

MACHINE METHODS OF ACCOUNTING

SELECTION AND TRAINING OF KEY PUNCH OPERATORS

THE degree of efficiency attained by key punch operators is greatly influenced by the character and thoroughness of their preliminary training. Assuming that the individual to be instructed has the qualifications necessary for the position, the training methods outlined in the following sections will generally furnish satisfactory results.

Selection

Experience has shown that certain personal qualifications should be considered in the selection of operators for training to insure the best results. Individuals possessing the following characteristics have proved highly satisfactory:

1. Education—Preferably high school graduate. Two years of high school, or the equivalent in commercial training, may be taken as a minimum.
2. Neatness.
3. Agreeable personality.
4. Alertness.

Importance of Accuracy

The necessity for accuracy should be impressed upon all potential key punch operators. Accounting reports must present a true picture of the results of the transactions of a business. All records must be carefully prepared and transcribed in order to prepare these essential accurate financial statements and reports. Any errors which may be introduced through carelessness must be discovered and corrected.

Key punch operators must appreciate their responsibility for accuracy in the punching of cards which will serve as a medium of preparing final tabulated reports. They should also realize that the location of errors represents an additional operation involving unnecessary or avoidable costs. Speed of punching is important; but accuracy should never be sacrificed.

Outline of Training

The training of operators falls naturally into three divisions:

1. Mechanical operation of punches.
2. Keyboard exercises.
3. Punching from actual business documents.

Properly selected individuals should be capable of completing the required training and developing necessary speed for all reasonable production in actual work in approximately two or three weeks. The procedure to be followed in each of the phases of instruction is briefly described.

Mechanical Operation

The operation of the electric key punch (Type 11) should be explained to illustrate the general mechanics of punching equipment. Other models of punches may be explained just prior to their use at the conclusion of the training period. These instructions may be taken directly from the machine descriptions pertaining to each unit of equipment which appear in separate sections of this book.

The following paragraphs contain a formal demonstration of the Electric Accounting Machine Method, frequently employed by sales representatives when demonstrating IBM machines. As it includes so many important facts about this method and presents them in such a vivid and intelligible manner, it is well adapted for use at this time in showing the operator the part played by each of the major units of this method. Again, special emphasis should be placed on the importance of the accuracy of punching in each succeeding step of the system.

“I shall show you the Electric Accounting Machine Method, which was originally described by Dr. Hollerith, the inventor, as a means of cross-indexing information. Today it is recognized generally as the quickest and most dependable means of *analyzing business facts*, such as inventory investments, sales by salesman, territory, product, class of trade, etc.; of *preparing accounting records*, such as journals, general and subsidiary ledgers, trial balances, etc.; and of *making documents* of various descriptions, such as job tickets, requisitions, invoices, and the like.

“While tabulating machines can be applied to sales analyses, inventories, accounts receivable, journal entries, etc., the principle of the Electric Accounting Machine Method and the general advantages of it can be illustrated by taking this job ticket, which is typical of those in use by manufacturing plants.

"It shows that in Department 31, Man No. 189, J. M. Franklin, on December 2nd, worked on Order No. 345, Operation No. 16, for two and a half hours and produced seventy-five good pieces for which he received two cents each, or \$1.50. It was direct labor. Now,

mean to the machines exactly what the written information means to us.

"Notice that the operator can concentrate on production, for the punching machine automatically feeds and ejects the cards. That is why

31		189		J. M. Franklin	
DEPT. NO.		MAN NO.		NAME	
345		16		Demonstrating	
ORDER OR ACC'T. NO.		OPER. NO.		PAYROLL and LABOR	
Welding				BY THE	
OPERATION NAME				INTERNATIONAL	
DEC 2 10.5		2.5		ELECTRIC TABULATING AND ACCOUNTING	
DEC 2 8.0		HOURS		MACHINE METHOD	
75		.02		INTERNATIONAL BUSINESS MACHINES CORP.	
GOOD PIECES		RATE		TABULATING MACHINE DIVISION	
AMOUNT		IND. DIR.		270 BROADWAY -- NEW YORK CITY	
1.50		2		OFFICES IN ALL PRINCIPAL CITIES	

INDIVIDUAL JOB TICKET											
DATE		DEPT.	EMR. NO.	ORDER OR ACC'T. NO.	OPER. NO.	HRS.	PIECES	AMT.	IND. DIR.	NATIONAL MFG. CO. IND. CODE NO. 150	
00	00	00	00	00	00	00	00	00	00	00	00
11	11	11	11	11	11	11	11	11	11	11	11
22	22	22	22	22	22	22	22	22	22	22	22
33	33	33	33	33	33	33	33	33	33	33	33
44	44	44	44	44	44	44	44	44	44	44	44
55	55	55	55	55	55	55	55	55	55	55	55
66	66	66	66	66	66	66	66	66	66	66	66
77	77	77	77	77	77	77	77	77	77	77	77
88	88	88	88	88	88	88	88	88	88	88	88

under the manual method these tickets, as they come in each day, are added up for a control total. To prepare the payroll at the end of the pay period, it is necessary to sort them into employee sequence. Then to distribute them to the proper cost classification, whether it be order number, department, or account number, it is necessary to sort them a second time, and so on for each desired record. And each time they are sorted they must be added, and then the totals secured of each classification must be balanced to the control totals which we have previously established. Sometimes, they must be re-added because the figures do not balance. And then, the last operation is to record the figures in the form of a payroll register, cost analysis, or whatever distribution is required.

"If we could put these tickets in some kind of machine and, by pressing a button, get all the answers, it would be fine. But, as we all know, it can't be done. There is no machine that will read the various kinds of writing which appear on this or any other original record.

"But suppose we take this job ticket and punch holes that will put the written information in a form in which it can be handled by automatic machines. (Put in automatic key punch.) In other words, these punched holes

this method of recording is so fast and so accurate. Because this recording machine is also simple, proficiency in its use is quickly acquired. Average operators prepare from 250 to 800 cards an hour according to the number of holes to be punched and the readability of the source data.

"While these holes in the card are for the purpose of operating the machines, I should like you, as a matter of interest, to note, 1, 2, 0, 2, for December 2nd; 3, 1, for Department Number; 1, 8, 9, for Clock Number; 3, 4, 5, for Order Number; 1, 6, for Operation; 2, 5, for Hours; 7, 5, for Pieces; 1, 5, 0, for Amount, and DIR for Direct Labor. That completes the recording of data in the card; and it is practically the only manual operation of the punched card method of accounting. It corresponds to the recording of information once under any other method. But it gives us a medium which is preserved, which will automatically actuate electric sorting, multiplying, and accounting machines with the corresponding speed, accuracy, and economy of automatic machine performance used to such a great extent in shops.

"When using other methods, it is necessary to make as many entries of the item as there are reports involved—one for payroll, one for labor costs, and one for each other report re-

quired. With the Electric Accounting Machine Method, the entry is made only once. (Point to holes in the card.) The machines do the rest.

“Figuratively speaking, the punched cards automatically can classify, multiply, add, subtract, divide, reproduce, and post themselves.

“Now, before we go to the demonstration of the sorting machine, are there any questions you would like to ask about the recording of information on the card? (Be sure everything is clear before proceeding to the sorter.)

“The sorting machine is designed to arrange the cards by Employee Number, Order Number, or other desired groupings or classifications. For the demonstration of this machine, I shall use a group of these same cards already punched. These cards, as you see, (Fan the cards) are not in numerical sequence.

“First, we shall sort them to Employee Number, which, of course, is preliminary to preparing the payroll. The cards are placed here in the feed of the machine. The machine is set (Set brush) to sort the units column of Employee Number, which on this card is column sixty-two, and then by pressing this button, the machine begins to sort the cards.

“The unit sort is now complete, and we shall take these cards from the “4” pocket and show you what has taken place. Here we have cards for Employee Numbers 294, 324, 354, and so on, but they are all 4’s in the units column. (Needle cards.) These cards from the “8” pocket are all 8’s in the units column. (Needle cards.)

“Now we shall remove these cards from the machine, placing the 0’s first, then the 1’s, 2’s, and so on. Setting the machine for the next sort, which is in the tens column, we shall go through a similar operation.

“That completes the sorting of the tens column, and now I want you to see what has hap-

pened in this sort. You will remember that when I stacked the cards after the unit sort, I placed the cards in order from 0 to 9. Now I shall take these cards from the “5” pocket. First we see that they are all 50’s; then 51, 52, 53, etc., follow in sequence, showing that the first sort to the units column has been preserved in our second sort to tens. That continues right on through the hundreds, or as far as we need to sort.

“There are about four hundred cards in this group which we are sorting. In order that you may realize the speed of this sorting operation, I should like you to time the machine on this next sort to hundreds. (Actually time the machine.)

“That completes the sort. It took about one minute, didn’t it? These cards you will find are now in complete numerical order. All cards of like Employee Number are grouped together for tabulation. Comparing this to manual sorting, time studies reveal in every case that automatic sorting is a great many times faster.

“Now for the next step let’s see the electric accounting machine, which prepares printed reports either on regular ruled forms or on paper fed from this roll. For this tabulation we shall use this sample printed payroll form. The cards are placed in the feed of the machine at this end. The pressing of this button starts the machine; the adding fields (Point to them) of the cards actuate the counters and the classification fields of the card actuate the machine so that it will print a total at each change in classification.

“We are now preparing on the machine a printed payroll showing the hours worked, the amount earned by each employee, together with a grand total of earnings for all employees.

“Every time that cross-head goes down, another card is added, and a total accumulated.

FORM 2-11 NATIONAL MANUFACTURING COMPANY					
DEPARTMENT 31				PERIOD ENDING December 8	
EMPLOYEE NAME	EMPLOYEE NO.	HOURS	DEDUCTIONS	GROSS EARNINGS	NET EARNINGS
Byron Arthur K.	100	450	100	2150	2050
Davidson Louise	101	450		2700	2700
Brokard Harry C.	102	430	60	1660	1600
Fry David M.	103	450	85	2151	2066
Jarland Ruth F.	104	450		3810	3810
Cerleton Louis P	105	450	200	2050	1850

Notice how the machine automatically prints the employee number, the hours worked, and the amount earned; it spaces the payroll sheet for the next total and continues on adding the cards for the next employee. This machine adds at a speed of 9,000 cards an hour. 9,000 times 5 (Point to the counters) equals 45,000 items an hour as compared to 2,000 items an hour, which is good production on a keyboard adding machine.

"Each time the machine prints totals, it has accumulated the hours and earnings of one employee for the pay period. The number of job tickets in each accumulation ranges from ten to twenty-five, according to the number of jobs on which the respective employees have worked.

"This payroll sheet for 25 men, tabulated in less than five minutes, is now complete. We have here the total hours and the gross earnings for each employee, together with the grand total of earnings for all employees. Notice that the distribution to Employee Number is vertical and not horizontal. Accordingly, the number of classifications of a given distribution is unlimited.

"Having completed the payroll, we now want to distribute this time and money to the various manufacturing accounts or order numbers. Under the punched card plan, checks for a payroll

need not be signed until the payroll has been distributed and the distribution and payroll balanced, because this distribution is secured by simply re-sorting these same cards to Order Number.

"These same cards are now re-arranged by Order Number and we shall place them in the feed of the machine at this end, and this printed distribution form in this end.

(Press the button and start the machine. While the machine is running, call attention to the speed at which reports can be secured.)

"Now we have completed the payroll distribution and have the hours and the amount of money charged to each Order Number. Notice this grand total. You see it is the same as the grand total shown here on the payroll sheet. It could not be otherwise, for we have used the same cards for both tabulations. Once we punch number 189, for instance, on a card, it cannot become 198, because punched holes are not subject to transposition or change.

"There is another function of this machine which I want to call to your attention. We are now going to list a detailed record of each job that made up the totals shown on the distribution sheet. In other words, we can provide all the detail required under any other method and show the totals which we have produced automatically.

NATIONAL MANUFACTURING COMPANY				
LABOR ANALYSIS				
TOTAL CHARGES TO ORDERS				DATE _____
ORDER NO.	HOURS	PIECES	AMOUNT	TOTAL AMOUNT
101	152	1257	745	
124	38	59	89	
136	449	872	2294	
141	170	170	738	
152	265	805	986	
160	2421	2696	12710	

NATIONAL MANUFACTURING COMPANY				
LABOR ANALYSIS				
DETAIL OF CHARGES TO ORDERS				DATE _____
ORDER NO.	HOURS	PIECES	AMOUNT	TOTAL AMOUNT
101	22	60	110	
101	13	137	65	
101	16	43	86	
101	55	132	275	
101	25	345	125	
101	21	540	84	
	152*	1257*	745*	
124	22	5	25	
124	16	54	64	
	38*	59*	89*	

“That completes the listing of the individual cards. Note the number of items shown on this list. It certainly calls your attention to the great amount of detail which, required to produce tabulated reports under other methods, can be eliminated.

“That covers, in general, the principle of the Electric Accounting Machine Method.”

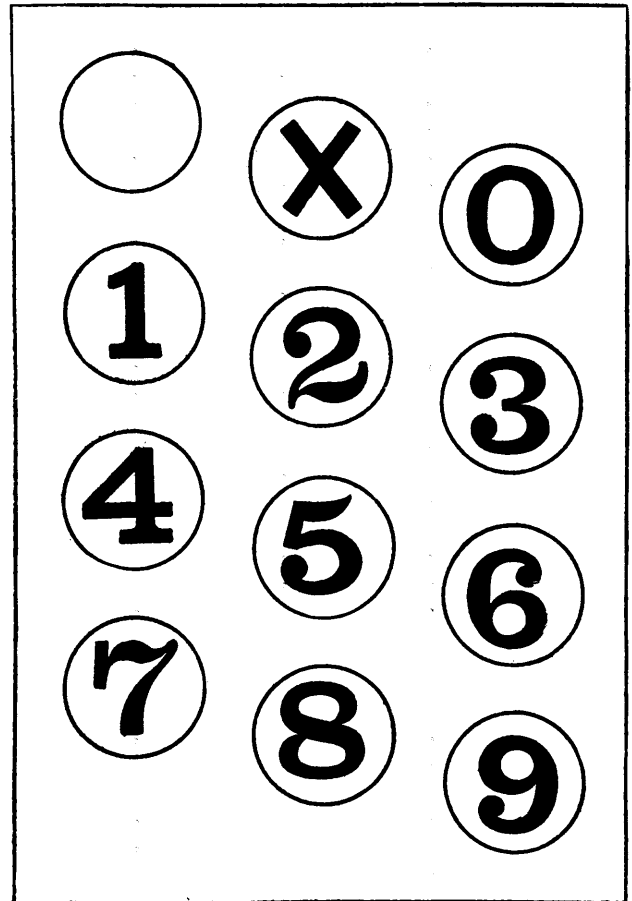
Punching Exercises

Before allowing the student operator to handle the key punch, the instructor should be sure that the purpose, functions, and mechanics of the machine are thoroughly understood. At this time, also, the operator should be impressed with the simplicity of the punching operation.

The first task of the training period is the memorizing of the standard key positions of the keyboard. For this purpose the Type 11 electric punch is used. The key punch must be operated by a touch system if average speed is to be acquired. The touch system for so few keys can be mastered easily and no excuses for looking at the keys should be accepted. Preliminary working exercises and a keyboard chart are furnished by IBM as an aid to the student.

The exercises, consisting of five punching lessons, are used primarily to familiarize the operator with the keyboard. The figures appearing on each page are to be transcribed to a single card. Upon the completion of punching each horizontal line of digits, the same card is fed back in the machine for punching in column one. Ten perfect cards are required from each lesson of the exercise. If the operator depresses each key correctly as she transcribes the information from each exercise sheet, each of these cards will be completely punched in all columns for each page, with the exception of the fourth. For this page, the 8 position of column 38 remains unpunched. This serves as a check to prove that she is performing the exercise properly.

For the operation of an electric key punch, it is recommended that the first three fingers of the right hand be used; the forefinger operating keys R-1-4-7, the second finger operating keys X-2-5-8, and the third finger operating keys 0-3-6-9. The resistance of the keys of the mechanical punch (Type 1) does not permit the use of the touch system in punching. For this type of punch, it is recommended that the second finger be used with the forefinger and thumb tips together against the first joint of the second finger (in the same



Keyboard Chart

relative position as if holding a pencil) and the third and fourth fingers closed against the palm of the hand.

Instruction in the positioning of the machine, punching data, unpunched cards, and punched cards, as well as the proper methods of feeding and removing cards, should all be given simultaneously with the punching of practice exercises. Thus the operator learns correct handling methods at the same time that she is becoming proficient on the keyboard. The following paragraphs outline the correct and approved methods of handling the key punching work.

Position.—The correct relative position of the punch keyboard and the operator should place the keyboard directly in front of the operator’s right shoulder—on a level with the right forearm held in a horizontal position, with the upper arm at rest in a vertical position. Both upper and forearm muscles should be at rest and relaxed. Punching effort in the case of the manual punches should come from

(1)								
12,345	67,890	12,345	67,890	12,345	67,890	12,345	67,890	12,345
23,456	78,901	23,456	78,901	23,456	78,901	23,456	78,901	23,456
34,567	89,012	34,567	89,012	34,567	89,012	34,567	89,012	34,567
45,678	90,123	45,678	90,123	45,678	90,123	45,678	90,123	45,678
56,789	01,234	56,789	01,234	56,789	01,234	56,789	01,234	56,789
67,890	12,345	67,890	12,345	67,890	12,345	67,890	12,345	67,890
78,901	23,456	78,901	23,456	78,901	23,456	78,901	23,456	78,901
89,012	34,567	89,012	34,567	89,012	34,567	89,012	34,567	89,012
90,123	45,678	90,123	45,678	90,123	45,678	90,123	45,678	90,123
01,234	56,789	01,234	56,789	01,234	56,789	01,234	56,789	01,234
(2)								
12,345	43,210	98,761	01,234	56,776	54,321	78,901	23,210	98,765
23,456	54,321	09,872	12,345	67,887	65,432	89,012	34,321	09,876
34,567	65,432	10,983	23,456	78,998	76,543	90,123	45,432	10,987
45,678	76,543	21,094	34,567	89,009	87,654	01,234	56,543	21,098
56,789	87,654	32,105	45,678	90,110	98,765	12,345	67,654	32,109
67,890	98,765	43,216	56,789	01,221	09,876	23,456	78,765	43,210
78,901	09,876	54,327	67,890	12,332	10,987	34,567	89,876	54,321
89,012	10,987	65,438	78,901	23,443	21,098	45,678	90,987	65,432
90,123	21,098	76,549	89,012	34,554	32,109	56,789	01,098	76,543
01,234	32,109	87,650	90,123	45,665	43,210	67,890	12,109	87,654
(3)								
12,321	31,213	32,231	23,132	13,231	11,323	12,313	23,131	31,233
23,432	42,324	43,342	34,243	24,342	22,434	23,424	34,242	42,344
34,543	53,435	54,453	45,354	35,453	33,545	34,535	45,353	53,455
45,654	64,546	65,564	56,465	46,564	44,656	45,646	56,464	64,566
56,765	75,657	76,675	67,576	57,675	55,767	56,757	67,575	75,677
67,877	86,768	87,786	78,687	68,786	66,878	67,868	78,686	86,788
78,986	97,879	98,897	89,798	79,897	77,989	78,979	89,797	97,899
89,098	08,980	09,908	90,809	80,908	88,090	89,080	90,808	08,900
90,109	19,091	10,019	01,910	91,019	99,101	90,191	01,919	19,011
01,210	20,102	21,120	12,021	02,120	00,212	01,202	12,020	20,122
(4)								
12,345	13,254	35,241	51,342	14,325	24,513	53,142	31,425	21,453
23,456	24,365	46,352	62,453	25,436	35,624	64,253	42,536	32,564
34,567	35,476	57,463	73,564	36,547	46,735	75,364	53,647	43,775
45,678	46,587	68,574	84,675	47,658	57,846	86,475	64,758	54,686
56,789	57,698	79,685	95,786	58,769	68,957	97,586	75,969	65,897
67,890	68,709	80,796	06,897	69,870	79,068	08,697	86,970	76,908
78,901	79,810	91,807	17,908	70,981	80,179	19,708	97,081	87,019
89,012	80,921	02,918	28,019	81,092	91,280	20,819	08,192	98,120
90,123	91,032	13,029	39,120	92,103	02,391	31,920	19,203	09,231
01,234	02,143	24,130	40,231	03,214	13,402	42,031	20,314	10,342
(5)								
13,579	86,420	15,962	04,873	52,874	19,360	27,130	58,496	73,546
24,680	97,531	26,073	15,984	63,985	20,471	38,241	69,507	84,657
35,791	08,642	37,184	26,095	74,096	31,582	49,352	70,618	95,768
46,802	19,753	48,295	37,106	86,107	42,693	50,463	81,729	06,879
57,913	20,864	59,306	48,217	97,218	53,704	61,574	92,830	17,980
68,024	31,975	60,417	59,328	08,329	64,815	72,685	03,941	28,091
79,135	42,086	71,528	60,439	19,430	75,926	83,796	14,052	39,102
80,246	53,197	82,639	71,540	20,541	86,037	94,807	25,163	40,213
91,357	64,208	93,740	82,651	31,652	97,148	05,918	36,274	51,324
02,468	75,319	04,851	93,762	45,763	08,259	16,029	47,385	62,435

the wrist only and for the electric punches from the fingers and a slight wrist motion. The keyboard should be elevated to an angle of about 30 degrees from the horizontal.

Feeding the Cards (applies to punches without automatic feed).—The cards to be punched should be directly behind the punch, slightly to the left of the keyboard and above the top of the punch. The operator should insert the card with a rotary sweep of the right hand, extending the forearm and sweeping the hand from the keyboard over the cards. The tips of the forefinger and the second finger come into contact with the cards at the left edge and rub the top card off the pile to the left and toward the punch. The thumb closes under the left edge of the card as it leaves the pile. The right edge of the card is pressed downward and to the right into position in the punch. The fingers press the left edge under the latch, the thumb slides onto the card feed lever as released from the card, and pushes the card feed rack into initial position, which, upon completion of the rotary sweep of the hand, leaves the fingers over the keyboard in position to punch.

Removing the Card (applies to punches without automatic eject).—While the right hand is punching, the left hand is used to hold a ruler or straight edge as a guide to the reading of data. The punching data are placed at the left edge of the punch as shown in the procedure diagram below. As the card approaches the last few columns to be punched, the left hand is placed in position to pick up the end of the card. As the last hole is punched and simultaneously with the feeding of the next card with the right hand, the card that has been punched is removed by the left hand and

placed face down directly in front of the punch.

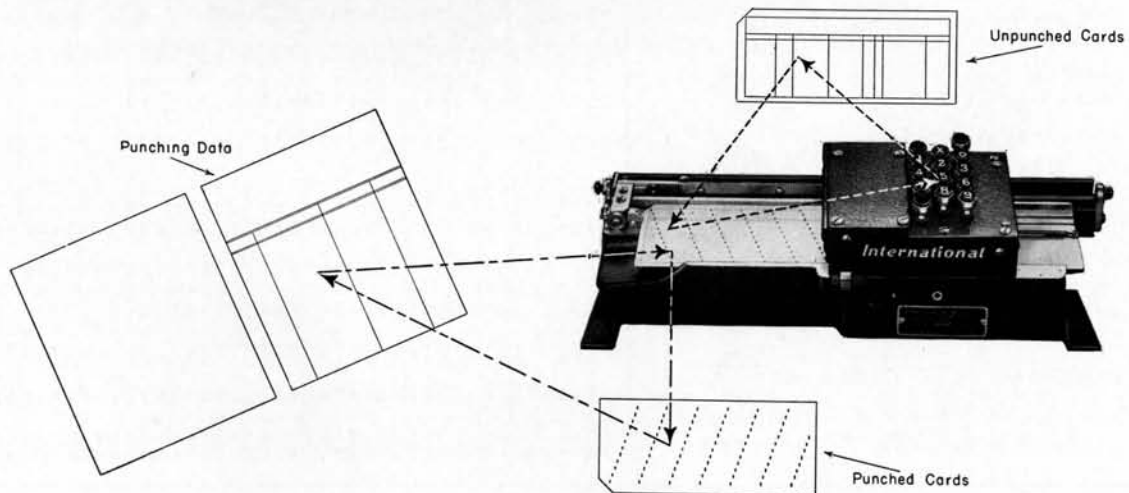
The directional arrows show the path of the sweeping movement of both the right and the left hands. Both hands carry through with these movements simultaneously. When punching on a non-automatic feed duplicator, the right hand is used to pull the feed lever; the left hand follows the same movement as illustrated. Automatic punches, of course, eliminate the handling of cards entirely.

Several other procedures for the feeding and removal of cards have been developed. Some of these have been more readily adaptable to key punch operators' physical characteristics; others may be more satisfactory when dual cards or other special forms have been used for recording of original data. No one method of feeding and removing cards, therefore, can be recommended to the exclusion of others; but the method described above has been most generally adopted.

Actual Punching.—After the required number of cards have been punched from the keyboard exercise practice sets, the operator should be assigned actual punching work. A standard set of invoices, similar to the sample shown, should be transcribed to a suitable sales card such as the one illustrated.

Production of twelve hundred (1200) such cards a day of six hours is the minimum required for completion of the training. This production is usually attained by the average operator within two weeks.

Accuracy of all punched columns may be determined by subsequent verification on the key verifier by another operator or by tabulating all punched fields to obtain a total that can be compared with predetermined amounts.



Procedure Diagram

REPRESENTATIVE COMPANY				STATISTICAL COPY FOR CUSTOMER'S USE ONLY	
CUSTOMER'S ORDER NO. AND DATE	REFER TO INVOICE NO. 2937			REGISTER NO.	VOUCHER NO.
SIGNED BY	INVOICE DATE 10/1/35			F. O. B. CHECKED	
REQUISITION NO.				TERMS APPROVED	PRICE APPROVED
SOLD TO	Park Drug Stores 464 Highland Road Yonkers, New York			CALCULATIONS CHECKED	
				TRANSPORTATION	
SHIPPED TO AND DESTINATION	Above			FREIGHT BILL NO.	AMOUNT
				MATERIAL RECEIVED	
DATE SHIPPED	9/28/35	F. O. B. ENDICOTT N. Y.	TERMS 30 DAYS NET	DATE	SIGNATURE
HOW SHIPPED AND ROUTE	Truck	FROM		SATISFACTORY AND APPROVED	TITLE
				ADJUSTMENTS	
				ACCOUNTING DISTRIBUTION	
				AUDITED	FINAL APPROVAL

QUANTITY	DESCRIPTION	UNIT PRICE	AMOUNT	COST
2 Doz	2" Gauze Bandage 20✓	.72	1.44	.70
3 "	1" " " 201	.60	1.80	90
2 "	Tooth Brushes 11	2.50	5.00	3.00
1 "	#10 Dental Cream 13	.89	.89	.50
1 "	#3 " Floss 505	.60	.60	.12
5 "	Tape - Aid 9	1.10	5.50	2.75
2 "	Auto Kits 317	.85	1.70	1.00
			16.93	

Specimen Invoice for Practice Punching

LICENSED FOR USE UNDER PATENT 1,772,492 I. B. M. 130394

THE PUNCHED TABULATING CARD

Demonstrating the first step in the

**INTERNATIONAL
ELECTRIC
ACCOUNTING
MACHINE
METHOD**

INTERNATIONAL BUSINESS MACHINES CORPORATION
TABULATING MACHINE DIVISION
270 BROADWAY ----- NEW YORK CITY, N. Y.
SALES OFFICES AND SERVICE BUREAUS
IN ALL PRINCIPAL CITIES

SALES ANALYSIS

INVOICE	DATE	BR.	SALES- MAN	CITY	STATE	CUSTOMER	QUAN- TITY	PRODUCT	SALES AMOUNT	COST AMOUNT
00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000
11111	11111	11111	11111	11111	11111	11111	11111	11111	11111	11111
22222	22222	22222	22222	22222	22222	22222	22222	22222	22222	22222
33333	33333	33333	33333	33333	33333	33333	33333	33333	33333	33333
44444	44444	44444	44444	44444	44444	44444	44444	44444	44444	44444
55555	55555	55555	55555	55555	55555	55555	55555	55555	55555	55555
66666	66666	66666	66666	66666	66666	66666	66666	66666	66666	66666
77777	77777	77777	77777	77777	77777	77777	77777	77777	77777	77777
88888	88888	88888	88888	88888	88888	88888	88888	88888	88888	88888
99999	99999	99999	99999	99999	99999	99999	99999	99999	99999	99999
38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80										

Tabulating Card for Above Invoice

Duplicating Punch Exercises.—After the operator has reached the required card production on the straight electric key punch, she is then trained on the duplicator. A thorough explanation of the duplicating machine is essential, particularly as to the semi-automatic feed, duplicating feature, and the duplicating stop button. The same Sales Analysis card in conjunction with a specially prepared master code card is used for practice punching, as this is an ideal application for the duplicating machine.

Usually it takes only about a day to familiarize an operator thoroughly with the operation of this machine, as she has already learned the keyboard from the straight electric key punch.

Automatic Machine Exercises.—The operator is trained next on the automatic machines.

A brief explanation of the automatic feeding and ejecting device is given. No other explanation is needed as the operator has already received the necessary knowledge on the previous machines.

Usually one day's punching is sufficient to familiarize the operator thoroughly with the automatic machines.

Verifier Exercises.—The last machine on which the operator is trained is the verifier. The operation of the machine is explained thoroughly, including instructions as to the handling of incorrectly punched cards to insure their being properly repunched. One operator should verify the cards punched by some other operator, for in this way the accuracy of both operators is tested.

Exercises for Alphabetic Punches

The keyboard of alphabetic punches is designed to correspond in arrangement to that of a standard typewriter. Any person adept at typing will, therefore, find these machines extremely easy to operate.

The object of the three exercises provided here is to familiarize an operator with the use of any of the different types of alphabetic punches. However, certain parts of the information in the first exercise refer only to the use of the alphabetic printing punch.

Each line in Exercise I should be recorded in a separate card. When the alphabetic printing punch is being used, not only will such information be recorded in the card in the form of punched holes, but it will appear also in printed form along the top of the card.

The card forms in Exercises II and III should be studied before practice is begun. The figures to be punched, units, ten, hundreds, etc., are placed in the corresponding positions of a card field. If \$1.10 is to be punched in a field of five columns, two zeros should be punched and then 110. The number and position of columns in each field should be noted. When the recording does not automatically place the card in position for recording in a subsequent field, the proper position may be obtained by spacing or tabular skipping. After the last field on the card has been punched, the card should be ejected to permit the next card to feed automatically into punching position.

In Exercise III the symbol "&" should be recorded by the use of the "X" key if the "12" key on the machine has not been replaced by that symbol.

EXERCISE I

AT THE END OF EVERY LINE DEPRESS EJECT KEY WITH LITTLE FINGER OF YOUR RIGHT HAND DISREGARD PUNCTUATION IN YOUR TYPING HOWEVER FOR YOUR CONVENIENCE IN READING YOUR CARDS YOU MAY LEAVE 3 SPACES AT THE END OF A SENTENCE AND THE CUSTOMARY ONE SPACE BETWEEN WORDS LEAVE ONE SPACE IN WORDS CONTAINING AN APOSTROPHE SUCH AS O KEEFE NO SHIFT KEYS ARE NECESSARY SINCE ALL LETTERS ARE PRINTED ONLY AS CAPITALS

IN TYPING THESE INSTRUCTIONS YOU ARE LEARNING TO OPERATE THE ALPHABETIC PRINTING PUNCH THIS MACHINE IS USED TO PUNCH BOTH ALPHABETIC AND NUMERICAL DATA INTO A TABULATING CARD SO THAT COMPLETELY SPELLED NAMES DESCRIPTIVE WORDS AS WELL AS NUMBERS CAN SUBSEQUENTLY BE PRINTED BY AN ALPHABETIC ACCOUNTING MACHINE

IF YOU ARE ALREADY FAMILIAR WITH TYPEWRITING THE OPERATION OF THIS MACHINE WILL PROVE TO BE AMAZINGLY SIMPLE AND ENJOYABLE YOU WILL OBSERVE HOW THE DEPRESSION OF A KEY CAUSES THE MACHINE TO PUNCH THE CARD AND SIMULTANEOUSLY PRINT THE CORRESPONDING LETTER OR FIGURE AT THE TOP OF THE CARD THE PRINTING IS FOR YOUR CONVENIENCE IN READING CHECKING AND FILING THE INFORMATION JUST PUNCHED THE PUNCHED HOLES ARE THE MEANS BY WHICH THIS INFORMATION WILL LATER BE INTERPRETED BY OTHER MACHINES

NOTE THE EASE AND SPEED WITH WHICH EACH KEY IS DEPRESSED THE ACTION OF ALL KEYS IS EXTREMELY LIGHT SINCE EVERY MOVEMENT IS POWER DRIVEN THE KEYS SERVE MERELY TO ENGAGE THE OPERATING MECHANISMS THE MACHINE MAY BE OPERATED AT A SPEED OF SIXTEEN KEY DEPRESSIONS PER SECOND A SPEED WELL ABOVE THAT REQUIRED BY THE FASTEST OPERATORS AN AUTOMATIC LOCKING DEVICE PREVENTS ANY TWO KEYS FROM BEING DEPRESSED AT THE SAME TIME

THE ALPHABET KEYS ARE ARRANGED IN STANDARD TYPEWRITER ORDER THE FOLLOWING ADDITIONAL KEYS SERVE SPECIAL PURPOSES ON THIS MACHINE

THE EJECT KEY CAUSES THE CARD IN THE MACHINE TO BE EJECTED AT ANY TIME AND FROM ANY DESIRED POSITION SIMULTANEOUSLY WITH THE FEEDING IN OF A NEW CARD

BY DEPRESSING THE TAB KEY WITH THE LITTLE FINGER OF THE RIGHT HAND YOU CONTROL THE SKIPPING OF THE CARD TO THE PROPER COLUMNS TO BE PUNCHED

THE COLON SEMICOLON KEY IS A DUMMY KEY WHOSE ONLY FUNCTION IS TO FACILITATE USE OF THE TOUCH SYSTEM IT IS PROVIDED MERELY TO COMPLETE THE STANDARD TYPEWRITER KEYBOARD

NEVER USE THE LETTER L FOR THE NUMBER 1 A ONE KEY IS PROVIDED FOR NUMERICAL PUNCHING WHEN PUNCHING ZERO USE THE ZERO KEY IN THE TOP ROW

THE 11 AND 12 KEYS LOCATED AT THE RIGHT OF THE LOWEST ROW OF KEYS PUNCH HOLES AT THE TOP OF THE CARD THE 11 HOLE IS USED FOR CONTROLLING ADDITION OR SUBTRACTION AND ACTUATING CLASS SELECTION DEVICES ON OTHER MACHINES THE 12 KEY PERMITS THE PRINTING OF ONE SPECIAL SYMBOL ON THE ALPHABETIC ACCOUNTING MACHINE

AS PREVIOUSLY STATED THERE IS NO PUNCTUATION OR CHARACTER OF ANY OTHER KIND ON THE KEYS 11 AND 12 EXCEPTED BECAUSE THIS TYPE OF SYMBOL IS UNNECESSARY ON THE OTHER MACHINES THAT WILL READ THESE PUNCHED CARDS

A COLUMN INDICATOR IS PROVIDED DIRECTLY ABOVE THE RIBBON AS YOU PUNCH ACROSS THE CARD THIS GUIDE INDICATES THE COLUMN ABOUT TO BE PUNCHED ON THE CARD

A BACK SPACE LEVER IS PROVIDED AT THE RIGHT AND SLIGHTLY ABOVE THE TABULAR RACK THE CARRIAGE MOVES BACKWARDS ONE SPACE WITH EACH DEPRESSION OF THE LEVER BY KEEPING THE LEVER DEPRESSED THE CARRIAGE CAN BE MANUALLY MOVED BACKWARDS FOR SEVERAL SPACES

THE TABULAR RACK AT THE TOP OF THE MACHINE ENABLES YOU TO SKIP TO A PREDETERMINED COLUMN OF THE CARD AT ANY TIME THIS RACK CONTAINS 80 SLOTS CORRESPONDING TO THE 80 COLUMNS ON A CARD TABULAR INSERTS ARE PLACED IN THE PROPER COLUMN SLOTS TO GOVERN COLUMN SKIPS THE TABULAR INSERT IS ALWAYS PLACED IN THE COLUMN WHERE PUNCHING IS TO BEGIN THESE INSERTS HAVE ON ONE SIDE A

SLIGHTLY RAISED FLANGE WHEN INSERTED UPPERMOST THIS FLANGE CAUSES A BELL TO RING AS THE CARRIAGE PASSES THE SELECTED COLUMN POSITION ANY NUMBER OF TABULAR INSERTS MAY BE PLACED ON THE RACK SEVERAL ARE NECESSARY FOR LONG SKIPS SINCE NO MORE THAN 12 COLUMNS SHOULD BE SKIPPED AT ONE TIME

IN CASE OF AN ERROR RESULTING IN AN IMPROPERLY PUNCHED COLUMN IT WOULD BE ADVISABLE IN MOST CASES TO EJECT THE CARD TEAR IT AND THEN PUNCH A NEW AND CORRECT CARD HOWEVER IF IT IS A DUAL CARD COMPLICATED AND DIFFICULT TO REWRITE AN ERASURE OF THE PRINTING CAN BE MADE THE HOLES IN ERROR CAN BE COVERED BY COURT PLASTER SQUARES AND THE CARD CAN BE REPUNCHED IN THE SAME COLUMN THAT WAS IN ERROR THE FIRST PROCEDURE IS THE MORE DEPENDABLE SINCE THE STICKER MIGHT COME OFF IN SUBSEQUENT MACHINE OPERATIONS

EXERCISE II

Table with 7 columns: EMP. NO., DEPT., FIRST NAME, SURNAME, ADDRESS, RATE. Contains 15 rows of employee data.

Punched card layout showing columns for EMPLOYEES NO., DEPT., FIRST NAME, SURNAME, ADDRESS, and RATE. Includes a column index at the bottom from 1 to 99.

