	216	197	141
Credits and collections	34	22	5	4	3
Dues and subscriptions	2,957	1,918	405	370	264
Donations	403	262	55	50	36
Legal, accounting, and professional fees	11,810	7,662	1,617	1,476	1,055
Employee welfare	689	447	94	86	62
Employee group life and hospital insurance	5,729	3,717	784	716	512
Equipment rental and supplies	15,086	9,788	2,065	1,886	1,347
Miscellaneous	3,209	2,082	439	401	287
Auto lease and equipment rental	3,898	2,529	534	487	348
Fidelity and burglary insurance	621	403	85	78	55
Depreciation - office equipment	2,117	1,373	290	265	189
Total administrative expenses	$168,000	$109,000	$23,000	$21,000	$15,000
Building expenses					
Salaries - Maintenance	$ 3,359	$ 2,738	$ 125	$ 248	$ 248
- Compensation insurance	30	25	1	2	2
- Payroll taxes	92	77	3	6	6
Operating supplies	27	22	1	2	2
Fuel	1,841	1,501	68	136	136
Light, water, and gas	2,781	2,266	103	206	206
Repairs - building	2,581	2,103	96	191	191
Protective service	640	522	24	47	47
Miscellaneous	281	229	10	21	21
Rent	9,231	7,519	342	685	685
Taxes on real estate and equipment	3,299	2,687	122	245	245
Insurance on real estate and equipment	443	361	16	33	33
Amortization of leasehold improvements	2,395	1,950	89	178	178
Total building expenses	$ 27,000	$ 22,000	$ 1,000	$ 2,000	$ 2,000

Figure 4.--A detailed statement of operating expenses.

If cash and carry operations are not used, only one digit is needed. If the distributor serves affiliated accounts from only one supply depot, a location code is not necessary. Coding for cash and carry branches should use the second digit and follow the code for the supply depot (warehouse) servicing the unit. For example:

10 - Service House #1
        Units serviced:
        11 - Cash and carry #1
        12 - Cash and carry #2

20 - Service house #2
        Units serviced:
        21 - Cash and carry #3
        22 - Cash and carry #4

The third digit designates the departmental or product classification, for companies that handle more than one class of products. Product classification is denoted as follows:

1. Grocery
2. Produce
3. Meat
4. Frozen foods
5. Dairy
6. Store equipment (sale and commissions on
                    sale of store fixtures)
7. Institutional
8. Other departments
9. All-products

This breakdown is useful for income statements which are prepared on a departmentalized basis.

The fourth digit is for the major control and designates the following:

1. Assets
2. Liabilities and stockholders' equity
3. Sales and cost of sales
4. Operating revenues
5. Operating expenses
6. Other income
7. Other expenses
8. Contributions to trusts and
   provision for income taxes

The fifth digit is for the minor control and denotes subcategories within any major category. Reference to the operating expense codes will illustrate the use of the fifth digit as follows:

00-0-50 Fourth digit denotes operating expense
00-0-51 Fifth digit (1) denotes merchandising and turnover expense
00-0-52 Fifth digit (2) denotes selling expense
00-0-53 Fifth digit (3) denotes warehouse expense
00-0-54 Fifth digit (4) denotes delivery expense
00-0-55 Fifth digit (5) denotes administrative expense
00-0-56 Fifth digit (6) denotes building expense

The last two digits, the sixth and seventh, provide a breakdown of a major expense, regardless of classification in the income statement. These detail

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digits are useful in determining the total company expense of a particular type. For example, code 00-0-53-00 will designate warehouse expense, as previously shown. Code 00-0-53-20 may designate warehouse wages; and 00-0-53-21, warehouse wages for receiving merchandise.

Figures 5 through 10 show the classification and code construction for the various kinds of accounts as follows: Figure 5, asset accounts; figure 6, liability and equity; figure 7, sales and cost of sales; figure 8, operating revenue; figure 9, operating expense; and figure 10, the other income and expense.

Figure 11 shows method of constructing codes for typical accounts; the cross references to account classifications in figures 5 through 10 indicate the method used in code assignments. Location codes are:

Branch	City	Code
Warehouse	A	10
Warehouse	B	20
Cash and carry	C	11

The code method in this report can be contracted or expanded. In one company studied, 342 classifications were provided for each sales division; more classifications can be provided if needed. Account classifications can be expanded, and numbering assignment within the various balance sheet, income, and expense groups can be revised to meet a company's needs. Figure 12 illustrates the extent to which accounts may be expanded.

Codebooks

Code construction should be detailed in a book containing all the authorized accounts. These books eliminate coding errors and simplify the task of coding. Figure 13 shows pages from codebooks of two wholesale food distributors.

A wholesaler who distributes only grocery products will normally use 230 to 250 accounts for all transactions. Each additional sales department (produce, meat, frozen foods) will add 130 to 150 accounts. When more than one warehouse is operated, the accounts will increase in direct proportion to the number of branches and sales departments.

The following tabulation summarizes the number of accounts kept by several companies to prepare a statement of financial condition on a sales department basis:

Wholesale food distributor	Warehouses	Cash and carry branches	Sales divisions	Accounts provided
Company A	4	9	6	5,798
Company B	3	7	6	2,844
Company C	1	0	9	1,413
Company D	1	0	8	1,282
Company E	1	0	8	1,182
Company F	1	0	4	758

Account title	Account code			
	Location 1/	Dept.	Major	Minor
Major account	1st and 2nd	3rd	4th and 5th	6th and 7th
Minor account	digits	digit	digits	digit detail
Cash	XX	-0	-10	
Cash in bank - regular account				-10
- payroll account				-20
Petty cash funds				-50
Notes receivable	XX	-0	-11	
Customers				-10
Employees				-20
Accounts receivable	XX	-0	-12	
Trade				-10
Officers and employees				-20
Allowance for doubtful accounts				-50
Merchandise inventories	XX	-X2/	-13	
Grocery - retail				-10
- institutional				-20
Produce				-30
Meat				-40
Frozen foods				-50
Dairy				-60
Prepaid expenses and supplies	XX	-0	-14	
Auto and truck licenses				-10
Unexpired insurance				-20
Prepaid interest				-30
Tires				-50
Gasoline, oil, grease, and parts				-90
Investments and other assets	XX	-0	-15	
Notes receivable				-10
Accounts receivable				-20
Investment in subsidiary				-50
Cash value of life insurance				-90
Property, plant, and equipment	XX	-X2/	-16	
Accumulated depreciation	XX	-X2/	-17	
Land				-10
Buildings				-20
Fixtures and equipment				-30
Motorized equipment				-50
Autos and trucks				-70
Furniture and fixtures				-90
Leasehold improvements	XX	-X2/	-18	-00

1/ Provide a location code as needed in figures 5 through 10 if the company operates more than one branch.

2/ "X" denotes that a department code may be inserted.

Figure 5.--Classification and code construction for asset accounts.

Account title	Account code			
Major account Minor account	Location 1st and 2nd digits	Dept. 3rd digit	Major 4th and 5th digits	Minor 6th and 7th digit detail
Notes payable	XX	-0	-20	
Bank				-10
Other				-20
Accounts payable	XX	-0	-21	
Trade	XX	-0		-10
Sundry	XX	-0		-20
Accrued payrolls	XX	-0	-22	
Accrued salaries and wages				-10
Additional compensation and bonuses				-20
Accrued taxes on payrolls	XX	-0	-23	
Federal withholding income tax				-10
Federal old age benefits tax				-20
State and Federal unemployment tax				-50
Accrued taxes on property	XX	-0	-24	
Real estate tax				-10
Personal property tax				-20
Accrued taxes on income	XX	-0	-25	
Federal income tax				-10
State income tax				-20
Clearing accounts 1/	XX	-0	-30	
Telephone				-10
Heat, light, and power				-20
Rent				-50
Long-term indebtedness	XX	-0	-40	
Notes payable				-10
Mortgage loan				-20
Stockholders' equity	XX	-0	-50	
Preferred stock				-10
Common stock				-20
Capital in excess of par value				-50
Retained earnings				-70

1/ Clearing accounts are used only for companies preparing financial statements on the basis of 13-period accounting with 4 weeks each period.

Figure 6.--Classification and code construction for liability
and equity accounts.

Account title	Location code	Department code										Account code	
		Grocery, retail	Produce	Meat	Frozen foods	Dairy	Store equipment	Institutional (Open)		All Products		Major	Minor
Major account Minor account	1st and 2nd digits	3rd digit										4th & 5th digits	6th & 7th digits
		1	2	3	4	5	6	7	8	9			
Sales	XX	X	X	X	X	X	X	X				30	10
Service fees (Used for service fee charges on groceries, meat, produce, etc. under cost-plus plans, and also for retailer service fees on drop shipments.)	XX	X	X	X	X	X	X	X				30	20
Returns and allowances	XX	X	X	X	X	X	X	X				30	30
Unsaleable merchandise returned		X	X	X	X	X	X	X					31
Allowances in lieu of returns (Includes all returns of unsaleable merchandise, allow- ances for bad order, overcharges and miscellaneous sales adjustments).		X	X	X	X	X	X	X					32
Cost of goods sold (Separate accounts for purchases have been omitted. Purchases of merchandise may be charged to the inventory accounts in the asset accounts. Cost of sales is determined by actual costing or by gross profit ratio calculation. The entry would be to credit inventory and charge cost of goods sold.)	XX	X	X	X	X	X	X	X				30	40

Figure 7.--Classification and code construction for sales and cost of sales accounts.

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Account title Major account Minor account	Location code 1st and 2nd digits	Department code 3rd digit								Account code Major 4th digit	Minor 5th digit	Detail 6th & 7th digits
		Grocery, retail (1)	Produce (2)	Meat (3)	Frozen foods (4)	Dairy (5)	Store equipment (6)	Institutional (7)	All products (9)			
Advertising income	XX									4	1	
Advertising fees from group members (charges against retailers for advertising)		X	X	X	X	X	X	X				11
Advertising income - national brands		X	X	X	X	X	X	X				12
Advertising income - special brands		X	X	X	X	X	X	X				13
Advertising expenses - newspaper, radio, etc.		X	X	X	X	X	X	X				65
Advertising expenses - handbills		X	X	X	X	X	X	X				66
Advertising paid to retailers		X	X	X	X	X	X	X				67
Operating expenses of advertising department 1/		X	X	X	X	X	X	X	X			
Retail accounting	XX									4	2	
Service fees		X										14
Operating expenses 1/		X										
Printing department	XX									4	3	
Fees and income - fees for work performed for other departments or retail stores		X	X	X	X	X	X	X	X			15
Order form advertising		X	X	X	X	X	X	X	X			16
Clearance account - transfer of actual cost of printing to account entitled "Price Books and Bulletins"									X			43
Operating expenses 1/									X			
Training school income	XX	X	X	X	X	X	X	X	X	4	4	18
Income less direct expenses for operating training schools on meat, produce, checkers, etc.												
Discounts on purchases	XX	X	X	X	X	X	X	X	X	4	7	19

1/ Includes salaries, fringe payroll costs, supplies, and any other operating expenses of the department as shown in figure 9.

Figure 8.--Classification and code construction for operating revenue accounts.

Figure 9 — Classification and code construction for operating expense accounts.

Account title	Location code 1st and 2nd digits	Grocery retail (1)	Produce (2)	Meat (3)	Frozen foods (4)	Dairy (5)	Store equipment (6)	Institutional (7)	All products (9)	Advertising (41)	Retail accounting (42)	Printing department (43)	Training school (44)	Discounts on purchases (47)	Buying and turnover (51)	Selling (52)	Warehouse (53)	Delivery (54)	Administrative (55)	Building (56)	Detail, minor 6th and 7th digits
Major account																					
Minor account																					
Detail account																					
Operating expenses															X	X	X	X	X	X	
Merchandising and turnover	X			X											X	X	X	X	X	X	
Selling	X			X											X	X	X	X	X	X	
Warehouse	X			X											X	X	X	X	X	X	
Delivery	X			X											X	X	X	X	X	X	
Administrative	X			X											X	X	X	X	X	X	
Building	X			X											X	X	X	X	X	X	
Salaries - Officers	X			X											X	X	X	X	X		11
Supervision	X			X						X	X	X	X		X	X	X	X	X	X	12
Selling	X			X						X	X	X	X		X	X	X	X	X		13
Clerical	X			X											X	X	X	X	X		14
Payroll fringe and welfare costs	X			X						X	X	X	X		X	X	X	X	X		25
Supplies - Supplies, stationery, and printing	X			X						X	X	X	X		X	X	X	X	X	X	30
Tires, gas, oil, and grease	X			X													X	X			31
Utilities - Fuel, light, power, etc.	X			X							X	X	X							X	35
Repairs - Buildings	X			X																X	40
Fixtures and equipment	X			X							X	X	X				X	X			41
Delivery equipment	X			X												X		X	X		42
General - Travel and entertainment	X			X							X								X		50
Telephone and telegraph	X			X							X	X	X		X	X	X	X	X		51
Postage	X			X						X	X	X	X		X	X			X		52
Pricebooks and bulletins	X			X								X				X					53
Bank charges, credits, and collections	X			X															X		54
Dues and subscriptions	X			X							X	X	X		X	X	X	X	X		55
Donations	X			X															X		56
Legal, accounting, and professional fees	X			X															X		57
Storage and demurrage	X			X													X				58
Outside transfer and cartage	X			X													X	X			59
Protective service (A.D.T.,etc.)	X			X																X	60
Licenses and sundry corporate taxes	X			X													X		X		61
Equipment rental	X			X							X	X	X						X		62
Interest expense	X			X											X				X	X	63
Miscellaneous	X			X						X	X	X	X		X	X	X	X	X	X	64
Advertising - Newspaper, radio,etc.	X			X						X											65
Handbills	X			X						X											66
Paid to retailers	X			X						X											67
Fixed - Rent	X			X						X	X	X	X								70
Insurance																					
Other than property	X			X						X	X	X	X		X	X	X	X	X	X	71
Real estate, merchandise and equipment	X			X							X	X	X		X	X		X	X		72
Depreciation and amortization	X			X							X	X	X		X	X	X	X	X	X	73
Intracompany - Intracompany service fees	X			X						X	X	X	X		X	X	X	X	X	X	75
Home-office or all products allocations	X			X						X	X	X	X		X	X	X	X	X	X	76

Figure 9.--Classification and code construction for operating expense accounts.

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Account title (Major account / Minor account)	Account code — Location 1st and 2nd digits	Dept. 3rd digit	Major 4th digit	Minor 5th digit	Detail 6th and 7th digits
Other income					
Interest received	XX	X	6	0	00
Bad debts recovered	XX	X	6	1	00
Profit or loss:			6	2	00
Sale of fixed assets	XX	X	6	3	00
Sale of investments	XX	X	6	4	00
Miscellaneous (Income from vending machines, sale of bags, cartons and waste.)	XX	X	6	5	00
Other expenses					
Insurance premiums on officers' life insurance	XX	X	7	0	00
Bad debt expense	XX	X	7	1	00
Interest expense	XX	X	7	2	00
Interest paid other than on building, fixtures, and inventory			7	3	00
Sundry (Miscellaneous, nonrecurring expenses)	XX	X	7	4	00
Contributions to trusts and provision for income taxes			8	0	00
Contribution to profit sharing plan	XX	X	8	1	00
Provision for income taxes:					
State	XX	X	8	2	00
Federal	XX	X	8	3	00

Figure 10.--Classification and code construction for other income and expense accounts.

Branch and Account	Account code	Figure Reference	Code assignment						
			Location		Department	Major	Minor	Detail	
			1	2	3	4	5	6	7
A Cash in bank	1001010	5	1	0	0	1	0	1	0
C Petty cash	1101050	5	1	1	0	1	0	5	0
Merchandise inventory:									
A Grocery	1001310	5	1	0	0	1	3	1	0
B Frozen foods	2001350	5	2	0	0	1	3	5	0
A, B, and C Accrued taxes on income	0002510	6	0	0	0	2	5	1	0
Sales:									
A Grocery	1013010	7	1	0	1	3	0	1	0
C Produce	1123010	7	1	1	2	3	0	1	0
B Dairy	2053010	7	2	0	5	3	0	1	0
Discounts on purchases:									
A Grocery	1014719	8	1	0	1	4	7	1	9
A Meat	1034719	8	1	0	3	4	7	1	9
Salaries, supervision:									
A Grocery department buyer	1015122	9	1	0	1	5	1	2	2
A Frozen foods salesman	1045222	9	1	0	4	5	2	2	2
B Meat department buyer	2035142	9	2	0	3	5	1	2	2
B Produce warehouse superintendent	2035322	9	2	0	2	5	3	2	2

Figure 11.--Examples of code construction for specific accounts.

Salaries and wages (figure 9)		Possible expansion salaries and wages	
Code	Classification	Code	Classification
11	Salaries-officers	11	Salaries-officers
12	Salaries-supervision	12	Salaries-supervision
13	Wages-selling	13	Wages-selling
14	Wages-clerical	14	Wages-clerical
		15	Wages-warehouse-receiving
		16	Wages-warehouse-shipping
		17	Wages-warehouse-other
		18	Wages-delivery-drivers
		19	Wages-delivery-mechanics

Payroll fringe costs (figure 9)		Possible expansion payroll fringe costs	
Code	Classification	Code	Classification
25	Payroll fringe and welfare costs	25	Social security tax
		26	State unemployment tax
		27	Federal unemployment tax
		28	Workmen's compensation insurance
		29	Group insurance
		30	Union health and welfare

Depreciation and amortization (table 5)		Possible expansion Depreciation and amortization	
Code	Classification	Code	Classification
73	Depreciation and amortization	73	Depreciation-buildings
		74	Depreciation-warehouse fixtures and equipment
		75	Depreciation-office equipment
		76	Depreciation-autos
		77	Depreciation-delivery equipment
		78	Amortization of lease-hold improvements

Figure 12.--Method of expanding account classifications.

OPERATING EXPENSES

Retailers, I. G. A.

Product classification Digits	Groceries 1-23-45	Produce 1-23-45	Meat 1-23-45	Frozen foods 1-23-45	Dairy 1-23-45	Company stores 1-23-45	Institutional 1-23-45	All products 1-23-45
Buying expenses								
Salaries - officers	1-61-11	2-61-11	3-61-11	4-61-11	5-61-11	6-61-11	7-61-11	9-61-11
supervusion	1-61-12	2-61-12	3-61-12	4-61-12	5-61-12	6-61-12	7-61-12	9-61-12
clerical	1-61-13	2-61-13	3-61-13	4-61-13	5-61-13	6-61-13	7-61-13	9-61-13
compensation and								
liability insurance	1-61-24	2-61-24	3-61-24	4-61-24	5-61-24	6-61-24	7-61-24	9-61-24
taxes on payroll	1-61-25	2-61-25	3-61-25	4-61-25	5-61-25	6-61-25	7-61-25	9-61-25
Traveling expense	1-61-41	2-61-41	3-61-41	4-61-41	5-61-41	6-61-41	7-61-41	9-61-41
Telephone and telegraph	1-61-42	2-61-42	3-61-42	4-61-42	5-61-42	6-61-42	7-61-42	9-61-42
Miscellaneous	1-61-66	2-61-66	3-61-66	4-61-66	5-61-66	6-61-66	7-61-66	9-61-66
Dues and subscriptions	1-61-48	2-61-48	3-61-48	4-61-48	5-61-48	6-61-48	7-61-48	9-61-48
Auto rental expense	1-61-67	2-61-67	3-61-67	4-61-67	5-61-67	6-61-67	7-61-67	9-61-67
Selling expenses								
Salaries - officers	1-62-11	2-62-11	3-62-11	4-62-11	5-62-11	6-62-11	7-62-11	9-62-11
supervision	1-62-12	2-62-12	3-62-12	4-62-12	5-62-12	6-62-12	7-62-12	9-62-12
clerical	1-62-13	2-62-13	3-62-13	4-62-13	5-62-13	6-62-13	7-62-13	9-62-13
salesmen's commissions	1-62-15	2-62-15	3-62-15	4-62-15	5-62-15	6-62-15	7-62-15	9-62-15
Compensation and								
liability insurance	1-62-24	2-62-24	3-62-24	4-62-24	5-62-24	6-62-24	7-62-24	9-62-24
Taxes on payroll	1-62-25	2-62-25	3-62-25	4-62-25	5-62-25	6-62-25	7-62-25	9-62-25
Stationery and printing	1-62-26	2-62-26	3-62-26	4-62-26	5-62-26	6-62-26	7-62-26	9-62-26
Traveling expense	1-62-41	2-62-41	3-62-41	4-62-41	5-62-41	6-62-41	7-62-41	9-52-41
Telephone and telegraph	1-62-42	2-62-42	3-62-42	4-62-42	5-62-42	6-62-42	7-62-42	9-62-42
Pricebooks and bulletins	1-62-45	2-62-45	3-62-45	4-62-45	5-62-45	6-62-45	7-62-45	9-62-45

OPERATING EXPENSES (cont'd)

Retailers, I. G. A.

Product classification digits	Groceries 1-23-45	Produce 1-23-45	Meat 1-23-45	Frozen foods 1-23-45	Dairy 1-23-45	Company stores 1-23-45	Institutional 1-23-45	All products 1-23-45
Delivery expenses								
Trucking income								
Outgoing	1-64-01	2-64-01	3-64-01	4-64-01	5-64-01	6-64-01	7-64-01	9-64-01
Backhaul	1-64-08	2-64-08	3-64-08	4-64-08	5-64-08	6-64-08	7-64-08	9-64-08
Expenses								
Salaries - officers	1-64-11	2-64-11	3-64-11	4-64-11	5-64-11	6-64-11	7-64-11	9-64-11
supervisors	1-64-12	2-64-12	3-64-12	4-64-12	5-64-12	6-64-12	7-64-12	9-64-12
truck drivers	1-64-14	2-64-14	3-64-14	4-64-14	5-64-14	6-64-14	7-64-14	9-64-14
union health and								
welfare fund	1-64-23	2-64-23	3-64-23	4-64-23	5-64-23	6-64-23	7-64-23	9-64-23
compensation and								
liability insurance	1-64-24	2-64-24	3-64-24	4-64-24	5-64-24	6-64-24	7-64-24	9-64-24
taxes on payroll	1-64-25	2-64-25	3-64-25	4-64-25	5-64-25	6-64-25	7-64-25	9-64-25
Operating supplies, stationery, and printing	1-64-26	2-64-26	3-64-26	4-64-26	5-64-26	6-64-26	7-64-26	9-64-26
Supplies - tires, gas, oil and grease	1-64-28	2-64-28	3-64-28	4-64-28	5-64-28	6-64-28	7-64-28	9-64-28
Repairs - delivery equipment	1-64-37	2-64-37	3-64-37	4-64-37	5-64-37	6-64-37	7-64-37	9-64-37
Traveling expense	1-64-41	2-64-41	3-64-41	4-64-41	5-64-41	6-64-41	7-64-41	9-64-41

RETAIL   ACCOUNTING

	DES MOINES	MINNEAPOLIS
Service income	31 1 5505 4	5115505 9
Coupon redemption	31 1 5506 2	5115506 7
Supervision	31 1 5512 0	5115512 5
Maintenance wages	31 1 5513 8	5115513 3
Bonus reserve	31 1 5517 9	5115517 4
Clerical and stenographic	31 1 5518 7	5115518 2
Social security	31 1 5525 2	5115525 7
Maintenance supplies	31 1 5526 0	5115526 5
Stationery and printing	31 1 5527 8	5115527 3
Fuel	31 1 5532 8	5115532 3
Utilities	31 1 5534 4	5115534 9
Furniture and fixtures	31 1 5539 3	5115539 8
Traveling expense	31 1 5541 9	5115541 4
Telephone and telegraph	31 1 5542 7	5115542 2
Postage	31 1 5543 5	5115543 0
Special reports	31 1 5553 4	5115553 9
License	31 1 5560 9	5115560 4
Equipment rental	31 1 5563 3	5115563 8
Sundry	31 1 5566 6	5115566 1
Commissions and fees	31 1 5567 4	5115567 9
Rent	31 1 5581 5	5115581 0
Insurance	31 1 5582 3	5115582 8
Real estate taxes	31 1 5583 1	5115583 6
Depreciation	31 1 5585 6	5115585 1
Leasehold improvements	31 1 5586 4	5115586 9
Fixed charges	31 1 5591 4	5115591 9

CASH   DISCOUNT

Cash discount	ABERDEEN	BISMARCK	FARGO	DES MOINES	MINNEAPOLIS
Grocery	1115000 0	2115000 8	4115000 4	3115000 6	5115000 1
Produce	1125000 8	2125000 6	4125000 2	3125000 4	6125000 7
Provisions	1135000 6	2135000 4	4135000 0	3135000 2	6135000 5
Frozen foods				3155000 7	6155000 0

Figure 13.--Pages from codebooks used by two wholesale food distributors.

Description of Accounts

The following descriptions clarify the meaning and aid the understanding of income and expense accounts that require explanation because of their nature of specific application in the wholesale food industry. Some accounts have not been defined because they are standard in all industries. Knowledge of accounting for these standard accounts is assumed since this publication is not intended to replace standard accounting texts.

XXX3010, Sales.--Sales for cash or otherwise, includes all sales of merchandise, equipment, and store supplies in the normal course of business, including those shipped direct to retailers from suppliers and invoiced through the wholesale food distributor.

XXX4111 to XXX4113, Advertising Income.--Income from advertising and promotional allowances for the categories shown in figure 8. Allowances may consist of amounts received for newspaper and/or other advertising media and promotional allowances, based on either cases purchased or dollar amount of purchases.

XX13010, Grocery.--Sales to retail customers of all nonperishable products such as canned and glass pack foods, health and beauty aids, grocery store supplies, tobacco, and other nonfood items.

XX23010, Produce.--Sales of fresh fruits and vegetables, such as potatoes, bananas, apples, oranges, and lettuce, and also supplies for use in the retail store produce department.

XX33010, Meat.--Sales of all fresh, smoked, and dry meats, fish and poultry items, and meat department supply items. Whole frozen poultry is also included.

XX43010, Frozen Foods.--Sales of all packaged frozen food products (except whole frozen poultry), including poultry cuts, canned juices, concentrates, vegetables, and prepared foods.

XX53010, Dairy.--Sales of butter, margarine, milk (direct shipment), eggs, cheese, and ice cream.

XX63010, Store Equipment.--Sales of refrigerated cases, shelving, gondolas, cash registers, check stands, mechanical and refrigerated equipment, scales, and other store equipment of a fixed nature. Also included are commissions for sales of store fixtures and charges for installation.

XX73010, Institutional.--Sales of all products, grocery, meat, dairy, frozen foods, etc., to all accounts other than retail stores, such as restaurants, hotels, hospitals, and schools.

XXX3020, Service Fees.--Charges to customers for fees under the cost-plus type of selling plan. Each division selling under cost-plus programs is credited with the applicable fees. Fees to retailers on direct supplier shipments are credited to the respective sales departments.

XXX4343, Clearance Account, Order Form Printing.--Many distributors have extensive facilities for printing and mailing material such as handbills, circulars, order forms, and other forms. These facilities operate as a service to all departments. Each department is charged for the actual material, labor, and overhead required for each project. The accounting for this operation is to accumulate all printing and mailing costs--material, labor, rent, depreciation of equipment, and other operating expenses--and then allocate the costs to the various classifications. The clearance account is used to charge these services to other departments so the printing department will operate on a break-even basis.

XXX5253, Price Books and Bulletins.--Cost of printing and postage for price books and bulletins mailed to customers and charges for work done by the company printing department. The entire cost is classified in the selling function.

XXX5358, Storage and Demurrage.--Amounts paid to public warehouses and other facilities for storing merchandise and demurrage to common carriers for holding freight cars beyond the prescribed times. Both classes of charges are reflected in the warehousing function.

XXX5459, Outside Transfer and Cartage.--Payments to outside trucking concerns for shipments to customers are reported in this account under the delivery function.

XXX5062, Equipment Rental.--Payments for leasing equipment in the warehouse for renting electronic office machines and supplies used on these machines, and for delivery or office functions. The type of equipment determines the functional classification.

XXX5362, Warehouse Equipment Rental.--Rent for forklifts and other mechanical equipment used in the warehouse.

XXX5462, Delivery Equipment Rental.--Payments for leasing trucks and trailers used in hauling merchandise.

XXX5562, Office Equipment Rental.--Payments for renting office equipment and supplies used to activate the equipment.

XXX5X62, Automobile Rentals.--Payments for renting cars used by company personnel are classified in the functional expense category in which the individual's salary is charged. Assignment of automobile rentals to functional departments is shown in the following tabulation:

CODE	FUNCTION	USER
XXX5162	Merchandising and turnover	Buyer
XXX5262	Selling	Salesman
XXX5562	Administrative	President

XXX5075, Intracompany Service Fees.--Fees charged for transfer of merchandise from the warehouse to cash and carry branch or to another warehouse in the company.

<u>XXX5076, Home-office or All-product Allocations.</u>--These accounts are used to record transportation or service charges for products transferred or services performed by one sales division or branch for another sales division or branch. Credits due to redistribution of expenses by service centers of home-office or all-products or general expense distribution are also included. Examples of handling intracompany service fees and home-office accounts are shown in the following tabulation:

TYPE OF EXPENSE	CODE	FUNCTION	SERVICE
Intracompany service fees	XX15375	Warehouse	Fee charge for transfer of grocery merchandise from warehouse to cash and carry branch
Intracompany service fees	XX25475	Delivery	Fee charge for delivery of produce from one branch to another branch
Home-office	XX95176	Merchandising and turnover	Allocation of general merchandising expense (all products) to each sales division
or			
All-product allocation	XX95576	Administrative	Allocation of general home-office administrative expense to each sales division

Payroll Accounting

Salaries of executives and employees, and their related expenses such as payroll taxes, insurance on payrolls, and travel expenses, should be classified in the function or sales division for the respective employees. The following major functions classify the operations of wholesale food distributors and are recommended for accounting reports: Merchandising and turnover, sales, warehousing, delivery, administrative, and building.

Major labor groups are classified by their primary function or sales department. These groups are as follows:

GROUP	FUNCTION
1. Warehousemen, shipping and receiving clerks	Warehouse
2. Truckdrivers and mechanics	Delivery

3. Clerical and stenographic:
     Switchboard   )
     Sales invoicing   )
     Tabulating   )   Administrative
     General office   )
     General accounting)	

Secretaries and clerical personnel are classified by the basic function to which they are assigned. Examples include:

POSITION	FUNCTION
Secretary to president	Administrative
Warehouse office clerk	Warehouse
Buyer's clerk	Merchandising and turnover

Home-office services for more than one sales division are termed "all-products" activities. Salaries of employees who perform these services are charged to a home-office pool of expenses. The total expenses are then allocated among the sales divisions according to the formula in the next section of this report, "Home-office and all-products expenses."

Examples of coding and classifying the executive complement are shown in figure 14. The executive and supervisory group is illustrated for a headquarter's (central office group) and also for a branch operation. A 7-digit code is used because the first 2 digits denote location and code 9 in the third digit position denotes an all-products or headquarters classification.

Expense allocation must be modified to reflect operations. If, for example, the tabulating department is servicing the grocery department only, then the expense of all tabulating is charged to the grocery department.

HOME-OFFICE AND ALL-PRODUCTS EXPENSES

The home-office or all-products classification is for expenses of a general or administrative nature which apply to the company as a whole and cannot be charged to any one sales division. This type of expense would include legal and professional services, dues and subscriptions, donations, credits and exchanges, taxes, and salaries of officers and administrative personnel.

It is difficult to accurately allocate certain expenses among the various sales divisions. For example, the president makes decisions and manages the business. His salary and incidental expenses benefit each sales division in varying degrees. Therefore, the amount chargeable to each division cannot be determined. Because there are other expenses of this nature, decisions affecting sales and profits must be based on sound reporting.

All companies, at some time, must decide whether to charge a particular expense to a sales division or allocate it to the various product lines by a predetermined method. Approximately 80 percent of the expenses can be charged directly to a sales division--grocery, produce, meat, etc. The remaining expenses cannot be charged on a direct basis, but can be equitably allocated to each sales division by a predetermined formula.

Title	Payroll Classification	Function	Code 1/
Home Office			
Chairman of the Board	Officer	Administrative	0095511
President	Officer	Administrative	0095511
Director of Merchandising	Officer	Buying	0095111
Vice President - Sales	Officer	Selling	0095211
Vice President - Operations	Officer	Warehouse delivery	0095311
Store Engineer	Supervision	Selling	0095212
Manager - Retail Development	Supervision	Selling	0095212
Controller	Officer	Administrative	0095511
Treasurer	Officer	Administrative	0095511
Chief Accountant	Supervision	Administrative	0095512
Manager - Machine Accounting	Supervision	Administrative	0095512
Supervisor - Cash and Carry Operations	Supervision	Selling	0095212
Director - Meat Department	Supervision	Selling	0095212
Advertising Director	Supervision	Selling	0095212
Branch Operations			
Branch Manager	Supervision	Selling	0195212
Buyer - Grocery	Supervision	Buying	0115112
Buyer - Frozen Foods	Supervision	Buying	0145112
Meat Selector	Supervision	Buying	0135112
Field Sales Representative	Supervision	Selling	0195212
Office Manager	Supervision	Administrative	0195512
Tab Department Supervisor	Supervision	Administrative	0195512
Bookkeeper	Supervision	Administrative	0195512
Warehouse Superintendent	Supervision	Warehouse	0195312
Delivery Superintendent	Supervision	Delivery	0195412
Printing Department Manager	Supervision	Printing	0114312
Retail Accountant	Supervision	Retail acctg.	0114212
Manager - Frozen Foods Department	Supervision	Selling	0145212
Manager- Meat Department	Supervision	Selling	0135212
Advertising Manager	Supervision	Selling	0195212

1/ In the last two digits, code 11 denotes an officer in the company. Code 12 denotes an individual who is not an elected officer.

Figure 14.--Examples of payroll coding.

In this study, expenses referred to as all-products or home-office expenses are grouped by function (buying, selling, administrative, etc.) into an expense pool under the sales division designated as all-products and are redistributed on the basis of sales and investment for each sales division. Each department (grocery, produce, meat, etc.) receives a pro rata charge of these expenses based on a formula computed quarterly for each branch and division. The formula is based on each department's proportionate percentage of the total investment made by the company in inventory and fixed assets plus sales.

Computation of the sales-plus-investment allocation formula is illustrated in figure 15. The computation represents a hypothetical wholesale food distributor operating two branches and one cash and carry.

For example, the grocery division of Branch A (fig. 15) would be charged, through the intracompany accounts, with 52.1 percent of the all-products expenses, produce with 10.0 percent, and the grocery division of Branch B would be charged with 26.6 percent.

Sales division	Sales	Inventory	Fixed assets 1/	Total	Percent of total
Branch A					
Grocery	$10,000,000	$800,000	$100,000	$10,900,000	52.1
Produce	2,000,000	25,000	75,000	2,100,000	10.0
Meat	1,000,000	50,000	50,000	1,100,000	5.3
Frozen foods	500,000	18,500	25,000	543,500	2.6
Total	$13,500,000	$893,500	$250,000	$14,643,500	70.0
Branch B					
Grocery	$ 5,000,000	$475,000	$ 85,000	$ 5,560,000	26.6
Frozen foods	250,000	11,500	18,500	280,000	1.3
Total	$ 5,250,000	$486,500	$103,500	$ 5,840,000	27.9
Cash and carry	$ 400,000	32,500	10,500	443,000	2.1
Total	$19,150,000	$1,412,500	$364,000	$20,926,500	100.0

1/ Fixed assets are reported at gross value; no deduction is taken for accumulated depreciation.

Figure 15.--Computation of allocation formula.

Building expenses are allocated on the basis of area occupied or used by each department or product line. When expenses are for one division (banana rooms in produce, for example), they are charged to that division.

Figure 16 shows a journal entry made by one wholesaler to reflect the distribution of the sales manager's salary and the officers' salaries for the 4-week period ended March 31, 1959. This company uses a 7-digit code classification, with the first 2 digits for location, the third for the sales division, the fourth and fifth for major control, and the sixth and seventh for minor control.

THIRTEEN-PERIOD (4-WEEK) REPORTING

Many companies in the wholesale food industry use the 13-period accounting year, with 4 weeks in each period, rather than the 12-month calendar year. The accounting yearend (calendar year or fiscal year ending in a month other than December) is the last Saturday in the 52nd week, with an extra week (53rd week) added every 5th year. A 13-period calendar is shown in figure 17.

Among the advantages of the 13-period method are: (1) More accurate comparison of operations for each period, since each contains 4 weeks instead of the 4 weeks plus a fractional week, in some months, with the 12-month method, (2) easier preparation of period accruals and reduction in the number of adjustments, by eliminating the odd days in each calendar month, (3) easier preparation of accounting information and control of cutoff data on sales, cost of sales, inventory, and payrolls because each period ends on a Saturday.

Some disadvantages of the 13-period method are: (1) Preparing 13 financial statements each year, instead of the 12 with the calendar month method; and (2) maintaining clearing accounts and accruals to reflect the adjustments that are necessary for fractional periods of the month.

Clearing Accounts

Many companies that report under the 13-period (4-week) method use clearing accounts for expense accrual and distribution. These accounts are generally used for the following types of expenses: Rent, supplies, and utilities.

A monthly charge for each item is made to the appropriate product line expense account, with a correlative credit to the respective clearing account. The charges are based on a study within the company on several years' experience. As the monthly bills are received, they are debited to the clearing accounts and any difference between the bill and the monthly charge is cleared by an adjusting entry at the end of the period.

This method is recommended because it facilitates preparation of the period statement. Since the monthly charge usually approximates the bill, the accountant can post this charge instead of waiting to receive the bill.

DESCRIPTION	ACCOUNT NUMBER	GENERAL LEDGER CHARGES	GENERAL LEDGER CREDITS
SELLING EXPENSE - SALES SALARIES			
Whse. A - Grocery	1015222	128 75	
Whse. B - Grocery	1015222	136 99	
Whse. B - Produce	2025222	12 81	
Whse. B - Frozen Foods	2035222	39 83	
Whse. B - Dairy	2045222	20 02	
Whse. B - Meats	2055222	61 60	
All Products	0095222		700 —
To distribute salary of sales manager among sales divisions of Warehouse A and B.			
ADMINISTRATIVE EXPENSE - OFFICERS' SALARIES			
Whse. A - Grocery	1015521	2705 21	
Whse. B - Grocery	2015521	864 34	
Whse. B - Produce	2025521	80 83	
Whse. B - Frozen Foods	2035521	251 30	
Whse. B - Dairy	2045521	126 32	
Whse. B - Meats	2055521	388 67	
All Products	0095521		4416 67
To distribute salaries of administrative officers of the company among sales divisions of Warehouse A and B.			

Prepared by	Approved by	Posted by	WHOLESALE FOOD DISTRIBUTOR	PERIOD ENDED	PAGE NO.

Figure 16.--A journal entry for distribution of salaries among product classes.

Figure 17.--Period Calendar.

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Cost of Sales

Preparing accurate income statements depends on determining the accurate cost of merchandise sold and the amount of inventory at the end of each accounting period. In the majority of companies, this creates a problem only in the grocery division, because of its large inventory and multiplicity of items. A physical inventory is customarily taken of the perishables divisions--meat, produce, frozen foods, and dairy--so that accurate gross profits can be determined.

The customary practice is to take a complete physical inventory of all grocery stocks twice a year. During interim periods the margin of gross profit to sales at the last physical inventory is used to compute gross margin to sales. This method is not entirely accurate, but it provides a reasonable basis for preparing interim financial statements.

With automatic tabulating machine methods, a cost of sales figure is accumulated daily as a byproduct of daily invoicing. The purchase cost of each item is punched into a tab card. As the sales invoices of shipments to retailers are prepared, the costs are printed on a retained office copy and a total is printed. This total is accumulated daily and is summarized at the end of the period to determine the period cost of sales.

With electronic computers, at the end of each 4-week period the machine prints and totals the inventory value by a read-out on the console typewriter at 100 cards per minute. The inventory value may be determined in 30 to 60 minutes, depending on the number of items. The inventory value at the end of the period is recorded by a journal entry. This entry is determined by adding the inventory at the beginning of the period to purchases during the period, then subtracting the computed cost of sales (total daily sales).

CASH AND CARRY OPERATIONS

Accounting for cash and carry operations is similar to accounting for the customary methods of wholesale food distribution. Each cash and carry operation is treated as a separate branch with the first and second digits indicating location.

Financial statements for cash and carry operations are prepared on a summary basis, by function (fig. 18) and by detailed analysis (fig. 19). The detailed statement of income further classifies expenses as those that are fixed (rent, taxes, etc.) and those that can be controlled by the manager. Data shown in figures 18 and 19 are a composite of 10 cash and carry units.

Items of expense that require definition are:

Salary of cash and carry branch manager	- Classified as selling expense even though his duties involve some buying and warehousing.
Service and handling charges paid to wholesale supply house	- Fees are classified into their respective functions, as follows:

1. Buying fees, to buying
2. Transportation charges, to delivery
3. Accounting and/or home-office charges, tó administrative

Salaries of warehousemen — Classified as warehouse expense although some work consists of sales activity.

Cash discounts on merchandise purchases — Retained by the wholesale house, and <u>not</u> credited to cash and carry.

	1958	Percent of sales	1959	Percent of sales
Net Sales	$2,047,371	100.00	$2,037,897	100.00
Gross profit	150,949	7.37	156,552	7.68
Trucking	(12,690)	(.62)	(14,115)	(.69)
Gross profit all operations	$ 138,259	6.75	$ 142,437	6.99
Operating expenses				
Buying	$ 3,769	.18	$ 3,888	.18
Selling	29,584	1.44	29,948	1.47
Warehouse	54,240	2.65	56,352	2.77
General and administration	17,428	.85	17,044	.84
Turnover	6,700	.33	5,520	.27
Building	21,705	1.06	23,888	1.17
Total operating expenses	$ 133,426	6.51	$ 136,640	6.70
Net profit before income taxes	$ 4,834	.24	$ 5,797	.29

Figure 18.--A cash and carry statement of income comparing first four periods, 1958 and 1959.

SOURCE DATA FOR PREPARING FINANCIAL STATEMENTS

The basic information for preparing financial statements and maintaining records of account (general ledger) does not vary with the volume of sales or type of operation. This information (termed source data in this report) is obtained as a byproduct of the following major accounting operations: Cash receipts and disbursements, cost of sales and inventory, sales and accounts receivable, accounts payable, payroll, and expense distribution. Figure 20 shows the flow of basic information to the general ledger and the financial statements.

	C and C No.6	Percent of sales	C and C No.1	Percent of sales	C and C No. 2	Percent of sales
Sales	$136,545	100.00	$205,959	100.00	$279,223	100.00
Cost of goods sold	126,507		189,836		258,567	
Gross profit	$ 10,038	7.35	$ 16,123	7.83	$ 20,656	7.40
Controllable expenses						
Salary, supervision	$ 1,698		$ 1,790		$ 1,790	
Salaries and wages	1,314		3,704		4,582	
Union welfare fund			52		68	
Bonus reserve	200		823		1,116	
Social security	128		260		240	
Operating supplies	113		345		141	
Fuel	144		340		320	
Light, water, gas	280		440		340	
Telephone, telegraph	56		120		140	
Price bulletins	165		260		260	
Cash over or short	(2)		(26)		(15)	
Professional fees					1,019	
Coupon reserve			(19)		(22)	
Miscellaneous	5		(145)		(8)	
Freight parcel post	27		22		23	
Liability insurance	32		56		64	
Taxes	464		480		388	
Insurance on merchandise	16		16		20	
Total controllables	$ 4,640	3.40	$ 8,518	4.14	$ 10,466	3.75
Noncontrollables						
Machinery and equipment	28				70	
Bank charges	30					
Protective service			155		162	
Licenses			12		12	
Rent	668		1,200		1,848	
Depreciation	40		240		184	
Total noncontrollables	$ 766	.56	$ 1,607	.78	$ 2,276	.82
Total direct expense	$ 5,406	3.96	$ 10,125	4.92	$12,742	4.57
Intercompany charges						
Service fees	$ 1,754		$ 2,757		$ 3,814	
Fixed charges	612		744		816	
Cash and carry hauling	1,782		1,327		1,718	
Total intercompany charges	$ 4,148	3.04	$ 4,828	2.34	$ 6,348	2.27
Total expense	$ 9,554	7.00	$ 14,953	7.26	$19,090	6.84
Net profit	$ 484	.35	$ 1,170	.57	$ 1,566	.56

Figure 19.--A statement of income for cash and carries, fourth period 1959 year-to-date.
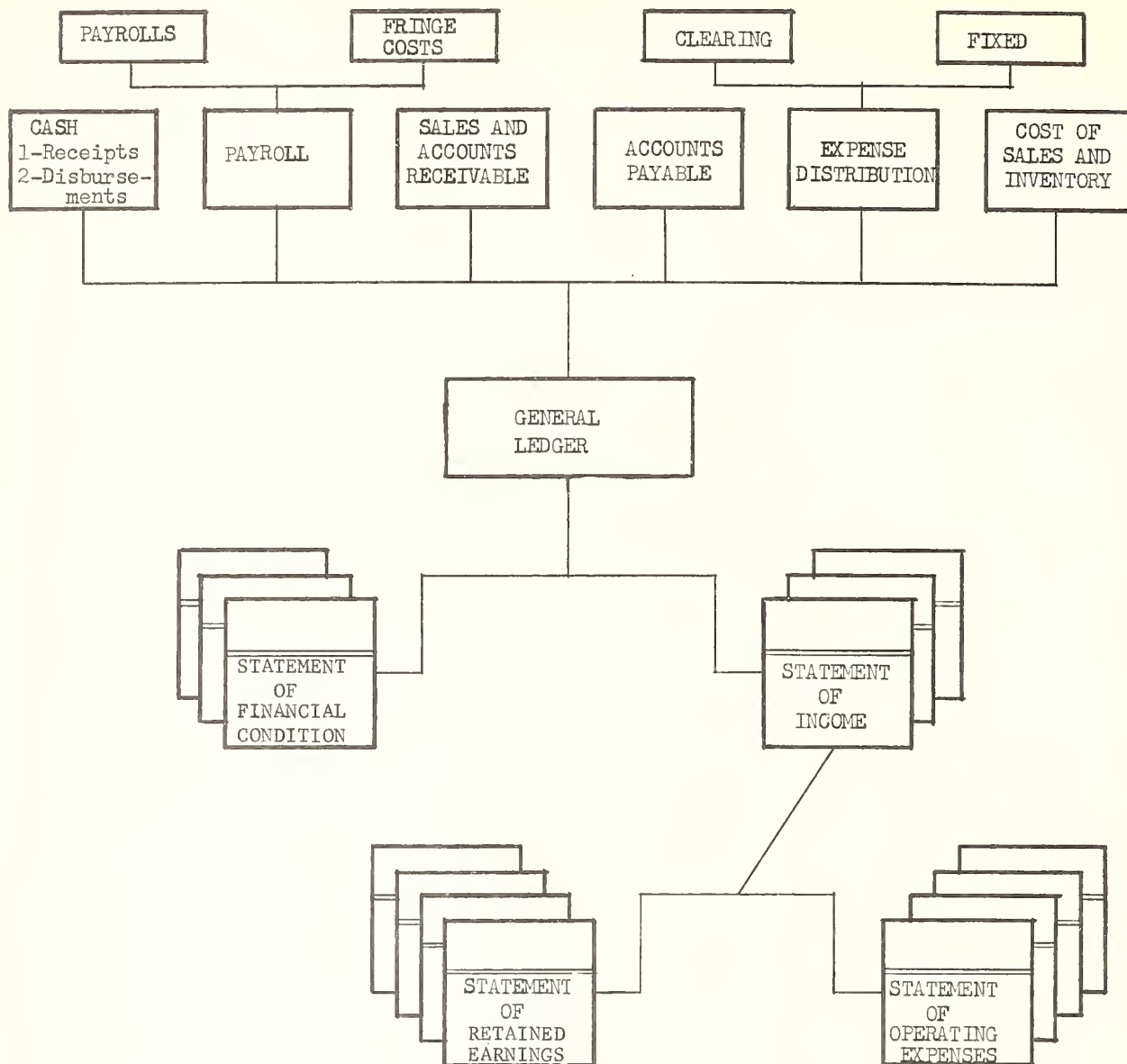
Figure 20.--Sources of data required to prepare financial statements.

Assignment of Source Data

Basic sources of information are needed to organize and accelerate the preparation of financial statements. Thus, the accountant can control the data recorded in the general ledger. All information compiled for each accounting source should be prepared on standard form journal entry sheets that are preprinted with the account code and description. Each journal entry should have the same number each period, with a numerical prefix to indicate the period or month. For example, the journal entry for cash receipts for the first 4-week period, or January, would be 1-1, while the sixth period, or June, would be 6-1.

The following sequence and numbering of source data are recommended: (1) Cash receipts; (2) cash disbursements; (3) sales and accounts receivable; (4) payroll; (5) payroll transfers; (6) accounts payable (merchandise and variable expense); (7) cost of sales and inventory; and (8) expense distribution (clearing accounts for telephone, heat, light, power, rent, and fixed expenses such as depreciation, amortization of leasehold improvements, insurance, property taxes, payroll taxes, and insurance); and (9) intracompany charges and allocations. These are the conventional sources. With the exception of number 5 (payroll transfers) and number 9 (intracompany charges and allocations) the sources are self-explanatory.

Payroll transfers.--This is used to report transfers of wages for personnel who work for two or more sales divisions or in a dual function, as a truckdriver who works part-time in the warehouse. The transfer source is used to record those portions of wages for an employee temporarily working in a function other than his regular assignment. Transfer accounting simplifies the book-keeping and payroll accounting otherwise required as payroll records account for total salaries and wages; it also eliminates splits in the amounts.

For example, a warehouseman works 30 hours in the grocery department and 10 hours in the frozen foods department. Total weekly wages amount to $56.00, $42.00 chargeable to grocery and $14.00 to the frozen foods department. The payroll charge originating from the payroll record would be as follows:

Account Number					
Location	Dept.	Expense	Description	Debit	Credit
XX	1	5314	Warehouse wages, grocery	$56.00	
XX	0	0213	Accrued payroll		$56.00

A journal entry is then originated, charging the frozen foods department and crediting the grocery department through the following wages transfer journal entry:

Account Number					
Location	Dept.	Expense	Description	Debit	Credit
XX	4	5324	Warehouse wages, frozen foods	$14.00	
XX	1	5324	Warehouse wages, grocery		$14.00

<u>Intracompany Charges and Allocations</u>.--This is used to report the follow-
ing charges: (1) Transportation of merchandise, administrative and other
services and supplies provided by one department or branch to another depart-
ment or branch of the company; and (2) allocation of home-office and other
related expenses distributed on a ratio or predetermined basis. For example,
the administrative expense incurred by a home office for a 4-week period
totaled $2,155.00. This expense could be allocated among the sales divisions
on the basis of sales and investment in each division as shown in the follow-
ing illustrative ratio: grocery 72.78 percent; produce 15.49 percent, meat
7.82 percent, and frozen foods 3.91 percent.

    <u>Allocation Entry</u>.--The allocation charge would be as shown in the
following tabulation:

	Account Number						
	Department		Major/				
Description	Location	Code	Minor	Detail	Description	Debit	Credit
Grocery	XX	1	54	75	Home office allocation	$1,568.41	
Produce	XX	2	54	75	Home office allocation	333.81	
Meat	XX	3	54	75	Home office allocation	168.52	
Frozen foods	XX	4	54	75	Home office allocation	84.26	
Home office	XX	9	54	75	Home office allocation		$2,155.00

<u>Journal Vouchers for Source Data</u>

A recommended type of journal voucher form for recording source informa-
tion is shown in figure 21. The format is standard and conforms to the needs
of wholesale food distributors. Space has been provided for indicating
tab-card column assignment for key punching or reproducing the source
documents. A program card is used on the card-punch machine for automatic
positioning and column skipping for the card on which the original data is
being recorded.

This journal voucher (figure 21) is identical to the others with the
exception that card column assignment is shown so the card-punch operator is
notified where each item should be punched. The journal voucher system is
adaptable to any system of general ledger accounting--manual, bookkeeping
machine, punched-card, or computer. Figure 22 shows a voucher designed to
indicate the coding translation for a manual system. The card column numeric
assignment corresponds with the card layout, machine charts, and workflows in
a later section of this report on general ledger accounting with automatic
tabulating equipment and electronic computers.

The journal voucher in figure 23 is adapted for use with key-driven
accounting machines. With this method, control accounts (general ledger) are
normally followed by separate detail sheets, called a subsidiary ledger,
where the details of each asset, liability, income, or expense account are
listed.

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                                              PAGE NO. _____

                                              PERIOD    _____
                                              (cc 1-2)
            JOURNAL VOUCHER
                                              SOURCE NO. _____
                                              (cc 3-4)
```

EXPLANATION	Acct. Code	Debits	Credits
	Cols. 5-11	Cols. 12-21 NX	Cols. 12-21 X1/

1/ An "x" printed in the credit column instructs the key punch operator to punch an "x" in card column 21 so all subsequent machine operations will identify this as a credit entry. Conversely, no "x" in card column 21 indicates a debit entry.

Figure 21.--A suggested journal voucher form for use with automatic tabulating equipment and electronic computers.

```
                        JOURNAL VOUCHER

                                              No. _____
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DESCRIPTION	DEBITS		CREDITS	
	Acct. No.	Amount	Acct. No.	Amount

Figure 22.--A suggested journal voucher form for use with manual methods of general ledger accounting.

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                        JOURNAL VOUCHER
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DESCRIPTION	Subsidiary Ledger			General Ledger		
	Acct No.	Charges	Credits	Acct No.	Charges	Credits

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Figure 23.--A suggested journal voucher form for use with key-driven accounting machines.

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Control of Source Data

The accounting departments of many wholesale food distributors prepare complete financial statements for each 4-week period. These are submitted to management within 5 to 8 underline working days after the close of the period. This is accomplished by scheduling the work assignment required to process the daily transactions and by controlling the preparation of source data. Each original source of data for the general ledger is assigned to a specific individual, with instructions as to the date the data is due.

A checklist is maintained to note the date for completion of the information and also to determine that all information has been received. When data is received after the due date, the reason for delay is reviewed, and processing of the information is improved to meet the next schedule. Figure 24 shows a checklist; figure 25 shows a worksheet.

Preprinted Data.--The account description and account codes on each source journal voucher are used each period. Preprinting journal vouchers with account description and codes for each source shortens the time for this operation and reduces errors. Journal vouchers can be printed for all branches at one time. One company prints the journal vouchers for all branches, providing space for hand insertion of the location code. A preprinted form with handwritten entries is shown in figure 26.

TIME REQUIRED TO PREPARE
GENERAL LEDGER AND FINANCIAL STATEMENTS

This section summarizes the operations involved and time required to maintain a general ledger and to prepare financial statements. The workflow for each method--manual, accounting machine, and tabulating--is compared for each major phase. Comparison was made of a general ledger and statement reporting system before and after its conversion from the manual method to electronic machines. The test was made for a company with two major grocery warehouses having annual sales of $30 million. Operations included the following sales divisions: Grocery, meat, produce, frozen foods, nonfoods, dairy products, and coffee.

The analysis covered a 4-week period of operations with the 13-period method of annual accounting. Unit analysis for cost comparison was made beginning with a completed source document--a journal voucher--for each major source of journal entry. Table 1 shows the number of transactions and accounts to be posted. Table 2 shows the time required to prepare the general ledger and financial statements by three methods.

Tables 3, 4, and 5 show the operations performed and time required to prepare the general ledger and financial statements.

No.	Source	Due date [1]	Date completed, 1960 [1]												
			1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th [2]
	Date of close of period		1/23	2/20	3/19	4/16	5/14	6/11	7/9	8/6	9/3	10/1	10/29	11/26	12/31
1	Cash receipts	2nd	1/25	2/22											
2	Cash disbursements	2nd	1/25	2/22											
3	Sales and accts. rec.	3rd	1/26	2/23											
4	Payroll	4th	1/25	2/24											
5	Payroll transfers	4th	1/25	2/24											
6	Accounts payable	5th	1/30	2/25											
7	Cost of sales and invty.	5th	1/30	2/24											
8	Clearing accounts:														
	(a) Telephone	2nd	1/25	2/22											
	(b) Heat, light and power	2nd	1/25	2/22											
	(c) Rent	2nd	1/25	2/22											
	Fixed expenses:														
	(a) Depreciation	2nd	1/26	2/22											
	(b) Leasehold amortization	2nd	1/27	2/24											
	(c) Insurance	2nd	1/25	2/22											
	(d) Property taxes	2nd	1/25	2/22											
	(e) Payroll taxes & ins.	2nd	1/25	2/22											
9	Intracompany charges and allocations	5th	1/30	2/22											

[1] Due date is the number of workdays after the end of the 4-week period.
[2] 1960 is the 5th year with the 13-period cycle. Consequently, the 13th period in 1960 has 5 weeks and ends on December 31.

Figure 24.--A work schedule checklist for preparing data for financial statements.

Figure 25.--A period-ending report used in one company to show when reports were completed and mailed to the home office.

#	Report	Due date*	Explanation	Code	Date Report Mailed to Home Office												
					1	2	3	4	5	6	7	8	9	10	11	12	13
1	Daily cash disbursed / Daily cash received	2nd	These daily reports must be completed daily and submitted first	Dis / Rec	8/1 7/31	3/3 3/30	3/1 30	3/1 30	3/1 30	3/1 30	3/1 30						
2	Final transfers	3rd	Close Transfer Book and complete transfer record. Be sure to mark. final!			8/1	8/1	7/31	7/31	7/3							
3	Sales report	4th	Figures must balance with 21 A/C report listed under No. 5 below.		8/6	8/2		8/1	8/1	8/2							
4	Hours worked / Whse-Drivers - Office	4th	These figures used for Production Report. List hours worked for number of workdays in month.		7/31	8/8 8/5	8/8 8/5	8/8 8/5	8/7	8/1							
5	21 A/C Report	4th	This balance entered on Summary Sheet. Must agree with General Ledger Balance.		8/1	8/8 8/2	8/8 8/1	8/8 8/1	8/1	8/8 8/2							
6	Journal voucher	4th	Entered in General Ledger before balanced.		8/12	8/12				8/8 8/7							
7	Inventories	8th	Inventories must be received with gross profit report and Summary Sheets.	Prod. / Dairy	8/1 8/7	8/8 1/8 19	8/8 8/12	8/8 1/12	8/8 1/8 12	8/8 8/2							
8	Gross profit report	8th	Differences between Gross Profit Report and actual statements must be reported.	Prod. / Dairy	7.83 8/1	8/6	8/1	3/6	8/8 8/1	8/8 8/3 2							
9	Summary sheet	8th	This report enables us to start operating reports and to check ledger balances		8/12	8/8 16/12	8/8 8/12	X	8/8 14/14	8/8 13/5							
10	Transfer record	8th	This report insures receiving proper charge and credits for branch interchanges.		8/12	8/8 14/14	8/8 12/12	8/8 13/13	8/8 8/12	8/8 8/7							
11	Sales analysis	8th	Analysis sheets are necessary to complete Sales Report.	Store / Inst.	8/9 8/6	8/9 8/8 6/12	8/9 8/8 8/6	8/9 NO 8/8	8/9 8/8 8/5	8/9 8/2 NO							
12	Inventories - Grocery	11th	Final element required to complete Grocery Operating Statements.	C & C Groc.	NO 8/8 2/9	8/8 8/9 2/8 9	8/8 NO 9/12	8/8 14 10/11	8/8 8/8 13/13	8/8 8/8 13/12							
13	Insurance report	11th	These reports are used to determine fire insurance liability.		8/7	8/8 16/12	8/8 8/1	8/8 14/13	8/8 14/13	8/8 13/7							
14	Payroll tax report	11th	The current balance must agree with General Ledger Balance.		8/6	8/8 8/1	8/8 8/1	8/8 8/2	8/8 2/0	8/8 8/12							
15	Accounts receivable	15th	This report to list Store A/C Current and over 7 days Inst.	Store / Inst.	8/8 8/8 8/12	8/8 8/8 8/1			8/8 8/8 12/12	8/8 8/2 12/NO							

*Due Date is the number of Work Days after the end of the preceding month. These reports must be in the Home Office on the dates shown.

Source_____   _____Period
                                                  (1) Headquarters
Reference _____   (2) Branch A
                                                  (3) Branch B
                          _____Journal (4) Branch C
                                                  (5) Branch D

Description	Account Number		Amount	
Weekly C and C sales	Debit	Credit	Dollars	
Transfers from main warehouse				
Grocery	(3)400100 1/	1114100	9,623	78
Fruit and vegetable	(3)400800	1400200	2,118	34
Meat	(3)400100	1400300	24	96
Frozen food	(3)400100	1400400	96	13
Dairy	(3)400100	1400500	224	07
Cash and carry sales				
Grocery		(3)310100	11,649	40
Fruit and vegetable		(3)310200	752	30
Cash sales clearance	(3)112007		12,401	70

1/ The number "3" is handwritten to indicate the branch for the entry.
This makes it possible for the company to print journal vouchers in quantity;
and the branches are only required to write in the applicable code numbers in
the brackets.

Figure 26.--A preprinted journal voucher for use throughout a company

Table 1.--Number of transactions recorded on journal vouchers in one company for one period

Source	:	Number of Transactions (Accounts requiring recording)
1. Cash:		
Receipts		31
Disbursements		250
2. Sales and accounts receivable		20
3. Payroll		213
4. Accounts payable		288
5. Cost of sales and inventory		37
6. Expense distribution:		
A. Fixed entries:		
Depreciation and amortization	54	
Insurance	41	
Property tax (includes inventory tax; can also include entries for rent which have been classified as Rent Accrual under 6.F., Reversing journal entries.)	<u>17</u>	112
B. Payroll fringe costs:		
Group insurance	53	
Social security	53	
State unemployment tax	53	
Federal unemployment tax	53	
Workmen's compensation insurance	53	
Pension cost	<u>30</u>	295
C. Clearing accounts (telephone, water, light, heat, etc.)		33
D. Allocations:		
Intrabranch transfers	4	
Payroll allocations	6	
Home-office allocations	<u>192</u>	202
E. Sundry adjustments and accruals (correction of errors)		122
F. Reversing journal entries:		
Accounts payable	104	
Rent accrual	8	
Accrued payrolls	145	
Unmatched receivings	<u>10</u>	<u>267</u>
Total transactions		<u>1,870</u>

Table 2.--Summary of time required to prepare the general ledger and financial
    statements with manual methods, key-driven accounting machine, and with
    automatic tabulating machine

Method	Record and balance transactions	Prepare and compute financial statements	Type and check financial statements	Total time	Savings over manual methods
	Man-hours	Man-hours	Man-hours	Man-hours	Man-hours
Manual......:	64.12	8.82	6.25	79.19	
Key-driven accounting machine....:	21.26	5.56	6.25	33.06	46.13
Automatic tabulating machines...:	3.93	2.09	1.13	7.15	72.04

A time comparison was not made with the random access method of accounting
and control equipment because the processes are fundamentally the same as with
automatic tabulating machines with the exception of time required to compute
the reciprocal percentages and to print the statements. The random access time
to prepare the financial statements was $6\frac{1}{2}$ minutes, as compared with the 402 or
403 time of 14.06 minutes (table 5). The saving in reciprocal percentage cal-
culation would be the reduction from $1\frac{1}{2}$ hours for machine calculator to $1\frac{1}{2}$
minutes on random access equipment.

Preparing financial statements requires computing ratios of individual
income and expense items to a measurement base, usually sales. These ratios
are used by management to determine trends and to establish whether the ratios
are reasonable and meet standards of profitability. Similar types of ratios
developed in other reports are: payroll dollars to hours, out-of-stock per-
cent to sales, and tons per man-hour for inbound and outbound merchandise.
Hundreds of items are calculated to a given base figure. The time required
for this calculation can be reduced by using the technique known as reciprocal-
of-one on machine calculators.

Data shown in figure 2, statement of income, require 105 calculations. If
each calculation is made separately, the total time required would total 1.3
hours. With use of the reciprocal-of-one, the time required would total nearly
38 minutes, or less than 49 percent as much time. Table 6 shows a comparison
of time required by the two methods, calculated from the data in figure 2. An
automatic calculator was used for developing the time standards.

Division by multiplication through use of the reciprocal-of-one is shown
in the following tabulation. The example uses the amounts shown in the money
columns of each sales division in figure 2. The reciprocal of a divisor is
"one" divided by the divisor.

Table 3.--Time required to prepare the general ledger and financial statements with manual methods

Workflow	Unit	Standard unit time	Total time
		Man-minutes 1/	Man-minutes 1/
1. Record transactions into general ledger from documents, items 1 to 6 (table 1).....................	1870 2/	1.7327	3240.15
2. Total to prove, cross, add or subtract to arrive at net balance in each account, and prove totals of all accounts year-to-date.........	619 3/	.5636	348.87
3. Cross, add or subtract current period transactions to arrive at net balance in each income and expense account, current period...........	537 3/	.4805	258.03
4. Post account balances to financial statements worksheet preparatory to typing:			
A. Financial condition...........	82 3/	.4374	35.87
B. Current period income and expense. Obtain totals by major functions (buying, selling, warehousing, etc.).............	537 3/	.3860	207.28
C. Year-to-year income and expense......................	537 3/	.3860	207.28
5. Compute ratio of each major function item to net sales by use of reciprocal-of-one.................	220 4/	.3575	78.65
6. Type and check financial statements			
A. Statement of financial condition......................	1 5/	20.58	20.58
B. Statement of income............	2 5/	34.80	69.60
C. Statement of operating expenses......................	10 5/	28.49	284.90
Total time..................			4751.21

1/ Includes 15 percent personal and fatigue allowance.
2/ Transactions.
3/ Accounts.
4/ Computations.
5/ Pages.

Table 4.--Time required to prepare the general ledger and financial statements with an accounting machine

Workflow	Unit	Standard unit time	Total time
		Man-minutes1/	Man-minutes1/
1. Record transactions into general ledger from source documents, Items 1 to 6 (table 1).			
A. Select account card from tray and insert into machine.........:	1870 2/	.1041	194.67
B. Post transaction to card and to distribution register (including control accounts by major functions by major ledger and subsidiary ledger). Arrive at current-period net balance, automatic program...............:	1870 2/	.2300	430.10
C. Pick up prior-period account balance and add current-period net balance: Arrive at total year-to-date balance, automatic program......................:	1870 2/	.2415	451.61
D. Return account ledger card to tray............................:	1870 2/	.1041	194.67
E. At completion of posting, compare proof totals on distribution register to balance debits and credits...................:	25 3/	.1800	4.50
2. Post account balances to financial statements worksheet preparatory to typing:			
A. Financial condition.............:	82 4/	.2200	18.04
B. Current-period income and expense.......................:	537 4/	.2200	118.14
C. Year-to-date income and expense.:	537 4/	.2200	118.14
Note: Steps A and B include major control total cards by function.			
3. Compute ratio of each major function item to net sales by use of reciprocal-of-one.......................:	220 5/	.3575	78.65
4. Type and check financial statements			
A. Statement of financial condition:	1 6/	20.58	20.58
B. Statement of income............:	2 6/	34.80	69.60
C. Statement of operating expenses.:	10 6/	28.49	284.90
			1983.60

1/ Includes 15 percent personal and fatigue allowance.
2/ Transactions.
3/ Proofsheets.
4/ Accounts.
5/ Computations.
6/ Pages.

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Table 5.--Time required to prepare the general ledger and financial statements with automatic tabulating machines

Workflow	Unit	Standard unit time	Total time
		Man-minutes 1/	Man-minutes 1/
1. Key punch transactions (18 digits) from source documents, items 1 to 6 (table 1)......................	1870 2/	.0495	92.57
2. List tab on 402 for proof of punching.........................	1870 2/	.0154	28.80
3. Sort cards into account code sequence:			
A. Sort on cc9 and hand separate	1870 3/	.0020	3.74
B. Sort on cc 11 to 5...........	13090 3/	.0018	23.56
4. Merge header cards and prior-period balance with current-period cards	3108 4/	.0129	40.09
5. Machine list current-period and year-to-date general ledger, summary punch current-period and year-to-date balance forward....	3727 4/	.0126	46.96
6. Prepare financial statements by 402 or 403 machine listing onto spirit duplicator masters........	1406 4/	.0100	14.06
7. Compute ratio of each major function item to net sales by use of reciprocal-of-one, and insert onto masters.....................	312 5/	.3575	111.54
8. Complete spirit duplicator masters by typing in percentages for each statement....................	12 Columns of 312 ratios	.2167	67.61
			428.93

1/ Includes 15 percent personal and fatigue allowance.
2/ Transactions.
3/ Sorts.
4/ Cards.
5/ Computations.

Table 6.--Time required to compute ratio of income and expense to net sales as shown in figure 2.

Method	Calculator automatic division by individual item			Calculator division by multiplication reciprocal-of-one		
	Time per unit	Items computed	Total time	Time per unit	Items computed	Total time
	Man-min 1/		Man-min 1/	Man-min 1/		Man-min 1/
Clear machine, set dividend on keyboard, and touch enter key................:	.1564	105	16.42			
Clear machine, set divisor of "1" on keyboard, and touch enter key............:				.1219	5	.61
Set divisor on keyboard, and touch both divide keys.....................:	.2783	105	29.22	.1955	5	.98
Enter resulting reciprocal on keyboard, add, and lock upper dials...............:				.0932	5	.47
Multiply dividend by reciprocal...............:				.0989	105	10.38
Post answer to worksheet and draw lines.............:	.1794	105	18.84	.1794	105	18.84
Check and prove work 2/......:			12.90			6.26
Total man-minutes...........:			77.38			37.54

1/ Includes 15 percent personal and fatigue allowance.
2/ Twenty percent of total time is allowed for checking and proving.

No.		DIVISOR		RECIPROCAL
		Amounts	Class	
1	÷	$22,800,000	Total net sales	= .000000043859
1	÷	12,400,000	Grocery net sales	= .000000080642
1	÷	2,300,000	Produce net sales	= .000000434783
1	÷	6,900,000	Meat net sales	= .000000144927
1	÷	1,200,000	Frozen foods	= .000000833333

To divide by multiplication, multiply the dividend by the reciprocal of the divisor and move the decimal point two places to the right for the percentage as shown in the following tabulation:

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Class	Amount	Reciprocal	Ratio to net sales percent
Advertising	$ 45,000	.000000043859	.19
Purchase discounts	196,000	.000000043859	.86
Selling	186,000	.000000043859	.81
Warehouse	273,000	.000000043859	1.19

This method requires manual rounding-off of each percentage because the ratios are limited to two decimal positions for easier reading. For example, the ratio of purchase discounts to sales is .8596, but it has been rounded-off to .86.

When many percentages must be compiled for one total, manual rounding-off delays the computation time. The work can be accelerated when the reciprocal is rounded-off by locking the reciprocal remainder in the machine with the accumulators internally rounding-off and recording the rounded figures. This eliminates delay in computation since the calculator machine rounds-off all figures automatically and carries balances forward so the calculations are correct and total exactly 100 percent. This method of locking the reciprocal on a calculating machine for rounding-off is shown in figure 27. The amounts in the "Total" column of figure 2 were used to show the machine procedures and to indicate the balances remaining in the machine.

GENERAL LEDGER PREPARATION BY MANUAL METHOD: ONE-WRITING SYSTEM

When a bookkeeping machine, automatic tabulating equipment, or electronic computer is not available, a bound ledger for each account classification on the financial statements is maintained manually. Two types of general ledger sheets are suggested for the manual method: The 3-column sheet and the multicolumn sheet.

The 3-column ledger sheet has a debit money column, a credit money column, and a balance money column. This sheet is used for recording transactions for accounts when group totals are not reflected on financial statements.

Multicolumn ledger sheets are used for grouping related series of accounts to reduce the number of pages and to provide control totals by functions such as selling and merchandising. These sheets simplify the clerical work of control totals. They are used for each of the major and minor controls (figs. 2 and 4) such as accounts receivable, merchandise inventories, sales, cost of goods sold, prepaid expenses and supplies, advertising, printing department, merchandising, and delivery. Figure 28 shows a ledger sheet for prepaid insurance, property and equipment, and grocery merchandising and turnover expenses.

Wholesale food distributors who use manual methods can save as much as 50 percent of clerical labor by using the one-writing pegboard method of recording original data. Summary strip, pegboard, clip strip, and shingle strip are other names for the method of compiling figures from original records. The three major sources of information accumulated for general ledger work are: Accounts receivable and sales analysis; purchases and cash disbursement record; and payroll preparation and expense distribution.

Figure 27. Determination of percentages, on an automatic calculator, without manual rounding.

Classification (fig.2)	Amount	Percent	Proof Plus	Proof Minus	Step	Multiplier exhibit B	Keyboard	Touch control key	Upper counter dials 111 11 1 / 543 21 09 8765 4321	Lower dials
Net sales	$22,800,000	100.00	100.00%		1		Enter 1 in dial 13 with twirler			
					2			Both div.	100.00.00 0000 0000	
					3					43859-
					4					Copy to keyboard
					5					Clear and lock
					6		Lock		Cover dial 10 / Lock upper dials / 1.00.00 0000 0848	
Service fees	467,000	2.04	2.04		7	467,000	4385964	Mult.	2.04. 2 6598 8000	
	$23,267,000	102.04								
Cost of goods sold	22,257,000	97.61		97.61%	8	22,257,000	"	"	97.61. 6 6673 6000	
Gross margin on sales	$1,010,000	4.43								
Operating income										
Advertising	$ 45,000	.19	.19		9	45,000	"	"	.19. 0 3511 6000	
Retail accounting	4,000	.01	.01		10	4,000	"	"	.01. 5 7897 2000	
Printing department	2,000	-0-			11	2,000	"	"	. 3 5090 0000	
Purchase discounts	196,000	.85	.85		12	196,000	"	"	.85. 9 9984 4000	
Total operating income	$ 1,257,000	5.48								
Operating expenses										
Buying and turnover	$ 149,000	.65		.65%	13	149,000	"	"	.65. 5 0840 0000	
Selling	186,000	.81		.81	14	186,000	"	"	.81. 2 9778 4000	
Warehouse	273,000	1.19		1.19	15	273,000	"	"	1.19. 6 6569 6000	
Delivery - income	(228,000)	(1.00)	1.00		16	228,000	"	"	1.00. 6 6574 8000	
Delivery - expense	342,000	1.50		1.50	17	342,000	"	"	1.50. 6 6543 6000	
	$ 114,000	.50								
Administrative	168,000	.73		.73	18	168,000	"	"	.73. 5 0738 8000	
Building	27,000	.11		.11	19	27,000	"	"	.11. 9 2841 6000	
Total operating expenses	$ 917,000	3.99								
Net operating profit	$ 340,000	1.49								
Miscellaneous expense	111,000	.48		.48	20	111,000	"	"	.48. 7 7042 0000	
Income before taxes	$ 229,000	1.01								
Provision for income taxes	123,000	.54		.54	21	123,000	"	"	.54. 2 4399 2000	
Net income	$ 106,000	.47		.47	22					
Proof total		104.09%	104.09%	104.09%						

Recorded in figure 2 in percent column.

1/ Place decimal marker to the left of the dial or column as indicated.

Prepaid Insurance

No. 11-3

1958			Debit	Credit	Balance	
Jan. 1	Beginning balance	x			1812 37	1
31	Insurance premium	CD	137 85			2
31	Monthly writeoff of insurance	JE		162 52	1787 70	3
						4
						5

Property and Equipment

No 11-6

1958			Land	Building	Store Fixtures	Office Furniture	Delivery Equipt.	Total	
Jan. 1	Beginning balance		32473 18	12661 2 89	42144 86	8487 62	4585 52	214304 07	1
31	Truck purchased	CD					3250 —	3250 —	2
31	Cash register purchased	CD			1850 —			1850 —	3
31	Desk purchased	CD				12735		12735	4
31	Truck traded-in	JE					(1923 35)	(1923 35)	5
									6
31	Balance, end of month		32473 18	12661 2 89	43994 86	8614 97	5863 17	217559 07	7

Merchandising and Turnover Expenses - Groceries

	1960	Total Dr.	Cr.	Salaries Officers	Super-vision	Salaries Clerical	Payroll Costs	Travel Expense	Sundry	
1	Jan								59 41	1
2		567 49				875 92		510 08		2
3		4765 00		1344 33	2547 75	(338 98)				3
4			238 98							4
5		250 —							250 —	5
6		100 15					100 15			6
7		5687 64	238 98	1344 33	2547 75	636 94	100 15	510 08	309 41	7
8		5,448 66								8

Figure 28.--Ledger sheets for prepaid insurance, property and equipment, and grocery merchandising and turnover expense.

With the one-writing pegboard system, forms of different sizes are held in position on a posting board so the clerk can make one entry on several forms at the same time. Interleaved carbons enable the accountant to simultaneously prepare three or more records in one operation. The forms and posting board are designed for automatic alinement in sequence so the written data are prepared in a chronological sequence. This reduces the time for developing each source of information. In addition, the forms permit analysis and accumulation of weekly or daily totals for posting batch totals to the general ledger.

The records for basic operations that may be combined in a one-writing operation are:

Receivables	Payables	Payroll
Customer statement	Purchases register	Pay check
Accounts receivable	Cash disbursement record	Employee earnings notice
Ledger card for each customer	Vendor record of charges and credits	Payroll summary
Sales analysis register	Remittance advice	Individual earnings record
Cash receipts record	Check	Check register

For example, in payroll preparation, it is necessary to make a payroll check, employee earnings notice, individual earnings record, payroll summary, and a check register. The pegboard system combines all five of these records for preparation in a single operation with one writing. A number of wholesalers use this payroll system. The accounts payable and accounts receivable applications are not in general use in the food industry, but they have proved useful and have resulted in labor savings in many other industries.

Accounts Receivable.--With the one-writing system on accounts receivable, the entry can be made direct to the Customer's Statement (Form A, fig. 30). A carbon, attached to the back, transfers the entry, as it is written, onto the Customer's Ledger Record (Form B, fig. 30). The Sales and Cash Receipts Record (Form C, fig. 30) receives its impression from a sheet of carbon under the ledger.

The entry is distributed to the sales divisions (grocery, produce, etc.) daily, and the totals are recorded in the general ledger at the end of the month. Figure 29 shows the method of inserting the various forms for accounts receivable. Figure 30 shows the forms used with the one-writing system.

Accounts Payable.--The one-writing system of accounts payable enables the accountant or bookkeeper to prepare the check (Form A, fig. 32). A carbon copy or coating on the reverse side of the check transfers the entry onto Vendor's Ledger Record of Charges and Credits (Form B, fig. 32). The Purchase and Cash Disbursements Record (Form C, fig. 32) receives its impression from a sheet of carbon under the Vendor's Ledger. Charges and credits are summarized into the general ledger accounts, totaled at the end of the month or 4-week period, and posted to the general ledger. The forms used are shown in figure 32, and the method of inserting them for simultaneous preparation is shown in figure 31.

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ACCOUNTS RECEIVABLE LEDGER

ACCOUNTS
RECEIVABLE
STATEMENT

statements are supplied
carbon attached

carbon paper

carbon paper
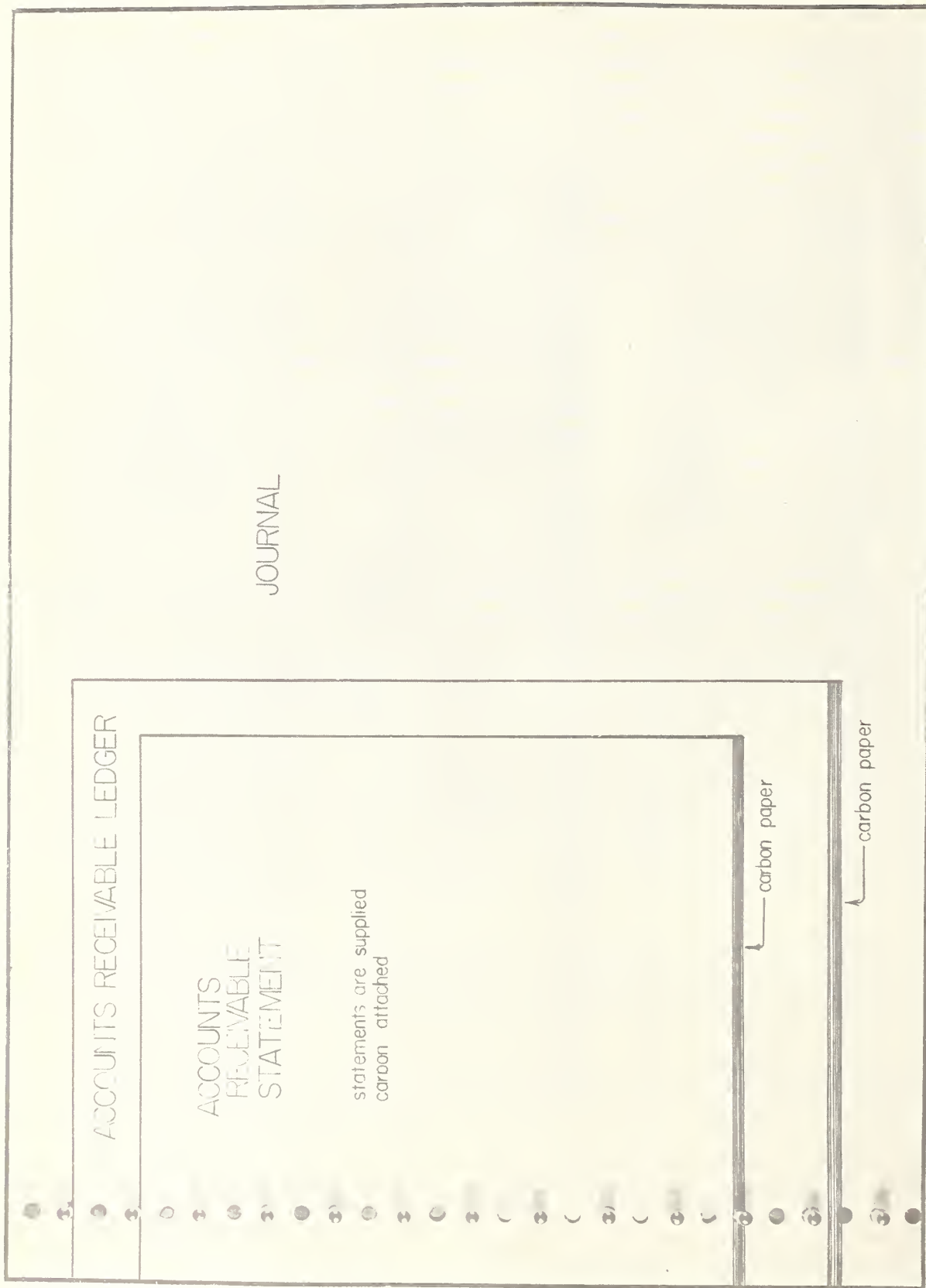
Figure 29.--Method of placing accounts receivable forms for a one-writing system.

Form C   SALES AND CASH RECEIPTS RECORD

Form B – Customer Ledger
Record

Form A – Customer Statement

SALES

GENERAL LEDGER

ACTUAL SIZE OF FORM: 14" X 19"

Figure 30.--Forms used with one-writing accounts receivable.

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VENDOR'S LEDGER

CHECKS
checks are supplied pre-shingled

carbon paper

Figure 31.--Method of placing accounts payable forms for one-writing.

Figure 32.--Forms used with one-writing accounts payable.

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Payroll.--Basic payroll records are prepared simultaneously by using a combination check- and employee-earnings-remittance strip (Form A, fig. 34). The strip is perforated so it can be easily torn off. A carbon coating on the strip transfers the entry onto the individual earnings record (Form B, fig. 34). A sheet of carbon paper under this record transfers the data onto the payroll journal (Form C, fig. 34). Gross earnings for each employee are distributed to their respective summary columns for totaling and month-end or 4-week posting to the general ledger. Figure 33 shows how original payroll records are combined.

GENERAL LEDGER PREPARATION WITH KEY-DRIVEN MACHINES

Some wholesale food distributors use key-driven accounting machines for payroll, accounts payable, and general ledger. These machines are used to simultaneously prepare original source documents (checks for bills and payroll) and accumulate control and distribution totals for records and ledgers. The machines are used for practically all bookkeeping as they contain arithmetic registers that mechanically add or substract, carry forward the proof and totaling balances, and provide totals that ensure the accuracy of the bookkeeping. The basic chart of accounts and procedures in this report is adaptable for bookkeeping machines.

Figure 35 shows the general ledger forms customarily used with key-driven machines. These machines permit preparation of multiple-copy forms in a series of operations. Key-driven machines with attachments are available in various models. Prices range from approximately $1,200 for a desk model with 3 registers to $5,000-$6,000 for a model with 12 to 20 column registers. The machines may be rented for various periods of time, from one to four years or more. For example, monthly rental for a 4-year period would average 2.7 percent of the purchase cost, with an option to buy at the end of the period at 2.5 percent of the initial price, per month. A machine costing $2,000 would require a monthly rental of about $55.00.

A key-driven accounting machine is shown in figure 36.

The machine operation of preparing the payroll permits simultaneous preparation of the following: Employee's pay check; individual earnings record; payroll register; and summary or individual posting to general ledger.

The accounts payable operation results in simultaneous completion of each of the following operations: Writing checks for amounts due suppliers, vendors, and others; preparing the disbursement journal; and posting to general ledger. Figure 37 shows the procedural work steps in byproduct general ledger accounting originating with the accounts payable operation.

Figure 33.--Method of placing payroll accounts for one-writing.

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Figure 34.--Forms used for one-writing payroll accounts.

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OLD BALANCE	DESCRIPTION	DATE	ACCOUNT NO	DEBIT	CREDIT	BALANCE	BALANCE YEAR TO DATE
		JUL 31 59					600.00
		AUG 31 59	1,001,010	1,158.52		1,158.52	
1,158.52		AUG 31 59	1,001,010	715.40		1,873.92	
600.00							
1,873.92		AUG 31 59					2,473.92

Account: WAREHOUSE A - CASH IN BANK — Account No 1,001,010 — A

(ACTUAL SIZE OF FORM: 9 3/4" X 11")

Figure 35.--A general ledger form used with key-driven accounting machines.

Figure 36.--A key-driven accounting machine.
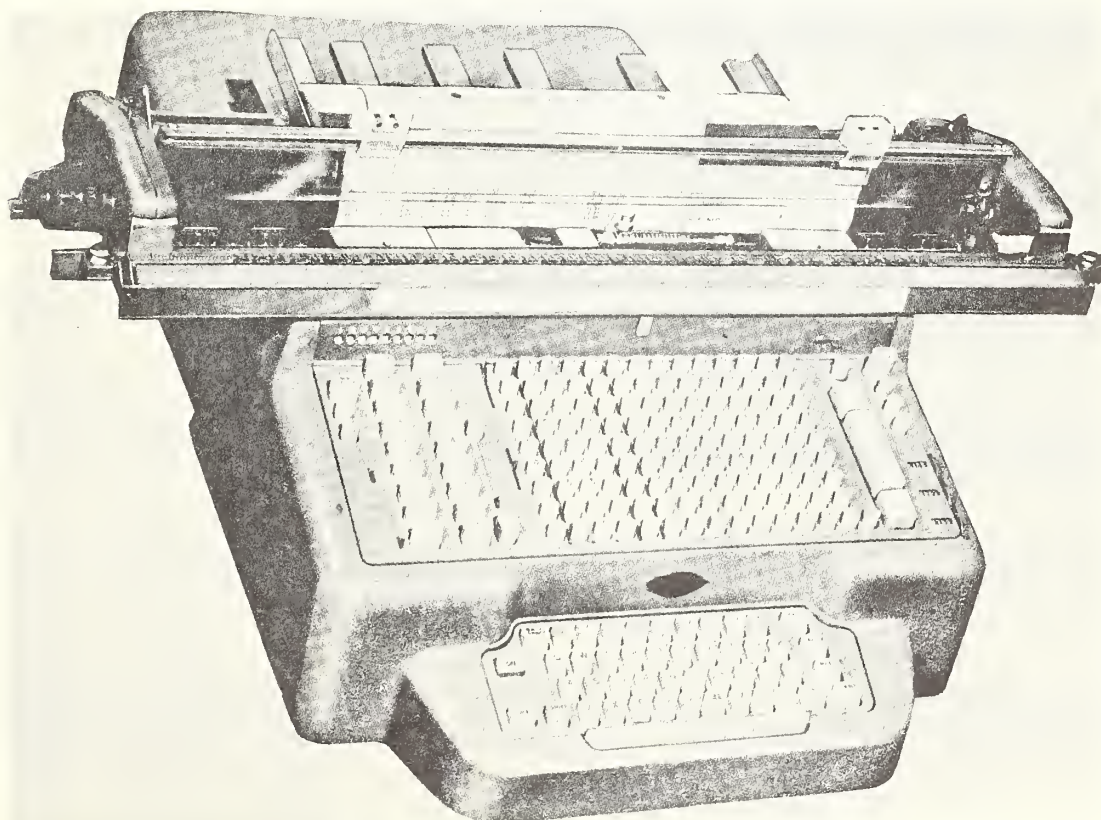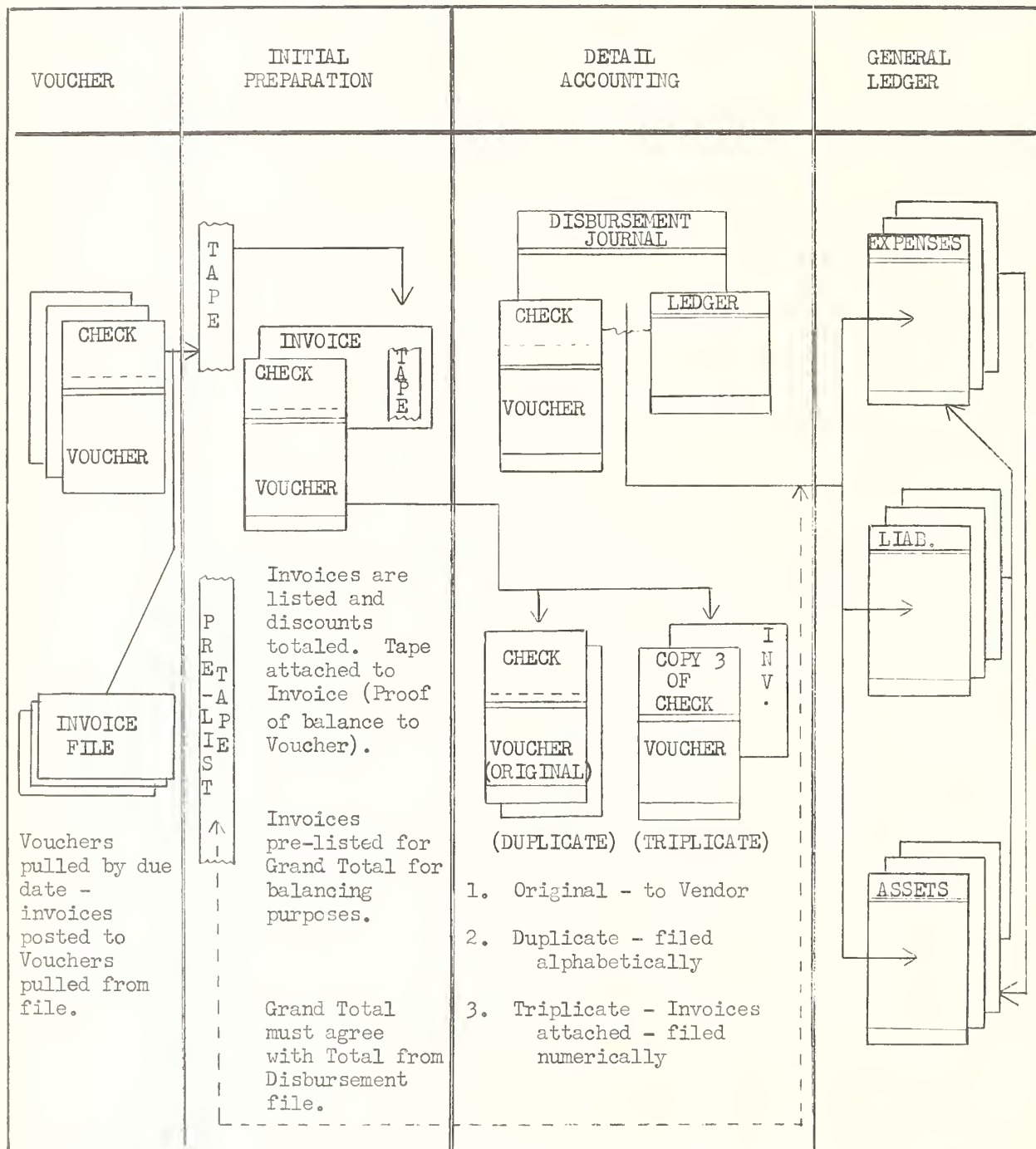
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VOUCHER	INITIAL PREPARATION	DETAIL ACCOUNTING	GENERAL LEDGER

CHECK

VOUCHER

TAPE

DISBURSEMENT JOURNAL

EXPENSES

INVOICE

CHECK

VOUCHER

TAPE

CHECK

VOUCHER

LEDGER

INVOICE FILE

PRE-TAPE LIST

LIAB.

CHECK

VOUCHER
(ORIGINAL)

COPY 3 OF CHECK
VOUCHER

INV.

(DUPLICATE)   (TRIPLICATE)

ASSETS

Vouchers pulled by due date – invoices posted to Vouchers pulled from file.

Invoices are listed and discounts totaled. Tape attached to Invoice (Proof of balance to Voucher).

Invoices pre-listed for Grand Total for balancing purposes.

Grand Total must agree with Total from Disbursement file.

1. Original – to Vendor

2. Duplicate – filed alphabetically

3. Triplicate – Invoices attached – filed numerically

Figure 37.--Accounts payable procedure with a key-driven accounting machine.

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General Ledger Distribution as a Byproduct
of Key-Driven Accounting Machine Operations

Some wholesalers use a card-punch coupler to obtain punched cards for the general ledger. The accounting machine is connected to a card punch machine, Model 024 or 026, as shown in figure 38.

As the machine operators prepare basic records, such as payroll and accounts payable, certain information inserted on these records is transmitted by the card-punch coupler to a key-punch machine which automatically punches a card. This card is used to prepare supplemental reports; it also serves as the general ledger card. This operation eliminates the manual key-punching operation otherwise required to prepare a detail card for each account distribution to the general ledger. Simultaneous preparation of reports results in automatic key-punch of account cards for general ledger work. The basic mechanics of the operation are illustrated in figure 38.

A card punch coupler costs approximately $850. It may be rented for varying periods of time with a purchase option.

The labor savings in preparing detail cards for general ledger are particularly significant in recording the cash distribution, accounts payable, and payroll items. These three factors represent 85 to 95 percent of the total items in the general ledger. Table 7 shows the workload of individual postings and checks written for the purchase of merchandise and payment of expenses at two wholesale food distributors.

Table 7.--Number of invoices processed, checks written, and individual account postings at two sales levels

Items	Company A (Sales: $665,000 per month)	Company B (Sales: $3,282,000 per month)
Invoices processed monthly:		
Merchandise............................	710	1,444
Expense and other items...............	90	228
Total invoices.....................	800	1,672
Checks written in disbursement:		
Merchandise............................	640	1,282
Expenses and other items..............	85	188
Individual postings to accounts: 1/		
Merchandise............................	2,800	5,776
Expenses and other items..............	360	912

1/ Postings required on a manual basis are: Write check in payment; record accounts payable; post to cash disbursement ledger; and record in general ledger account.
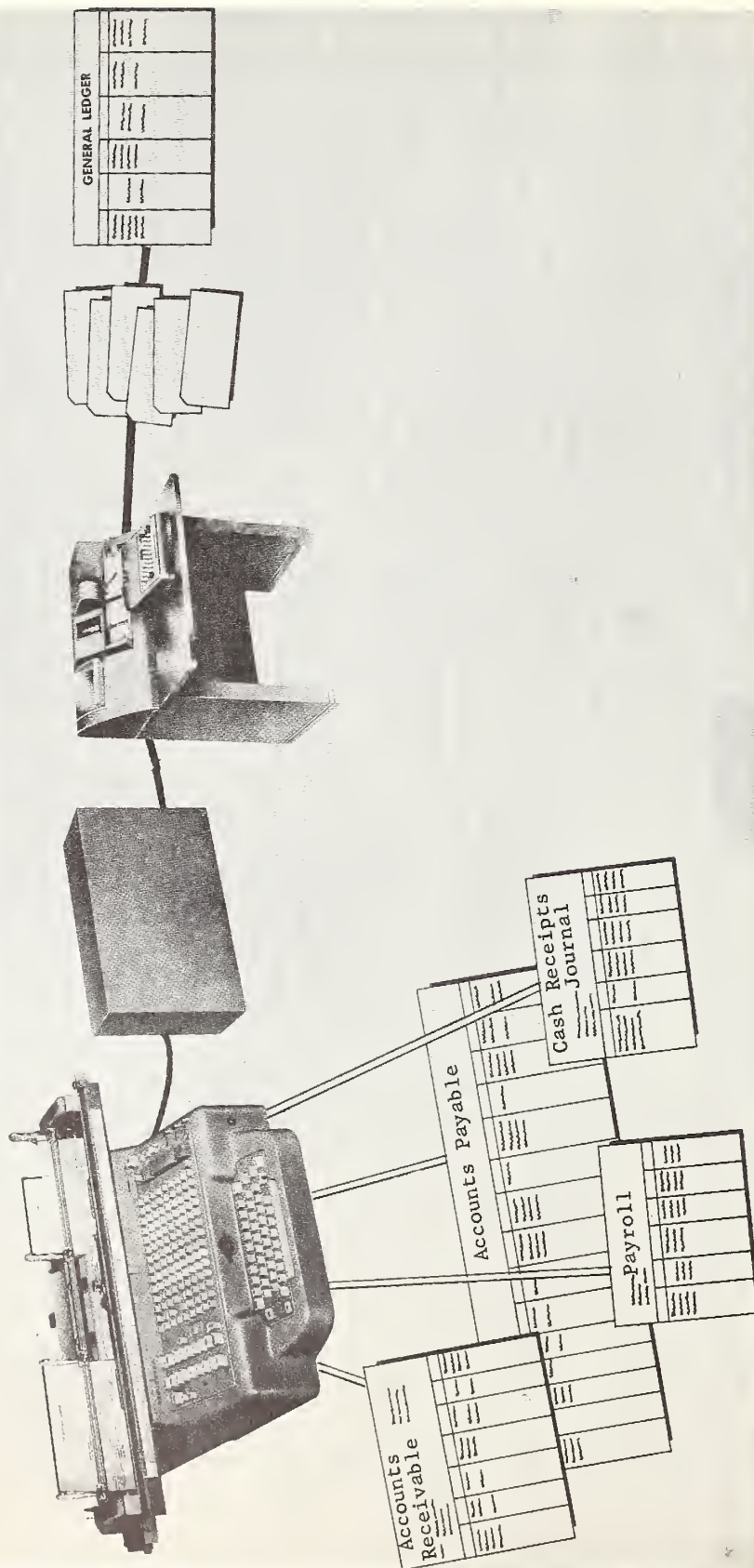
Figure 38.--Key-driven accounting machine and card punch coupler.

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Without an intercoupler, processing the items listed above for individual key-punching of a card for each account in the general ledger would require 6.62 additional hours for Company A and 13.8 hours for Company B. This additional time requirement is based on time studies and on a standard time of .497 man-minutes per transaction applied to 800 items for Company A and 1,672 items for Company B.

Payroll Distribution, General Ledger

Substantial clerical work is required to distribute payroll expenses into various sales divisions and operating functions by their appropriate account functions. For a wholesaler with 256 employees (two warehouses with seven sales divisions), the proper classification of each employee's wages normally required posting to a general ledger card for each 4-week period. This was the equivalent of 1,024 separate machine-posting operations to 336 general ledger payroll expense accounts requiring machine pickup and totaling of prior period balances. With use of automatic tabulating equipment, this operation would involve key-punching 1,024 tab cards.

When an accounting machine is used, the work of weekly balancing, pickup of prior balances, and posting for weekly or biweekly payroll can be reduced to a single posting to the general ledger accounts, for each employee, by either of the following two methods. With the first method, post the employee's gross earnings at the end of the last 4-week period, then subtract these earnings from the gross earnings at the end of the current period. The machine automatically subtracts and prints the net payroll expense for the period while accumulating a total. This total should match the total gross earnings for the payroll periods in the accounting period. The net payroll expense is then punched into cards by key-punch (intercoupler if attached) and 402/403 machine, listed, and totaled to prove against the accounting machine total.

The second method can be used if the machine does not have enough registers for the gross and net earnings columns. At the end of the period, list all employee earnings cards in straight employee ledger card sequence, and machine post the following: General ledger account number; current-period gross earnings, and prior-period gross earnings. The machine automatically subtracts column 3, current total earnings, from column 2, prior total earnings, prints the net payroll expense for the current period (fig. 39), and accumulates a total internally. This total is printed, at the end of the operation, as a proof total. The source and date of entry, account numbers, and net current payroll expense are then punched into cards by manual key-punching or intercoupler punching.

The second method (period variation with machine posting) can save 10.59 man-hours over posting individual amounts by machine (table 8).

Figure 39 shows a facsimile of a portion of the proofsheet prepared on an account machine.

Table 8.--Comparison of time required to prepare payroll distribution for the general ledger with machine-posting of individual amounts and with machine-posting by group

Operation	Units	Man-minute per unit 1/	Total man-minutes 1/
Machine posting individual amounts			
Locate proper ledger card, insert into machine, remove on completion of operation	1,024	.2082	213.20
Post entry to ledger card, accumulate current period total...................	1,024	.2300	235.52
Clear machine, prove totals...............	4	.1800	.72
Pick up current-period and prior year-to-date total, machine total these, and print new year-to-date total............	1,024	.2415	247.30
Total............................			696.74 or 11.61 hrs.
Machine posting by group			
Post to proofsheet at end of period: Account number, price period gross earnings, and year-to-date gross earnings. Machine automatically subtracts, prints current period amount, and accumulates totals...............................	256	.2200	56.32
At completion of operation, clear machine, and print proof totals...................	1	.1800	.18
Verify proof totals to total control amount: on gross payrolls........................	4	1.2500	5.00
Total............................			61.50 or 1.02 hrs.

1/ Includes 15 percent personal and fatigue allowance.

GENERAL LEDGER AND FINANCIAL STATEMENT PREPARATION
ON AUTOMATIC TABULATING EQUIPMENT

More than 72 man-hours can be saved each period by using automatic tabulating equipment instead of manual methods for maintaining the general ledger and preparing financial statements (table 2). The following card layout, wiring diagrams, and machine reports can be used by any wholesale food distribution business having a basic IBM tabulating machine installation. Some procedural steps stipulate use of collator (model 077) or a summary punch (models 519 or 523) connected to an accounting machine (models 402 or 403). The same results can be obtained without a collator by merging through sorting (for example, header and name cards) or by manual key-punching. Header cards are cards that are prepunched with alphabetic data such as account description. The header cards are merged with cards containing numeric data. The merged alphabetic and numeric data cards are printed on the 402 or 403 accounting

machine on a basis that permits the machine to print the account description and the numeric data without punching the alphabetic data into the numeric data cards.

(1) ACCOUNT NUMBER	DATE	(2) CURRENT PERIOD GROSS EARNINGS	(3) PRIOR PERIOD GROSS EARNINGS	(4) NET PAYROLL EXPENSE CURRENT PERIOD
1,151,021	AUG 31 59	3,500.00	2,000.00	1,500.00
1,251,021	AUG 31 59	1,675.00	837.50	837.50
1,351,021	AUG 31 59	1,847.85	912.50	935.35
1,152,022	AUG 31 59	1,185.00	535.00	650.00
1,252,022	AUG 31 59	892.85	438.95	453.90
	AUG 31 59	56,182.75	38,196.25	17,986.50

Figure 39.--Proof sheet, labor distribution form.

The forms, card column assignment, and wiring diagrams can be used in a tub-file, batch-billing, or RAMAC type of operation. The procedure workflow provides for the use of header cards for printing account descriptions in the general ledger lists and financial statements. Printing-account descriptions are omitted when the accountants are familiar with the coding or an interpreter is not available.

Material for installing the general ledger on tabulating equipment is shown in the following figures: Figure 40, a list of header cards and codes for account description in the statement of financial condition; figure 41, a list of header cards and codes for account description in the statement of income; figure 42, card layout, general ledger showing card column assignment; figure 43, form layout for 402 machine spacing and listing of general ledger; and figure 44, sample copy of general ledger as prepared on 402 accounting machine. The following wiring diagrams and workflow are shown: Figure 45, general ledger transaction panel (402-403); figure 46, general ledger summary punch (519); figure 47, addition to general ledger, summary punch for year-to-date balance-forward amount in card columns 22 through 31 (519); figure 48, match-merge general ledger deck; and figure 49, workflow for general ledger and financial statements.

Account code	Account description 1/	Minor control columns
0001000	Cash	XXXX
0001100	Notes receivable	"
0001200	Accounts receivable	"
0001300	Merchandise inventory	"
0001500	Prepaid expenses	"
0001600	Other assets	"
0001700	Fixed assets	"
0001800	Accumulated depreciation	"
0001900	Notes payable	"
0002000	Accounts payable	"
0002100	Accrued payables	"
0002200	Accrued other taxes	"
0002300	Taxes on income	"
0002400	Clearing accounts	"
0002500	Common stock	"
0002600	Accumulated earnings	"

1/ Limited to 18 digits due to card column limitations.

Figure 40.--A list of header cards and codes for account
description in the statement of financial condition.

Account code	Account description	Control columns	
0003200	Net sales	XXXX	Minor
0003900	Cost of sales	XXXX	"
	Gross profit	XXXX	Total intermediate
Operating Revenues:			
0004100	Advertising	XXXX	Minor
0004200	Retail accounting	XXXX	"
0004300	Sundry	XXXX	"
0004400	Purchase discounts	XXXX	"
		XXXX	Total intermediate
		XXXX	Total major
Operating Expenses:			
0005100	Merchandising, turnover	XXXXX	Minor
0005200	Selling	XXXXX	"
0005300	Warehouse	XXXXX	"
0005400	Delivery	XXXXX	"
0005500	Administrative	XXXXX	"
0005600	Turnover	XXXXX	"
0005700	Building	XXXXX	"
		XXXX	Total intermediate
		XXXX	Total major
Nonoperating items:			
0006200	Other income	XXXX	
0007100	Other expenses	XXXX	
		XXXX	Total

Figure 41.--A list of header cards and codes for account description
in the statement of income.

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CC 1-2 PERIOD OF YEAR

CC 3-4 SOURCE OF ENTRY

CC 5-11 ACCOUNT CODE

CC 12-21 1/
AMOUNT (DOLLARS)

CC 22-39
DESCRIPTION

CC 80
X PUNCH
TO DENOTE
MASTER DECK 2/

HEADER (DESCRIPTION) CARD

TRANSACTION CARD

1/ "x" in card column 21 is credit balance; no "x" in card column 21 is debit balance.

2/ Provided to separate header (account description) cards from transaction cards in one pass through sorter (082).

Figure 42.--Card layout: General ledger showing card column assignment.

CHART FOR 5/32" MACHINE SPACING — 6 LINES PER INCH

"X" COLUMN 80 ONLY

GENERAL LEDGER DETAIL LISTING

1. Indicate header card on first line of group.

Minor control cc 5-11 summary punch on all accounts.

Intermediate control cc 5-9 summary punch on income and expense only.

(3-9 in col 8) Use digit selector to control intermediate counters.

Intermediate summary punch only cc 5-9 dropping cc 10 & 11. Let zeros punch in these positions.

Example: IOI6700

SOURCE	LOCATION	DEPT.	MAJOR	DETAIL MINOR	ACCOUNT DESCRIPTION	DEBIT	CREDIT	THIS PERIOD BALANCE BA	YEAR-TO-DATE BALANCE 8B

BALANCE FORWARD Card is gang-punched with "X" in column 4 and 99 in cc 3 and 4 (source) while summary punching.

X 21 indicates credit

NX 21 indicates debit

PRINT CONTROL
NX 80
X 21
NX 4

SUMMARY PUNCH

plus
NX 80
NX 4
NX 21

minus
NX 80
NX 4
X 21
MINOR

INTERMEDIATE COUNTER
NET DIFFERENCE
MAJOR COUNTER

plus
NX 80
NX 21

minus
NX 80
X 21

MINOR → MAJOR COUNTER

INTEREST EXPENSE SUMMARY PUNCH   LIST MINOR   X X X X X   X X   X X X X
INSURANCE ON INVENTORY SUMMARY PUNCH   LIST MINOR   X X X X X   X X   X X X X
TAXES ON INVENTORY SUMMARY PUNCH   LIST MINOR   X X X X X   X X   X X X X
TURNOVER EXPENSE SUMMARY PUNCH   INTERMEDIATE   X X X X X   X X   X X X X

IOI6658
IOI6673
IOI6674
IOI6600

Figure 43.--Form layout for 402 machine spacing and listing of general ledger.

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```
99     1010 THIRO NATIONAL BANK                                              5555555
 4                                      2550000     2550000 CR    2550000 CR
 1                          235000000               225000000     225000000
 6                                    165000000   165000000 CR  165000000 CR
19                                     35000000    35000000 CR   35000000 CR
                                                   22450000*     28005555*

99     2100 ACCTS PAYABLE TRADE                                              8996829R CR
 6                           43754568               43754568     43754568
 6                                    45500000    45500000 CR   45500000 CR
19                            9257782                9257782      9257782
 6                                     7167965     7167965 CR    7167965 CR
                                                     344385*     89623913*CR

99  1013200 CHARGE SALES GROCERY                                            475000000 CR
 3
19                            3946668   102986521 102986521 CR  102986521 CR
                                                    3946668       3946668
                                                   99039853*    574039853*CR

99  2013200 CHARGE SALES GROCERY                                            222500000 CR
19                            1675780                1675780      1675780
 3                                    43074591    43074591 CR   43074591 CR
                                                  41398811*CR   263898811*CR

99  2023200 CHARGE SALES PRODUCE                                             27500000 CR
 3                                     4869420     4869420 CR    4869420 CR
19                             254555                 254555       254555
                                                    4614865*CR   32114865*CR

99  2033200 CHARGE SALES FR FOOD                                             56500000 CR
 3                                    11836057    11836057 CR   11836057 CR
19                             477585                 477585       4775R5
                                                  11358472*CR    67858472*CR

99  2043200 CHARGE SALES TIRE                                                13500000 CR
 3                                     4331052     4331052 CR    4331052 CR
19                             137585                 137585       137585
                                                    4193467*CR    17693467*CR

99  2053200 CHARGE SALES MEAT                                                56500000 CR
19                             477585                 477585       477585
 3                                   21208743    21208743 CR    21208743 CR
                                                  20731158*CR    77231158*CR

99  1013900 COST OF SALES GRO                                              458557599
 8                           97734208               9773420R     9773420R
19                                      677585     677585 CR     6775R5 CR
                                                  97056623*      555614222*

99  2013900 COST OF SALES GRO                                             200199RR5
 8                           40597802               40597802     40597802
19                                      344383     344383 CR      3443R3 CR
                                                  40253419*      240453304*

99  2023900 COST OF SALES PRO                                              22687989
 8                            4431172                4431172     4431172
19                                      67882      67882 CR      67RR2 CR
                                                    4363290*      27051279*

99  2033900 COST OF SALES FR FOO                                           50765565
 8                           10534091               10534091     10534091
19                                      56979      56979 CR      56979 CR
                                                  10477112*       61242677*

99  2043900 COST OF SALES TIRE                                             11818575
19                                      34213      34213 CR      34213 CR
 8                            3508152                3508152     3508152
                                                    3473939*      15292514*

99  2053900 COST OF SALES MEAT                                             5097756R
19                            6871979                6871979     6871979
 8                           20466256               20466256     20466256
                                                  27338235*       78315803*

19  1016658 INTEREST EXPENSE GRO          87885     87885       R78R5
                                                     87885*      R78R5*

19  2016658 INTEREST EXPENSE GRO          21318     21318       2131R
                                                     21318*      2131R*

11  1016673 INSURANCE GROCERY             12600     12600       12600
                                                     12600*      12600*

11  2016673 INSURANCE GROCERY              4000      4000        4000
                                                      4000*       4000*

12  1016674 TAX INV GROCERY               41916     41916       41916
                                                     41916*      41916*

12  2016674 TAX INV GROCERY               10813     10813       10813
                                                     10813*      10813*

19  2026658 INTEREST EXPENSE PRO            315       315         315
11           INSURANCE PRODUCE
12           TAX INV PRODUCE                 82        82          82
                                                       397*        397*

19  2036658 INTEREST EXPENSE F F           9768      9768        9768
11           INSURANCE FR FOOD             1400      1400        1400
12           TAX INV FR FOOD               5399      5399        5399
                                                     16567*      16567*

19  2046658 INTEREST EXPENS TIRE           8588      8588        8588
```

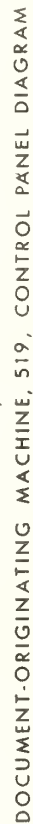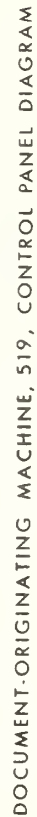Figure 44.--A sample copy of general ledger as prepared on the
402 accounting machine.

Figure 45.--General ledger transaction panel (402-403).

Figure 46.--General ledger summary punch (519).

Figure 47.--Addition to general ledger, summary punch for year-to-date balance forward amount in card columns 22 through 31.
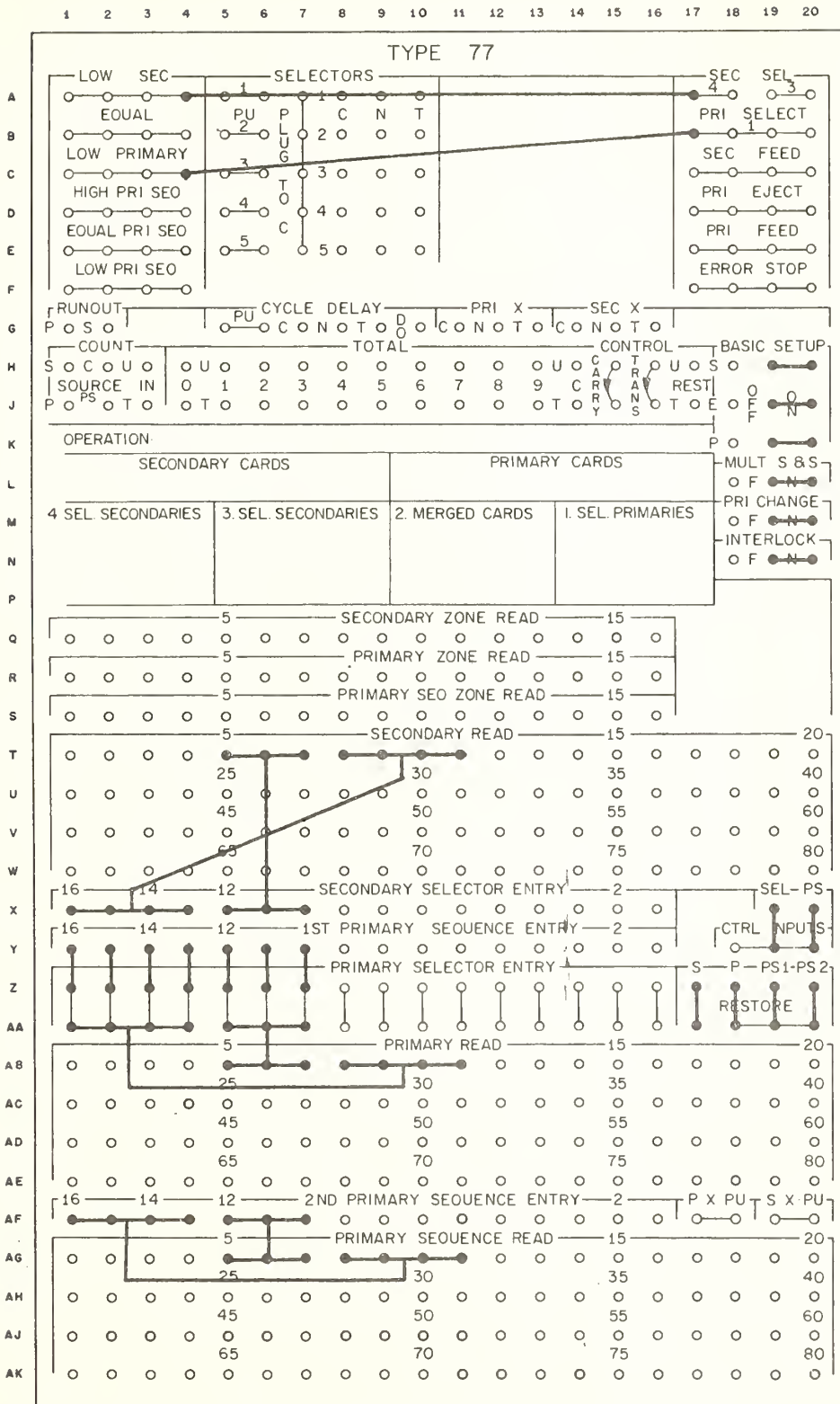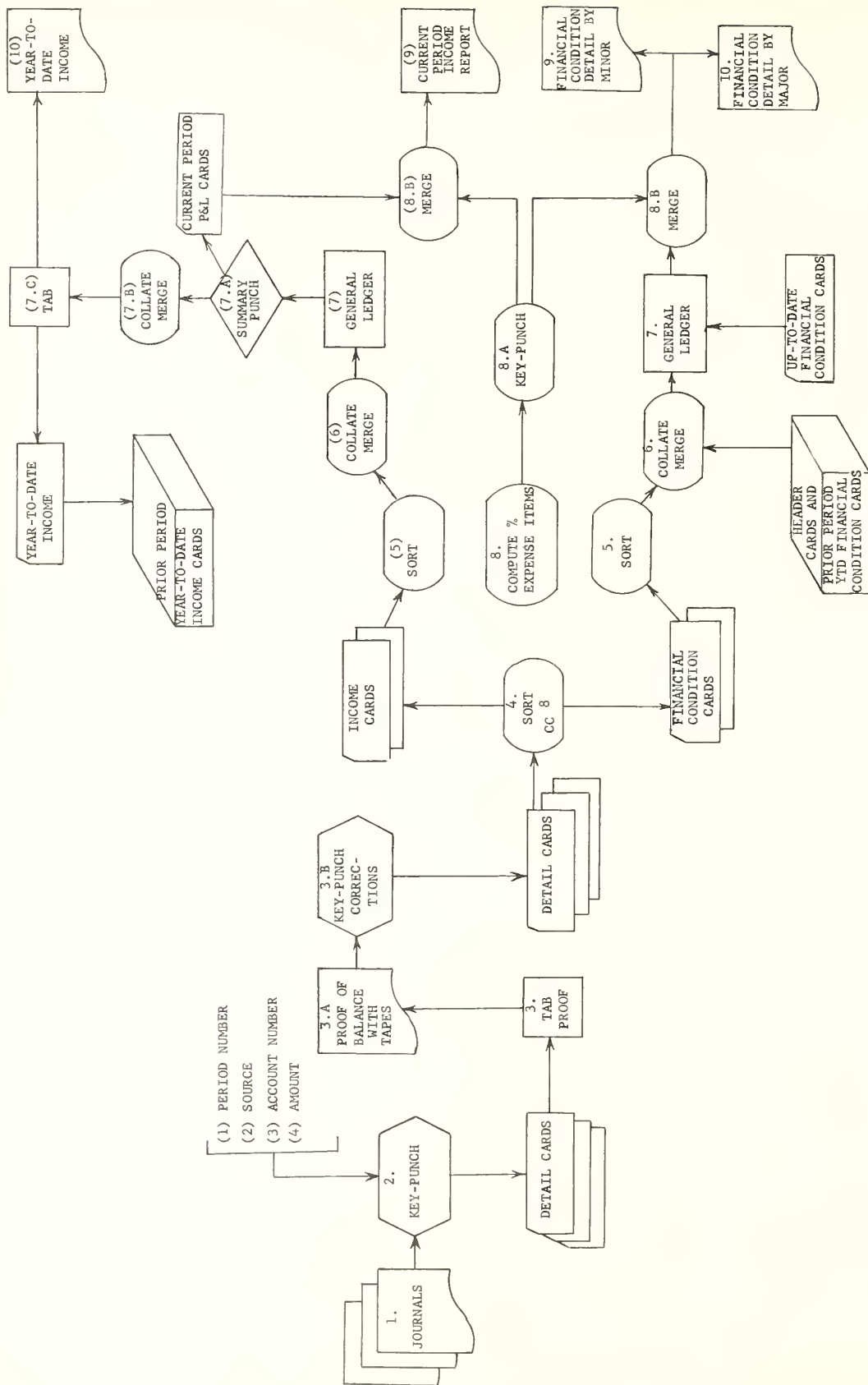
Figure 48.--Match-merge general ledger deck.

Figure 49.--Workflow for general ledger and financial statements.

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With these forms and diagrams a basic format can be developed for using random access method of accounting and control equipment, following the program steps described later in this report, without revision or modification of the forms, card layout, or wiring diagrams.

The workflow in maintaining the general ledger and preparing financial statements on tabulating equipment is shown in the following procedural resume. This resume follows the symbol workflow in figure 49; the numerals correspond to the workflow symbols.

1. Journal entries are submitted for each source document.

2. Cards are key punched for each account and transaction.

3. Cards are list tabbed on 402 with grand totals matching total debit balances with total credit balances.
    A. Entries not in money balance are checked.
    B. New cards are punched to replace incorrect cards.

4. Cards are sorted (082) in account code sequence. (card column 8, cc-8) Hand separate the balance sheet cards. (code digits 1 and 2 in cc-8) from profit and loss cards (code digits 3, 4, 5, 6, 7, 8, and 9 in cc-8).

Financial Condition Cards:	Statement of Income Cards:
5. Sort cards on cc 11, 10, 9, 8, 7, 6, and 5.	(5) Sort cards on cc 11, 10, 9, 8, 7, 6, and 5.
6. Match merge on collator (077) or sort (082) header (description) cards and prior-period year-to-date balance sheet cards.	(6) Match merge on collator (077) or sort (082) header (description) cards. (Do not include prior-period year-to-date cards.)
7. Machine list (402 current-period and year-to-date general ledger.	(7) Machine list (402) current-period general ledger.
A. Summary punch (519) new year-to-date balance sheet cards.	(A) Summary punch new current-period profit and loss cards.
	(B) Match merge on collator (077) or sort with 082 current-period cards with prior-period year-to-date profit and loss cards.
	(C) List tab year-to-date general ledger.

(D) Summary punch new year-
to-date balance forward
cards.

The resulting difference in balances on the list prepared in steps 7
and (7) should agree and represent the net profit or loss for the
current period.

8. Compute expense and accrual items based on a percentage of profits
   such as income tax accrual, bonus accrual, and profit sharing con-
   tribution; prepare journal entry.
   A. Key punch cards from journal entry.
   B. Merge cards into the respective decks.

9. Prepare financial condition   (9) Prepare statement of income
   showing detail in accounts by   for current period only. 1/
   minor controls.

10. Prepare financial condition   (10) Prepare statement of income
    showing major account balances   for year-to-date. 1/
    only.

Spread Cards for Departmental Financial Statements

Time can be saved in preparing departmental financial statements by print-
ing them with spread cards directly on the 402 or 403 accounting machine when
the general ledger listing is completed. In one company the time required to
prepare a 5-department financial statement was reduced from 18.8 hours to 1.5
hours by using the spread card system.

With this system the machine prepares a single card for each item of in-
come or expense on a departmental basis and also cross totals and punches the
grand total for the item into a single card. For more than five departments,
the spread card data must be punched into two cards. Spread card reporting on
a departmental basis is limited to the countercapacity of the machines, but
as many as 10 departments can be spread on two cards.

Figure 50 shows the data from five sales departments being inserted in a
spread card. The 402 machine processes separate cards containing current-
period sales data for each of the following sales departments: (1) Grocery;
(2) meat; (3) produce; (4) frozen foods; and (5) nonfoods. The amounts of
sales have been punched into separate cards for each department in card col-
umns 12 through 21. A card is held in the 519 reproducer as the cards go
through the 402 machine. Data from each card for the five sales departments are
punched into the respective departmental locations on the spread card. For
example, the amount of grocery sales in card columns 12 through 21 is punched

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1/ Methods of preparing the statement of income include: Handwriting onto
worksheets; typewriting on reproducing machine masters; and preparing on 402
machine basis using spread card method shown in figure 2.
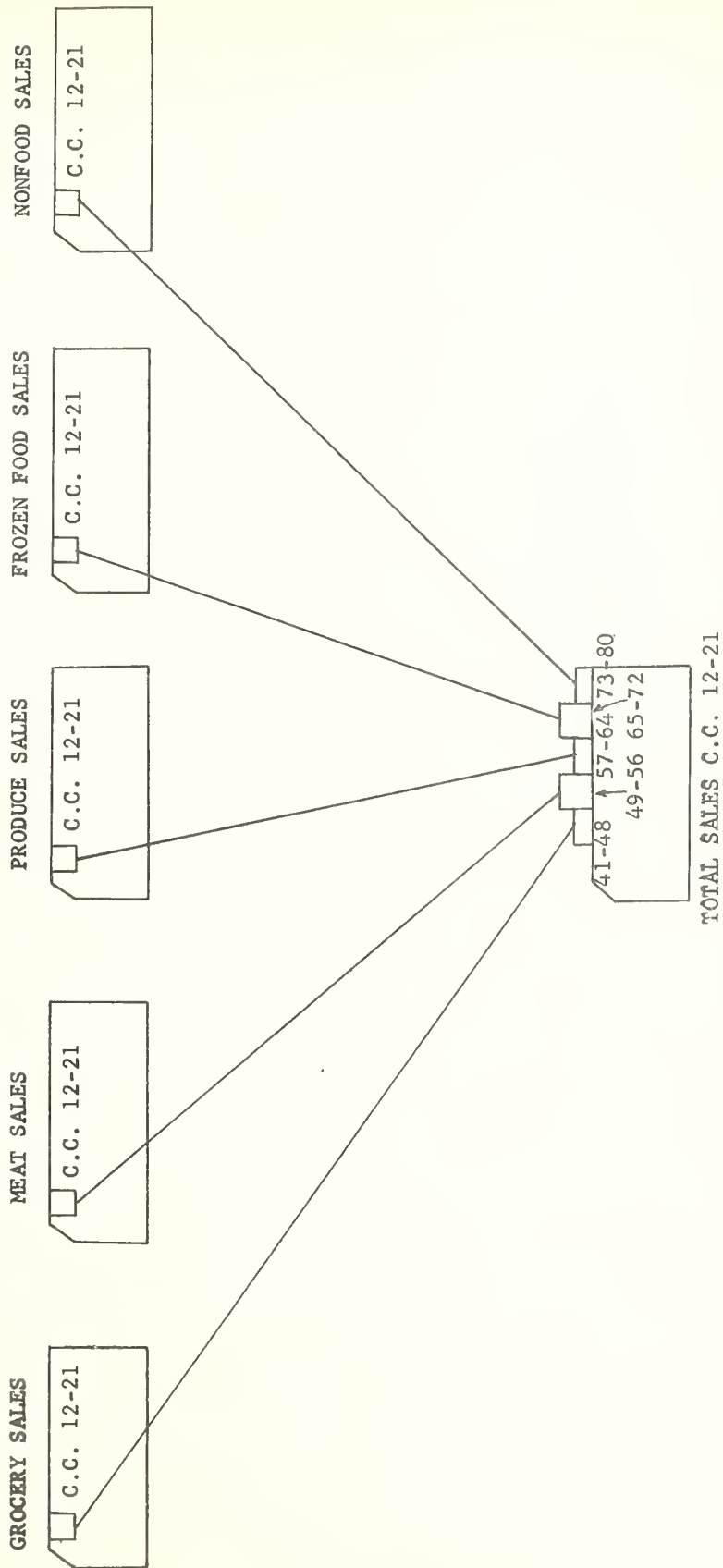
Figure 50.--Sales data transferred from detail cards to spread card with card column assignments.

into card columns 41 through 48 on the spread card; the amount of meat sales in columns 12 through 21 is punched into columns 49 through 56 on the spread card; and so forth, for each department. The same procedure is followed to prepare a spread card for the cost of sales, operating revenues, operating expenses, and so forth. It is also used to obtain the year-to-date information by use of the year-to-date detail card deck. Figure 51 shows the wiring diagram used to transfer data from the detail department cards to the spread card.

When the spread cards are completed, the income statement is prepared by the 402 on a departmental and total basis (fig. 2). The spread income statement is printed with the 402 by using the wiring diagram shown in figure 52.

This procedure does not provide a method for determining the percentage of each item to sales. The percentage can be computed with a calculator or by processing the spread cards through a 602 A or 604 electronic calculator.

The workflow for preparing an income statement with spread cards on the accounting machine is:

1. Sort the general ledger summary cards by account number columns 11 to 8.

2. Merge the summary cards behind the account description master cards.

3. Intersperse gang punch the description and end print the account number columns 8 to 11, using the 519 reproducer.

4. Sort separate on column 8 the financial condition and income statement items. Hold the financial condition items for preparation of the financial condition summary.

5. Sort the income statement summary cards by location columns 6 and 7.

6. List on the 402 accounting machine with summary punch hookup (519 or 523 to the 402) by location and account number, obtaining the year-to-date income statement spread cards (indicated by a "1" in column 1) for each major classification. Repeat, using setup switch as indicated on 402 panel to obtain the current-period spread cards (indicated by a "2" in column 1). Note: Use wiring diagram shown in figure 51 for 402 machine.

7. Forward the summary report to the Accounting Division. Retain the balance-forward cards for the next period.

8. Sort the income statement spread cards on column 8, selecting all expense items as indicated by a 5 punch in column 8. Sort the current-period and year-to-date separately.

9. List on the 402 accounting machine and obtain a card representing the total operating expenses. The summary cards will have the account number 5998 in order to place them in the proper sequence when arranging the income spread cards for the statements.

Figure 51.--Wiring diagram used for transferring data from detail cards to a spread card.

Figure 52.--Wiring diagram for preparing the income statement from spread cards.

10. Sort the income spread cards, including the total expense cards, preceded by the income statement header cards, by accounts 11 to 8 and location column 5. Process separately the year-to-date and current period.

11. Prepare the income statement for each location with the 402 accounting machine. Process the year-to-date and the current-period separately. Note: Use wiring diagram shown in figure 52 for 402 machine.

12. Send completed statement to the Accounting Division. File the spread cards for future reference.

The procedural resume' for preparing the financial condition summary is as follows:

1. Obtain the financial condition summary cards.

2. Insert the location header cards in front of each location.

3. Prepare the income condition summary on the 402 accounting machine, using $8\frac{1}{2}$" x 11", 2-part stock tab paper. Process for year-to-date amount only.

4. Forward the summary sheets to the Accounting Division. File the summary cards for the next accounting period. Accounting Division reviews the financial condition statement and forwards it to management.

Color Cards to Identify
Source of Accounting Data

One wholesale food distributor uses stock color stripe cards to denote the major groups of card decks interspersed into the general ledger deck. These cards are used to: (1) Provide a quick visual check to ensure that the various sources are included; (2) facilitate temporary filing of general ledger cards that are prepared as a byproduct of another basic tabulating operation such as accounts payable; (3) avoid merging other decks of groups not needed during certain operations; and (4) make sure that the new year-to-date (balance-forward) cards are separated from the regular deck.

Color assignments for the various types of data are: Blue for year-to-date cards (current balances); white for transactions for the current period; orange for transactions originating from accounts payable 2/; red for period cutoff data for reversal 3/; and yellow for header cards.

2/ Accounts payable comprise the greatest number of cards in the deck since the majority of entries are recorded in expense accounts.
3/ These cards represent accruals and various transactions for the current period that must be reversed in the following period.

Time Savings on Fixed Entries

Most of the work of recording, summarizing, and compiling basic data into the general ledger and onto financial statements comprises the recurring entries, commonly termed fixed entries. These generally consist of such items as rent, insurance, depreciation, and property taxes, and comprise from 20 to 40 percent of the recurring general ledger work for each 4-week period. The data from one company--used to show the time required to prepare the general ledger and financial statements with improved accounting procedures with manual, key-driven accounting machine, and tabulating machine-- had 632 fixed entries out of 1,870, or 33.8 percent of the total. The fixed entries were coded with the following source entry numbers:

Source (table 1)	Description	Number of Entries
6.A.	Fixed entries	112
6.B.	Payroll fringe costs	295
6.C.	Clearing accounts	33
6.D.	Home office allocations	192
	Total fixed entries	632

Repetitive posting of recurring entries, period after period, is time consuming when the same information is prepared and posted regardless of the method used. This repetition can be eliminated completely in tab installations by using a permanent deck of fixed entries, adjusted periodically and gang reproduced (519) at one time, thus bypassing clerical operations.

Preparing the entries, posting, balancing, and proving the fixed entry data for 632 entries requires 33 hours manually and 10.9 hours with an accounting machine. Gang-reproduction and processing on tabulating equipment require 0.37 hours, a reduction of 10.6 hours from the accounting machine methods (table 9).

Figure 53 shows the procedure followed with tabulating equipment to process fixed entries. The detail steps are as follows: (1) Set up and prepare a permanent deck of fixed entries at beginning of the accounting year; (2) insert adjustment (plus or minus) cards from permanent deck when corrections to amounts are required; key punch plus additions or deductions including correct total balancing amount, and replace incorrect fixed entry cards with new cards; (3) at end of each period, machine (402/403) list all fixed entry cards to prove that debits and credits are in balance; and (4) reproduce (519) fixed entry transactions deck. Collate, merge, or sort transactions deck into current-period general ledger deck for processing. File permanent fixed entry deck in files for use in subsequent month.

Procedure for Reversing Journal Entries

Preparing the period, semiannual, or quarterly financial statements requires compiling and recording many entries representing accruals and prepayments to reflect transactions at the end of each period. In many instances,

Table 9.--Comparison of time required to prepare and record fixed entries with three methods 1/

Operation	Units	Manual Standard elemental time Man-min. 2/	Manual Total Man-hrs. 2/	Key-driven accounting machine Standard elemental time Man-min. 2/	Key-driven accounting machine Total Man-hrs. 2/	Tabulating Standard elemental time Man-min. 2/	Tabulating Total Man-hrs.
Prepare journal entries....:	632	.3105	3.27	.3105	3.27		
Total entries to balance..:	632	.0460	.48	.0460	.48		
Record fixed entries into general ledger............:	632	1.7327	18.25				
Prove totals, cross add or subtract to arrive at balance in each account and prove totals of all accounts year-to-date.....:	632	.5636	5.94				
Cross add or subtract current period transactions to arrive at balance for current-period...........:	632	.4805	5.06				
Locate proper ledger card, insert in machine, and remove...................:	632			.2082	2.19		
Post entry to ledger card (machine accumulate current period total)........:	632			.2300	2.42		
Clear machine and prove totals.................:	1			.1800	.00		
Pick up current-period and prior year-to-date total, machine total these, and print new year-to-date total...................:	632			.2415	2.54		
402 list permanent fixed entry deck as period journal entry............:	632					.0115	0.12
Reproduce deck on 519......:	632					.01456	0.15
Sort (082) reproduced deck in with current-period general ledger deck..................:	3,160					.0017	0.09
Return permanent deck to file...................:	1					.58	0.01
Total...........:			33.00		10.90		0.37

1/ A standard has not been set for adjustments or deletions to change the amounts for each fixed entry because this is a variable, undeterminable factor. The entries are normally adjusted every 6 months or when substantial variations occur.

2/ Includes 15 percent personal allowance.

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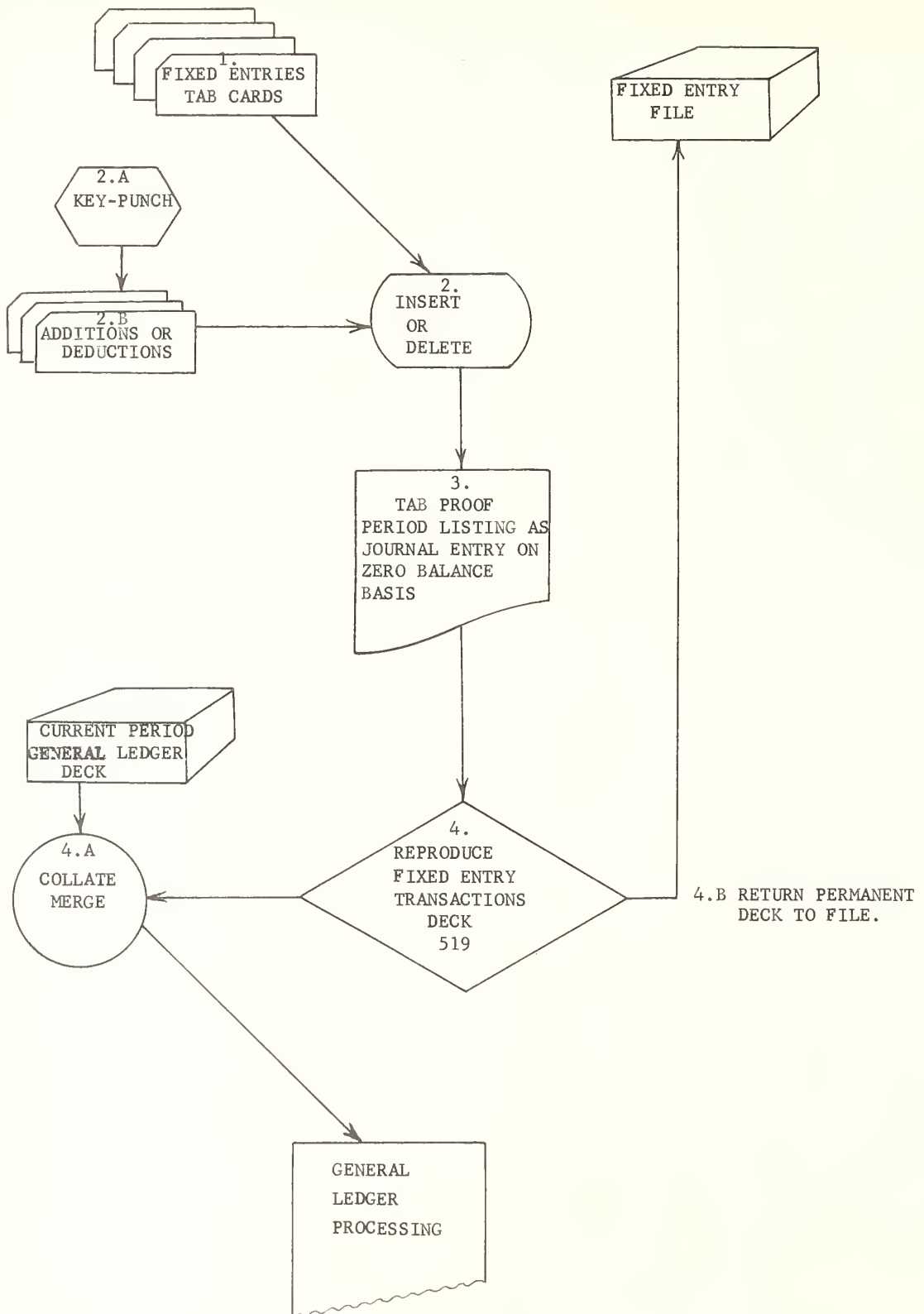
Figure 53.--Workflow diagram showing procedure followed to process fixed entries with automatic tabulating equipment.

these entries must be reversed at the beginning of the following period. This is done so the daily routine will record these transactions by payment.

Examples of items accrued at the end of one accounting period and reversed at the beginning of the following period include: (1) Merchandise received but supplier invoices are not available; (2) invoices received from supplier but merchandise has not been received (merchandise in transit); (3) expense and other approved invoices (accounts payable) that have not been recorded; (4) suspense items or items for which accounting has not been determined; (5) consigned merchandise recorded on the books for control purposes; (6) period-end accruals for estimated income or expense items; (7) reclassification entries prepared primarily for balance sheet presentation such as credit balances in accounts receivable, debit balances in accounts payable, and overdrafts in bank accounts; and (8) deposits in transit during the statement date.

Entries requiring subsequent period reversal may vary from a few to many hundreds. These entries must be reversed, item by item and account by account, by preparing a journal entry authorizing reversal and then individually hand posting, machine posting, or key punching each item.

Accounting for reversal entries requires less time by the card-punch method than with the manual or bookkeeping machine procedure. The cards for these entries are duplicated and are punched to show reversal. They are then automatically punched, by machine, with the amounts reversed into their required sequence (current period debits to next period credits and current-period credits to next period debits).

The procedure for using the card column assignments in figure 54 would be:

1. Process journal entries for current period transactions.
    A. Indicate entries to be reversed in subsequent period by marking instructions on journal voucher as follows: "ENTRY TO BE REVERSED IN FOLLOWING PERIOD."

2. Keep entries to be reversed separate at key punch.
    A. Sort (082) on column 21 for "X" only.

3. Place reversal cards ("X" in card column 21) in the read side of the reproducer.
    A. Gang punch card with the next period in columns 1 and 2 placed in front of the blank cards in the punch side.
    B. Reproduce cards as next period reversing entries.

4. Place reversal cards (no "X" in card column 21) in the read side of the reproducer.
    A. Gang punch card with the next period in columns 1 and 2 and an "X" punch in card column 21 placed in front of the blank cards in the punch side.
    B. Reproduce cards as next period reversing entries.

5. Machine proof list for next period journal entry and verify.
    A. Retain next period cards and machine list for processing with following period general ledger cards.

B. Place current-period reversal cards with current-period cards for
        processing general ledger.

Figure 54 illustrates the procedure for reversal entries with a flow diagram.
Figure 55 shows a wiring diagram for reversing journal entries. The wiring
diagram is designed to reduce all data shown on the reversal card and to re-
verse the money amounts (debits into credits and credits into debits).

    Table 10 shows the time required to prepare, record, and balance the rever-
sing journal entries, exclusive of time to accumulate the basic original data
with manual methods, bookkeeping machine, and automatic tabulating equipment.
The data are based on time studies in a company with two warehouses and five
sales divisions. The number of accounts that required reversing entries at the
beginning of a 4-week period were as follows: Merchandise received, supplier
invoices not available, 30; merchandise in transit, 10; accounts payable not
recorded, 10; accruals, 36; and balance sheet reclassification, 14, or a total
of 100 entries.

Self-Checking Digit For
Verifying Coding and Key-Punching

    Two problems of general ledger accounting, irrespective of method (manual,
bookkeeping machine, or electronic machine), are: Incorrect classification of
transactions and posting amounts to incorrect accounts. In manual or bookkeep-
ing machine systems, these errors are discovered only by a visual inspection of
the records or audit of the transactions. In electronic systems, using the
self-checking digit eliminates the majority of coding errors and the possibility
of recording amounts to the wrong accounts.

    The self-checking digit requires an attachment on the card-punch machine.
This device permits simultaneous punching and verifying of numerical codes by
the machine. This method locates 97 percent or more of the key-punch or source
document coding errors. Errors are discovered at the start of the operation
so that time is not lost in attempting to locate them during subsequent machine
processes and listings. Correct coding at the origination of the source data
eliminates incorrect posting to the accounts because the sorting operations
will correctly file the transactions in proper sequence.

    The method for determining the self-checking digit is: (1) Unit position
and each alternate position of the basic code number are multiplied by 2; (2)
digits in product and digits in basic code number not multiplied by 2 are cross
added; (3) cross-footed total is subtracted from next higher number ending in
zero; and (4) the difference is the check digit. The self-checking device au-
tomatically makes these computations while the key-punch operator is punching
the code numbers into the cards from the basic journal entries. Table 11 shows
examples of computations for establishing the self-checking digit.

    Time studies were made to establish the time required to compute the self-
checking digit by manual methods, as compared with random access equipment.
The comparison shown in table 12 is based on computing the self-checking digit
for each account in the chart of accounts of one wholesale food distributor.
With manual computation each account number and self-checking digit must be
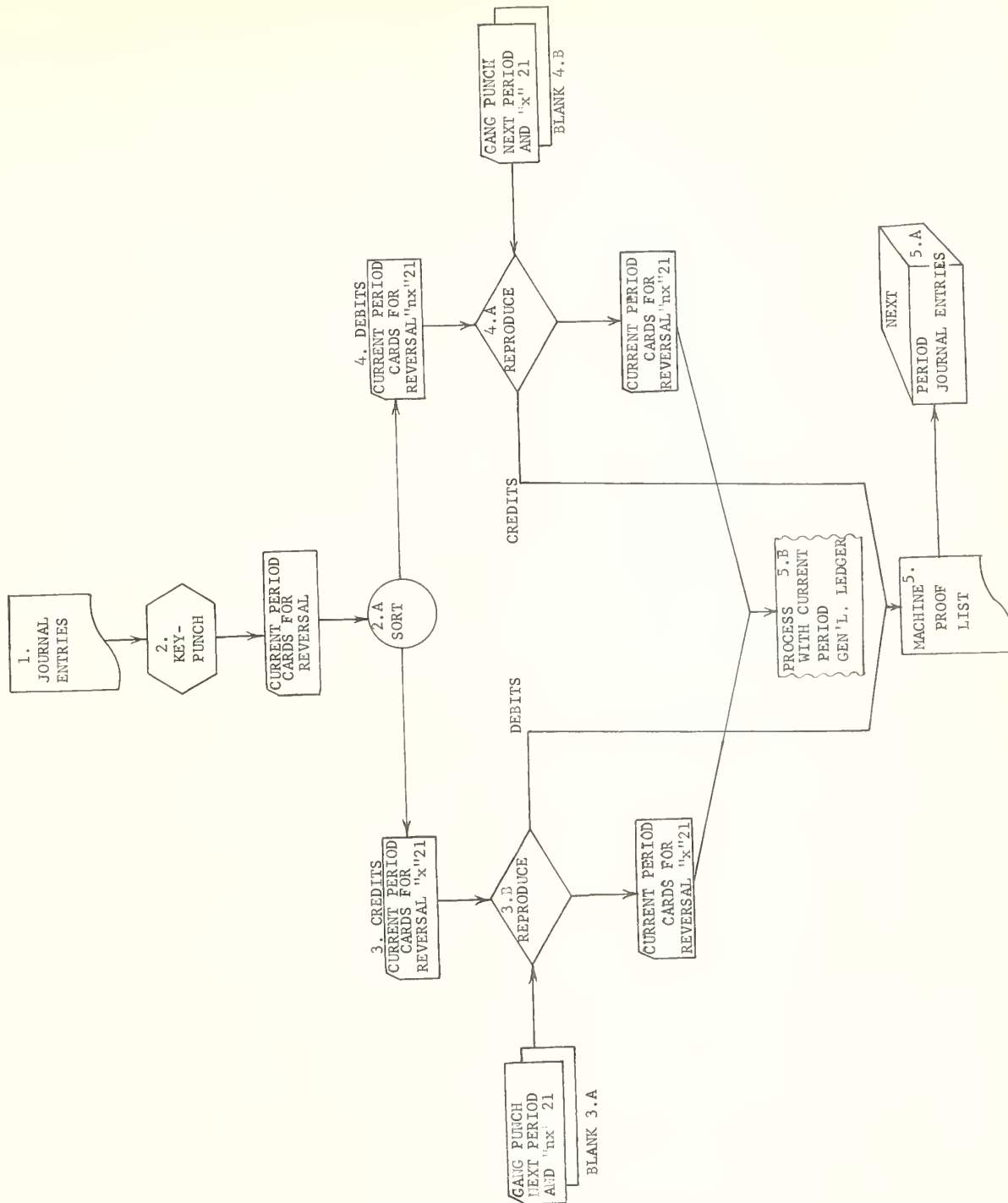
1. JOURNAL ENTRIES

2. KEY-PUNCH

CURRENT PERIOD CARDS FOR REVERSAL

2.A SORT

GANG PUNCH NEXT PERIOD AND "x" 21

BLANK 4.B

4. DEBITS CURRENT PERIOD CARDS FOR REVERSAL "nx" 21

4.A REPRODUCE

CURRENT PERIOD CARDS FOR REVERSAL "nx" 21

CREDITS

NEXT PERIOD JOURNAL ENTRIES 5.A

5.B PROCESS WITH CURRENT PERIOD GEN'L. LEDGER

MACHINE 5. PROOF LIST

DEBITS

3. CREDITS CURRENT PERIOD CARDS FOR REVERSAL "x" 21

3.B REPRODUCE

CURRENT PERIOD CARDS FOR REVERSAL "x" 21

GANG PUNCH NEXT PERIOD AND "nx" 21

BLANK 3.A

Figure 54.--Tabulating machine procedure for reversal entries.

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Figure 55.--Wiring diagram reversing journal entries.

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Table 10.--Comparison of time required to prepare and record reversal journal entries with three methods

Operation	Unit	Time per unit	Total time
		Man-min. 1/	Man-min. 1/
Manual			
Prepare, balance, and total reversing journal entries........:	100	.3565	35.65
Locate accounts in ledger and post amounts........................:	100	1.7327	173.27
Determine balance in account.......:	100	.5636	56.36
Total time (manual)...........:			265.28
Bookkeeping machine			
Prepare, balance, and total reversing journal entries........:	100	.3565	35.65
Locate ledger card in machine, post amounts, and return card to ledger:	100	.4382	43.82
At completion of posting, strike total on proofsheet and verify debits and credits...............:	1	.1800	.18
Total time (bookkeeping machine)....................:			79.65
Tabulating			
Process current-period journal entries 2/......................:	-		
Punch next period reversal cards with all data including an "X" in 21.............................:	100	.0248	2.49
Gang punch next period reversing entries........................:	100	.0146	1.46
Machine list as journal voucher....:	100	.0115	1.15
Destroy current-period reversing cards...........................:	Deck	.5000	.50
Total (tabulating)...........:			5.60

1/ Includes 15 percent personal allowance.

2/ Time expended has not been included because this operation is performed in normal machine-processing of all transactions for the period.

Table 11.--Method of computing a 7-, 6-, and 5-digit code number and the self-checking digit

Basic code	Explanation	1	2	3	4	5	6	7	X
A 7-digit code									
Branch	(2 digits for more than 9 branches)	1	0						
Division	Frozen foods			4					
Expense-function	Warehouse				5	3			
Expense classification	Salaries, supervision						1	2	
Self-checking digit									4
A 6-digit code									
Branch	(Single digit for less than 9 branches)	1							
Division	Frozen foods		4						
Expense function	Warehouse			5	3				
Expense classification	Salaries, supervision					1	2		
Self-checking digit									6
A 5-digit code									
Branch	(Not needed with only one warehouse)								
Division	Frozen foods	4							
Expense function	Warehouse		5	3					
Expense classification	Salaries, supervision				1	2			
Self-checking digit									6

		Self-checking digit
7-digit code	1045312 plus	4
6-digit code	145312 plus	6
5-digit code	45312 plus	6

typewritten to have a complete chart of accounts. With RAMAC the computations are made and punched into cards and the accounts are listed on the 402 without manual typing.

The random access method not only saved time in making each separate computation, as compared with manual methods, but also provided absolute accuracy in denoting the correct check digits. With manual methods, from two to three errors were made in every 20 to 25 computations and were discovered only by rechecking every calculation.

The tabulating machine program instructions in this section and the time savings can be applied to coding of all types, including commodity codes, employee codes, supply inventory identification codes, and territorial and customer codes. The following figures show program instructions: Figure 56, program instructions for 305 computation of self-checking digit;

Table 12.--Comparison of manual methods and random access method for computing self-checking digit

Operation	Manual method			Random access method		
	Standard elemental time	Time for 960 computations	Labor cost 1/	Standard elemental time	Time for 960 computations	Labor and card cost 1/
	Man-min. 2/	Man-hrs. 2/	Dollars	Man-min. 2/	Man-hrs. 2/	Dollars
Manual computation						
Compute self-checking digit.....	0.76	12.16	21.28			
Check computation.............	0.54	8.64	15.12			
Error allowance 3/............	0.11	1.76	3.08			
Random access computation 4/						
Prepare program, test.........				.0234	0.38	1.12
Reproduce on 519 master deck into full deck..............				.0469	0.75	2.40
Compute and punch-out master deck on 305 with check digit...				.0112	0.18	1.61
Prepare list of chart of accounts with check digit						
Type complete description and account number and check accuracy..................	1.04	1.66	2.90			
Program print-out of chart of accounts on RAMAC..........				.0112	0.18	.80
Total..................	11.79	24.22	42.38	.0927	1.49	5.93

1/ Labor cost for clerical help based on $1.75 per hour. Material (worksheet or calculator) excluded as nominal. Labor cost of random access programer based on $2.95 per hour, and card cost at $1.13 per thousand.

2/ Includes 15 percent personal and fatigue allowance.

3/ Study indicated an error rate of 3 for every 21 computations. Added time allowance computed at 14 percent of 0.76.

4/ Machine rental costs have been excluded because machine loading, printing, and punch-out of cards is done during idle machine time.

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Application: __Check Digit Computation_____ Date: _____ Page _1_ of _5_

Routine: __305 General Purpose Control Panel_____ Written by: _____

PROGRAM LOADING INSTRUCTIONS

ONE						TWO						THREE			
¹I	7 9	⁴0 4 9	⁷5 0	⁹X	¹⁰	¹¹		¹⁴		¹⁷	¹⁹ 20	²¹	²⁴	²⁷	²⁹ 30
FROM		TO	NO. CHAR.	CONTROL		FROM		TO		NO. CHAR.	CONTROL	FROM	TO	NO. CHAR.	CONTROL

PROG. STEP	FROM TR.	FROM POS.	TO TR.	TO POS.	NO. CHAR.	CONTROL		DESCRIPTION	TO PROG. STEP
								Blank Track X	
000	b	9 ː 9	X	9 ː 9	0 ː 0				
Restart									
					Check Reset Program Start ☐				
								K to W	
001	K	9 ː 9	W	9 ː 9	0 ː 0	F		1. Feed card	
Restart								2. Program advances	
					Check Reset Program Start ☐				
								1st Digit of Item Code to Accum. 0	
002	W	0 ː 4	L	0 ː 6	0 ː 1		5		
Restart									
					Check Reset Program Start ☐				
								3rd Digit of Item Code to Accum. 0	
003	W	0 ː 6	L	0 ː 8	0 ː 1				
Restart									
					Check Reset Program Start ☐				
								5th Digit of Item Code to Accum. 0	
004	W	0 ː 8	L	0 ː 8	0 ː 1				
Restart									
					Check Reset Program Start ☐				

Figure 56.--Program instructions for 305 computation of self-checking digit. (Continued through page 94.)

Application: **Computation of Check Digit**   Date: _____ Page __2__ of __5__

Routine: _305 General Purpose Control Panel   Written by: _____

PROGRAM LOADING INSTRUCTIONS

ONE						TWO						THREE				
¹I│7	9	⁴⁰9│9	9	⁷5│0	9	¹⁰¹¹0│	9	9	¹⁴Q│	9│9	¹⁷0│0	¹⁹Y│	²⁰²¹	²⁴	²⁷	²⁹ 30
FROM		TO		NO. CHAR.	CONTROL	FROM			TO		NO. CHAR.	CONTROL		FROM		TO	NO. CHAR. CONTROL

PROG. STEP	FROM TR.	FROM POS.	TO TR.	TO POS.	NO. CHAR.	CONTROL		DESCRIPTION	TO PROG. STEP
005	W	1│0	L	0│9	0│1			7th Digit of Item Code to Accum. 0	'
Restart									
					Check Reset Program Start ☐			
006	L	0│9	L	0│9	1│0			Add Contents of Accum. 0 to Accum. 0	
Restart:									
					Check Reset Program Start ☐			
007	L	0│9	L	1│9	0│1		5	Units Digit of Accum. 0 to Accum. 1	
Restart:									
					Check Reset Program Start ☐			
008	L	0│8	L	1│9	0│1			Tens Digit of Accum. 0 to Accum. 1	
Restart:									
					Check Reset Program Start ☐			
009	L	0│7	L	1│9	0│1			Hundreds Digit of Accum. 0 to Accum. 1	
Restart.									
					Check Reset Program Start ☐			

PROGRAM INSTRUCTION SHEET

Application: __Computation of Check Digit__   Date: _____ Page __3__ of __5__

Routine: __305 General Purpose Control Panel__   Written by: _____

PROGRAM LOADING INSTRUCTIONS

ONE						TWO						THREE				
¹I	7 ¦ 9	⁴1 ¦ 4 ¦ 9	⁷5 ¦ 0	⁹X	¹⁰	¹¹ ¦ ¦	¹⁴ ¦ ¦	¹⁷ ¦	¹⁹	²⁰²¹ ¦ ¦	²⁴ ¦ ¦	²⁷ ¦	²⁹	³⁰		
FROM		TO	NO. CHAR.	CONTROL		FROM	TO	NO. CHAR.	CONTROL		FROM	TO	NO. CHAR.	CONTROL		

PROG. STEP	FROM TR.	FROM POS.	TO TR.	TO POS.	NO. CHAR.	CONTROL	DESCRIPTION	TO PROG. STEP
							Thousands Digit of Accum. 0 to Accum. 1	
010	L	0 ¦ 6	L	1 ¦ 9	0 ¦ 1			
Restart								
					Check Reset ☐ Program Start			
							Ten-thousands Digit of Accum. 0 to	
011	L	0 ¦ 5	L	1 ¦ 9	0 ¦ 1		Accum. 1	
Restart								
					Check Reset ☐ Program Start			
							2nd Digit of Item Code to Accum. 1	
012	W	0 ¦ 5	L	1 ¦ 9	0 ¦ 1			
Restart								
					Check Reset ☐ Program Start			
							4th Digit of Item Code to Accum. 1	
013	W	0 ¦ 7	L	1 ¦ 9	0 ¦ 1			
Restart								
					Check Reset ☐ Program Start			
							6th Digit of Item Code to Accum. 1	
014	W	0 ¦ 9	L	1 ¦ 9	0 ¦ 1			
Restart								
					Check Reset ☐ Program Start			

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Application: **Computation of Check Digit**   Date: _____ Page **4** of **5**

Routine: **305 General Purpose Control Panel**   Written by: _____

PROGRAM LOADING INSTRUCTIONS

ONE					TWO					THREE				
¹I 7 9	⁴1 9 9	⁵5 0	⁹	¹⁰	¹¹1 9 9	¹⁴Q 9 9	¹⁷0 0	¹⁸Y	²⁰ ²¹		²⁴	²⁷	²⁹	³⁰
FROM	TO	NO. CHAR.	CONTROL		FROM	TO	NO. CHAR.	CONTROL		FROM	TO	NO. CHAR.	CONTROL	

PROG. STEP	FROM TR.	FROM POS.	TO TR.	TO POS.	NO. CHAR.		CONTROL	DESCRIPTION	TO PROG. STEP
015	Z	3 1	L	2 8	0	1	5	**Add 10 to Accum. 2**	
Restart									
Check Reset Program Start ☐									
016	L	1 9	M	2 9	0	1		**Subtract Low Order Position of**	
Restart								Accum. 1 to Accum. 2	
Check Reset Program Start ☐									
017	W	9 9	X	9 9	0	0		**W to X**	
Restart									
Check Reset Program Start ☐									
018	L	2 9	X	1 1	0	1		**Check digit to X**	
Restart									
Check Reset Program Start ☐									
016	X	9 9	S	9 9	0	0	&	**X to S**	
Restart								1. Punch	
								2. Program advance	
Check Reset Program Start ☐									

Application: __Computation of Check Digit__ _____ Date: _____ Page __5__ of __5__

Routine: __305 General Purpose Control Panel__ _____ Written by: _____

PROGRAM LOADING INSTRUCTIONS

ONE								TWO									THREE						
1 I	7	9	4 2	4	9	7 5	0	9	10 11 2	4	9	14 Q	4	9	17 5	0	19 Y	20 21	24	27	29	30
FROM			TO			NO. CHAR.	CONTROL		FROM			TO			NO. CHAR.	CONTROL		FROM		TO		NO. CHAR.	CONTROL

PROG. STEP	FROM		TO		NO. CHAR.	CONTROL		DESCRIPTION	TO PROG. STEP
	TR.	POS.	TR.	POS.					
020	Z	2 0	–	9 9	0 1	0		Trans. to Step 000	
Restart									
						Check Reset Program Start ☐			
Restart									
						Check Reset Program Start ☐			
Restart									
						Check Reset Program Start ☐			
Restart									
						Check Reset Program Start ☐			
Restart									
						Check Reset Program Start ☐			

figure 57, block diagram for check-digit computation on 305 general purpose
control panel; figure 58, record layout form for check-digit computation
(305); figure 59, program load cards for self-checking digit computation and
punching; and figure 60, a list of account codes with self-checking digits
and account descriptions prepared on 402 accounting machine.

GENERAL LEDGER AND FINANCIAL STATEMENT PREPARATION
WITH ELECTRONIC CALCULATING PUNCH

One wholesale food distributor in this study used the batch-billing method
(described in an earlier report) of invoicing sales.4/ An electronic calcu-
lating punch and other equipment were used to maintain the general ledger and
to prepare the financial statements on spirit duplicating masters on the 402
accounting machine. These masters were used to reproduce 30 copies of the
statements. Figure 43 shows general ledger cards that were punched with per-
centages of net sales. The percentages were computed by the electronic calcu-
lating punch prior to final processing.

Procedure for Tabulating the General Ledger

The detailed general ledger tabulating procedures are shown in the follow-
ing tabulation. Prior ledger cards consist of: (1) General ledger group A,
prior financial condition cards (0 in column 1), and general ledger group B,
prior income cards; and (2) fixed asset ledger cards. The current period
additions to the general ledger are key punched and grouped as follows:

1. Folio 1	(Columns 49-51)	Sales
2. Folio 2	(Columns 49-51)	Cash receipts
3. Folio 3	(Columns 49-51)	Disbursements
4. Folio 4	(Columns 49-51)	Payroll
5. Folio 5	(Columns 49-51)	Cash and carry
6. Folio 6-799	(Columns 49-51)	General journal
7. Folio 800-899	(Columns 49-51)	Semifixed entries
8. Folio 900-999	(Columns 49-51)	Fixed entries

Each group will consist of general ledger cards and must be kept separate.
Fixed assets cards, if used, will be separated at the back of the respective
group by a rubber band or a blank card.

Prior financial condition general ledger cards, group A, and prior income
general ledger cards, group B, are tabulated as one group and should zero bal-
ance. The prior fixed asset ledger cards are then tabulated, and the total
should equal the total of general ledger account No. 29 controls. The list is
then tabulated and totaled separately by folio group so that: (1) General

---

4/ See: Bartz, Daniel J., Improved Methods Among Wholesale Food Distrib-
utors For Inventory Control, Sales Accounting, and Shipment of Merchandise,
Mktg. Res. Rpt. 271, U. S. Dept. Agr., Agr. Mktg. Serv., Sept. 1958, pp. 46-48.
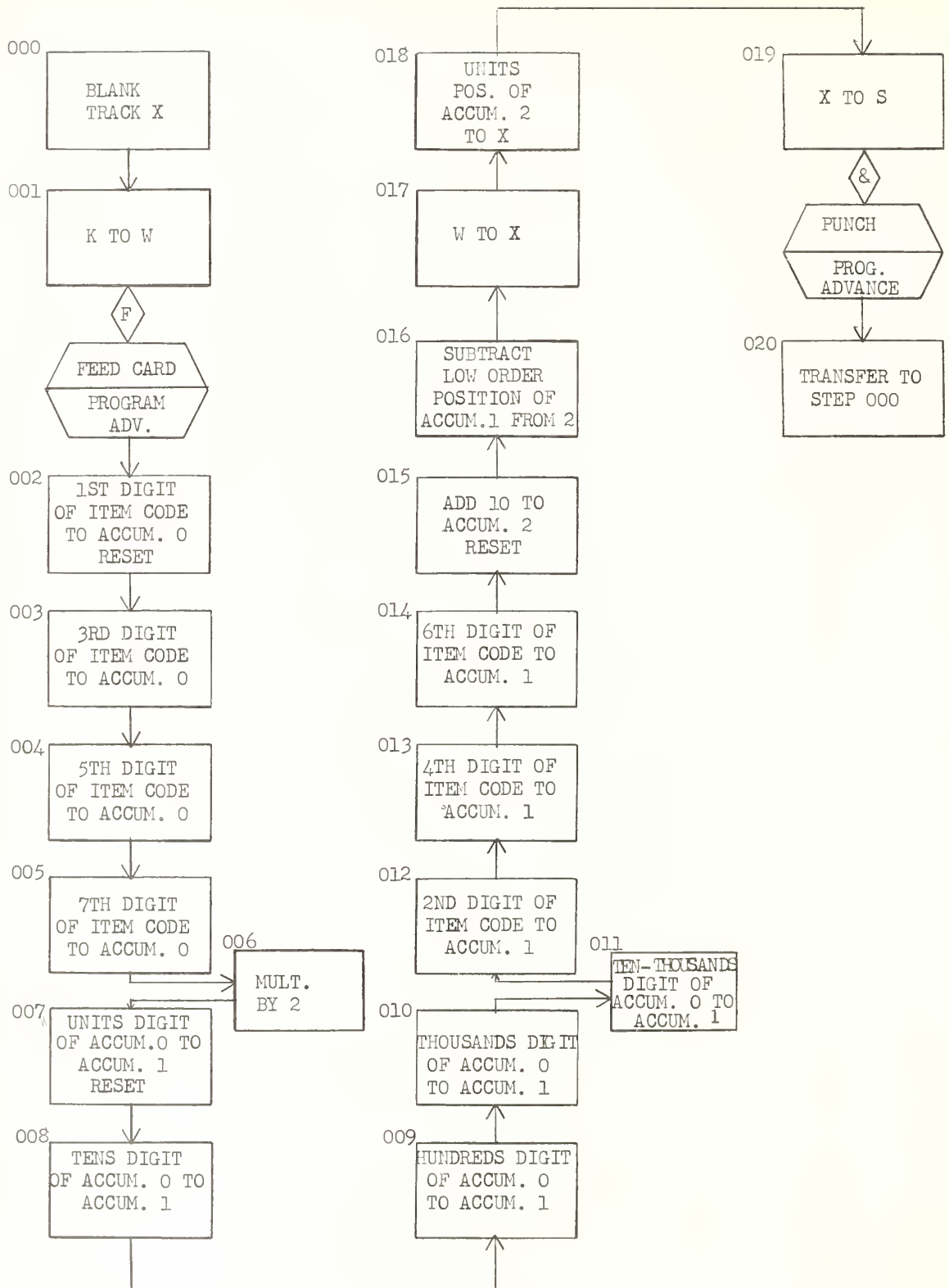
Figure 57.--Block diagram for check-digit computation on 305 general purpose control panel.
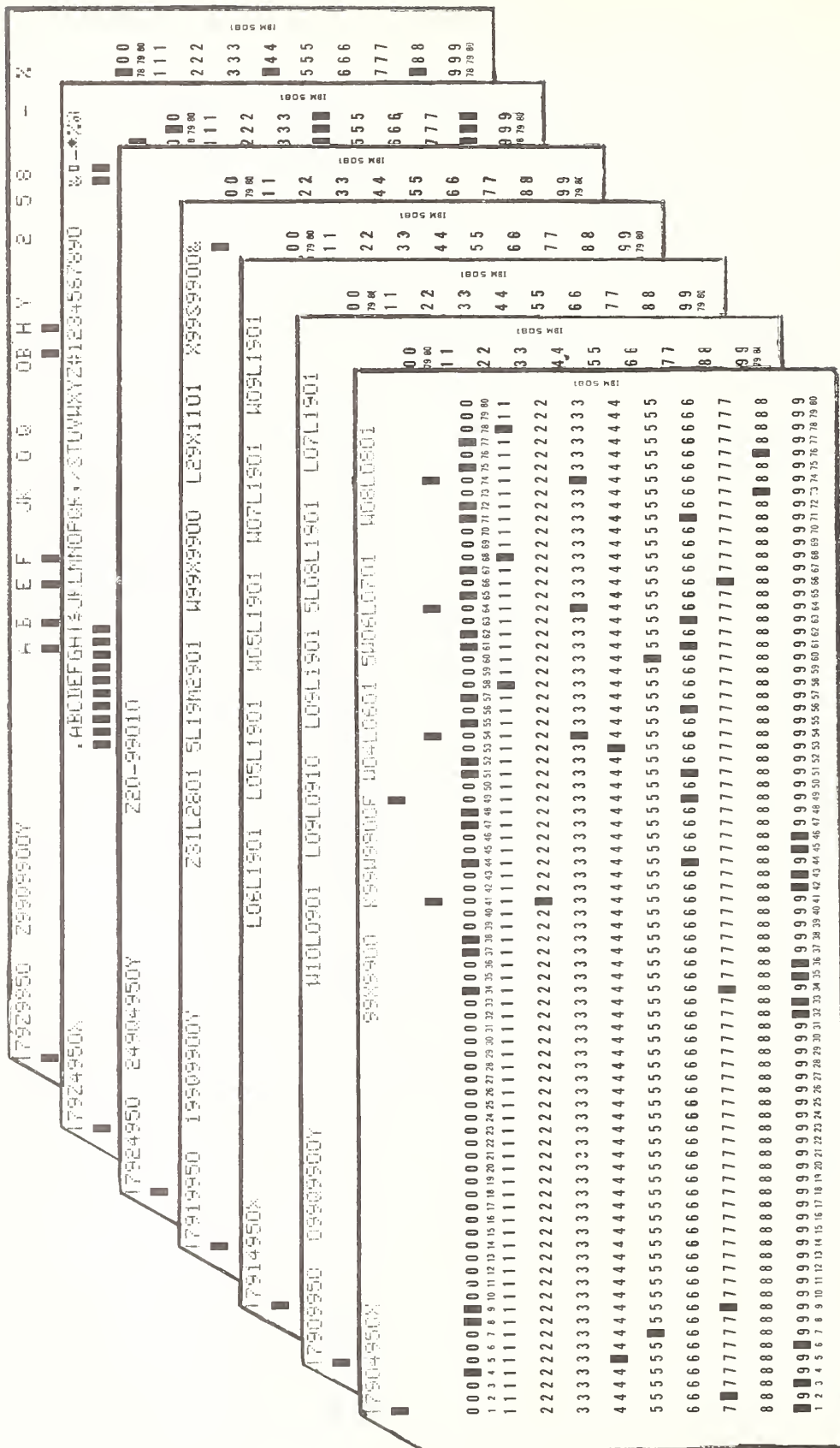
Figure 58.--Record layout form for check-digit computation (305).

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Figure 59.--Program load cards for self-checking digit computation and punching.

Left list:

```
00010108   THIRD NATIONAL BANK
00010207   THIRD NAT PAYROLL
00010306   NATIONAL CITY BANK
00010603   PETTY CASH
00010900   EMPLOYEES LOAN FUND

00011106   NOTES REC CUSTOMERS
00011205   NOTES REC OFFICERS
00011304   NOTES REC EMPLOYEES

00012104   ACCOUNT REC CUSTOMER
00012112   INVESTMENT HOT OR AOU
00012203   EMPLOYEES ACCTS REC
00012302   EMPLOYEES PENSION
00012401   ACCTS REC SUPPLIERS
00012609   COLONIAL REALTY CO
00012708   COLONIAL COFFEE CO
00012807   FIXTURCRAFT INC
00012906   RES DOUBTFUL ACCTS

00013003   INVENTORY GROCERY
00013102   INVENTORY GROCERY
10513108   INVENTORY GROCERY
00013201   INVENTORY PRODUCE
20213203   INVENTORY PRODUCE
00013300   INVENTORY FR FOOD
20313305   INVENTORY FR FOOD
00013407   INVENTORY TIRE
20413409   INVENTORY TIRE
00013508   INVENTORY MEAT
20513503   INVENTORY MEAT

00015107   PREPAID LICENSE A & I
00015206   PREPAID INSURANCE
00015305   PREPAID INTEREST
00015404   PREPAID PENSION
00015503   PREPAID RENT
00015701   TIRES & PARTS
00015800   GASOLINE GARAGE PUMP

00016105   STOCKS SUBSIDIARIES
00016204   OTHER STOCKS & BONDS
00016402   CASH VAL LIFE INS
00016501   UTILITY DEPOSITS
00016600   CLEARANCE
```

Right list:

```
00016808   NOTES REC CL REALTY
00016907   NOTES REC FIX CRAFT

00017004   LAND USED IN BUSINS
00017103   BUILDINGS
00017202   COOLER
00017301   WAREHOUSE EQUIPMENT
00017400   FURN AND FIX
20517405   2ND AV FURN&FIX MEAT
00017509   GARAGE EQUIPMENT
00017608   LEASEHOLD IMPROVES
00017707   AUTOMOBILES
00017715   TRUCS & DEL EQUIP
00017806   PRINTING EQUIPMENT
00017905   TIRE DEPT FIX

00018101   ACCUM DEPR BUILDING
00018200   ACCUM DEPR COOLER
00018309   ACCUM DEP WHSE EQUIP
00018408   ACCUM DEPR F & F
00018507   ACCUM DEPR GAR EQUIP
00018705   ACCUM DEPR AUTOS
00018713   ACCUM DEPR TRUCKS
00018804   ACCUM DEPN TIRE
00018903   ACCUM DEPR T D FIX

00019000   CLRNG ACCT ACCUM DEP

00020008   NOTES PAYABLE BANK
00020107   NOTES PAYABLE OTHER

00021006   ACCTS PAYABLE TRADE
00021204   ACCTS PAY COL COFFEE
00021212   ACCTS PAY C B NEWS
00021303   MEMBERSHIP DUES
00021402   EMPLOYEES TAX WITH
00021501   EMPLOYEE KY TAX WITH
00021600   EMPLOYEES FICA WITH
00021709   COCA COLA FUND

00022004   ACCRUED INTEREST
00022103   ACCRUED WAGES
00022202   ACCRUED RENT
00022301   ACCO P & REALTY TX

00023101   ACCO FICA TAXES
```

Figure 60.--A list of account codes with self-checking digits and account descriptions prepared on 402 accounting machine.

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ledger additions will zero balance, and (2) fixed asset additions will equal total of general ledger account No. 29 controls.

Separation of Current Additions.--Sort, on column 1, the general ledger additions except those fixed asset cards banded or separated in back of the deck. These will be retained as a third separate deck. The cards with 0's in column 1 are the financial condition cards, and cards with other numbers in column 1 are income cards.

General Ledger Statement of Financial Condition Cards (0's in Column 1).-- Sort these cards on columns 7, 6, 5, 4, 3, and 2 (account number). Collate to merge prior financial condition cards in front of current-period financial condition additions and tabulate a new statement of financial condition (no summarization). Retain all cards for use in the following period.

General Ledger Statement of Income (cards with numbers other than 0 in column 1).--Sort current income addition cards in folio sequence (columns 49 through 51) on columns 5, 4, 3, 2, 1, 7, and 6. After column 1, sort, select 501 accounts, and sort those and others on columns 7 and 6 separately. Collate to merge current period income addition cards in front of prior income summaries (interspersed prior period). Tabulate income section, with summary attached. Summary cards must have constant X-40 punched. Collate to merge summary cards following master deck, and intersperse gang-punch descriptions in columns 53 through 68 and the word B-A-L in folio columns 49 through 51. Sort to separate, selecting X in column 7. Retain income summary cards and income cards for use in the following period.

Fixed Asset Ledger.--Sort current additions (banded separately) on columns 5, 4, 3, 2, 7, and 6. Manually move 50's (packaging) in columns 7 and 6 to follow 00's (staff), and 92's (bakery) to follow 02's (location). Collate to merge prior fixed asset cards followed by current additions. Tabulate (without summary attached) and last-card total each location (columns 7 and 6) separately, except 00's and 50's shall be one group and 02's and 92's another single group. Retain all cards for use in the following periods.

Procedure for Preparing the Statement of Income

To facilitate management analysis of major operating functions, the statement of income is usually prepared with dollar amounts, and the ratio of each item of income and expense is reported as a percentage of net sales. Control of the cards is obtained by key punching the appropriate predetermined statement page and line number. Card column assignment (fig. 61) in this operation is as follows:

Card columns	Credit X column	Item
1 - 3		Line number
4 - 13	4	Amount column 1
14 - 17		Percentage column 1
18 - 27	18	Amount column 2
28 - 31		Percentage column 2
32 - 41	32	Amount column 3

42 - 45		Percentage column 3
46 - 55	46	Amount column 4
56 - 59		Percentage column 4
79 - 80		Page number

Use of multicolumn card procedure reduces costs of supplies and labor and accelerates the machine printing operation. Supplies are reduced since the use of four columns results in each card doing the work of four. In this operating statement 1,314 cards were used for one period, at cost of $1.25 per thousand or a total card cost of $1.64 for the statement of income. With this method, card costs would be reduced more than $64 per year. By using the amount columns, labor savings at the card-punch station were significant, since 4-amount-column cards are produced at a 40-percent greater rate than the single-amount-column rate.

Statement Format.--Statements are printed on spirit duplicating masters on the accounting machine after percentages have been computed and punched by the electronic calculating punch (model 602A). Figure 62 shows a statement prepared on the accounting machine with duplicating masters. The time required to process the masters is:

	Man-hours
Typing page numbers, operating statements, headings (departmental or location), and underlining title and insertions on 135 masters	9
Preparing 30 copies each of 135 pages of financial operating statements on spirit duplicator	8
Folding 85 sheets to report size	3.4
Assembling reports	2
Punching pages and binding into report covers	6.5
	28.9

With this method, preparing all statements in this operation for each of the thirteen 4-week periods requires slightly more than 3.6 man-days, as compared with 18 man-days by the manual method.

The cost of paper for printing statements by the spirit duplicating process was:

145 sets of $13\frac{1}{2}$"x12" spirit duplicating master @ $126.45 per 1,000 masters	$18.33
4,725 sheets of $12\frac{1}{2}$"x15" and $12\frac{1}{2}$"x$12\frac{1}{2}$" 20-pound paper @ $5.40 per ream	49.39
Miscellaneous paper (combining forms and branch data submission forms)	1.00
	$68.72

Figure 61.--Card column assignment for machine percentage calculation and statement preparation.

GROCERIES PER100	BRANCH A	%	BRANCH B	%	BRANCH C	%	BRANCH D	%
40 GROSS SALES	1429490		1598914		1591985		857267	
50 ADD SERVICE FEES	41529	282	39968	244	46587	285	23904	272
60 LESS ALLOWANCES	691		708		1077		517	
70 LESS WHSE SALVAGE	1		288				315	
80 NET SALES	1470326		1637886		1637495		880339	
90 COST GOODS SOLD	1420961		1588774		1582449		851328	
		54		56		51		58
100 GROSS MARGIN SALES.	49365	336	49111	300	55046	336	29010	330
140 AIR TRANSPORT	659*	04	623*	04	651*	04	385*	04
160 TOTAL AOV REVENUE	350*	02	6001*	37	6058	37	1894	22
180 RETAIL STORE ACCT	1300	09	1260	08	1333	08	296	03
190 MULTILITH DEPT	83	01	19		24*		4	
191 SILK SCREEN DEPT	5*							
210 CERTIFIED BAKERS			1421	09				
230 CASH DISCOUNT	23252	158	25655	157	24182	148	13325	151
240 CIGARETTE STAMP	791	05	964	06	522	03	289*	03
250 TOTAL OPERATING REV	24413	166	22696	139	31422	192	14846	169
290 GROSS MARG ALL OPER	73779	502	71807	438	86468	528	43856	498
310 MERCHANDISIN EXP	2432	17	1893	12	1728	11	1932	22
320 STAFF OFFICE	363	02	344	02	359	02	198	02
330 SALES SUPV EXP	6876	47	3498	21	9430	58	3888	44
340 STAFF OFFICE	350	02	331	02	346	02	204	02
350 WAREHOUSE EXPENSE	21771	148	19313	118	14684	90	12054	137
360 STAFF OFFICE	270	02	255	02	267	02	158	02
370 LOCAL DELIVER EXP	35		229*	01	2749	17	451*	05
390 GENL & ADM EXP	8217	56	7257	44	12563	77	6452	73
400 STAFF OFFICE	6327	43	5982	37	6252	38	3698	42
410 TURNOVER EXPENSE	2497	17	3076	19	3484	21	2455	28
420 BUILDING EXPENSE	3897	27	3961	24	5171	32	5388	61
430 STAFF OFFICE	307	02	290	02	303	02	179	02
440 TOTAL DIVISION EXP	45729	311	38772	237	49813	304	31720	360
450 TOTAL STAFF OFFICE	7618	52	7204	44	7528	46	4440	50
460 TOTAL OPERATING EXP	53347	363	45976	281	57341	350	36160	411
490 OPERATING MARGIN	20432	139	25830	158	29126	178	7695	87
92 CAFETERIA INCOME			28*					
493 INTEREST EARNED	74	01			3		62	01
500 PRO LOSS ON EQUIP			980*	06				
520 RENT INCOME	193	01					167	02
530 BLDG INTEREST EXP	1230*	08						
600 SCHOOLS							70*	01
620 PROV FOR AOD COMP	3126*	21	3155*	19	3550*	22	2878*	33
630 PENSION TRUST	2124*	14	2816*	17	3325*	20	647*	07
640 OTHER INC & DEDUCTS	6214*	42	6981*	43	6871*	42	3365*	38
690 MARGIN BEFORE TAX	14217	97	18849	115	22254	136	4330	49
700 INCOME TAX PROV	7535	51	9490	61	11795	72	2294	26
701 MARGIN BEFORE DIV	6682	45	8859	54	10495	64	2035	23
710 REQUIRED DIVIDEND	3558	24	3103	19	2567	16	2144	24
750 FINAL NET MARGIN	3123	21	5756	35	7892	48	109*	01

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(ACTUAL SIZE OF FORM: 12 1/2" X 12 1/2")

Figure 62.--A statement of income, for a 4-week period grocery division with 4 branches, prepared by accounting machine printing on a spirit duplicator master.

Time Schedule for Preparing Statements

The time schedule for statement preparation was: Saturday: Period closed. Monday: Prepared branch statements and submitted them to home office. Tuesday: Key punched cards for home-office operations and verified accuracy with tabulating machine. Wednesday: Key punched cards for branch operations and verified accuracy. Consolidated branch statements on preprinted form and key punched and verified consolidated reports. Computed operating statement percentages to net sales and prepared spirit reproduction statement masters on accounting machine. Thursday: Typed column headings, page numbers, and titles on spirit reproduction masters and inserted lines on masters to facilitate statement continuity. Reproduced statements by spirit reproduction process. Key punched cards for detailed expenses for all locations and verified accuracy of key-punching operation by tabulating on accounting machine. Punched statement (comparative and operating reports) pages on cards, folded report pages, and assembled and bound reports. Computed detailed expense item percentages to net sales. Prepared spirit reproduction statement masters for the expense report on the accounting machine. Friday: Typed column headings and titles on expense report on spirit reproduction masters and inserted lines on masters to facilitate statement continuity. Reproduced statements by spirit process. Folded report pages, and assembled and bound reports.

The detailed procedures and flowchart (fig. 63) are included in this section. A byproduct of this operation is also illustrated in the flowchart because entries to the fixed asset accounts are hand separated and reproduced with a reproducer (IBM 519), and the original cards are returned to the deck. The reproduced cards are then used in fixed asset and depreciation accounting.

GENERAL LEDGER AND FINANCIAL STATEMENT PREPARATION ON RANDOM ACCESS METHOD OF ACCOUNTING AND CONTROL EQUIPMENT

During this study the IBM-RAMAC 305 was used for preparing financial statements and maintaining the general ledger. The study of the 305 was made for the following reasons: Wholesale food distributors are interested in additional use of the equipment; and the typewriter output from the information stored in the memory unit can prepare a summary statement of income on a departmental spread basis in a few minutes. The conventional tabulating equipment procedure requires separate machine listing for each sales division or separate key punching on a line number basis (fig. 44).

The 305 is a self-contained unit combining several machine units including: (1) Card reader; (2) processing unit; (3) magnetic disk storage; (4) card punch, and (5) console and inquiry (typewriter). An output printer is available, but most wholesalers use their accounting machines (402 or 403) for report printing and listing.

The 305 was developed to fit the need for a random-access storage unit that would permit the entry of data into the processing unit by punched cards in any sequence. The data is processed, various arithmetic functions are performed, logical decisions are made, and the accounting records that are stored on the magnetic disks are maintained and updated. The results from the processing may then be punched onto cards, printed into cards, typed, and stored in the storage unit.
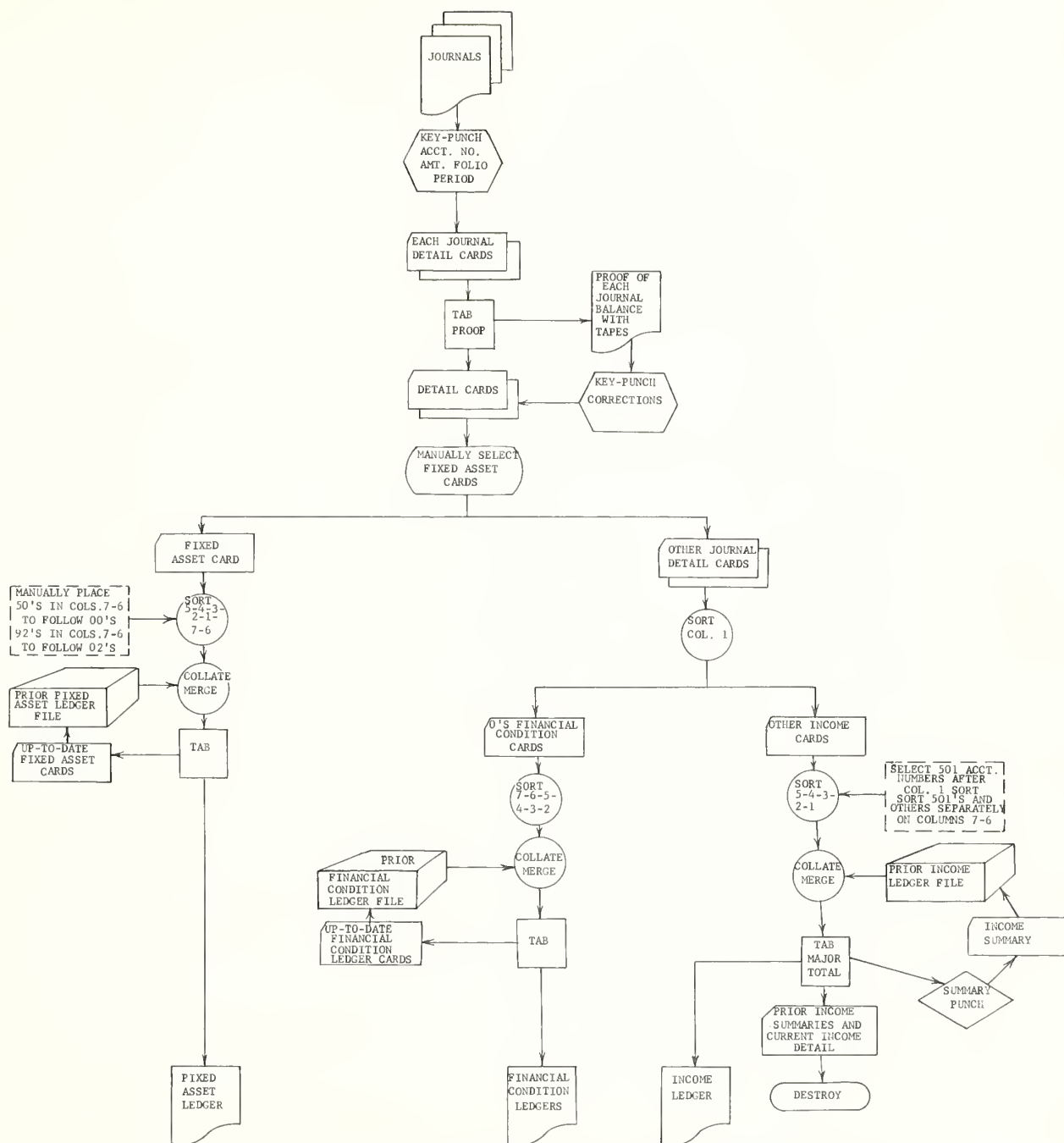
Figure 63.--General ledger procedure at end of period.

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In general ledger accounting, the RAMAC is used to: (1) Store year-to-date financial data (general ledger); (2) update the accounting data by adding the current period's transaction to or subtracting it from the balances stored for the prior period, thus determining net balances; (3) compute percentage of the component elements of profit and loss to sales; and (4) print the statement of financial condition and statement of income on a departmental basis for the current period and year-to-date on the console typewriter, or punch cards for these statements to be printed on duplicating masters by either the 402 or 403 accounting machine. Rental, purchase costs, operating characteristics, and technical requirements of the tabulating machines and RAMAC unit are available from the manufacturer.

Figure 64 shows the basic RAMAC 305 with an output printer. For printing operations, many wholesalers substitute a 402 or 403 accounting machine.

The basic code assignments and card-column assignments on the input and summary punched cards, described in the section of this report on automatic tabulating equipment, are used for preparing the general ledger and financial statement with the 305.
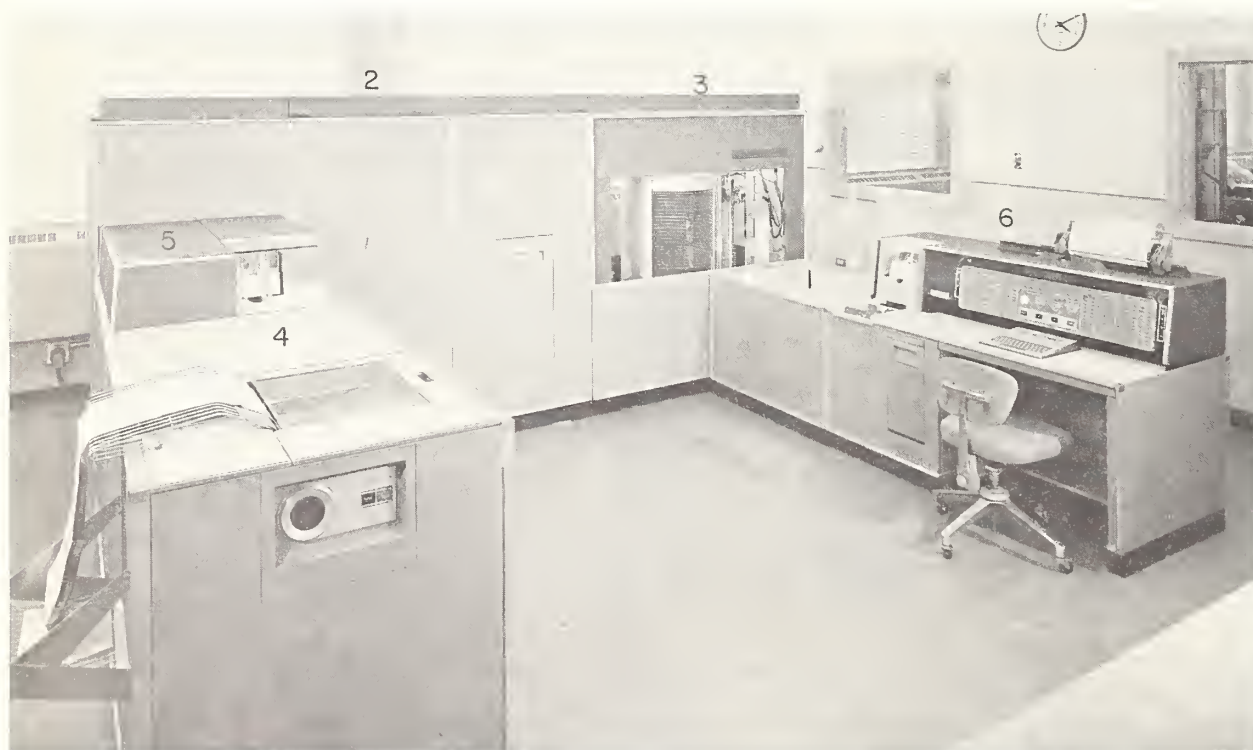
Figure 64.--The 305 used by many wholesale food distributors.

1. Card reader. Generally, the information to be entered into the system is punched into tabulating cards. The card reader in turn enters the data into the 305.

2. Processing unit. This unit contains the program instructions and performs arithmetic and logical functions on the information being processed.

3. <u>Magnetic disk storage</u>. To perform inline processing, the system must auto-matically obtain any record it requires in a minimum of time. This ability is provided by the magnetic disk storage. Information (alphabetic, numerical, or special characters) is stored in the form of magnetized spots on the disk. Magnetic disks can be used repetitively to store new information. Each time new information is stored, it replaces the information formerly stored there. Of course, if not rewritten or erased by the program, written records can be read as often as desired.

4. <u>Output printer</u>. The 370 Printer prepares printed reports. These can vary from invoices to operating statements.

5. <u>Card punch</u>. The 323 Card Punch is used to punch results into IBM card records.

6. <u>Console and inquiry</u>. The Console provides manual and semiautomatic control of the system. It consists of a keyboard, signal lights, control keys, and typewriter. Through the keyboard of the console, the operator can inter-rogate RAMAC's memory. The desired record is read from storage and printed on the typewriter.

The account coding used in this section consists of an assignment of the first two digits to indicate the location or home office, warehouse, or branch.

<u>Information in Disk Storage</u>.--An item record is maintained of each account in the uniform chart of accounts providing for 53 characters as shown in the following tabulation:

<u>Description</u>	Number of <u>characters</u>
Coding (self-checking digit in 8th position not retained)	7
Account description	20
Current-period charges (or credits)	10
Year-to-date charges (or credits)	10
Disc address	5
Control	1
	53

<u>Input</u>.--Information punched into cards at the key-punching station or from the summary punch (519 or 523 hookup with 402 or 403) at the time of general ledger preparation is processed into RAMAC storage files.

<u>Processing</u>.--For each account number having a corresponding input card the corresponding account record is referred to; the current transaction is record-ed, net balance computed, and the year-to-date balance updated.

<u>Output</u>.--The current-period totals only are summary punched during the general ledger run. The year-to-date cards for the next period general ledger run are obtained as output during the updating run on RAMAC. The departmental spread is typed out (not punched) on a secondary run for obtaining the state-ment of income on a spread basis, or the cards are used to print the statement

on a duplicating master with the 402 or 403 accounting machine. In addition, reports may be typed and cards punched out detailing income and expense for the current period and year-to-date.

The following program step diagrams and item records (both even and odd sectors) present a detailed step-by-step analysis in processing the accounting transaction data to completion of the financial statements.

Disk address assignment.--These program steps are used on the initial installation of the general ledger operation on RAMAC and are required to assign disk storage and address for the various accounts in chart·of accounts sequence. Figure 65 shows the program instruction sheet for RAMAC disk address assignment; figure 66 is a block diagram showing disk address assignment; figure 67 is a record layout form for disk address assignment; and figure 68 shows the program load cards for disk address assignment.

Recording current period transactions.--These program steps are used at the end of each 4-week or month period to record the transactions. The input data consists of punched cards prepared on the summary punch hookup to the accounting machine. The program steps are to record the net money debit or credit balances reported for the current period by adding to or subtracting from the net balances stored for the prior periods to date, and to accumulate a new year-to-date balance including prior-period and current-period balances. The process of recording current-period transactions is illustrated in the following figures: 69, program for updating year-to-date balances by adding current-period totals to prior-period year-to-date balances; 70, a block diagram showing updating the general ledger control accounts; 71, a record layout form; and 72, program load cards for updating general ledger control accounts.

The preceding analysis covers the method of updating current-period balances with prior-period totals to arrive at current-period-to-date totals. The statement of income (fig. 2) and statement of operating expenses (fig. 4) may then be prepared on a departmental basis. These statements can be prepared on the console typewriter on a spread basis. The procedure for processing the year-to-date data for printing the operating statements on a departmental spread basis is:

1. Balance general ledger journal entries to source material by source. Zero balance indicates correct punching of dollar amount. General ledger control panel, switch 1 on.

2. Sort general ledger detail cards on columns 7 through 5 and 11 through 8.

3. Merge year-to-date cards with detail cards. Major columns, 8 through 11; minor, 7 through 9. Note: Year-to-date cards in primary feed. Check for X-column 4.

4. Select sort for zeros in column 7 of the 6000 series. Also hand select any specials accounts requested by management.

Application: __Disk Address Assignment - General Ledger__   Date: _____ Page __1__ of __4__

Routine: __305 General Purpose Control Panel__   Written by: _____

PROGRAM LOADING INSTRUCTIONS

ONE						TWO					THREE				
¹I 7 9	⁴0 4 9	⁷5 0	⁹X	¹⁰11	¦	14 ¦	17 ¦	19 ¦ 20	21	¦	24 ¦	27 ¦	29 ¦ 30
FROM	TO	NO. CHAR.	CONTROL	FROM		TO	NO. CHAR.	CONTROL	FROM		TO	NO. CHAR.	CONTROL		

PROG. STEP	FROM TR.	FROM POS.	TO TR.	TO POS.	NO. CHAR.	CONTROL		DESCRIPTION	TO PROG. STEP
								Reset All Accums.	
000	M 9 ¦ 9		b 9 ¦ 9		0 ¦ 0				
Restart:									
						Check Reset ☐ Program Start			
								Add "3" to Accum. 0	
001	Z 3 ¦ 3		L 0 ¦ 5		0 ¦ 1				
Restart:									
						Check Reset ☐ Program Start			
								Add "3" to Accum. 0	
002	Z 3 ¦ 3		L 0 ¦ 6		0 ¦ 1				
Restart:									
						Check Reset ☐ Program Start			
								K to W	
003	K 9 ¦ 9		W 9 ¦ 9		0 ¦ 0				
Restart:									
						Check Reset ☐ Program Start			
								Test for Blank Trans.	
004	W 1 ¦ 0		K 1 ¦ 0		0 ¦ 7	N	6		
Restart:									
						Check Reset ☐ Program Start			

Figure 65.--Program instruction sheets for 305 disk address assignment for the general ledger. (Continued through page 112.)

PROGRAM INSTRUCTION SHEET

Application: __Disk Address Assignment - General Ledger__ ____ Date: _____ Page __2__ of __4__

Routine: __305 General Purpose Control Panel__ _____ Written by: _____

PROGRAM LOADING INSTRUCTIONS

ONE					TWO					THREE				
I 7 9	4 0 9 9	7 5 0	9	10 11 0 9 9	14 Q 9 9	17 0 0	19 Y	20 21		24		27	29	30
FROM	TO	NO. CHAR.	CONTROL	FROM	TO	NO. CHAR.	CONTROL	FROM		TO		NO. CHAR.	CONTROL	

PROG. STEP	FROM TR.	FROM POS.	TO TR.	TO POS.	NO. CHAR.		CONTROL		DESCRIPTION	TO PROG. STEP
									Trans. to Step 007	
005	Z	0 0	–	9 9	0	1	7			
Restart:										
					Check Reset ☐ Program Start					
									Error Halt	
006	b	9 9	b	9 9	0	0				
Restart:										
					Check Reset ☐ Program Start					
									Add "1" to Accum. 0	
007	Z	3 1	L	0 9	0	1	F		1. Feed Card	
Restart:									2. P. A.	
					Check Reset ☐ Program Start					
									Accum. 0 to Address Register	
008	L	0 9	J	9 9	0	5				
Restart:										
					Check Reset ☐ Program Start					
									Blank Track Y	
009	b	9 9	Y	9 9	0	0				
Restart										
					Check Reset ☐ Program Start					

PROGRAM INSTRUCTION SHEET

Application: __Disk Address Assignment - General Ledger__   Date: _____   Page __3__ of __4__

Routine: __305 General Purpose Control Panel__   Written by: _____

PROGRAM LOADING INSTRUCTIONS

ONE					TWO					THREE				
I	7 9	1 4 9	5 0	X	11		14	17	19 20	21	24	27	29	30
FROM	TO	NO. CHAR	CONTROL		FROM		TO	NO. CHAR	CONTROL	FROM	TO	NO. CHAR	CONTROL	

PROG. STEP	FROM TR.	FROM POS.	TO TR.	TO POS.	NO. CHAR.	CONTROL		DESCRIPTION	TO PROG. STEP
010	L	0 : 9	W	7 : 8	0 : 5			Disk Add. to Track W	
Restart:									
					Check Reset ☐ Program Start			
011	W	1 : 0	Y	0 : 6	0 : 7			Account Code W to Y	
Restart:									
					Check Reset ☐ Program Start			
012	W	4 : 0	Y	9 : 9	2 : 0			Description W to Y	
Restart:									
					Check Reset ☐ Program Start			
013	Y	9 : 9	R	9 : 9	0 : 0			Account Description to File	
Restart:									
					Check Reset ☐ Program Start			
014	W	9 : 9	S	9 : 9	0 : 0	&		W to S 1. Punch 2. P. A.	
Restart:									
					Check Reset ☐ Program Start			

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Application: __Disk Address Assignment - General Ledger__ Date: _____ Page __4__ of __4__

Routine: __305 General Purpose Control Panel__ Written by: _____

PROGRAM LOADING INSTRUCTIONS

	ONE					TWO					THREE			
I 7 9	1 9 9	5 0		1 9 9	Q 9 9	5 0	Y							
FROM	TO	NO. CHAR. CONTROL	FROM	TO	NO. CHAR. CONTROL	FROM	TO	NO. CHAR. CONTROL

PROG. STEP	FROM TR.	FROM POS.	TO TR.	TO POS.	NO. CHAR.	CONTROL		DESCRIPTION	TO PROG. STEP
								Trans. to Step 003	
015	Z	2 0	-	9 9	0 1	3			

Restart:
Check Reset Program Start ☐

Restart:
Check Reset Program Start ☐

Restart:
Check Reset Program Start ☐

Restart:
Check Reset Program Start ☐

Restart:
Check Reset Program Start ☐

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Figure 66.--Disk address assignment for the general ledger.

Figure 67.--Record layout form for disk address assignment of the general ledger.

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Figure 68.--Program load cards for disk address assignment of the general ledger.

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Form X26-6343-3
Printed in U.S.A.

Application: __Updating General Ledger Control Accounts__ Date: _____ Page __1__ of __4__

Routine: __305 General Purpose Control Panel__ Written by: _____

PROGRAM LOADING INSTRUCTIONS

ONE					TWO				THREE			
1 I 7 9	4 0 4 9	7 5 0 9 X	10 11		14	17	19 20	21	24		27 29	30
FROM	TO	NO. CHAR. CONTROL	FROM		TO	NO. CHAR. CONTROL		FROM	TO	NO. CHAR. CONTROL		

PROG. STEP	FROM		TO		NO. CHAR.	CONTROL	DESCRIPTION	TO PROG. STEP
	TR.	POS.	TR.	POS.				
000	M	9 9	b	9 9	0 0		Reset All Accumulators	
Restart:								
					Check Reset Program Start ☐			
001	b	9 9	X	9 9	0 0	.	Blank Track X	
Restart:								
					Check Reset Program Start ☐			
002	K	9 9	W	9 9	0 0	F	K to W 1. Feed Card 2. Program Advance	
Restart:								
					Check Reset Program Start ☐			
003	W	7 9	J	9 9	0 5		Disk Address to Address Register	
Restart:								
					Check Reset Program Start ☐			
004	W	2 0	L	1 9	1 0		Current Charge to Accum. 1	
Restart:								
					Check Reset Program Start ☐			

Figure 69.--Program for updating year-to-date balances in the general ledger.
(Continued through page 119.)

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PROGRAM INSTRUCTION SHEET

Application: **Updating General Ledger Control Accounts**   Date: _____ _____ Page __2__ of __4__

Routine: **305 General Purpose Control Panel**   Written by: _____

PROGRAM LOADING INSTRUCTIONS

ONE						TWO						THREE					
¹I	7	9	⁴0	9	9	⁷5	0	⁹	¹⁰ ¹¹0	9	9	¹⁴Q	9	9	¹⁷0	0	¹⁹Y	²⁰ |²¹		|²⁴		|²⁷	|²⁹	30
FROM		TO		NO. CHAR.	CONTROL	FROM		TO		NO. CHAR.	CONTROL	FROM		TO		NO. CHAR.	CONTROL

PROG. STEP	FROM TR.	FROM POS.	TO TR.	TO POS.	NO. CHAR.	CONTROL		DESCRIPTION	TO PROG. STEP
005	R	9 ¦ 9	X	9 ¦ 9	0 ¦ 0			**Control Account to Track X**	
Restart:									
						Check Reset ☐ Program Start			
006	W	1 ¦ 0	X	0 ¦ 6	0 ¦ 7	E	1	**Compare Account Codes**	✎
								= Pick Sel. 1 & Program Advance	
Restart:								≠ D.O. Sel. 1 & Program Advance	
						Check Reset ☐ Program Start			
007	Z	0 ¦ 0	–	9 ¦ 9	0 ¦ 1	9		**Transfer to Step 009, if Sel. 1**	
Restart:								is Transferred	
						Check Reset ☐ Program Start			
008	b̲	9 ¦ 9	b̲	9 ¦ 9	0 ¦ 0			**Error Halt**	
Restart:									
						Check Reset ☐ Program Start			
009	X	1 ¦ 6	L	1 ¦ 9	1 ¦ 0			**Y.T.D. Charges to Accum. 1**	
Restart:									
						Check Reset ☐ Program Start			

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PROGRAM INSTRUCTION SHEET

Application: **Updating General Ledger Control Accounts**   Date: _____   Page ___3___ of ___4___

Routine: **305 General Purpose Control Panel**   Written by: _____

PROGRAM LOADING INSTRUCTIONS

ONE						TWO						THREE			
¹I 7 ¦ 9	⁴1 ¦ 4 ¦ 9	⁵5 ¦ 0	⁹X	¹⁰	¹¹1 ¦ 4 ¦ 9	¹⁴Q ¦ 9 ¦ 9	¹⁷0 ¦ 0	¹⁹Y	²⁰	²¹	²⁴	²⁷	²⁹	³⁰	
FROM	TO	NO. CHAR.	CONTROL		FROM	TO	NO. CHAR.	CONTROL		FROM	TO	NO. CHAR.	CONTROL		

PROG. STEP	FROM TR.	FROM POS.	TO TR.	TO POS.	NO. CHAR.	CONTROL		DESCRIPTION	TO PROG. STEP
								Updated Y.T.D. Charges to Track X	
010	L	1 ¦ 9	X	1 ¦ 6	1 ¦ 0				
Restart:									
					Check Reset ☐ Program Start				
								Current Charges to Track X	
011	W	2 ¦ 0	X	2 ¦ 6	1 ¦ 0				
Restart:									
					Check Reset ☐ Program Start				
								Control Account Back to File	
012	X	9 ¦ 9	R	9 ¦ 9	0 ¦ 0				
Restart:									
					Check Reset ☐ Program Start				
								Account Code to Track Y	
013	X	0 ¦ 6	Y	1 ¦ 0	0 ¦ 7				
Restart:									
					Check Reset ☐ Program Start				
								Y.T.D. to Track Y	
014	X	1 ¦ 6	Y	2 ¦ 0	1 ¦ 0				
Restart:									
					Check Reset ☐ Program Start				

Application: **Updating General Ledger Control Accounts**   Date: _____   Page __4__ of __4__

Routine: **305 General Purpose Control Panel**   Written by: _____

PROGRAM LOADING INSTRUCTIONS

ONE					TWO					THREE				
FROM		TO	NO. CHAR.	CONTROL	FROM		TO	NO. CHAR.	CONTROL	FROM		TO	NO. CHAR.	CONTROL
I	7 9	1 9 9	5 0		1	9 9	Q 9 9	0 0	Y					

PROG. STEP	FROM		TO		NO. CHAR.		CONTROL		DESCRIPTION	TO PROG. STEP
	TR.	POS.	TR.	POS.						
									Y to S	
015	Y	9 9	S	9 9	0	0	&		1. Punch	
Restart:									2. P. A.	
						Check Reset Program Start ☐				
016	Z	2 0	–	9 9	0	1	0		**Trans. to Step 000**	
Restart:										
						Check Reset Program Start ☐				
Restart:										
						Check Reset Program Start ☐				
Restart:										
						Check Reset Program Start ☐				
Restart:										
						Check Reset Program Start ☐				
Restart:										
						Check Reset Program Start ☐				

000 RESET ALL ACCUMS.

001 BLANK TRACK X

002 K TO W

F

FEED CARD PROGRAM ADVANCE

003 DISK ADDRESS TO ADDRESS REGISTER

004 CURRENT CHARGE TO ACCUM. 1

005 CONTROL ACCOUNT TO TRACK X

006 COMPARE ACCOUNT CODES

E

TEST COMPARE = PICK SEL. 1 ≠ D.O. SEL. 1

007 TRANS. TO STEP 009 IF SEL. 1 IS TRANSFERRED

008 ERROR HALT

009 YEAR-TO-DATE CHARGES TO ACCUM. 1

010 UPDATED YEAR-TO-DATE CHARGES TO TRACK X

011 CURRENT CHARGE TO TRACK X

012 CONTROL ACCT. BACK TO FILE

013 ACCOUNT CODE TO TRACK Y

014 YEAR-TO-DATE CHARGES TO TRACK Y

015 Y TO S

&

PUNCH PROGRAM ADVANCE

016 TRANSFER TO STEP 000

Figure 70.--Block diagram for updating the general ledger control accounts.

120

Figure 71.--Record layout form for updating the general ledger control accounts.

121

Figure 72.--Program load cards for updating the general ledger control accounts.

5. List selected account codes and forward to Accounting Department for preparation of allocation journal entries. General ledger control panel, all switches off.

6. Key punch allocation journal entries.

7. Balance to source document.

8. Sort allocation entries as follows: Columns 7 through 5 and 11 through 8.

9. Merge with selected cards used to prepare allocation list as follows: Major columns, 8 through 11; minor, 5 through 7.

10. Merge above cards with unselected journal entry cards as follows: Major columns, 8 through 11; minor, 5 through 7.

11. Match merge detail general ledger cards with general ledger description deck. Description deck in primary feed. Major columns, 8 through 11; minor, 5 through 7.

12. Detail list and summarize on 402. General ledger control panel, switch 2 on.

13. Zero balance summary cards. General ledger control panel, switch 1 on.

14. Select sort for account description cards (X-column 80). File year-to-date and detail cards.

15. Select sort for "2" in column 5. Hold two groups separate. Each group used to pull statement from 305 by location.

16. Summary cards from step 13 to the 305 to update general ledger control accounts. General purpose process control panel with 80-80 punch panel and applicable program load cards. Note: Output cards are the new year-to-date cards. File summary cards.

17. Zero balance new year-to-date balance-forward cards. General ledger control panel, switch 1 on. File year-to-date cards.

18. Account description cards from step 15 to the 305 to pull statement by location. Run each location separately and forward to the accounting department.

19. Merge account description file together. Major columns, 8 through 11; minor, 5 through 7.

20. Merge description cards from above step with unused account description. File with major columns 8 through 11 and minor columns 5 through 7 in sequence.

The program steps and diagrams for this operation are shown in the following figures: 73, program instruction sheet for preparing spread operating statement on console typewriter; 74, a block diagram showing method of obtaining a spread operating statement on console typewriter; 75, record layout form for preparing the current-period spread operating statement, typewriter output; 76, RAMAC control panel wiring diagram for spread card output; 77, the program load spread cards for year-to-date operating statement; and 78, the program load cards for current-period operating statements.

UNMATCHED RECEIVINGS

Accounting for determining the dollar amount of inventory for insurance reports and computing the accurate inventory turnover requires recording merchandise received at the end of the period even if an invoice has not been received from the supplier. When a company has a warehouse report for merchandise received that has not been matched with an invoice, the merchandise is termed unmatched receivings.

The accounting journal entry for these items, as merchandise inventory and accounts payable, normally takes 2 to 3 weeks after the close of the period if the accounts are held open until all the invoices have been cleared. To avoid delay, the dollar value of the receiving reports is determined by machine extension of each invoice or by machine processing. In manual, key-driven accounting machine, or tabulating systems, the dollar value is determined by extending the amounts shown on the receiving reports by the unit cost of the merchandise received.

A company using the 305 determined the dollar value of the unmatched receivings by late Friday afternoon of the closing date by machine matching the receiving reports for which invoices had not been received with the receiving output card. The receiving output card is prepared daily as a part of the normal work routine. This card was designed for preparing the following reports: Tonnage reports for the warehouse; buyer's receipts for the week; dollar value of receivings; and cost equalization (machine audit of vendor's invoices with the receiving reports). Accumulating data for recording 376 items of merchandise received for 84 unmatched warehouse receiving reports required 1.24 hours (table 13). This operation would require from 8 to 12 hours if done manually, but the information would not have been available for several weeks. This timesaving procedure was possible because the receiving numbers had been punched into the receiving spread card and the receiving output card (fig. 79). An unmatched receiving report is shown in figure 80.

The procedure for preparing the merchandise received amount was as follows:

1. Office copies of the purchase order receiving tallies for merchandise received but not invoiced were forwarded to the tabulating department by the accounts payable control clerk. This eliminated the 14.49 minutes (table 13) for listing purchase order numbers.

2. A card was key punched and verified for each purchase order receiving tally, showing the purchase order number in columns 46 through 50.

Form X26-6343-3
Printed in U.S.A.

Application: __Operating Statement - Current Period__   Date: _____ Page __1__ of __5__

Routine: __305 General Purpose Control Panel__   Written by: _____

PROGRAM LOADING INSTRUCTIONS

ONE									TWO								THREE							
1 I	7	9	4 0	4	9	7 5	0	9 @	10 11			14			17	19	20 21			24		27		29	30
FROM			TO			NO. CHAR.	CONTROL		FROM			TO			NO. CHAR.	CONTROL	FROM			TO		NO. CHAR.		CONTROL	

PROG. STEP	FROM TR.	POS.	TO TR.	POS.	NO. CHAR.		CONTROL		DESCRIPTION	TO PROG. STEP
									Reset All Accumulators	
000	M 9	9	_b_ 9	9	0	0				
Restart:										
					Check Reset ☐ Program Start					
									K To W	
001	K 9	9	W 9	9	0	0	0	6	1. Test Sel. 20	
Restart:										
									No - Feed cards to step 003	
									Yes - Feed card	
									Program Advance	
					Check Reset ☐ Program Start					
									Compare Control Codes	
002	W 0	8	X 0	4	0	2	1	1	= Program Advance	
Restart:									≠ To Step 012	
					Check Reset ☐ Program Start					
									Disk Address to Address Register	
003	W 7	9	J 9	9	0	5	2		1. Pick Sel. 1	
Restart:										
					Check Reset ☐ Program Start					
									Account Record To Track X	
004	R 9	9	X 9	9	0	0				
Restart:										
					Check Reset ☐ Program Start					

Figure 73.--Program instruction sheet for preparing spread operating state-
ment on console typewriter. (Continued through page 129 .)

Application: __Operating Statement - Current Period__   Date: _____ Page __2__ of __5__

Routine: __305 General Purpose Control Panel__   Written by: _____

PROGRAM LOADING INSTRUCTIONS

ONE					TWO					THREE				
¹I	7	9	⁴0	9	9	7 5 : 0	0	⁹	¹⁰¹¹ 0	9 : 9	¹⁴Q	9 : 9	¹⁷0 : 0	¹⁹&

FROM | TO | NO. CHAR. | CONTROL (columns repeated)

PROG. STEP	FROM TR.	FROM POS.	TO TR.	TO POS.	NO. CHAR.		CONTROL		DESCRIPTION	TO PROG. STEP
005	X	2 : 6	L	6 : 9	1 : 0				Current Charges To Accum. 6	
Restart:										
						Check Reset Program Start ☐				
006	W	0 : 6	-	9 : 9	0 : 1	3			Low Order Digit Of Dept. To Char. Sel.	
									1. P. A.	
Restart:									2. To Step 008	
									3. To Step 009	
									4. To Step 010	
						Check Reset Program Start ☐			5. To Step 011	
007	X	2 : 6	L	1 : 9	1 : 0	4			Current Charge To Accum. 1	
									1. To Step 001	
Restart:										
						Check Reset Program Start ☐				
008	X	2 : 6	L	2 : 9	1 : 0	4			Current Charge To Accum. 2	
									To Step 001	
Restart:										
						Check Reset Program Start ☐				
009	X	2 : 6	L	3 : 9	1 : 0	4			Current Charge To Accum. 3	
									To Step 001	
Restart:										
						Check Reset Program Start ☐				

PROGRAM INSTRUCTION SHEET

Application: **Operating Statement - Current Period**   Date: _____   Page __3__ of __5__
305 General Purpose Control Panel
Routine: _____   Written by: _____

PROGRAM LOADING INSTRUCTIONS

ONE				TWO					THREE			
1 I 7 9	4 1 4 9	7 5 0	(a)	10 11 1 4 9	14 Q 4 9	17 5 0	19 &	20 21	24	27	29	30
FROM	TO	NO. CHAR.	CONTROL	FROM	TO	NO. CHAR.	CONTROL		FROM	TO	NO. CHAR.	CONTROL

PROG. STEP	FROM TR.	FROM POS.	TO TR.	TO POS.	NO. CHAR.	CONTROL	DESCRIPTION	TO PROG. STEP
010	X	2 6	L	4 9	1 0	4	**Current Charge To Accum. 4** To Step 001	
Restart:								
					Check Reset / Program Start ☐			
011	X	2 6	L	5 9	1 0	4	**Current Charge To Accum. 5** To Step 001	
Restart:								
					Check Reset / Program Start ☐			
012	X	0 4	Y	0 1	0 2		**Account Number To Track Y**	
Restart:								
					Check Reset / Program Start ☐			
013	M	9 9	Y	9 9	9 8		**Blank 98 Positions of Track Y**	
Restart:								
					Check Reset / Program Start ☐			
014	M	6 9	Y	1 5	1 0		**Accumulator 6 to Track Y**	
Restart:								
					Check Reset / Program Start ☐			

PROGRAM INSTRUCTION SHEET

Application: __Operating Statement - Current Period__ Date: _____ Page __4__ of __5__

Routine: __305 General Purpose Control Panel__ Written by: _____

PROGRAM LOADING INSTRUCTIONS

ONE					TWO					THREE			
¹I 7 9	⁴1 9 9	⁷5 0	⁹	¹⁰¹¹1 9 9	¹⁴Q 9 9	¹⁷0 0	¹⁹(a)	²⁰²¹		²⁴		²⁷	²⁹ 30
FROM	TO	NO. CHAR.	CONTROL	FROM	TO	NO. CHAR.	CONTROL	FROM		TO		NO. CHAR	CONTROL

PROG. STEP	FROM TR.	FROM POS.	TO TR.	TO POS.	NO. CHAR.	CONTROL		DESCRIPTION	TO PROG. STEP
015	M	1 9	Y	2 9	1 0			Accum. 1 To Track Y	
Restart.									
					Check Reset Program Start ☐				
016	M	2 9	Y	4 3	1 0			Accum. 2 To Track Y	
Restart:									
					Check Reset Program Start ☐				
017	M	3 9	Y	5 7	1 0		5	Accum. 3 To Track Y	
Restart:									
					Check Reset Program Start ☐				
018	M	4 9	Y	7 1	1 0			Accum. 4 To Track Y	
Restart.									
					Check Reset Program Start ☐				
019	M	5 9	Y	8 3	1 0			Accum. 5 To Track Y	
Restart									
					Check Reset Program Start ☐				

PROGRAM INSTRUCTION SHEET

Application: __Operating Statement - Current Period__   Date: _____   Page __5__ of __5__

Routine: __305 General Purpose Control Panel__   Written by: _____

PROGRAM LOADING INSTRUCTIONS

ONE				TWO				THREE			
¹I ⁷7 9	⁴2 4 9	⁷5 0	⁹ ¹⁰	¹¹2 4 9	¹⁴Q 4 9	¹⁷5 0	¹⁹(a) ²⁰	²¹	²⁴	²⁷	²⁹ 30
FROM	TO	NO. CHAR.	CONTROL	FROM	TO	NO. CHAR.	CONTROL	FROM	TO	NO. CHAR.	CONTROL

PROG. STEP	FROM TR.	FROM POS.	TO TR.	TO POS.	NO. CHAR.	CONTROL		DESCRIPTION	TO PROG. STEP
								Y To Q	
020	Y	9 9	Q	9 9	0 0	5		Test Blank Transmission	
Restart								No - Type & Step 003	
								Yes - Type & D. O. Sel. 20	
				Check Reset Program Start ☐					
Restart:									
				Check Reset Program Start ☐					
Restart:									
				Check Reset Program Start ☐					
Restart.									
				Check Reset Program Start ☐					
Restart:									
				Check Reset Program Start ☐					

Figure 74.--A block diagram for preparing the current-period operating statement.

000 RESET ALL ACCUMS.

001 K TO W

TEST SEL. 20 — 0 — N — PROGRAM ADVANCE AND FEED CARDS — TO STEP 003 AND FEED CARDS

TEST SEL. 20 — Y

002 COMPARE CONTROL CODES — 1 — TEST COMPARE — ≠ — PROGRAM ADVANCE — TO STEP 012

TEST COMPARE — =

003 DISK ADDRESS TO ADDRESS REGISTER — 2 — PICK SEL. 20

004 ACCOUNT RECORD TO TRACK X

005 CURRENT CHARGE TO ACCUM. 6

006 LOW ORDER DIGIT OF DEPT. TO CHAR. SEL. — 3 — TEST CHAR. SEL.

PROGRAM ADVANCE — 1
TO STEP 008 — 2
TO STEP 009 — 3
TO STEP 010 — 4
TO STEP 011 — 5

007 CURRENT CHARGE TO ACCUM. 1 — 4 — TO STEP 001

008 CURRENT CHARGE TO ACCUM. 2 — 4 — TO STEP 001

009

010 CURRENT CHARGE TO ACCUM. 3 — 4 — TO STEP 001

011 CURRENT CHARGE TO ACCUM. 4 — 4 — TO STEP 001

CURRENT CHARGE TO ACCUM. 5 — 4 — TO STEP 001

012 ACCOUNT NO. TO TRACK Y

013 BLANK TRACK Y

014 ACCUM. % TO TRACK Y

015 ACCUM. 1 TO TRACK Y

016 ACCUM. 2 TO TRACK Y

017 ACCUM. 3 TO TRACK Y

018 ACCUM. 4 TO TRACK Y

019 ACCUM. 5 TO TRACK Y

020 Y TO Q — S — TEST BLANK TRANS. — Y

TEST BLANK TRANS. — N — D.O. SEL. 20 TYPE

TYPE TO STOP 003

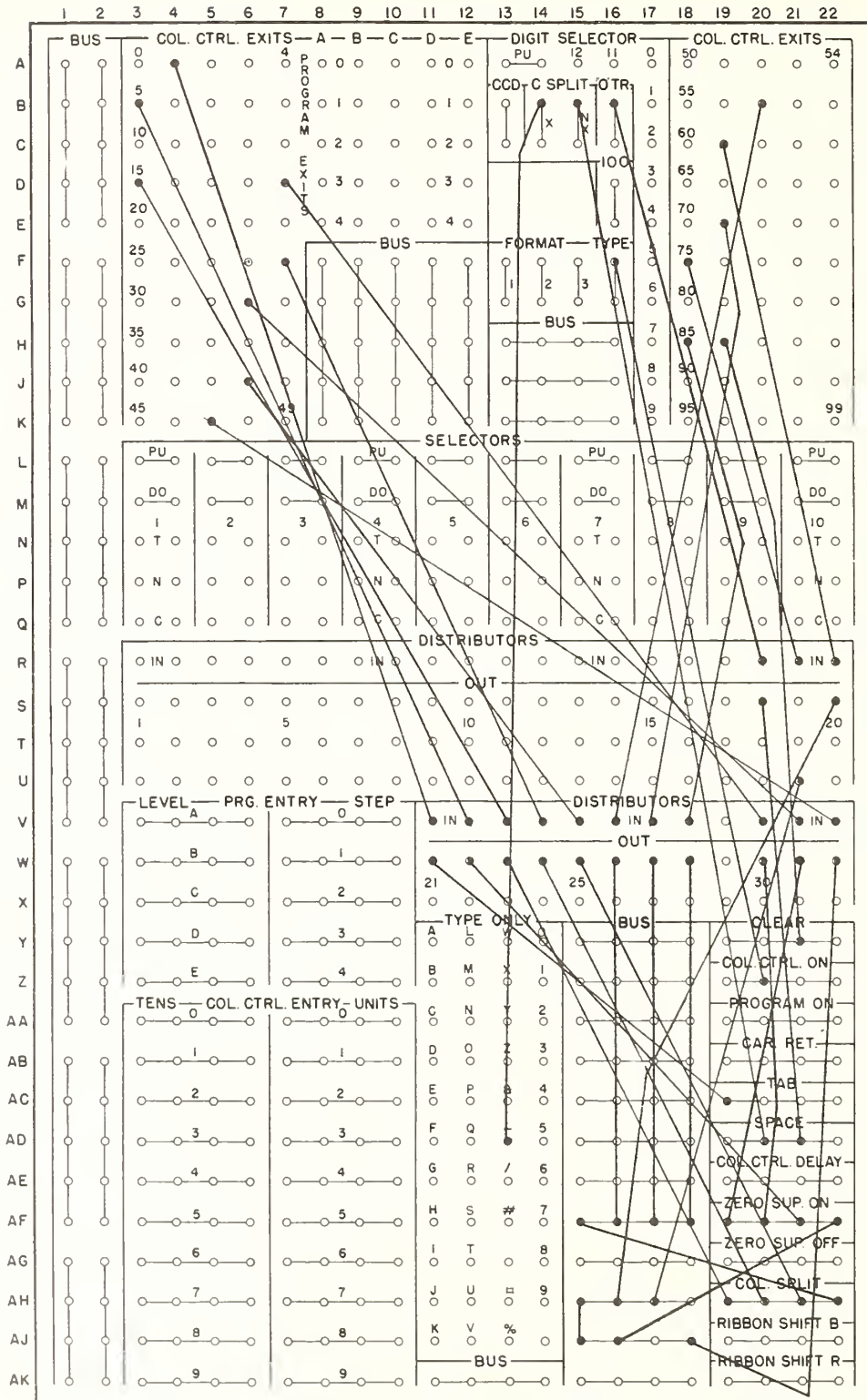Figure 75.--Record layout forms for current-period spread operating statement.

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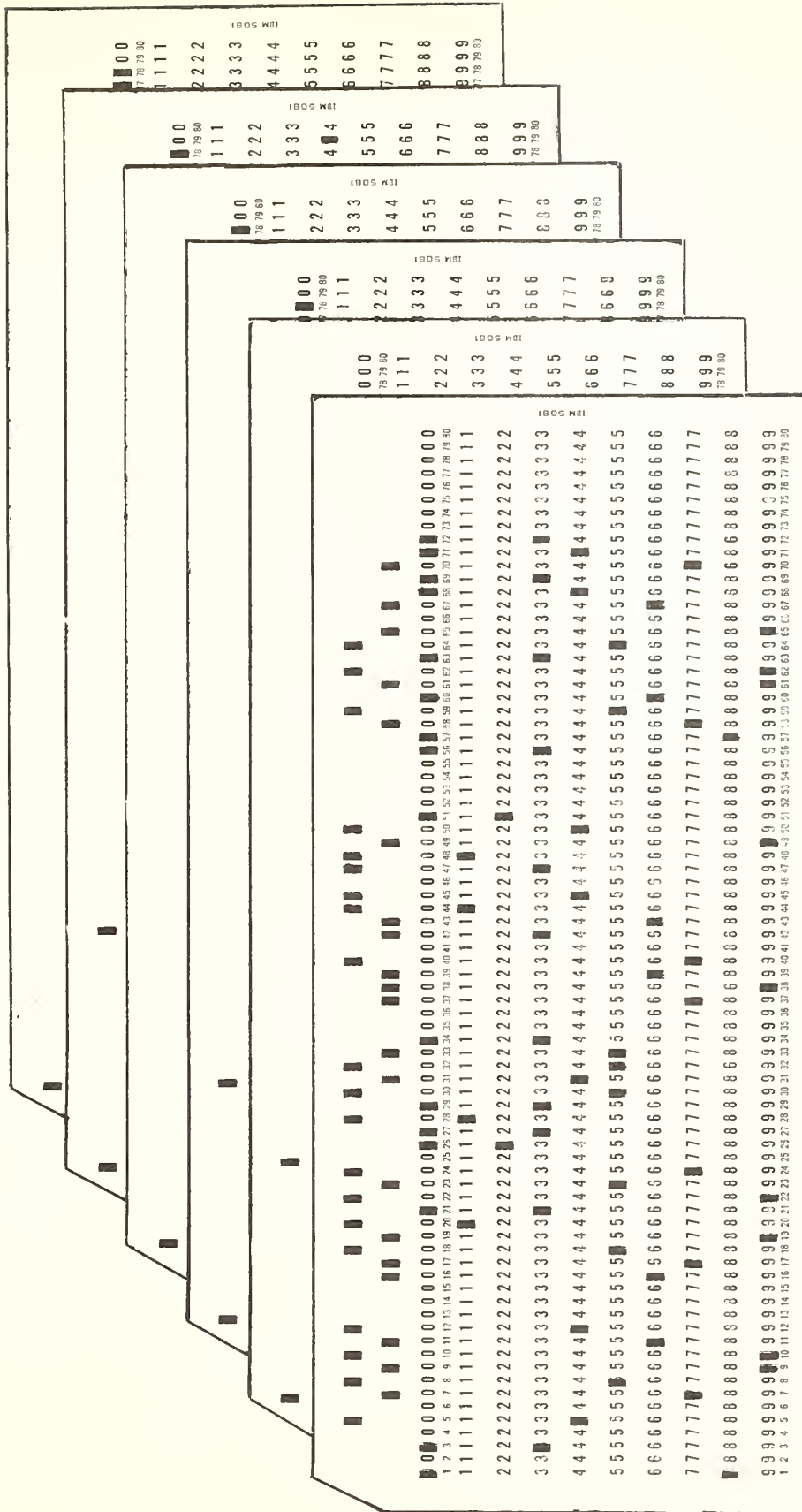Figure 76.--Control panel wiring diagram for spread
card output (305).

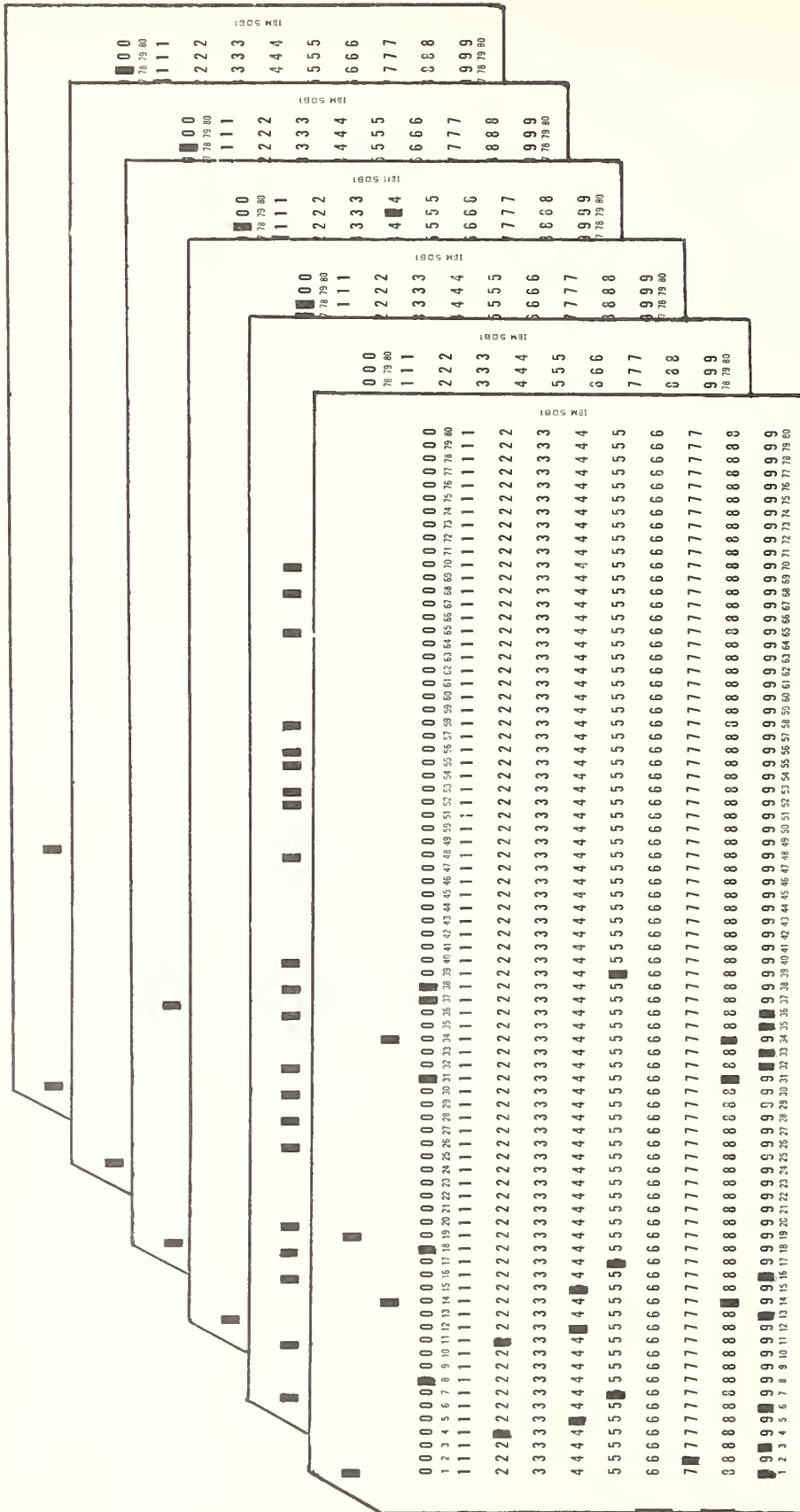Figure 77.--Program load spread cards for year-to-date operating statements.

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Figure 78.--Program load cards for current period operating statements.

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Figure 79.--A receiving spread card and receiving output card.

VENDOR CODE	BUYER		PACK & SIZE (UNITS)		ITEM DESCRIPTION	ITEM CODE	RECEIPTS	UNIT COST	EXTENDED COST	EXTENDED WEIGHTS	DATE REC'D	P.O. NUMBER
66495	4	CS	5	10 LB	PB ENR FLOUR SR PLAIN	37761	100	435	43500	5100	519	28944
66495	4	CS	10	5 LB	PB ENR FLOUR PLAIN	37734	91	445	40495	4641	519	28944
66495	4	CS	12	2 LB	PB ENR FL PAPR	37741	42	251	10542	2142	519	28944
66495	4	CS	12	2 LB	PB ENR FLOUR SR PAPR	37775	42	256	10752	2142	519	28944
66495	4	CS	5	10 LB	PB ENR FLOUR PLAIN	37727	50	425	21250	2550	519	28944
66495	4	CS	10	5 LB	PB ENR FLOUR SR	37768	80	455	36400	4080	519	28944
							405		162939	20655		
66495	4	CS	12	10 OZ	PB WHI LOAF CAKE MIX	39556	30	135	4050	240	519	28947
66495	4	CS	12	9 OZ	PB CHO FUDG LOAF CAK	39550	30	135	4050	240	519	28947
66495	4	CS	12	9½ OZ	PB YEL LOAF CAKE MIX	39554	31	135	4185	248	519	28947
66495	4	CS	12	10 OZ	PILLS BANANA LOAF CK	39549	45	230	10350	405	519	28947
							136		22635	1133		
66495	4	CS	24	10 OZ	PILLS PIE CRUST MIX	39726	48	395	18960	720	519	28949
66495	4	CS	12	2 LB	PB BMILK PANCAKE MIX	39761	48	355	17040	1296	519	28949
66495	4	CS	12	6½ OZ	PB ORANGE FROSTING	39710	12	280	3360	72	519	28949
66495	4	CS	12	9¾ OZ	PB CHOC PUD CAKE MIX	39720	60	325	19500	600	519	28949
66495	4	CS	24	5 OZ	PB PIE CRUST STICKS	39730	44	395	17380	660	519	28949
66495	4	CS	12	6½ OZ	PILLS WHITE FROSTING	39712	36	280	10080	216	519	28949
66495	4	CS	12	14 OZ	PB LEMON PUD CAKE MX	39722	60	325	19500	600	519	28949
66495	4	CS	12	10½ OZ	PILLS HOT ROLL MIX	39743	24	280	6720	288	519	28949
66495	4	CS	24	9 OZ	PB ORANGE PUD CAKE	39724	36	325	11700	324	519	28949
66495	4	CS	12	1 LB	PB BMILK PANCAKE MIX	39758	45	385	17325	1215	519	28949
66495	4	CS	24	20¾ OZ	BALLARD CORNBREAD MX	39928	20	260	5200	360	519	28949
66495	4	CS	12	13 OZ	PILLS CHOC FUDG FROS	39699	36	325	11700	540	519	28949
							469		158465	6891		
3552	9	CS	12	10 OZ	FRENCH MIX BIRDSEED	21040	24	210	5040	216	519	29048
3552	9	CS	24	11 OZ	FRENCH PARAKEET SEED	21080	96	420	40320	1728	519	29048
3552	9	CS	12	1½	PARAKEET GRAVEL	21072	24	108	2592	480	519	29048
							144		47952	2424		
30000	4	CS	24	8 OZ	WHEATIES	60196	9	394	3546	153	519	29138
30000	4	CS	12	20 OZ	BC HONEY SPICE CAKE	39176	10	327	3270	180	519	29138
30000	2	BL	10	5 LB	CHUCK W CHAR BRIQUET	64142	90	329	29610	4500	519	29138
30000	2	BL	5	10 LB	CHUCK W CHAR BRIQUET	64143	90	304	27360	4500	519	29138
							199		63786	9333		
75480	2	CS	12	8 OZ	SAVOY CAR SHAMPOO	66060	20	545	10900	200	519	29144
							20		10900	200		
11322	4	CS	24	7 OZ	RED X SEA SHELLS	34112	3	215	645	39	519	29147
11322	4	CS	12	6 OZ	RED X EX WIDE NOODLE	34214	10	125	1250	50	519	29147
11322	4	CS	24	12 OZ	RED X ELBO MACARONI	34109	31	332	10292	558	519	29147
							4		12187	647		
82917	2	CS	12	80 OZ	4980 PURITY WH PLATE	75202	30		25440	1080	518	29159
							30		25440	1080		
							22861		7167965	544638		

UNMATCHED RECEIVING AMOUNT

Figure 80.--An unmatched receiving report.

Table 13.--Time required to prepare an unmatched receiving report, with improved methods

Operation	Elements	Elemental time	Total time
		Man-minutes 1/	Man-minutes 1/
List open receiving reports, showing purchase order number only...........	84	.1725	14.49
Key punch purchase order number into unmatched receiving cards (cc 46 to 50).............................	84	.3571	30.00
Machine sort 1,050 RAMAC output receiving cards into purchase order number sequence......................	1,330	.0113	15.03
Collate (077) unmatched receiving cards with receiving and purchase order cards.........................	1,414	.0071	10.04
List tab on 402 (or 403) machine unmatched receiving report...........	376	.0133	5.00
Total time.................			74.56

1/ Includes 15 percent personal and fatigue allowance.

3. Key-punched purchase order number cards were machine sorted into purchase order number sequence.

4. Key-punched purchase order number cards were matched against receiving output cards that had been sorted by purchase order number for weekly receiving report. Matched key-punched purchase order number cards were destroyed.

5. Matched receiving output cards for the unmatched receiving report were listed on 402 (or 403) machine.

6. Unmatched receiving output cards were merged with the matched receiving output cards after the unmatched receiving report was listed.

7. Unmatched key-punched purchase order number cards for manual costing were listed on 402 (or 403) by the accounts payable control clerk.

PREPARATION OF INCOME TAX RETURNS

Tax accountants for wholesale food distributors require substantial time to classify income and expenses for computing taxable income and reporting it to the Federal and State governments. Most of the time is spent in preparing

tax worksheets of the accounts, inserting balances, totaling all worksheets to ensure that entries are arithmetically correct, manually classifying the accounts to the appropriate category, and then again totaling each column and cross totaling to ensure accuracy. The totals must then be written into the appropriate columns of the tax returns.

The accounting system in this study was designed to replace the foregoing manual methods with a machine processing method that saves man-hours by accelerating preparation of the basic data. It is estimated that more than 257 man-hours were saved in the annual preparation of 5 U.S. corporation income tax returns (Form 1120) and 5 State income tax returns in a company with more than $100 million annual business.

These savings are accomplished by eliminating all manual and totaling operations and using the general ledger cards available after completion of the yearend financial statements. The income statement cards are hand separated from the financial condition cards and sorted on the last two digits of the account code; master namecards are interspersed (optional) and machine listed in sequence. The data are then posted directly on lines 1 to 30 on page 2 of U.S. corporation income tax Form 1120.

The workflow procedure is shown in figure 81. Figure 82 shows a partial summary of the income tax trial balance prepared by 402 machine listing with the items keyed into the various line numbers on the form where the amounts have been posted. The classification of income and expense on Form 1120 is shown in figure 83.

Table 14 shows the time required by one company to manually prepare a worksheet for basic data for the U.S. corporation income tax return (Form 1120), as compared with time required to machine process the same data. The departments reported and extent of this operation are shown in the following tabulation:

Warehouses operated............................ 2

Accounts for each item for
  each department's income...................... 865

Number of departments:

Warehouse #1	Warehouse #2
Grocery	Grocery
Frozen foods	Frozen foods
Home office	Meats
	Produce

Total number of accounts in which
  a transaction is recorded (865
  separate accounts for 7
  departments)............................... 6,055

Compiling, classifying, and totaling the basic data for the Federal income tax return required 47.14 man-hours manually and only .76 hours with improved accounting methods and tabulating equipment (table 14).
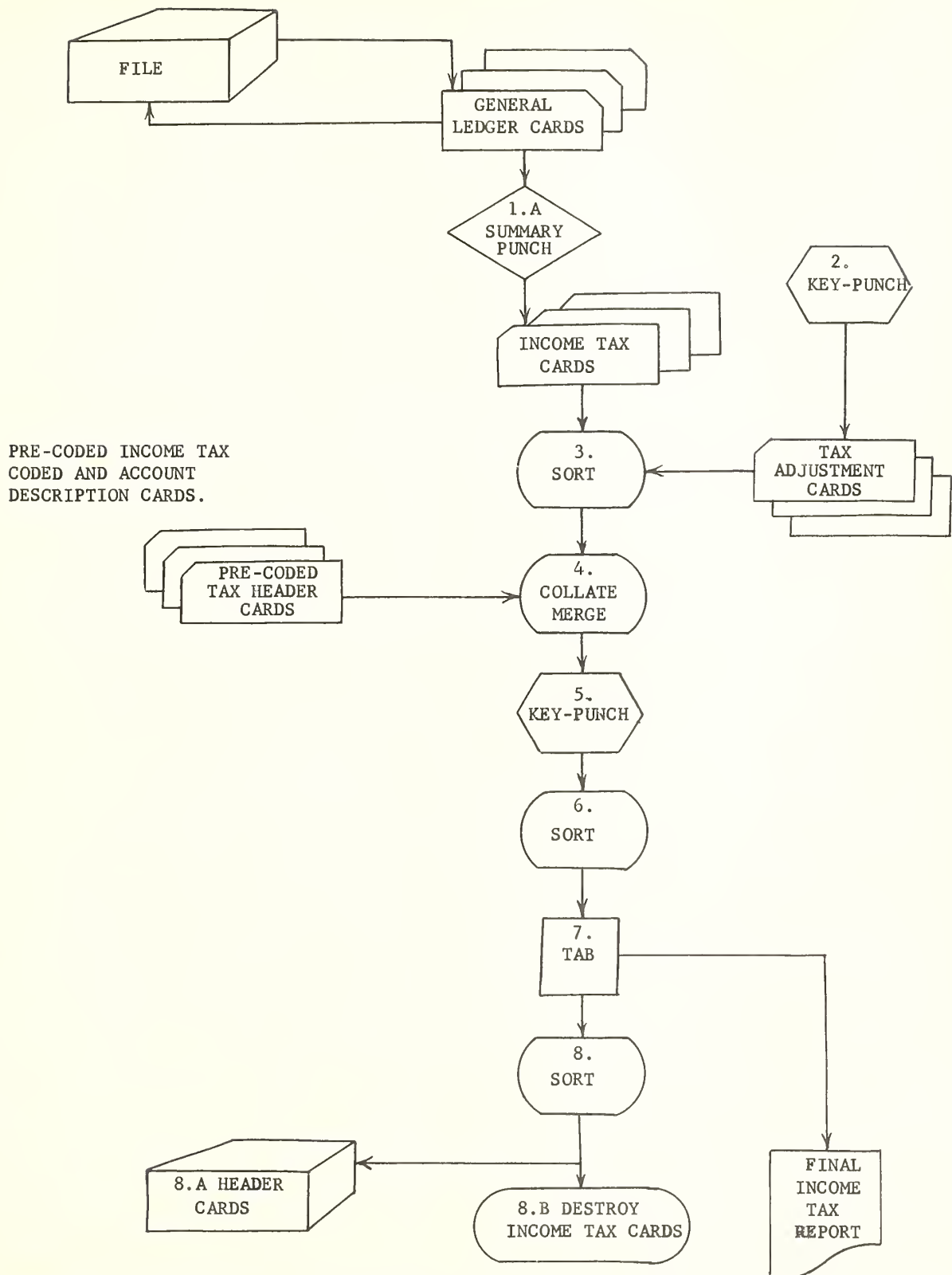
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Figure 81.--Workflow of tabulating procedure for preparing income tax trial balance.

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Figure 82.--Accounting machine listing of items for preparing Federal income tax return.

TAXABLE INCOME COMPUTATION

Page 2

Instruction and Use No.

GROSS INCOME

1. Gross sales (where inventories are an income-determining factor) _____ Less: Returns and allowances _____	27,170,700.63	
2. Less: Cost of goods sold (Schedule A)	25,367,181.73	
3. Gross profit from sales	1,803,518.90	
4. Gross receipts (where inventories are not an income-determining factor)		
8. Less: Cost of operations (Schedule B)		
6. Gross profit where inventories are not an income-determining factor		
7. Dividends (Schedule C)	2,044.00	
8. Interest on loans, notes, mortgages, bonds, bank deposits, etc.	10,974.09	
9. Interest on corporation bonds, etc.		
10. Interest on obligations of the United States, etc.:	Gross Amount of Interest / Less: Amortizable Bond Premium	
(a) Issued prior to March 1, 1941—(1) U.S. savings bonds and Treasury bonds owned in excess of the principal amount of $5,000, and (2) obligations of an instrumentality of the U.S.		
(b) Obligations issued on or after March 1, 1941, by the U.S. or any agency or instrumentality thereof.		
11. Rents	3,098.33	
12. Royalties		
13. Gains and losses (from separate Schedule D):		
(a) Net short-term capital gain reduced by any net long-term capital loss		
(b) Net long-term capital gain reduced by any net short-term capital loss		
(c) Net gain (or loss) from sale or exchange of property other than capital assets	3,110.25	
14. Other income (itemize):		
Discounts on purchases	221,604.11	
Advertising allowances	109,351.38	
Delivery income	194,259.67	
15. Total income in lines 3, and 6 to 14, inclusive		2,347,960.73

DEDUCTIONS

16. Compensation of officers (Schedule E)	143,679.85	
17. Salaries and wages (not deducted elsewhere)	1,052,068.56	
18. Rents	34,314.52	
19. Repairs (Do not include cost of improvements or capital expenditures)	61,198.20	
20. Bad debts (Schedule F)	5,080.33	
21. Interest	12,110.51	
22. Taxes (Schedule G)	81,840.20	
23. Contributions or gifts paid (Schedule H)	9,270.69	
24. Losses by fire, storm, shipwreck, or other casualty, or theft (Attach schedule)		
25. Amortization (Schedule I)	4,885.80	
26. Depreciation (Schedule J)	28,210.41	
27. Depletion of mines, oil and gas wells, timber, etc. (Attach schedule)		
28. Advertising (Attach schedule)	178,269.07	
29. Amounts contributed under:		
(a) Pension, annuity, stock bonus, or profit-sharing plans (Attach schedule)	61,028.26	
(b) Other employee benefit plans (Attach schedule)	22,017.65	
30. Other deductions (Schedule K)	481,805.48	
31. Total deductions in lines 16 to 30, inclusive		2,075,779.53
32. Taxable income before net operating loss deduction and special deductions		272,181.20
33. Less: Net operating loss deduction (Attach schedule)		
34. Taxable income before special deductions		272,181.20

SPECIAL DEDUCTIONS

35. Deduction for partially tax-exempt interest (net amount entered on line 10 (a))		
36. Dividends-received deductions (See Instructions):		
(a) 85% of column 2, Schedule C		
(b) 62.115% of column 3, Schedule C		
(c) 85% of dividends received from certain foreign corporations	1,737.40	
37. Total dividends-received deductions (sum of lines 36 (a), (b), and (c) but not to exceed 85 percent of the excess of line 32 over the sum of lines 35 and 39) (See instructions in case of net operating loss or if the corporation is a small business investment company)		
38. Deduction for dividends paid on certain preferred stock of public utilities (See Instructions in case of net operating loss)		
39. Deduction for Western Hemisphere trade corporations (See Instructions in case of net operating loss)		
40. Total special deductions		1,737.40
41. Line 34 less line 40 (Enter income or loss here and on line 42(b))		270,443.80

TAX COMPUTATION FOR CALENDAR YEAR 1958 AND TAXABLE YEARS ENDING ON OR BEFORE JUNE 30, 1959
For other taxable years attach Schedule 1120 FY (See tax computation instructions)

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Figure 83.--Portion of U.S. Corporation Income Tax Form 1120 prepared with use of improved accounting methods.

Table 14.--Time required to prepare income tax classification of income and expenses with manual and tabulating machine methods

Operation	Manual			Tabulating		
	Elements	Elemental time Man-min.1/	Total time Man-hrs.1/	Elements	Elemental time Man-min.1/	Total time Man-hrs.1/
Record account number and description	865	0.2875	4.14			
Post debit and credit amounts	6055	0.1150	11.61			
Cross total, post by sales divisions	865	0.6325	9.12			
Total each worksheet to balance debits and credits	35	1.6675	.97			
Classify each item into proper income tax category (Items 1 to 30 of Federal income tax return)	865	.7300	10.52			
Total and cross prove page totals	35	5.0000	2.92			
Record income tax adjustments	10	.0150	---			
Add 20 percent for error check			7.86			
Tabulate yearend general ledger income and expense cards and summary punch detail tax cards				865	.0115	0.17
Key punch and verify income tax adjustments				10	.3310	0.06
Sort on last 2 digits for control total by detail expense classification				1730	.0011	0.03
Collate precoded income tax header cards containing account description and income tax code (Items 1 to 30 of Form 1120 tax return in cc 40-41)				865	.0024	0.03
Gang punch code 1 to 30 into general ledger cards				895	.0138	0.21
Sort tax cards into income tax code sequence, 2 digits (cc 40-41)				1790	.0021	0.06
List tab income tax report for use in completing returns				895	.0115	0.17
Sort to separate header cards from tax cards				895	.0021	0.03
Total 2/			47.14			0.76

1/ Includes 15 percent personal time.
2/ When the computation is completed, the income tax header cards should be permanently filed and the income tax cards should be destroyed. The time for these operations is nominal.