

Linotype Keyboard Operation

PART I

Keyboard Practice

THE COMPETENT Linotype operator, especially when employed in a book or commercial printing office, is essentially a craftsman. With the Linotype as a tool, he composes and assembles types varying as needed from four to sixty points in size and lines from four to forty-two picas in length with the proper equipment. All of the intricacies and niceties of commercial composition must be controlled by the operator's knowledge, the results of his skilful use of the machine. In addition his subconscious attention to the machine must be such that he constantly produces slugs with clean sharp-printing face and good body, properly trimmed to uniform size. Add to these responsibilities the need for speed of fingering with adroitness in handling both copy and product, and it is readily seen that the beginner is undertaking a serious task in training eyes, hands, ears, and mind.

Knowledge of Printing. The experience of years has pointed out some of the qualifications which must be possessed by the student who would become a capable Linotype operator. Foremost among these is a good working knowledge of printing including typographical layout. Familiarity with printers' customs and knowledge of type faces are essential.

The Relation of the Linotype to Printing. The Linotype is only a tool for the more rapid assembling and casting of lines of type, and, therefore, the prospective student should have a working knowledge of typographical layout before attempting to master the machine.

Educational Qualifications. Equal in importance is the matter of education. Experience shows that the equivalent of a high school education is necessary, but whatever else is possessed, a practical understanding of the language to be set is essential. The operator must understand grammatical construction, capitalization, division of words, accents, and proper punctuation in order to become a skilled workman.

General Qualifications. Third, but not the least important by any means, the student should possess a quick, keen mind, preferably coupled with an alert sense of hearing that will tell him at all times just what the machine is doing. Many operators know by the sound of the Linotype whether it is functioning properly or not. Good eyesight and good health are important.

Linotype Composition Is Based Upon the Principles of Type Arrangement. The operator's work consists chiefly in reading the copy and fingering the keyboard. To read and interpret copy requires a degree of general education and knowledge of printing which it is assumed that the student possesses, else he would not have taken up this study. If he has not had adequate instruction or experience in hand composition, it would be advisable for him to study the typical arrangement of types before proceeding with the study of the Linotype.

To Attain Speed. To all Linotype operators, especially beginners, the attainment of a high rate of speed, with accuracy, is the ultimate goal. Several steps are necessary in order to reach the highest point of efficiency in keyboard manipulation.

Familiarity with the Keyboard Is the First Essential. The fingers must be trained so that the key buttons may be touched without conscious effort on the part of the operator. A mental picture of the keyboard, which is only attained by accurate memorization, should always be before the eyes of the operator, obviating the necessity of constantly looking directly at the key buttons.

Follow the System as Outlined. Mastery of the keyboard may be attained by following faithfully the fingering system given in this book. This system provides the beginner with basic principles by which speed may be developed without excessive fatigue.

Proper Application. Besides being familiar with the layout of the keyboard, the operator, to become swift, must be able to read copy quickly and intelligently, have a good working knowledge of the functions of the machine, and possess steady nerves. An operator may be able to set a word, or two or three words, very rapidly, but unless he is able to maintain uniformity of motion, he will be excelled in a day's run by operators who apparently are not moving their fingers so rapidly.

Evenness or steadiness in operating is fundamental, if an operator desires to become rapid, and can only be attained by the student training himself to read his copy as he manipulates the key buttons, without variation of motion. A hand compositor can stop to memorize his copy, but the operator cannot do this, as it develops an irregular habit which is detrimental to efficiency.

Keyboard Manipulation. After he has reached the point of confidence in himself, the beginner should at once try to operate without looking at the keyboard. At first he will make errors and will not set as much matter. He will never become a proficient operator unless he starts correctly. If an operator persistently endeavors to assemble the lines without looking at the keyboard, in a short time he will be able to keep his eyes on his copy. Then will come steadiness in operating. Instead of setting two or three words very rapidly, then stopping to look at the copy and back to the key-

board, the operator will be working at a steady pace all the time, and at the end of the day the result will be a satisfactory output.

Character Location. The student should continue to make a careful study of his keyboard even after he has become a fairly capable operator. He should study the location of the small capitals and the points; familiarize himself with different keyboard layouts.

Speed Only One Factor. The ability to produce slugs speedily does not make a skilled operator. If, in an effort to become "swift," the beginner neglects the principles that characterize the work of a good printer, it would have been far better not to have made the attempt. No printer would send up a line improperly spaced. This admonition does not apply to a so-called "short line," but rather to a line where, for instance, the word "the" could easily be added, even though the spacebands would space out the line without it.

Errors Common to Operators. Many operators, in their desire to "hang the elevator," have acquired the bad habit of sending up the lines as soon as they think they have enough spacebands therein to space them out. The result, of course, is wide spacing, an indication of slovenly workmanship not tolerated in first-class shops. Accuracy in spelling, uniformity in capitalization, correct division of words, and punctuation, are very important adjuncts to a productive output of Linotype composition. Production in the shop is measured in terms of *corrected ems*, thus speed with errors is not speed at all. Many shops will not permit the division of words at the end of three consecutive lines, and at times the careful operator will go back three or four lines to obtain proper spacing. It is not considered good printing to begin or end three or more lines in succession with the same word. These comments are given to offset the impression that speed is the only qualification necessary to make the competent machine operator. Accuracy and good spacing must be the primary considerations.

Speed of the Fingers—Note the Instructions. Do not try to move the fingers faster than they can touch the right key buttons. To do so will cause confusion and a loss of time. When starting on a "take," go slowly; note any instructions about setting, then start, maintaining an even, steady motion.

Another very important factor in operating, which the beginner should observe, is to resume operating as soon as the assembling elevator returns to normal position. He should not watch the line while it is being carried into the first elevator by the line delivery.

All Students Do Not Become "Swifts." All beginners will not eventually become "swifts," but with the requisite typographical knowledge the majority can become competent operators. The man who can be relied upon to do his work properly is much more valuable than the nimble-fingered workman who cannot be depended upon in work in which accuracy is the basic consideration.

Cleanliness of the machine, care of the matrices and spacebands, and the proper attention to the plunger and metal pot contribute materially to operating efficiency.

Speed Comes by Irregular Stages. After the student has been working on the machine about four or five weeks, and has attained perhaps the speed of about 1,500 or 2,000 ems per hour, he will find that it will be difficult for him to increase his speed. This is the turning point in the beginner's upward climb. Continued practice and patient effort will be needed to attain higher speed. Accuracy must not suffer while the fingers become more nimble. *Speed does not come to the beginner. He must go after it and get it.*

Keeping Time on Composition. A very good method for the student to follow at this point is to time himself by keeping a chart of the ems of composition and time required to set them. This method, frequently repeated, will help to give a substantial increase in speed. The careful operator examines a slug now and then, and notes its face and bottom, to see that the lines are coming out satisfactorily. In this way he will relieve himself of the necessity of resetting slugs which will not print properly.

Positive Fingering System Provided. It will be realized that Linotype operating can be acquired only by patient, careful, energetic, and untiring practice. This is the factor that has produced all of the great speed records. This book provides a positive fingering system, gives the student one thing at a time, and furnishes sufficient intensive practice to enable the beginner to master the method thoroughly and correctly.

The Linotype Keyboard

THE LINOTYPE machine is a tool for doing more rapidly much of the work formerly done by the hand compositor. The operator must produce his composition correctly—that is, spell out the words, put in the punctuation marks, etc.—by touching the keys of the required characters on the keyboard of the machine. When a key is pressed, it causes the release of a corresponding matrix, which automatically drops into its proper place in the assembling elevator, the matrices and the spacebands making up the line.

How the Linotype Functions. When the line has been assembled, the operator raises the assembling elevator by moving the hand lever; the line delivery is released by the tripping of the latch, and the starting spring carries the line of matrices to the first elevator. The line remains in the first elevator during the operations of justification, alignment, and casting, after which it is conveyed to the transfer position and transferred to the second elevator. The slug, which received its face, or printing surface, from the matrix line, is trimmed to height and thickness by the back and side knives and delivered on to the machine galley. The matrices are carried to the distributor and returned to their proper channels in the magazine and the



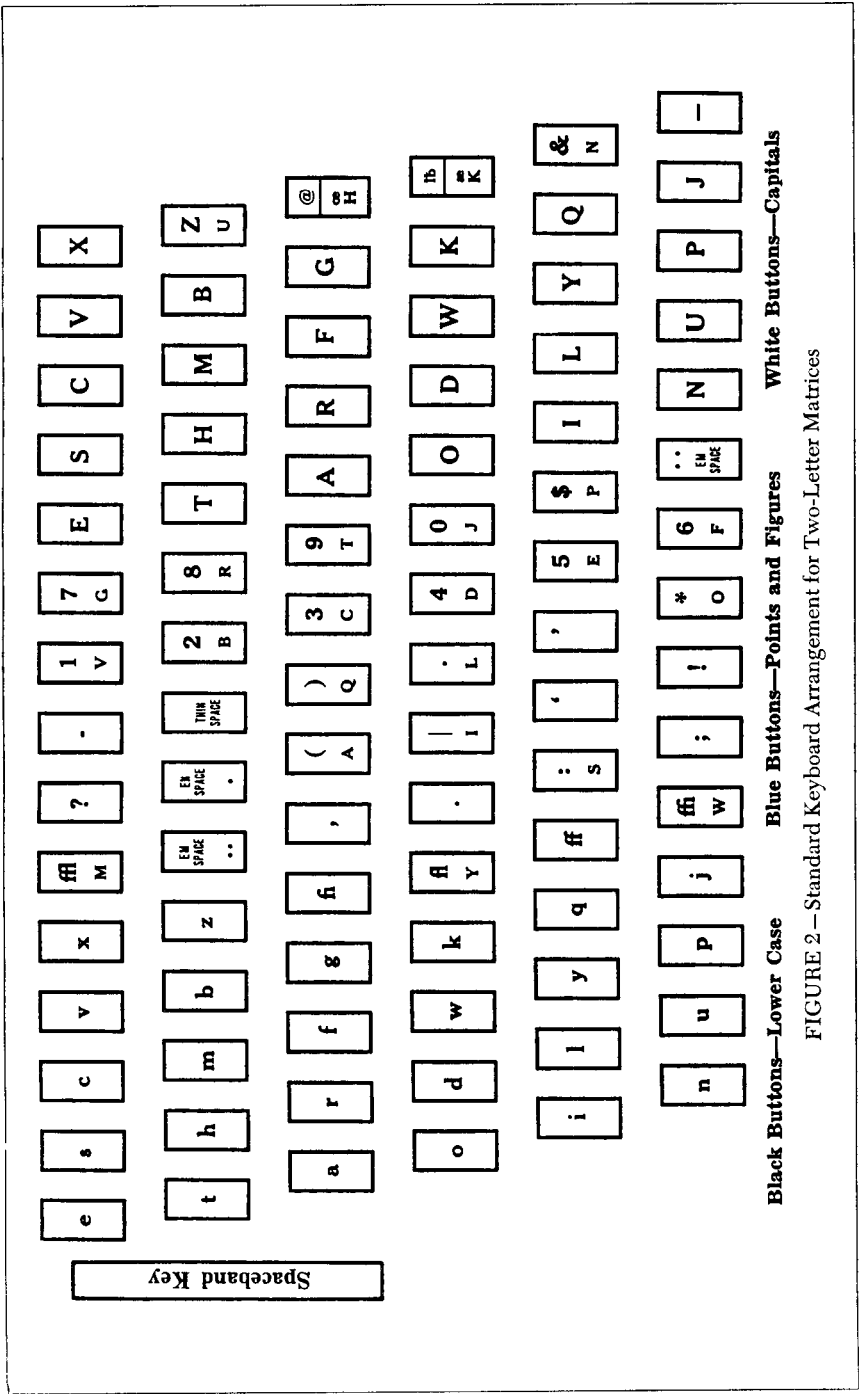
FIGURE 1

Showing the Proper Position of the Operator at the Keyboard

spacebands are returned to their box during these operations. All of these actions are entirely automatic except the assembling of the line by the operator and the raising of the assembling elevator.

Memorize the Keyboard. The first task of the beginner must be to memorize the keyboard so that it can be operated without looking directly at the fingers or keys, thus leaving the eyes free to read the copy and watch the assembling of the line.

Standard Keyboard Arrangement. The standard keyboard consists of ninety keys, arranged in six horizontal rows of fifteen keys each (Figure 2).



Black Buttons—Lower Case Blue Buttons—Points and Figures White Buttons—Capitals

FIGURE 2—Standard Keyboard Arrangement for Two-Letter Matrices

In addition to the keys, the spaceband key is located at the left of the keyboard. Three sections will be noticed on the keyboard, each of which is characterized by distinct colored buttons. The black buttons are the lower case; white buttons are the capitals; blue buttons are the figures, marks of punctuation, and other miscellaneous characters. On most of the blue buttons and a few of the others it will be noticed that there are two characters, the lower letter in some cases being a small capital. Characters not shown on the keyboard run down the pi channel, to the right, into the pi stacker.

There is an extra channel in all magazines, with the exception of the Model 9, to accommodate extra lower-case "e" matrices when required. By the use of a special attachment, this channel of matrices may be used alternately with the regular channel. This is especially desirable on wide-measure machines and in split magazines.

Display Keyboard. On combination text and display machines, the Two-in-One Models, eighteen of the ninety keyboard keys automatically become inoperative as the Blue Streak Shift is operated to change from a ninety to a seventy-two channel display magazine (p. 31). The same arrangement is used on all Two-in-One Models which carry magazines some thirty-five per cent wider than ordinary Linotype magazines.

Study of the Keyboard. Study the buttons vertically, then horizontally, taking one section at a time to determine the general division of the keyboard and gain a mental picture of the arrangement. It will be observed that the capital layout (in white) is identical with the lower-case (in black) as far down as the letter z. The small capitals require a great deal more study than the other letters. Use the separate chart for them (Figure 6) and study it carefully. All letters and characters not found on the keyboard will be found on the sort tray. A standard keyboard arrangement (Figure 2) is given for reference and study when away from the machine.

Position of the Operator at the Keyboard. (Figure 1.) The position of the operator at the keyboard is a vital factor in obtaining maximum production without excessive fatigue. To get the best results with a minimum of effort, the operator should place himself to the best advantage in a comfortable chair and position. The body must be in such a posture that fatigue is reduced to a minimum. Avoid sloping shoulders and contracted chest. Throw out the chest and maintain natural breathing. Sit erect at a proper distance from the keyboard. This distance should be gauged by placing the thumbs over the lower rows of keys and sitting close enough so that the arms, down to the elbows, are parallel with the body. The arms should not be held away from the body, but should be relaxed and hang naturally by the sides. The palm of each hand should be close to the keyboard, with the right wrist near the assembling elevator shaft but not resting upon it nor on the frame of the keyboard. Sit in a position in front of the keyboard so that the first

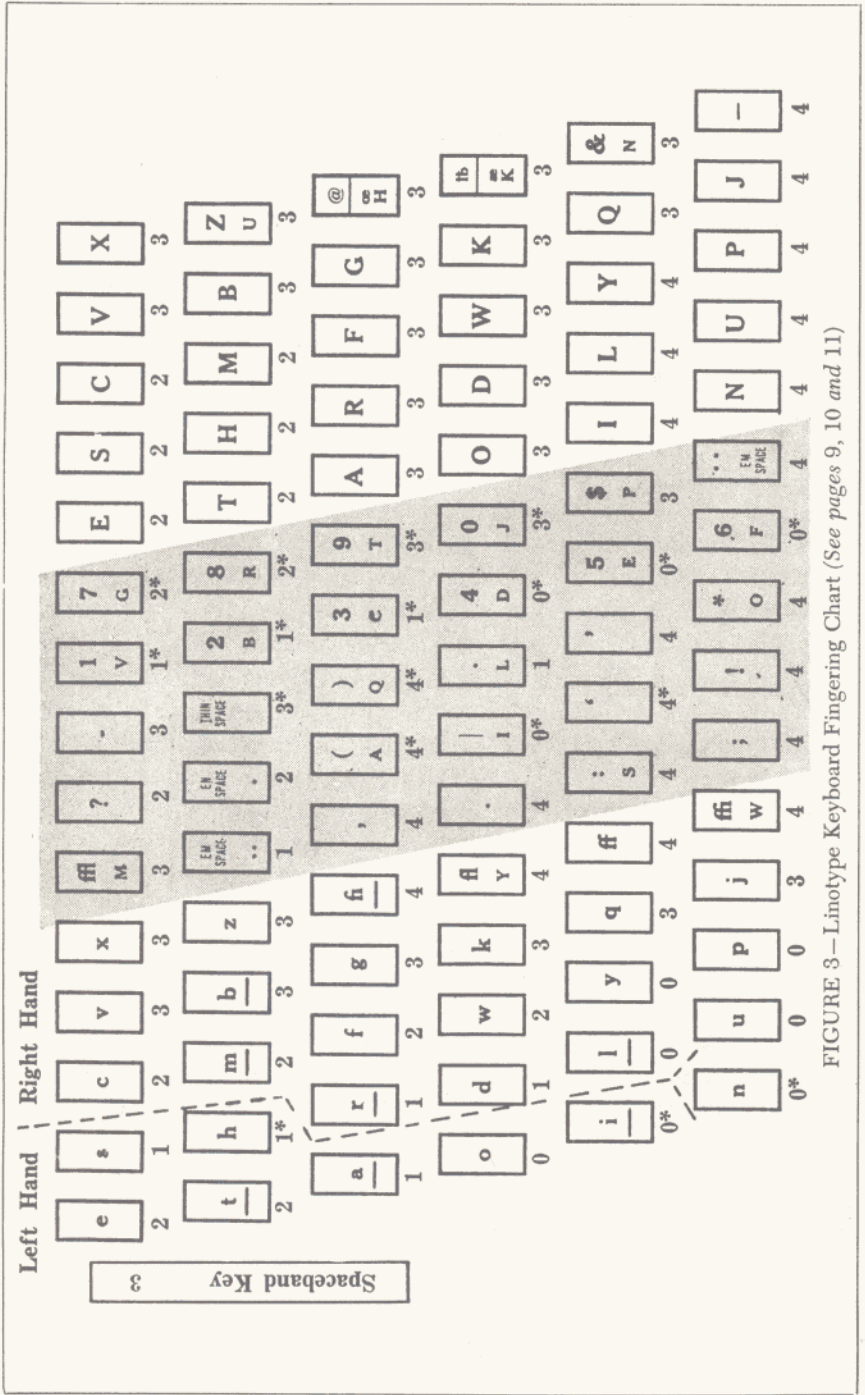


FIGURE 3—Linotype Keyboard Fingering Chart (See pages 9, 10 and 11)

two rows of lower case (e, t, a, o, i, n, and s, h, r, d, l, u) come opposite the center of body.

Use the Proper Chair. Each office should provide the operator with a proper chair. The health of the employee is an important factor in any business. There are many comfortable operating chairs on the market and there is no excuse for not having one for the operator. The sluggish workman accomplishes but little, so do not slump down in the chair, with your feet extending under the switchbox.

The Fingering System

SINCE it is essential that the key buttons be operated without looking at the keyboard, the hands must assume a fixed relation to the keys in order that the fingers may unhesitatingly and unerringly touch the key buttons without the guidance of the eyes. The vision must travel from the copy to the assembler slide and to the assembling matrices in the assembling elevator.

Place the left hand over the keyboard so that the second finger rests over the t button and the thumb over the i button. This will bring the first finger over the a. Place the right hand so that the thumb comes over the l and the first finger over the r. This is the basic position for these two hands. The left



FIGURE 4

The Above Illustration Shows the Hands over the Keyboard in Basic Position

hand will not have to move more than a few inches from this position for operating the key buttons. The e is struck by the second finger and the s by the first finger of the left hand. The letter a may be considered common ground for the second and first fingers. The right hand moves around to reach other characters, but it can always be rapidly brought back for continued work with the lower case. Figure 4 shows the basic position of the hands, which is indicated also by the underscored characters of Figure 3. An asterisk below a character means that character may be struck, sometimes, by other than the designated finger—as explained later.

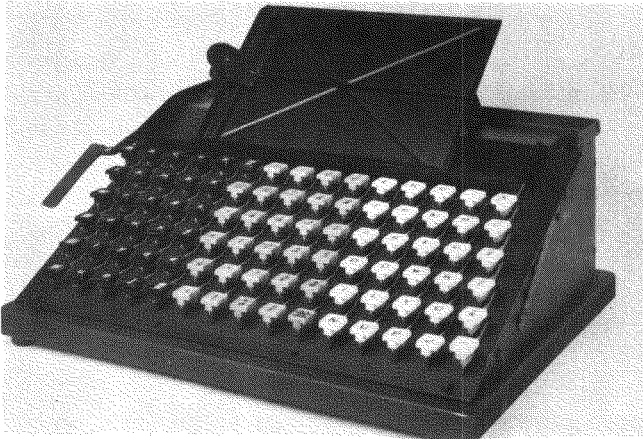


FIGURE 5
Practice Keyboard

The Work of the Fingers. Efficient operating requires that each finger be trained to do its specific work. In designating this work in these lessons the fingers are indicated as follows:

- 0—Thumb
- 1—Index finger
- 2—Second finger
- 3—Third finger
- 4—Fourth finger

The fingering system used in these lessons requires, with a few exceptions, that each lower-case keyboard character or key shall always be struck by a certain designated finger. These characters are operated by the left hand:

- | | |
|----------------------------|----------------------------|
| s, (h), and a—first finger | o, (i), and (n)—thumb |
| e and t—second finger | Spaceband key—third finger |

Train the left hand to strike above characters with the proper finger as shown in Figure 3. The characters above which are enclosed in parentheses

may be struck with fingers as marked of either the left or the right hand. Which hand is used depends on the syllable arrangement of the word being set and the hand structure of the operator.

The following lower-case characters are struck by the right hand, using the fingers as indicated in Figure 3:

- r, d, and (h) — first finger
- c, m, f, and w — second finger
- v, b, g, k, q, j, x, and ffl — third finger
- l, y, u, p, and (n) — thumb

The ligatures fi, fl, ff, ffi and the comma, period, colon, semi-colon and exclamation point are struck with the fourth finger. Always use ligatures when observed in the copy. Practice the alphabet until you can set it evenly and smoothly without any pause in the rhythm of your finger movement. Train the fingers to operate the keys as assigned in Figure 3. In this way the work of each finger is definite and is accomplished with ease, speed and precision. In Exercise 8 under "Word Practice" are some syllables and words in which variable fingering may be used.

Operating with Least Effort. The distribution of labor gives to the left hand a small number of keys, but these are most frequently used and comprise fully half of all the strokes in ordinary straight composition. Moreover, they are all in a small area and this hand does not have to travel. The right hand, which is naturally more versatile, travels around the board to set punctuations, figures, capitals and small capitals, etc. The fingering for the right hand as shown in Figure 3 is that suggested for the operator with an average type of hand.

Finger Practice. Assume the proper position and begin practice of the exercises. The fingers of the hand should not be widely stretched apart nor rigid. They should be slightly curved. The striking motion should be from the knuckle and not from the wrist. In other words the depressing of the key lever should be a finger and not a hand motion. The Linotype keys have a hair-trigger touch and the slightest movement of the button will cause the release of a matrix. The finger must be removed as quickly as possible, since continued holding down of a button causes the matrices to drop until the supply in the channel is exhausted.

Word Practice

IT is imperative that the student should learn to operate without looking at the keyboard. The keyboard chart showing finger assignment may be placed at the right of the copyholder as an aid in the earlier exercises. Determine from the chart, in practicing the following words, which fingers are required, then practice the word two or three times, looking at the key-

board if necessary. Practice the word at least five minutes without looking at either keyboard or chart.

Word practice should be on a detached, or practice keyboard (Figure 5), or on a running machine with the matrices locked in the magazine.

EXERCISE 1—Use of First and Second Fingers. The following words, or group of words, where they occur in the same line, should each be practiced for five minutes or until fingering has been memorized. Follow exactly the fingering given in Figure 3. Always strike the spaceband key after each word, using the third finger of the left hand.

test	tease	heart	haste
her	harmed	master	reader
she	these	smarter	father
far	warmer	cream	washer
was	scarf	frame	feasted
set	craft	shame	rehash
hard	reward	massacre	teamster

EXERCISE 2—Use of Thumbs. Do not worry in the beginning about speed; that will come later after you have had sufficient practice and experience. Strive to develop uniform and regular movements of your thumbs and fingers in striking the keys. Do not watch the hands or keys while you are practicing. Keep eyes on the copy.

aisle	clientele	heliotrope	uranium
alias	colonel	humorous	mysterious
your	dictaphone	youthful	spheroid
world	iridescent	dyspepsia	ointment
yellow	emolument	tournament	monsieur
mutual	lieutenant	facetious	unionist
personal	fecundity	running	romanticism

EXERCISE 3—Use of Third Fingers. Practice the following words using the proper finger on each key. Avoid the use of jerky movements and maintain a slow, even, rhythmical operating speed. Erratic fingering is a strain on the nerves.

rage	grave	parquet	affluent
dark	delve	background	javelin
wake	bivalve	objective	neutralize
back	ruffled	wedged	lighter
graft	galvanize	knapsack	jockey
extra	oxygen	language	subjacent
track	quartz	auxiliary	harlequin

EXERCISE 4—*Use of Fourth Finger.* It will require effort and diligent practice to train the third and fourth fingers to work, but when they are properly trained, operating will be easy and rapid. Timing is especially important in setting words with ligatures and double letters.

fine	flyer	affiliate	flourish
fling	figure	giraffe	fifteen
offer	deflate	flippant	chauffeur
reflex	affront	diffuse	afford
affinity	edifice	official	fitted
profile	efficacious	munificent	circumflex
buffed	offense	fixture	suffice

EXERCISE 5—*Double Letters.* Do not hold the key down for double letters; and further, do not slur your fingers across the key buttons. Either of these actions will disturb the smoothness of muscular motion and decrease your speed. Strike each letter separately in the following words:

been	dimmer	raccoon	football
good	opposes	doggerel	meerschaum
occur	battle	crippled	immune
arrest	meddle	embarrass	dazzle
lesson	drugged	fibbed	colonnade
pulley	lorgnette	vacuum	bullion
cannon	mezzanine	squabble	dilettante

EXERCISE 6—*Jumping of Fingers.* Cases will be found where it is necessary for a finger to successively jump from one key to another, as in the words in this exercise. Train the fingers to make these jumps smoothly and evenly. In this and previous exercises follow fingering as designated in Figure 3.

lubricate	sheet	ashes	shoot
nuptial	pleasure	save	luring
purpose	teeth	seethe	should
quintette	pump	join	accommodate
shave	intercede	puzzle	sash

EXERCISE 7—*Widely Separated Letters.* You may have noted that some of the words from previous exercises required a jumping around of the fingers of the right hand, because of the wide separation of their letters. Train this hand to move the fingers around the keyboard confidently, easily and

smoothly. Avoid spasmodic bursts of speed by the use of proper timing in striking the keys. Following are some selected words of widely separated letters:

extravagance	subjective	iconoclast	hieroglyphics
oxygen	unravel	encyclopedia	microscope
rhythmical	gravel	pneumatic	subject
reckon	quince	acknowledge	glycerin
nullificationist	justice	xylophone	zealously
envious	exposure	bezique	octagonal
objective	circumflex	banquet	loquacious

EXERCISE 8—Optional or Variable Fingering. It must be understood that variable fingering of the following words is optional with the operator and will show results in a smoother and faster fingering method only after the operator is able to set 4,000 or more ems per hour. As the operator gains speed he discovers that when he reaches a certain point in his progress he has to vary the fingering of certain syllables in order to maintain his rhythm and smoothness of operating. How he varies his fingering depends on the letter arrangement of the word and the operator's own particular type of hand. The most frequent variables are ing, tion, is, and ch. Practice the following words containing variables and notice how the letters i, n, and h may be struck to advantage by using either the left or the right hand:

running	moving	passing	nibbling
turning	razzing	shoeing	backing
meddling	raging	tossing	drawing
leaning	rooming	seeing	pushing
snowing	snubbing	petting	meaning
woeing	racing	teeing	laughing
reaction	passion	grain	conviction
mentioned	delusion	painful	adhesion
duration	conversion	against	mountain
sensation	session	vainly	depletion
confectioner	complexion	abstain	admission
dictionary	accession	detained	maintain
biscuit	bristle	cistern	disk
display	whistle	kissing	discreet
visionary	island	bisect	rising
gist	listing	visor	disillusion
jurisdiction	thistle	bishop	vanquish
issue	historic	inquisition	wrist

ratchet	churn	technicality	chuckle
catechism	chukker	bronchitis	chump
clutch	ketchup	orchestra	church
lunch	chunk	handkerchief	chipped
thatch	chute	chorine	churl
machination	chubby	chorus	chopper

Sentence Practice

FROM THE PRACTICE in the preceding lessons the location of all the characters on the keyboard should be memorized so that the fingers will readily touch any desired key without being directed by the eyes.

Interpreting Copy. The Linotype operator must read and comprehend copy much faster than the hand compositor whose hand motions in type-setting impose a leisurely pace for his mental activity. The high-pressure character of the operator's work requires concentration of attention on his copy in order to grasp its meaning accurately and rapidly. With the keyboard properly memorized, the fingers strike the character as directed by the brain, but if the brain does not correctly interpret the copy, the error in composition may be even more serious than striking an occasional wrong key. Correct comprehension of copy requires keen eyes, deep concentration, knowledge of the rules of grammar, spelling, punctuation, and language composition, and the general intelligence and knowledge that come from a wide range of reading and study. The operator must be alert and on constant lookout for any marks of instruction which may have been placed on the copy. In setting sentences the flow of thought helps to interpret copy or detect errors in the composition, but when setting proper names, numbers with figures, or involved punctuation, the power of memory must often work abstractly without the aid of reason or associated thought.

Memory Training. The powers of mental concentration and memory may be improved by more care and attention in the daily reading for pleasure. The cursory reading of newspapers, or the habit of skipping in other reading, will militate against mental efficiency. Learn the correct spelling of the names of prominent persons. Practice in repeating sentences after reading them, spelling unusual proper names, or repeating long numbers, and series of numbers, after passing them in reading, will be excellent mental training and prove greatly to the advantage of an operator. Crossword puzzles provide a wide vocabulary.

Steadiness of Motion. In the preceding lessons the operator has been urged to go slowly and be deliberate in order to acquire a smooth, easy motion and to develop such control that the mind, the eyes, and the fingers work in perfect harmony, each performing accurately its own separate and

distinct part. This smooth, easy motion acquired by using all the fingers soon becomes to the operator an unconscious habit—the reading of copy, fingering the keyboard, and dropping of the matrices working in unison and with such perfect harmony that a break in the uniformity of this action is instantly detected. To maintain a steadiness of motion the operator must strike each key distinctly for each letter of the copy. The student operator soon becomes accustomed to the sound of the dropping of matrices in the assembling elevator.

Harmonious Action Essential. Constant, uniform, harmonious action in fingering the keyboard makes for greater efficiency than frantic efforts at speed without a foundation for correct habits.

Assemblage Knowledge—Important. The operator should be particularly careful always to use the proper amount of matrices and spacebands in each line which he sets. Lines which are too tight to fit easily between the vise jaws do damage in a great many ways. They usually cause the matrices to be smashed, often damage the first elevator jaws and occasionally smash the first elevator duplex rails. However, the trouble and expense do not end there. The damaged matrices cause distributor and escapement troubles, with a great loss of production. Lines which are too loose do damage in two very definite ways: first, if the line is just barely tight enough to cast, the spacing is unsightly; and, second, the constant sending in of loose lines will soon ruin the matrices by damaging their side walls.

Sentence Ending. Between sentences in this book a spaceband was used. Styles of such spacing vary in different composing rooms—some may use a greater space between sentences.

Sentence Practice. Practice each of the following sentences at least five minutes. Set each sentence continuously. During this exercise the matrices and spacebands should be used. Remove the plunger pin so slugs will not cast. Learning one thing at a time is conducive to speed and accuracy.

EXERCISE 9—*Alphabetic Sentences.*

He that hath a trade hath an estate.

Diligence is the mother of good luck.

The tortoise was the first efficiency expert.

Concentration is the first condition of success.

The quick brown fox jumps over the lazy dog.

A good worker is worth more than a poor manager.

If you want a thing to succeed, get behind it and push.

Raise your own seed corn and be sure of a crop that is worth tilling.

Sloth makes all things difficult, but industry all easy.

If the text and the initial are in one color, should they harmonize?

The jazz band included a saxophone and a xylophone among the instruments of their queer outfit.

Dexterity in the vocation of typesetting may be acquired by work.

The man at the top is the one who has been in the habit of going to the bottom of things.

The average layman has but little idea of the immensity of the field of printing and its importance to modern civilization.

EXERCISE 10—*Punctuation Marks*

(See Figure 62, on page 128.)

Look, my lord! It comes!

Ha, ha, ha! That's a good joke.

St. Paul said, "Bear ye one another's burdens."

Read the following: "Mat. i: 5, 7, 9; v: 1-10; xiv: 3, 8, 27."

The flag has three colors: red, white, and blue.

He said: "I heard him say, 'Put down that gun,' and then I heard a shot."

Write a short essay on the following topic: "What is wrong with our industrial system?"

Farm for sale, rent, or exchange; 400 acres, improved. 24 West Michigan Street, Circle 5930.

Dost thou love life? Then do not squander time for that is the stuff life is made of!—Franklin.

Franklin, like many others, was a printer; but unlike the others, he was a student, statesman, and publicist as well.

"Breathes there a man with soul so dead,
Who never to himself hath said:
'This is my own, my native land?'"

If we can reduce the labor turnover from 50 per cent to 25 per cent (an accomplishment quite possible by means of group insurance) we shall have a consequent reduction of overhead from \$25 to \$12.50 per capita.

Sit thou patient looker-on;
Judge not the play before the play be done;
Her plot has many changes; every day
Speaks a new scene. The last act crowns the play.

Capital-Letter Practice

THE ARRANGEMENT of letters in the capital-letter section on the white buttons at the right side of the keyboard is the same as that in the small-letter section, as far down as the Z. The capital-letter section should be operated with the right hand. In setting ALL CAPITALS, right hand is placed over capital keys in similar position to that of basic position, i.e., thumb over L—first finger, R—second, M—third, B. Desired characters are struck with nearest finger.

A few words are given in Exercise 11 for the purpose of practicing, but the beginner should set a whole article in capital letters in order to familiarize himself with this work.

EXERCISE 11—Set each of the following words in capitals. Do not watch the fingers or the keys. Use a smooth, regular motion. Practice each word at least five minutes.

HAZY	TARGET	SPASMODIC
JUMP	WROUGHT	EXCELLENT
BACK	HOWEVER	KNOWLEDGE
KNOW	PECULIAR	PSYCHOLOGY
LARGE	QUESTION	THEORETICAL
SHOULD	CHARMING	GOVERNMENT

When only one capital is wanted, as in setting the first letter of a sentence or a proper name, the fingering suggested in Figure 3 is that recommended for the average type of hand.

EXERCISE 12—Practice each of the following lines at least five minutes:

New York City.	Montreal, Que., Canada.
Chicago, Illinois.	Hudson River Day Line.
Washington, D. C.	Ontario Arts Association.
Kalamazoo, Michigan.	San Francisco, California.
Dayton, Ohio, U. S. A.	President John Brown.
Thursday, January first.	Radio Corporation of America.
Buenos Aires, Argentine.	Mergenthaler Linotype Company.

Italic and Bold-Face Practice

EXERCISE 13—Composition involving the use of the duplex rail, for italic or bold-face words, requires practice to enable the student to become proficient. Set one of the following examples, according to the face on the machine, being careful to raise the words that are in italic, or bold face, on the duplex rail:

EXAMPLES FOR *ITALIC* PRACTICE

Plurals of family names.—The *plurals of family names* are formed by the addition of *s* or *es*; as: Jones, *Joneses*; Higgins, *Higginses*; McIntyre, *McIntyres*; McCann, *McCanns*, etc.

Prima facie.—This term is of *Latin origin, used in law*, and means “*at first view.*” It is pronounced, *prai’ma fe’shi-i—ai* as in *aisle*, *a* as in *final*, *e* as in *prey*, *sh* as in *ship*, first *i* as in *habit*, second *i* as in *police*.

Speak, talk, utter.—*Speak* is from the Anglo-Saxon *specan*, and means “*to utter articulate sounds or express thoughts by words.*” To *talk* is “*to speak*”

fluently and familiarly." *Talk* is from Anglo-Saxon *talian*, speak. *Utter* is from Anglo-Saxon *utian*, put out, and means "to express with the voice, as by putting out or making sounds be they articulate or not."

Doctor Fernald says, "To *talk* is to *utter* a succession of connected words, ordinarily with the expectation of being listened to. To *speak* is to give articulate utterance even to a single word; the officer *speaks* the word of command, but does not talk it. To *speak* is also to *utter* words with the ordinary intonation, as distinguished from singing. To *chat* is ordinarily to *utter* in a familiar, conversational way; to *chatter* is to *talk* in an empty, ceaseless way like a magpie."—*English Synonyms, Antonyms, and Prepositions.*

EXAMPLE FOR BOLD FACE PRACTICE

A SUPERLATIVE ENGINEERING FEAT

Preeminently the Car of the Season

The **Lexicon** is distinguished immediately from all other cars anywhere near its price by its sparkling, speedy performance. Only **Lexicon** could have produced this superlative value. Here, at last, is a car of modest cost with a brilliant inheritance of those wonderful qualities of performance and endurance that have built **Lexicon's** great reputation among car owners.

On the road the **Lexicon** literally does wonders! **Lightning** quick on the throttle . . . smooth throughout the entire driving range . . . **delightfully** balanced . . . **incredibly** easy to handle . . . **quiet, steady!** Under the hood there's a marvelous engine with the **largest** piston displacement in this price field—an engine that displays **unrivalled** mastery of performance in every expression of **power** and **stamina** and **speed!**

And a **host** of other extraordinary features! **Handsome Bodies**, upholstered in remarkable new **waterproof, dustproof, wear-resisting mohair.**

Most Complete at the Price

So many quality features does the **Lexicon** embody that it has been called the most complete car ever offered in the moderate-price field. And although the **Lexicon** is the outstanding quality car of the moderate-price class, the liberal terms make owning it very convenient and economical, easy to budget.

See this matchless new six. And don't delay having an experience at the wheel—drive the **Lexicon** . . . and know why everyone everywhere is saying "A GREAT CAR."

Figure Practice

FIGURE WORK, or tabular composition, requires more concentration than straight matter setting, but there are a great many operators who prefer this work. Extensive practice is required to become proficient. The right hand is used for the figures, dollar sign, em and en leaders, points, em and en spaces, and thin space.

EXERCISE 14—Practice each of the following lines five times, touching the space key with the third finger of the left hand at the end of each group of figures or characters corresponding to a word. Remember that accuracy is more important than speed. *(See Figure 62, on page 128.)*

23 23 23 23 23 23 23 23 23 23 23 23 23 23 23 23
 138 138 138 138 138 138 138 138 138 138 138 138 138 138 138 138
 156 156 156 156 156 156 156 156 156 156 156 156 156 156 156 156
 1,340 1,340 1,340 1,340 1,340 1,340 1,340 1,340 1,340 1,340 1,340 1,340 1,340
 (6,289) (6,289) (6,289) (6,289) (6,289) (6,289) (6,289) (6,289) (6,289)
 \$82.50 \$82.50 \$82.50 \$82.50 \$82.50 \$82.50 \$82.50 \$82.50 \$82.50 \$82.50
 7,239 7,239 7,239 7,239 7,239 7,239 7,239 7,239 7,239 7,239 7,239 7,239
 91-72 91-72 91-72 91-72 91-72 91-72 91-72 91-72 91-72 91-72 91-72 91-72
 (?) \$9.45 (?) \$9.45 (?) \$9.45 (?) \$9.45 (?) \$9.45 (?) \$9.45 (?) \$9.45 (?)
 378,992 378,992 378,992 378,992 378,992 378,992 378,992 378,992 378,992
 1,189,286 1,189,286 1,189,286 1,189,286 1,189,286 1,189,286 1,189,286
 1,987,684,322 1,987,684,322 1,987,684,322 1,987,684,322 1,987,684

EXERCISE 15—The following table is provided to give the beginner an example of tabular composition, with the heads centered over the column. Set up the first line of the table first, then align the headings over the columns. Place two ems between the figure columns, with two em leaders and an en leader after the breed in the first column. Do not put spacebands between the columns of figures—they belong only in the stub.

Breed	Cow Years	Av. Milk	Av. Test	Av. Fat
J. M. KoonceMixed	4.8	9872	4.17	412.18
Averson Bros. . . G. & P.B.G.	12.6	8261	4.97	411.21
Carl PetersonG.G.	5.7	9798	3.75	411.21
C. H. LanyhurstG.G.	6.8	7089	5.16	366.42
C. H. Welch . . . G. & P.B.G.	7.7	7305	4.98	364.42
A. DahlmanG.G.	11.0	8151	4.37	356.82
Newman & SonG.G.	7.6	7183	4.96	356.31
W. J. DarbyG.H.	5.6	9339	3.73	348.75
Carl Duesler . . G & P.B.G.	7.9	7548	4.55	343.40

(See Part II for further data on Tabular Composition.)

Small Capitals, Their Use and Practice

SMALL CAPITALS, being used less frequently than the regular capital and lower-case letters, are placed on matrices the italic characters of which are not required. Matrices of the proper thickness are selected for the small capitals to give the letters the right proportion. This, of necessity, causes the small-capital alphabet to be somewhat scattered over the keyboard (see Figure 6), but with a little practice considerable speed in composition can be attained.

Small-capital letters and characters are obtained by assembling the matrices on the duplex rail, which causes them to be cast in the auxiliary position. The small capitals x and z run pi. These are inserted by hand directly into the assembling elevator, and run down into the pi stacker at the right side of the machine.

In capital and small-capital composition, it is necessary to lower the capitals and punctuation marks to normal position or they will cast italic. The matrices should be lowered *after* the line has been assembled.

Practical Use of Small Capitals. Typographic usage recognizes an added resource in the use of small capitals, or capitals and small capitals combined. Occasions for their use may be noted in programs, menus, contents, indices, subheads, side-heads, and in the text of plays.

Examples of this work are shown in Part II. The student for the present should use the Alphabetic Sentences in Exercise 9, Sentence Practice, preceding, for practice until thoroughly familiar with the location of each small-capital letter.

Study of the Chart. A close study of the keyboard layout of the small capitals (Figure 6), given on page 21, should be made. This is made necessary by the fact that these letters are seldom used, but this does not excuse the good operator for being unfamiliar with their location on the keyboard.

Two examples are given herewith for practice. The first is from the play, *The Pilgrim Spirit*, giving the name of the speaker in small capitals and other names in capitals and small capitals. Set twice, recasting the names where possible:

MRS. GREENWOOD

Yes, mine if you will, but not yours! Not yours! (*Wanly*) Perchance there may be another respite.

BARROW

(*Who has been walking up and down*) Nay, no more respites. Last month they had struck off our chains and stood ready to bind us to the cart to take us to our deaths. A reprieve. Another day they took us to the place of execution and tied the nooses around our necks to the gallows.

Again a reprieve. Enough of reprieves! What our words, what our lives could not do, our deaths will. Men pass; ideas abide.

MRS. GREENWOOD

JOHN HENRY, pray! I cannot. Pray that God give me strength.

As her husband comforts her, BARROW begins praying. Distantly a bell strikes ten.

MRS. GREENWOOD

Only seven hours to daybreak! Only seven.

She clings to GREENWOOD, sobbing hysterically. To the sound of BARROW'S half audible praying, the lights close in.

SCENE III

THE OPPOSITION—April, 1602

The Royal March in this scene was composed by

EDWARD BURLINGAME HILL

The lights come up quickly and full. There is a rush and scurrying of children and the young people across the way.

The second specimen is from *Historical Plays of Colonial Days*, showing the name of the speaker in capitals and small capitals. The example should be set at least twice.

PATIENCE.—Oh, that would be dreadful!

MARGARET.—I should not dare.

ANNE.—Well, I shall dare. Will you come?

MARGARET AND PATIENCE.—Oh, no, no!

ANNE.—You can't be over-thirsty, then (*She starts off, but spies the sack of apples.*) Oh, look! Patience! Margaret! See what I have found! (*She holds up an apple.*)

MARGARET.—Why, what is it?

PATIENCE.—Oh, how lovely and smooth it is, and so red!

MARGARET.—It looks like those big berries that the Indians call tomatoes.

ANNE.—Nonsense!

MARGARET.—Well, do you know what it is?

ANNE.—Yes! It is a pomegranate.

PATIENCE AND MARGARET.—A what?

ANNE.—A pomegranate!

MARGARET.—How do you know?

ANNE.—I've read of them.

MARGARET.—Are you very sure?

ANNE.—The prince always says, "Her mouth was a split pomegranate set with pearls."

PATIENCE.—Why, Anne Bradberry! What dost *thou* know of princes!

Casting Slugs

HAVING DILIGENTLY practiced all of the preceding exercises, the operator, by this time, should be proficient in the assembling of lines, and should cast slugs for any subsequent work. However, this matter should be left solely to the discretion of the instructor. It may be particularly profitable for the student to take up composition on straight matter of various kinds of copy—reprint, typewritten, and manuscript—in order to develop more speed and accuracy. This should be governed by the judgment of the school director. Some students take readily to the fingering system, while others are of the "slow-but-sure" type.

The beginner must remember that the proper start in fingering the keyboard is very important. If he slights the preliminary work it will be a hard matter for him to become a successful operator.

It will be found very good practice for the instructor, where it is possible, to run a regular "hook" of copy, as is done in the commercial shops. This, besides giving shop practice, will train the students in the habit of taking their copy from the desk, and will familiarize them with the customary markings on the copy when it is sent to the operator on the machine.

Marks on the Copy

AN ILLUSTRATION containing proofreader's marks is shown in Figure 7. Proofreader's marks and the marks on the copy when it is sent to the machine should be identical. A single waved line under a word or group of words indicates that they are to be set in bold face; a single straight line means that they are to be set in italic. Small capitals are designated by two straight lines under the words, and three straight lines indicate that capitals are required.

Manuscript as Marked by the Author or Copy Reader. Figure 7a illustrates typewritten manuscript, containing marks for style. Copy is marked by the layout man, foreman, or copy cutter in this manner and sent to the operator. When in doubt in regard to any mark on the copy or wording, don't be afraid to ask about it. Figure 7b shows the resulting composition.

Proofreader's Marks

∩	He made his mark	<i>take out</i>
∩	He ma ^{de} his mark	<i>close up</i>
L	L He made his mark	<i>bring to mark</i>
tr	He(his/made) mark	<i>transpose</i>
stet	He made his mark	<i>let stand</i>
(t?)	He made [^] his mark	<i>query to author</i>
¶	Therefore, be it [^] Resolved	<i>make paragraph</i>
□	[^] He made his mark	<i>indent em-quad</i>
wf	He m ^a de his mark	<i>wrong font letter</i>
l.c.	He made his mark	<i>lower case letter</i>
sm.c.	<u>He</u> made his mark	<i>small capital</i>
caps	He made <u>his</u> mark	<i>capitals</i>
ital.	He made <u>his</u> mark	<i>put in italic</i>
rom.	He made <u>his</u> mark	<i>put in roman</i>
b.f.	<u>He made his mark</u>	<i>put in bold face</i>
⊙	He made his mark [^]	<i>period</i>
∩	He made Johns [^] mark	<i>apostrophe</i>
“ ”	He made his [^] mark [^]	<i>quotation marks</i>
=/	This is a trad [^] emark	<i>hyphen</i>
#	He made his [^] mark	<i>space</i>
∩	He [✓] made [^] his [✓] mark	<i>even spacing</i>
x	He <u>made</u> his mark	<i>broken letter</i>
	He made his mark	<i>align</i>
*	[^] He made his mark	<i>insert reference mark</i>

FIGURE 7

A Chart of the Proofreader's Marks

Set this job in 10½ pt. O.S. *7, on 12 pt. slug, 27 picas meas.
Heads in 10 pt. Caslon *3 as marked. Watch indentions.

COMPOSING-ROOM EFFICIENCY

Cas. *3 caps

Cas. *3, note Conveniences for planning type composition for economical production.

C & sm. c. flush I. THE LAYOUT

- [1] Absolutely essential to a working understanding of
[2] the job to be set, the layout may be a carefully drawn diagram or a simply sketched plan. Although type sizes, indentions, and spacing can be marked on copy like this sheet, the operator cannot fully visualize the desired result with a plan.

ital/ [2] a. Layout Materials

- [3] For quick, convenient layout work the following items are needed:

- [3] 1. Proof sheets of each type face in the plant.
[4] These should include sizable blocks of matter, with separate lines of caps, of small caps, and of figures and special characters.
[3] 2. Proof sheets of initial letters.
[4] Where initials form part of a standard style they should be charted for indention and alignment.

- [3] 3. Proof sheets of all borders and ornaments.

ital/ [2] b. A Copy-Fitting System

- [3] The Linotype Copy-Fitting tables, supplied
[4] with type specimen folders on request, are based on the mathematical relationship between typewritten manuscript and the various type faces and sizes. They are easy to use and accurate.

FIGURE 7a

Shows Marks on the Copy When Sent to the Machine

COMPOSING-ROOM EFFICIENCY

Conveniences for planning type composition for economical production.

I. THE LAYOUT

Absolutely essential to a working understanding of the job to be set, the layout may be a carefully drawn diagram or a simply sketched plan. Although type sizes, indentions, and spacing can be marked on copy like this sheet, the operator cannot fully visualize the desired result without a plan.

a. Layout Materials

For quick, convenient layout work the following items are needed:

1. Proof sheets of each type face in the plant. These should include sizable blocks of matter, with separate lines of caps, of small caps, and of figures and special characters.
2. Proof sheets of initial letters. Where initials form part of a standard style they should be charted for indention and alignment.
3. Proof sheets of all borders and ornaments.

b. A Copy-Fitting System

The Linotype Copy-Fitting tables, supplied with type specimen folders on request, are based on the mathematical relationship between typewritten manuscripts and the various type faces and sizes. They are easy to use and accurate.

FIGURE 7b

Shows the Resulting Composition

Division of Words

THERE HAS ALWAYS been a wide diversity of opinion among authors and proofreaders regarding the division of words. A great many follow the American plan of dividing according to pronunciation, while others prefer the English plan of dividing according to derivation. *Funk & Wagnalls Standard Dictionary* is widely used as a standard authority on division of words, and there are others which may be used with confidence by the Linotype operator. Shop style should determine which is to be the authority.

The following rules are offered to the operator as general guide to enable

him to make proper divisions. A good pocket dictionary should be kept for consultation when in doubt.

1. Words should be divided according to syllables; a syllable being a group of letters to represent one sound.

con-ster-na-tion

syl-lab-i-ca-tion

2. If a word is one containing a single vowel syllable, preceding the last syllable, divide the word preferably on the vowel, carrying over the last syllable. If it has two vowels retain both.

mechani-cal, *not* mechan-ical; approxi-mate, *not* approx-imate

3. If the last syllable of a word contains but two letters, do not carry it to the next line.

vocifer-ously, *not* vociferous-ly

4. In dividing present participles the *ing* should be carried over: smok-ing, din-ing, driv-ing, hav-ing, etc.

If the consonant is doubled on adding the *suffix*, carry over the second consonant: drum-ming, stir-ring, can-ning, etc.

Certain instances may be cited, however, where the consonant has not been doubled; it is part of the original word: express-ing, pass-ing, etc.

5. Divide a compound word into its elemental words rather than on syllables, unless spacing would be sacrificed to accomplish it:

composing-room, *not* compos-ing-room

6. Words which have been compounded of two words and which, from usage, have coalesced into one, should preferably be divided into their original elements.

school-master *is better than* schoolmas-ter

7. Words of one syllable cannot be divided, nor can the plurals of singular nouns, even though pronounced as if they were words of two syllables.

horse, horses;

inch, inches;

fox, foxes

8. The addition of the past tense of verbs of one syllable does not add a syllable. Such words cannot be divided.

drown, drowned;

slap, slapped;

push, pushed

9. Few English words begin with an *x* or *end* with a *j*, therefore, in dividing words containing these letters always **keep** the *x* on the upper line and the *j* on the lower line.

parox-ysm

pro-jection

The word *prejudice* is an exception to the foregoing rule of dividing words on a *j*. The accent is on the *prei*. Words such as *project* must be divided according to the sense to be conveyed, i.e., *pro-ject—proj-ect*.

10. If the first syllable in a word contains but one letter, do not divide it on the first syllable; carry over the letter.

E-gypt a-mong a-float a-shore a-gain

11. When a distinction is made in the pronunciation of a word to denote its part of speech, the word should be divided according to pronunciation.

12. Never have more than two divisions of words at the ends of successive lines.

The proper division of words is a subject that requires much study. A few rules are given here which will prove helpful:

Always divide according to pronunciation (knowl-edge).

Divide according to etymology when compatible with pronunciation (dis-pleasure).

Divide after vowels when possible (sepa-rate); (read-able).

Divide between two consonants when they come between vowels (advan-tage) (impor-tant).

Do not divide monosyllables.

Keyboard Diagrams

THE FOLLOWING PAGES show keyboard arrangements for the several standard equipments of the Linotype to set different kinds and sizes of type. Special arrangements are made for the inclusion of unusual characters and for foreign languages.

On pages 174, 175, 176, 177, 178, 179 and 180, you will find keyboard diagrams that cover special situations. In each instance, the numbers beneath the keybuttons indicate the magazine channel in which the character is to run.

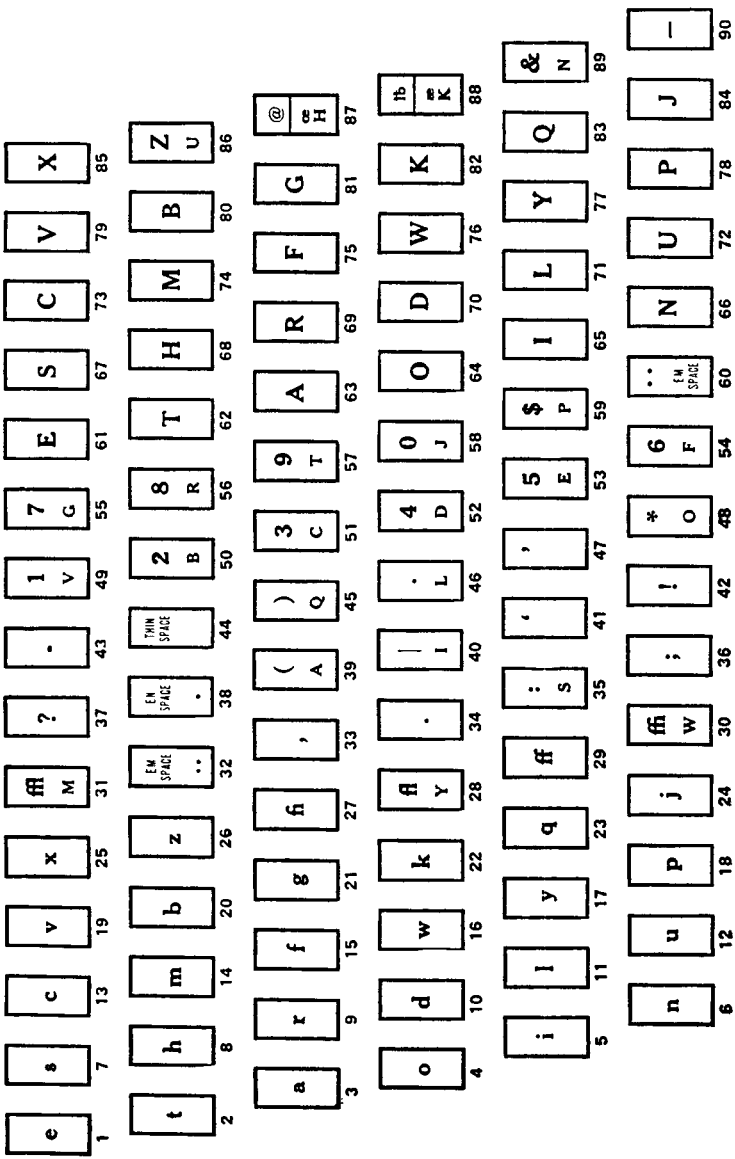


DIAGRAM NO. 12. Standard Layout for Use of Two-Letter Matrices
Numbers Show Corresponding Channels

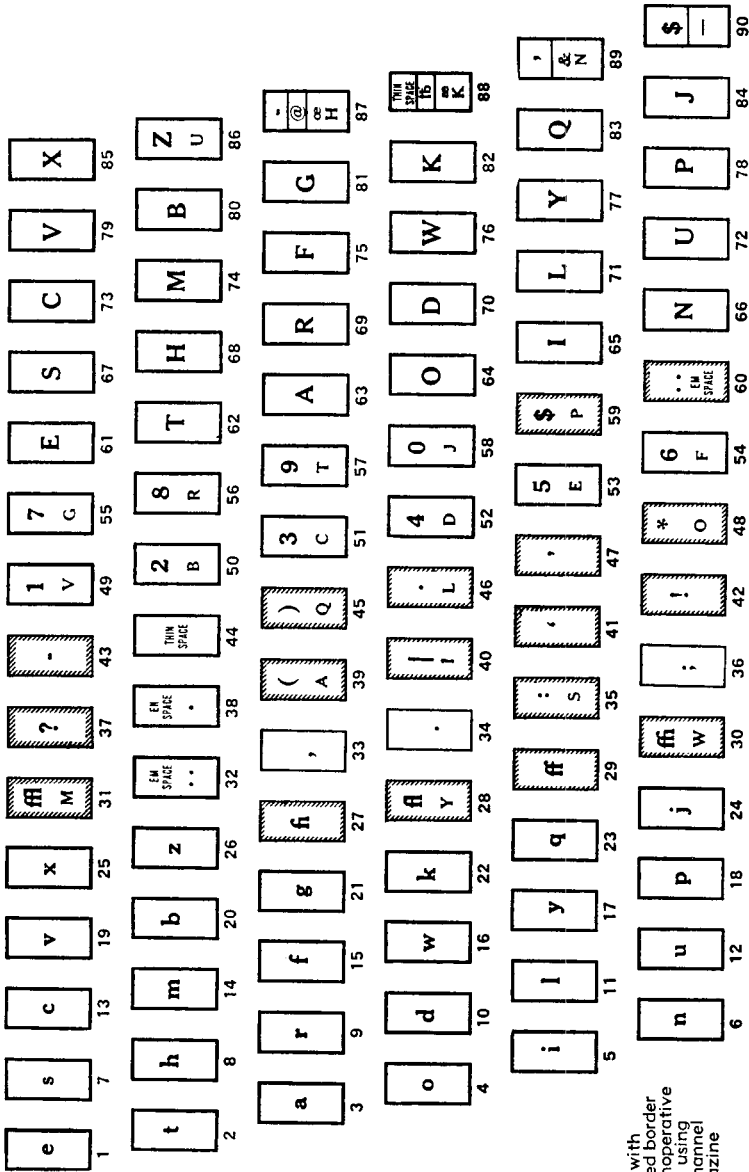


DIAGRAM NO. 150. Keyboard Layout for 72-90-Channel 2-in-1 Linotype (Combination of Diagrams 12 and 103)

Keys with shaded border are inoperative when using 72-channel magazine

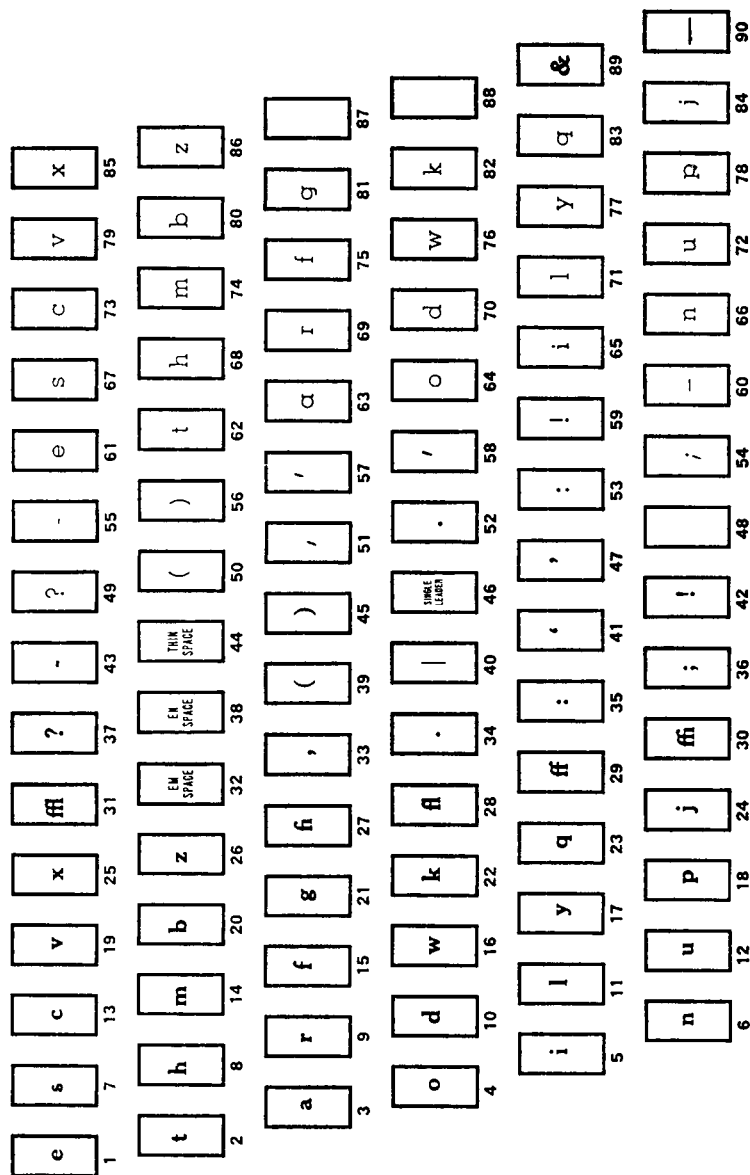


DIAGRAM NO. 135. Two Lower-Case Fonts, with Caps and Figures in Auxiliary Magazines

Numbers under keybuttons above, and on page 31, indicate magazine channel in which character is to run

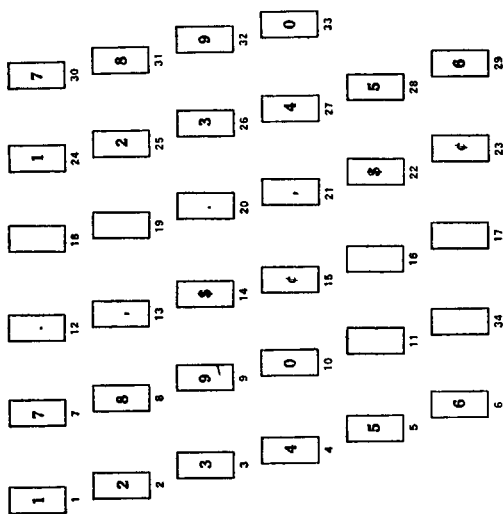


DIAGRAM NO. 177-B

For 34-Channel Auxiliary Magazine (Separate Auxiliary Keyboard Machines), Advertising Figures (2 Sets)

Numbers under keybuttons indicate Auxiliary Magazine channels in which character is to run

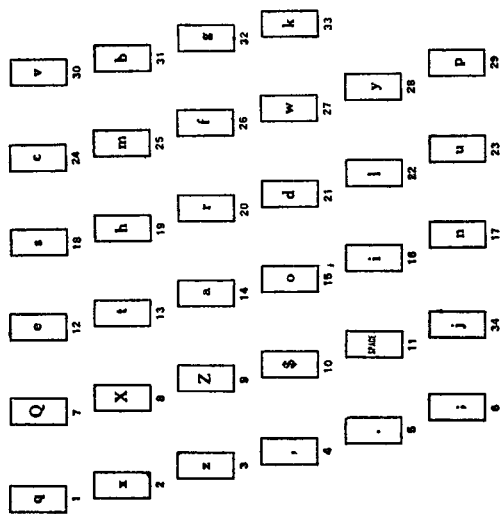


DIAGRAM NO. 177-A

For 34-Channel Auxiliary Magazine (Separate Auxiliary Keyboard Machines), Lower Case and Points

Numbers under keybuttons indicate Auxiliary Magazine channels in which character is to run