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COMPOSITORS' TOOLS



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TYPOGRAPHICAL TECHNICAL SERIES FOR APPRENTICES—PART 1, NO. 2

COMPOSITORS' TOOLS AND MATERIALS

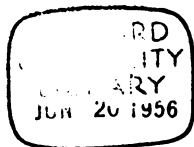
A PRIMER OF INFORMATION ABOUT
COMPOSING STICKS, GALLEYS, LEADS
BRASS RULES, CUTTING AND MITER-
ING MACHINES, ETC.

COMPILED BY
A. A. STEWART



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INTRODUCTORY

GLANCING back over the history of the printer's craft, from its crude beginning in the middle of the fifteenth century to its present high state of development, one of the most salient features to be noted is the exceedingly slow improvement in the tools and materials used by the compositor.

The printer has not lacked artistic ability — or, at least, the desire to exercise that faculty of his brain. And it is also fair to presume that those who toiled with types in Caxton's day were as dexterous manually as those of the present time. Nor did the early printers lack mechanical skill, as witness their really wonderful productions accomplished with inadequate facilities.

In their knowledge of literary form there is convincing evidence that they were, in many instances, far in advance of their brethren of today.

But printers as a class have never been noted for great aptitude for improving the tools, materials, and methods they employed. Precedent has usually been the controlling factor in the choice of their tools and the way in which they have used them. It is for this reason we have to thank many persons outside the craft for the remarkable machines now at the printer's command — the linotype, the monotype, the cylinder press, the platen press, and numberless other devices which make the quantity and quality of the printer's product an important factor in modern life.

A typical example of the printer's lack of mechanical inventiveness has been his failure to improve that commonly-used tool, the composing stick. It seems inconceivable that such an intelligent class of men would have so long been content to use, as many do today, the crude metal sticks whose accuracy is entirely dependent on the hasty judgment of a careless compositor.

The employer usually provides the composing sticks with which a compositor works. Being the common property of all workmen in the composing room, they are not properly taken care of, but become thick with rust and bent out of true shape.

What is true of composing sticks is equally true of composing rules. How many job compositors take the trouble to provide themselves with a set of composing rules graduated in length from four to fifty picas, or, having these rules, provide a receptacle making them instantly accessible?

The boy who aspires to become a first-class compositor would do well, when he arrives at the stage when he must use it, to provide himself with a good composing stick. An 8-inch length will be found a useful size for general work. If it is nickel-plated he can keep it in better shape with ease. It should be stamped with his name or initials.

A set of composing rules will also be found useful. These can be made of pieces of brass rule that have become worn so as to be unfit for printing purposes. They can be easily trimmed to standard lengths, leaving a short nib on one end, and stamped with the number of picas ems which they match. These should of course be kept in a convenient place close at hand, so that time will not be lost looking for them. If they are not thus kept they will be of little use. Two or three of the commonly used lengths may be kept in an apron pocket.

A line gage, marked off in ems of 6-point and 12-point or other type sizes, will be found handy to measure pages, lengths of lines, leads, rules, etc. Steel line gages accurately marked in various styles cost from twenty-five cents to one dollar, but wooden ones may be usually obtained without cost, as these are often distributed as advertisements stamped with the name of some maker or dealer in printers' goods.

Another useful article — almost indispensable at times — is a pair of tweezers. These should be used with restraint, however. They are not often needed at the case, but are useful for correcting, in job work, and on the imposing stone. They should not be jabbed into every bit of composition in hand.

Two other little things a compositor apprentice should have with him always. One is a small pocket dictionary for instant reference when in doubt about the spelling or meaning of a word in his copy. The other is a small note book in which to jot down any items of information or memorandum of things which he wishes to remember. This should not take much time from his work or interfere with regular shop duties, but may be done at odd times — noon, or evening, or in other spare time. The compositor's work is one of infinite detail and there are many little things to become familiar with. The habit of making notes is the best way to cultivate a good memory. It helps to impress ideas on the mind accurately.

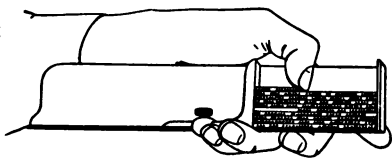
Never was there a saying more true than that a workman is known by his tools. To have good tools of the right kind and as few as are necessary to do the work efficiently, and to keep these in proper condition, where they can be easily reached when needed, are characteristics of a competent workman.

COMPOSITORS' TOOLS AND MATERIALS

THE compositor working at the case, and having access to the usual supply of type and material provided for the work of the room, requires, individually, a composing stick in which he may set the lines of type, and a galley to which to transfer the lines from the stick from time to time as the composing proceeds. To the stick he may find it convenient to add a composing rule to fit the measure of the line, and also a bodkin or tweezers to assist in correcting and handling types which cannot be as readily handled by the fingers.

The Composing Stick

A composing stick is a metal box into which lines of type, composed of pieces of varying thicknesses, are exactly adjusted so that all the lines needed to form the page may be made exactly uniform in length in order that they may be tightened together to make a solid mass. Its sides should, therefore, be accurate, and to be of good service it should be readily adjustable to a gage of any unit or number of units of the standard measurement.



Accuracy in the justification of printing forms is required now more than ever before. The time lost and the annoyance in having to rectify bad justification are serious matters in composing-room work. The daily use of an inferior tool makes it an expensive one; yet while much loss may be due to defective tools, undoubtedly more of it is attributable to

the carelessness of the workman. With the ordinary composing stick the accuracy and stability of a measure depends upon the compositor. A careful workman may fix up even a poor tool to serve his purpose tolerably, although he may not be able to do so without some waste of time.

The three essential features of a good composing stick are that it may be set quickly to the desired measure, that the knee is at an exact parallel with the inside face at the end of the stick, and that its structure is such that it will maintain an accurate measure until changed to another.

Early Composing Sticks

The original composing stick was literally a stick of wood with a long squared notch or mortise cut into one of its sides, into which the compositor placed the types one by one to make the line. (Fig. 1.) From this first tool the term



Fig. 1. An early wooden Composing Stick.

“stick” has survived, though the material out of which it is made has changed. As the compositor’s work grew in extent more attention was given to the stick and the first rude form was improved by adding a lining of brass or other metal to the wooden mortise to make it more accurate and more durable.

From wood entirely, and a combination of wood and brass or other metal, the change came to steel wholly, which was not until after 1800, although metal composing sticks had been made a hundred or more years before. Wooden composing sticks are still used for very long measures, such as are needed for poster work.

NOTE. The early stick was not like the neatly finished iron tool of our time, with steel composing rule and screw and knee adapting it to any measure. It was a real stick of wood, a homemade strip of deal, with the side and end piece tacked on. For every measure a new stick or a re-tacking of the movable piece was required. The date of the introduction of the stick cannot be fixed, but it was used, without alteration, for many years by the printers of all countries. It is possible that some of the early printers had no sticks . . . that the types were taken direct from the case and wedged in the mortised blocks of wood which served for chases.—*De Vinne, Invention of Printing.*

The first sticks were of necessity made for one measure only. This feature is still embodied in the modern metal tool known as the "news" stick (Fig. 2), made with a fixed compartment to suit the established width of a column or page. This is desirable in newspaper rooms, book rooms, and in cases where it is important that a standard measure should be fixed without liability of slight variations through carelessness or otherwise.

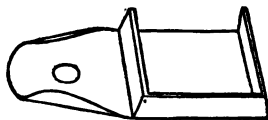


Fig. 2. Iron News Stick made for one measure.

Another step to increase the usefulness of the stick was to make one side of the mortise a movable piece, so that it could be adjusted to more than one length of line. This movable knee and the manner in which it was held in place have been very important features and their variations constitute the chief differences in the many kinds that have been made in the last century.

The adjustable side, or "knee," was fitted at the back with a small screw bolt which went through a hole at the back of the stick and then into a slot in the knee and was held in place by a nut. In some cases this arrangement was reversed, and the long slot was made in the back of the stick, while the hole was pierced through the knee.

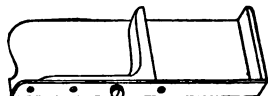


Fig. 3. Common Screw Stick.

A feature of some early composing sticks was to have two adjustable knees, the second one being smaller and fitted into the longer, the two knees forming a second type-box. (Fig. 3.) This enabled the compositor to have one stick contain two measures, the larger measure for setting the text lines of a page and the secondary one for notes or similar matter. The wooden sticks of the early printers were of small capacity, holding only a few lines of type, but as they were improved they were gradually increased in capacity to two or three times that of their predecessors.



Fig. 4. Double-measure Composing Stick of a hundred years ago.

Modern Composing Sticks

About 1885 a style known as the Grover stick (Fig. 5) was brought out. This avoided the screw and slots and instead had a clasp which was fastened to the knee and made to fit tightly over the back of the stick. This style was simple and very convenient, as it could be changed instantly from one measure to another by raising the clamp, moving the knee to the desired position, and then pushing down the clamp. But while it was handy it was not secure, as the compression of the clasp could not well be made tight enough to hold the knee firmly against the pressure of tightly justifying a number of lines, especially after the clasp became worn.

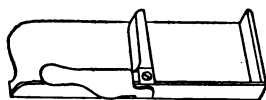


Fig. 5. Grover Composing Stick.

Another convenient stick, still in general use, is that known as the Yankee job stick (Fig. 6), in which the knee is held by a stout steel clamp which clutches the back plate from the bottom and bends up over the top and on to the knee-piece, the tightening being done by means of a small thumbscrew. As this thumbscrew could be tightened to the limit of strength in the clamp, it gives a stronger hold on the knee than the clasp of the Grover stick. In this Yankee stick the strength of this clamp is an important feature. A high quality of steel is required, and in some instances the clamp



Fig. 6. Yankee Job Stick.

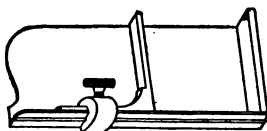


Fig. 6-A. Yankee Job Stick, with reversible knee and ribbed back plate for greater strength.

has been made of brass. It has been up to the present the most popular style of composing stick for general use.

PARTS OF A COMPOSING STICK. The parts of a composing stick are the base, or bottom plate, upon which the bottom of the type rests in composing; the back plate, against which the first line is set in composing and upon which, in the common styles, the movable knee is fastened by means of a screw or clasp; and the end plate, which forms the side of the type box at the ends of the composed lines.

Another style of stick which has been used to some extent is the Buckeye. In this the clamp holding the knee to the back plate is like that of the Yankee stick, but the device for tightening it is a screw turned by a short lever which requires a half turn to tighten or loosen the knee.



Fig. 7. The Buckeye Stick.

A structural weakness of these common styles of job sticks is the absence of a proper fastening for the outer end of the movable knee. The knee is held fast only at the back plate. It may be adjusted to a true parallel with the opposite side

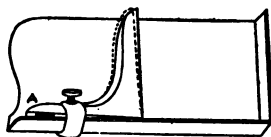


Fig. 8. Showing method of squaring up defective composing stick.

of the compartment at the end of the stick by inserting a slip of paper or card between the knee and the back plate, in front or in back of the clamp (shown at A) as may be necessary to adjust the outer end of the knee either backward or forward.*

In justifying lines of type, unless they are left somewhat loose, the pressure of each successive line will tend to spread the outer end of the knee away from the opposite side of the compartment; even when the knee is adjusted to an exact parallel with the opposite face of the stick before beginning composition, tight spacing will spring the knee so that the last line will be longer than the first. A careful compositor will make sure that his stick is true and that his spacing deflects the outer end of the knee as little as possible. In some sticks the accuracy of the open end of the stick is secured by an extra clamp or screw, as shown in Fig. 9. This, however, requires additional time and attention to set the measure and the advantage is usually neglected except when the stick is to remain at a fixed measure for

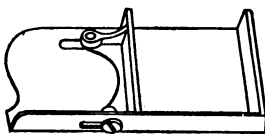


Fig. 9. A News Stick in which an extra screw is used to hold the knee; adjustable only to measures of 12 to 15 cms.

*This is a simple thing to do, and the compositor should not neglect it if there is any doubt about the accuracy of his stick.

continuous use. Another plan to strengthen the outer end of the knee was to make a cross brace extending diagonally between the ends of the knee. This made the knee more rigid, but it still left the exact squareness of the type box dependent upon the back plate to which the knee was clasped.

Graduated Composing Sticks

A defect in most sticks heretofore in common use is that they require to be set to a gage of some sort. This gage was any material that happened to be at hand — leads, rules, quads, or a line of letters. Variations in gages of this sort are inevitable; even when the same kind of gage is used, it is quite common for two compositors to set two sticks with a variation of a fraction of a point—one setting the gage loosely and the other pushing the knee up firmer. When both are working on matter to be used on the same page or form this discrepancy is annoying. Constant watchfulness is needed.

To overcome this, composing sticks in which the knee is held positively at a fixed position have been invented. In

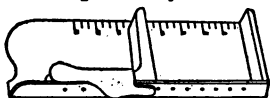


Fig. 10. Standard Graduated Stick.

this class, an early one was the Standard graduated stick illustrated in Fig. 10. It is adjustable to units of 6-point, the practicability of this scheme being made possible after the adoption of the point standard of type bodies which began in this country about 1886. The clasp which holds the knee to the back plate has a small pin which fits into one of a series of small holes in the back plate. A change in measure is made by lifting up the end of the clasp and disengaging the pin from its hole, then moving the knee to the desired measure (indicated by the scale at the outer edge of the stick) and inserting the pin in the corresponding hole and turning down the clasp again. This change of measure is made in a moment, and the advantage is that, no difference how many changes may be made, when the knee is set back to a previous measure it is exactly the same as it was before.

The value of a stick of this sort, however, depends greatly upon its absolute accuracy in each measure within its capacity. This requires great skill and care in the manufacture, in order to have the holes drilled in correct position in the back plate and the pin on the clamp fitted precisely. A serious defect in sticks of this class, depending for accuracy upon fixed pin-holes, is that both the pins and the holes are subject to wear, which will, after continued use, produce inaccuracies not practicable to remedy; especially is this liable to occur where certain measures are used more than others and there is excessive wear of the corresponding pin-holes.



Fig. 11. Rouse Graduated Stick.

In some later sticks this disadvantage is overcome in a degree by providing a series of slots cut in the back plate and fitting into these a segment of the knee containing several teeth, the two parts being held by a clamp, as in the Grover and Standard sticks. The durability of several teeth and holes is greater than that of one tooth in one hole, and the position of the knee is less affected by wear.

A composing stick in which the defects of the old-style patterns are avoided is that known as the "Star." (Fig. 12).

In this there has been a radical departure in two features. The movable piece which sets the measure is fitted to a loose steel spring band one-half inch wide surrounding the base plate in a crosswise manner. On the under inside of this band are a



Fig. 12. "Star" Composing Stick.

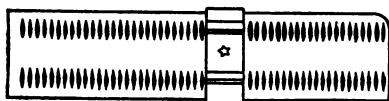


Fig. 12-A. Bottom of "Star" Stick, showing V-shape slots.

double set of V-shaped teeth which engage in a corresponding double row of V-shaped notches on the under side of the base plate. The steel band is shaped to go over the end of

the base plate freely, and when moved to position for any desired measure it is pressed together against the base plate by means of a small slide on the upper side. The interlocking teeth and notches hold the measure positively. The movable side of the measure is held at two points to the base plate by the double row of notches and it is thus less liable to be deflected from a true parallel with the opposite side. Neither its position nor its accuracy are dependent upon the back plate, as in the case with other sticks, consequently it is less liable to become inaccurate through excessive wear or carelessness.

Sizes of Composing Sticks

The early composing sticks were much narrower than those now used in America and England. The size given by Moxon (1600) was 10 inches long, 1 inch wide, $\frac{5}{8}$ inch deep, made of iron plate. Narrow sticks of this kind are still used in Europe and South America.

The size of metal composing sticks used in America varies from 6 to 20 inches long and from 2 to $2\frac{1}{2}$ inches in width. The metal is ordinarily machine-polished, but this is liable to rust rapidly, especially in warm weather,



Fig. 13. Wooden Composing Stick with metal knee and clamp.

when the perspiration from the hand quickly affects the metal. To avoid this condition the nickel-

plated stick is desirable. News composing sticks have sometimes been made of brass.

Wooden composing sticks, of cherry, with japanned metal knee and clamp, are used for poster work. They range in size from 16 to 42 inches long, and are $2\frac{3}{4}$ inches wide.

The Composing Rule

This is a strip of smooth metal, of steel or brass, about the same height as type, to be placed in the composing stick, against which the compositor places the types as he sets

them in the line. It usually has a nib or projection at one or both ends, so that it may be readily taken from between the lines after use. The side of the rule provides a smooth, high surface against which the types may be moved back and forth, while justifying, with greater ease than against the rough edges of the preceding line or a low lead. A stiff composing rule is also a convenient tool with which to handle lines of type—to place behind a line to be lifted from the galley when correcting; to hold lines when distributing, etc. Job compositors, who must continually change the measure of their sticks from one length to another, seldom use composing rules, except for setting many lines of small type in

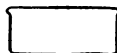


Fig. 14. Composing Rule.

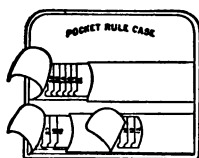


Fig. 15. Set of Composing Rules in leather case.

one measure. Printers' supply houses furnish steel composing rules in sets of standard lengths put up in a convenient case. These are desirable for individual use when they are kept at hand in order; but when used by a number of persons, any of whom are careless and leave them in places where time must

be spent in hunting for them, their presence in a composing room is of doubtful value.

A Make-up Rule

A convenient little tool for making up on newspapers, periodicals, and on type-matter of narrow columns is the make-up rule. This is a flat steel piece the length of the established line, with a hump which projects above the top of the type when placed between the lines. The hump forms a handle which enables the workman to push the rule down between the lines and move them up and down on the galley or in the form.



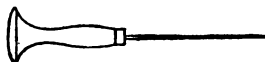
Fig. 16. Make-up Rule.

Bodkin and Tweezers

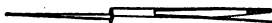
The bodkin and tweezers are used for correcting type in a form or on the imposing table, and for handling types,

rules, etc., in places where it is difficult to do so with the fingers. The bodkin has a limited use and is not as much employed now as formerly, as the tweezers are adapted to more uses and serve the compositor's needs better. They are furnished in a variety of styles, as illustrated herewith. A combination bodkin and tweezers, 4 to 5 inches long, which can be kept in a leather pencil-case in a pocket of the apron or working coat will be found the most convenient kind. The points of tweezers should be not wider than 8-point, and the inside file-cut teeth should be sharp, so that they will take a firm hold of the type. When these teeth wear smooth and readily lose their hold under ordinary pressure the tweezers should be discarded unless the teeth can be sharpened again. The slipping of the tweezers over the face of a type or rule is a common cause of damage, and should not be tolerated.

Tweezers are a necessary tool in composing-room work, but the beginner at typesetting needs them a great deal less than he is apt to think he does. He wants to use them instead of his fingers in many cases where his fingers will serve as well or better if he only makes the effort to train the fingers. The manner in which a little tool like this is used is usually a fair index of the character of a workman.



Common Bodkin.



Bodkin and Tweezers.



Folding Bodkin and Tweezers.



Steel Spring Tweezers.



Tweezers with ferule, to carry in pocket.

*Galley*s

A galley is a shallow tray upon which lines of type and other material are assembled to be made up into pages or printing forms. It has usually a raised rim around one end (the head) and two sides; the other end (the foot) is left open to allow the page, when tied up, to be pushed off to

the proof press, imposing table, or elsewhere. Galleys were formerly of hard wood, and some of this kind are still used to a limited extent. Later, the galley bottom was made of brass, in some cases of zinc, with wood rims. Another improvement was when the wood rims were lined with brass.

The most serviceable galley is now made of brass entirely, with the rims firmly riveted and the corners bound together to withstand the pressure of tightening the enclosed matter for taking proofs. The common full length galley is about 2 feet long and from 4 to 7 inches wide. These sizes are known as news or book galleys, for holding columns of straight matter when composition is first done and from which galley proofs are taken for the initial reading and correcting. The narrower galleys are single-column, while those wider than 6 inches are double-column or book galleys. Shorter and wider galleys, varying from 6 x 10 inches to 12 x 18 inches, are known as job galleys, and these are made in a variety of sizes. Larger galleys are sometimes made for special purposes, to a size of 18 x 25 inches, but these are exceptional.

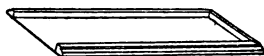


Fig. 17. Galley with wood rim, brass lined.

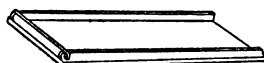


Fig. 18. All-Brass Page Galley.

The old-style wooden galley has a rim on the head and one side only. Pages made up on these must be tied up and removed from the galley for proofing, as there is no provision for holding the type together and the thickness of the wood bottom raises the type too high for the usual proof press. Wood galleys are inexpensive and are useful merely as temporary holders, but not for working surfaces.

Linotype galleys, of brass, zinc, or steel, are made with rims on the head and one side only, as there is no necessity for locking Linotype slugs on the side of the columns, the tightening up at the foot being sufficient. (Fig. 20.)

NOTE. Galleys, or trays of wood to keep in place the composed types, were not known to the first printers; the types were placed line after line, perhaps letter by letter, in the mortised block of wood which served for chase.—*De Vinne, Invention of Printing.*

Galleys for holding original composition, to be proofed or waiting for return of proof, have the rims about $\frac{3}{4}$ inch high. This rim, if not bent over or otherwise damaged, will hold type "on its feet" properly, but the rim is too high for making up when the pages are to be tied with strings. A convenient height of rim is about $\frac{5}{8}$ inch, so that the tying-up string may be wound around the page with ease. A size of galley adapted to general make-up purposes is that known as the quarto, about 9 x 13 inches.

Pressed steel galleys are now furnished to the printer, chiefly for storage purposes. These are less expensive than brass and more durable than the zinc-bottom kind. They are liable to rust, however, unless occasionally rubbed with oil or vaseline.

Mailing-list galleys are long and narrow, and made in a variety of forms, usually of cheap material, zinc or thin brass bottom and lining. They are closed in at all ends, and some styles have a screw bolt with which the column of addresses is locked up at the foot by means of a wrench. The single-column style is 7 to 10 picas wide inside, and about 2 feet or less in length; the double-column style being wider in proportion. They are often made to order to fit special needs.

Galley Locks

A galley lock is a device for holding the column of matter in the galley firm enough to permit a proof being taken. The common method is to place a piece of wide reglet or furniture beside the type and to insert one or more quoins

NOTE. A style of galley which was formerly popular but later discarded is that known as the slice galley. This was usually of quarto size and shape, the early ones made of wood, but later made of wood and brass. It consisted of a double bottom, the upper bottom on which the type was placed being a removal slice with a handle and a rim in front of the handle. This slice fitted into the open end of a tray having a rim on three sides, the whole, when put together, forming a galley with a rim on four sides. It was preferred for making up large pages or forms that were too large to be lifted by the hands. The galley was taken to the imposing stone, the slice with its tied-up page removed, and the page then slid off the thin edge of the slice to the stone.

between the wood strip and the rim of the galley. The kind of quoin best adapted for this is that known as the Hempel, two wedges of metal which can be tightened sufficiently by pressing together with the fingers. Small blocks of wood (quoins) may be used if the wooden strip beside the column is the beveled kind, that is, wider at the top of the galley than at the foot. A gentle pressure of the quoins pushed up along the beveled stick inside the galley will be sufficient to hold the matter for taking proofs.

In order to facilitate the locking of galley matter for proofing, several special appliances have been made. The simplest of these is a pair of long steel springs fastened together at the back like this shape $\times$. The ends of this spring are pressed together enough to permit inserting it beside the side stick in the galley, the pressure of the spring against the rim being sufficient to hold the lines in place. For a long column of matter, two or more double springs may be used.

Another kind of galley lock consists of a side stick of brass fitted with a long double wedge which spreads when it is pushed together, thus giving a pressure against the rim of the galley. The foregoing appliances provide for a lock-up at the side of the column only. It is often necessary to hold the matter at the foot of the column also, especially in the case of small type lines. This is commonly done with a large piece of printer's furniture or a block of metal pressed against the column and held firmly while rolling the column with the hand roller.



Fig. 19. Galley Lock for side only.

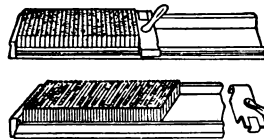


Fig. 20. Galley Lock at foot only, for Linotype matter.

There are, however, galley locks which have a foot clamp as well as a side stick. (Fig. 20.) These are naturally more elaborate appliances and have not been commonly employed. In composing rooms handling a large amount of type composition, either hand-set or Monotype-cast, their advantage is unquestioned if the work of the room is carried on in a systematic, careful manner.

A special small galley, very convenient for individual use, is that known as a distributing galley, for holding lines of miscellaneous job type when distributing, or for special lines or material to be used in composing or making up. It is made of wood, can be held in the hand, weighs about 8 ounces, is 4 x 6 inches in size, and has several lateral compartments in which odd lines, special characters, or other material may be sorted as they are taken from the form, each kind ready to be distributed at one time in the proper case. It is a handy holder for small lots of special material on the workstand or to



Fig. 21. Showing use of Distributing Galley.

be carried where needed. A small shallow box of any kind may be readily adapted for this purpose.

A Page Gage

This is a measure by which to gage the length of pages in a book or publication in order that all the pages may be of uniform depth. Roughly, a page gage may be a piece of reglet with a notch, but this is not very exact. A strip of stout waste brass rule or even a piece of steel is better. If it is to be used for some time, it should be properly marked and kept at hand. Often times a good steel type measure marked off in ems will serve for temporary use. A page gage is needed when making up, and is laid beside the upper side of the page on the galley while leads or other blank lines are added or withdrawn to make the page the desired length. The gage usually covers the entire length of the

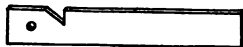


Fig. 22. Page Gage.

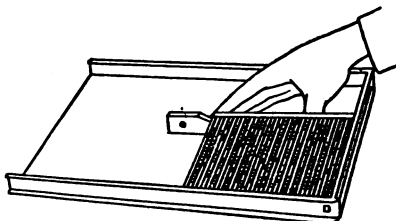


Fig. 23. Showing use of Page Gage.

page. If uniform divisions are to be kept in certain parts of the page—like an allowance for chapter heads, running heads, foot-lines, etc.,—these may be indicated on the page. In good work the uniformity of corresponding parts of a series of pages is important. The use of a carefully made gage will help to preserve this uniformity. A more accurate page is made if the measure is taken from a page locked up, so that the compression of a loose page can be allowed for.

A modern convenience is a make-up galley of brass, on the head and side rims of which a scale of picas is marked off both ways from the corner.

Page Tie-ups

The usual manner of binding a page of composition on the make-up galley, until it is placed in a chase to be locked with quoins, is by means of a piece of stout string wound around four to eight times and fastened at the corners. In rooms where there is a great deal of type work done the time spent in tying up pages is considerable. The work is often done carelessly and insecurely. A proper supply of good string is necessary if this detail of composing-room work is to be inexpensive; but any supply is inadequate and costly if it is not kept conveniently or is not in good condition when needed. A ball of stout white twine near at hand for individual use or an assortment of the lengths mostly used, systematically folded up and kept in the apron pocket, will save time and temper and will indicate the habit of a good workman.

Several devices have been invented to obtain better results and to save time. An assortment of stout rubber bands will sometimes serve the purpose satisfactorily. Other devices have proved suitable for pages of uniform size, where the

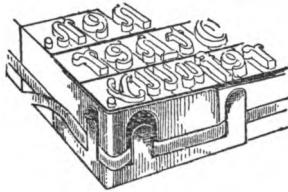


Fig. 24. Fastening of Hancock Page Tie-up.

This consists of an angle plate to fit the outside corner of the page; a stout, flat tape fastened to one end of the angle is drawn around the page once and the end inserted in the clips of the plate, the tape fitting snugly enough in the clips to hold the page securely.

device is used fairly and carefully. For general use, however, on miscellaneous pages of varying sizes, no patented device has yet been extensively adopted.

Thin Spaces and Justifiers

Careful justification of type matter and greater nicety of spacing is required now more than formerly, and it is the part of wisdom for a compositor to be provided with the material which will enable him to do this in the most convenient and economical manner. In job and advertisement composition, especially, spaces thinner than those usually provided with the regular fonts are frequently needed. A sufficient assortment of these extra justifiers and a convenient receptacle for them will be found a desirable adjunct to the compositor's outfit. All dealers now furnish copper ($\frac{1}{2}$ -point) and brass (1-point) thin spaces for all the usual type sizes, as well as any special material of this kind, at small cost. For nice justification these are much better than the customary bits of cards. They are more accurate and durable, and being usable over and over again they are not so liable to be left to litter up the cases, workstands, etc.

For the larger sizes of bodies and for thicknesses greater than 1-point, short lengths of ordinary leads can be used. In many composing rooms there is the wasteful practice of accumulating a boxful of odd-length and damaged leads, out of which each compositor scratches for what he may happen to need. If these discarded pieces are cut into standard lengths to correspond with type sizes, say 24-point up to 72-point, and kept in a small case with plainly marked boxes for each size, and the case is conveniently placed and regularly cared for, it can be made to serve a constant need at small expense.

If the supply of waste leads from the regular work does not meet the demand, it will pay to use new leads for the purpose. There is a common notion that cutting up short pieces of leads is a wasteful habit. The waste is not in cutting the leads and having enough short pieces if they are needed, but in not properly caring for them when they are

provided and throwing them away after being once used. It seems as desirable to provide and care for spacing material of this kind as for any other spaces.

The dealers supply small cases for copper and brass thin spaces in sizes from 8-point to 72-point. These cases can be placed near the type case or wherever needed. For large quantities and for space leads of 2-point, 3-point, 4-point, or thicker, other small cases can be easily provided. The kind used for leaders and for special figures may be readily adapted by subdividing the larger boxes with reglet or slugs.

The point should be emphasized that while the provision of this minor material may or may not seem important, it is very important that it should be systematically cared for. The original cost of the material is relatively small; the extravagance of it is almost wholly in the slipshod manner in which it is so often un-cared for. The waste of time in looking for little things that are not conveniently placed is one of the serious items of printing-room loss.

Leads and Brass Rule

The thin strips of metal placed between the lines of type to give a more open appearance to the composition are known as leads (pronounced *leds*). These are now made in

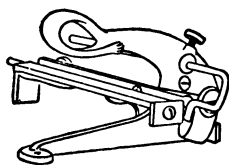


Fig. 25. Lead Cutter.

two widths (or heights, starting from the bottom of a type and measuring to its face), low leads and high leads, the former generally used in type composition to be put on the press for printing, and the latter, reaching up to the shoulder of the type, used in connection with high spaces and

quads for forms to be molded for electrotyping.

Leads are made in thicknesses varying from 1-point to 6-point. Leads of 2-point thickness are most used. The sizes of 6-point and thicker are, however, called slugs. Those commonly used are made of soft metal, chiefly lead with a small addition of antimony, by a special process of manufacture, in which the casting is done in a continuous

strip, passed through a shaving apparatus, and then cut into lengths of two feet. Leads are also cast on the Linotype and Monotype machines. Special leads are sometimes made for special uses. In newspaper composing rooms brass "leads" are used because of their greater durability.

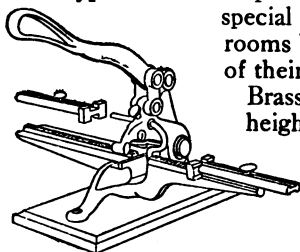


Fig. 26. Lead and Rule Cutter.

Brass rules are of a width equal to the height of type, of various thicknesses and many styles of face. They are largely used in composition where plain lines are to be printed. The highly durable quality of brass makes it preferred for running lines and

other pieces which must be used often, because a softer metal will wear and crumble easily on the fine lines. The common kinds of brass rules are made in strips of two feet long.

Leads and brass rules are usually furnished for the compositor's use in assortments of standard lengths, termed labor-saving fonts.

These are kept in special cases having small compartments, each suited to the length of the pieces it holds. Lead and brass rule cases should be placed in some convenient place near the compositor's workstand, where they may be readily reached when needed.

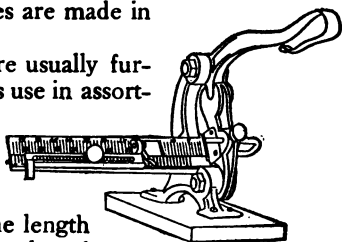


Fig. 27. Lead and Rule Cutter.

Lead and Rule Cutters

These tools, as their names indicate, are for cutting and fitting material which the compositor is constantly using. The greater part of composing-room material is now standardized as to sizes and a large part of the work can be performed with the usual supplies furnished for the department. There is, however, frequent need in nearly every composing-room for some extra supplies or for occasional special

sizes which the compositor may be called upon to use. The supply of labor-saving leads on hand must be constantly added to; larger quantities of certain sizes that are in stock may be called for, and the proprietor or superintendent may, for convenience or economy, order the material in uncut strips.

A lead and rule cutter is therefore a necessary part of the composing-room outfit, to cut up this extra supply and to cut special lengths. This is especially the growing practice of later years in regard to brass rules. Except in routine work or in standardized publications, it is rarely practicable to have on hand all the rule faces that may be called for. A special kind may be required at times and the compositor needs the cutter and mitering machine to trim the rules to the desired length.

The earlier labor-saving fonts of brass rule, in which short pieces were mitered at one end and joined at the other square end with pieces of a similar face, do not now suffice. Buyers of good printing and careful typographers are not satisfied with rules which show gaps and corners at which the rules do not come together evenly. The careful compositor must consider these details of his work; he may not be praised for doing his work properly but he surely will be criticized for such evidence of poor work.

A simple style of lead cutter is that shown in Fig. 25, consisting of a bed-plate 8 or 12 inches long, upon which the lead is placed, with a cutting edge which meets a knife on the lever. This kind of a tool is strong enough to cut ordinary leads but not for thick slugs or brass rules.

The commonest form of this appliance is the combination lead and rule cutter. This is made in a variety of styles by different makers. In these there is a double bed-plate,

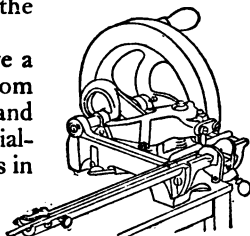


Fig. 28. An early style of Rule Cutting and Mitering Machine.

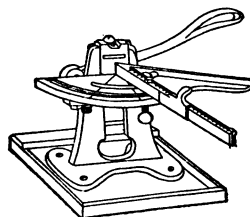


Fig. 29. Upright Mitering Machine.

one part (in front) for leads and the other (in back) for cutting brass rules. The knife on the cutting lever has two edges. That for leads has an edge exactly parallel with the under cutting edge, so that it chops off the lead with a uniform pressure across the width of the strip. The knife for brass has the upper edge ground at a slight angle and the cutting is done like that of a shear. The back of the knife lever, being nearer the post, gives the greater power necessary to shear off the tougher metal.

Another feature of modern cutters of this kind is the gage by which lengths of standard 6-point and 12-point multiples may be cut. The face of the bed-plate is marked off in numbered units, and there is a sliding gage which can

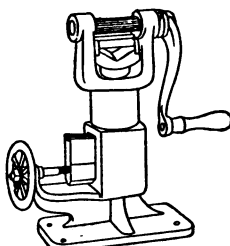


Fig. 30. Brass Rule Bending Machine for making curves, etc.

be moved to the desired position and held in place automatically by spring-pressed teeth fitted into notches in the gage rod. The proper use of a tool like this insures accuracy and uniformity in the sizes.

On many of these machines there is also an extension gage outside of the knife in addition to the gage on the bedplate. This front gage is useful for cutting quantities of short pieces — 2, 3, or 4 ems long. By setting the gage and pushing the strip of lead or brass up to the gage, it is then cut off and drops down, allowing the rule to be pushed along for the next cut.

Mitering Machines

The right joining of rules at corners of a panel or a page is a matter requiring some care. It is usually a good test of a compositor's mechanical skill. There are two ways in which the joining is done. In the case of plain faces that cover the body of the rule, or are made flush on one side of the rule, the faces may be joined by simply placing the squarely trimmed ends together at a right angle. Most of the rule faces in common use, however, cannot be joined

at a corner unless the ends are mitered or trimmed off at a bevel, usually at an angle of 45 degrees. When the face is made away from the extreme edge of the rule the two pieces of a right-angle corner must be beveled alike, though in opposite directions. These bevels must be made with nicety to form good joints.

Early compositors used a file for the purpose, depending upon the eye and hand to get true bevels. This was a laborious method and required time and skill to obtain good results.

Later a steel plate, with a beveled end for a guide, and a clamp were employed to hold the rule while the end was beveled with a file.

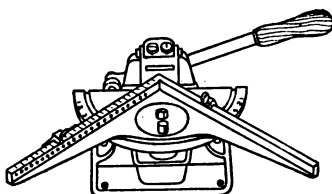


Fig. 31. Hansen Mitering Machine.

As the demand for better work of this kind increased improved devices were invented. An early one of these rule shaving and mitering machines is shown in Fig. 28. This was known as the Mitchell and was operated on the principle of a machine lathe. The table upon which the rule is held has a reciprocating motion controlled by a crank which moves it back and forth under a cutting tool fitted to a head. This head has a device for automatically lowering the point of the cutting tool at the end of each return movement. This machine has the advantage of cutting a number of pieces of one length with precision; but it is not quick or convenient, requires considerable skill to operate satisfactorily, and is not much used.

The style of rule shaving machine which has proved most popular for printers' use is that known as the upright mitering machine. This style is illustrated in Figs. 29 and 31. It has a cutting knife fitted in a sliding block between the two parts of an upright post, and is operated up and down by a lever. The knife moves past the edge of the table upon which the rule is held in place firmly, and it is adjustable to make a thin or thick shave from the rule, as may be required. The rule holder is adjustable over the

table to give any variety of angle in the cutting, there being usually a scale to guide the operator. There are also gages which may be set to trim a number of pieces to the same length, gaged to 12-point, 6-point, or other units. An extra attachment is made for clamping the rule tightly to the holder, so that the cutting may be done with precision.

Usually machines of this kind should be fastened to a strong table conveniently situated and properly lighted. Sometimes the smaller styles are fastened to a strong board, so that they may be moved from place to place if necessary. All cutting and shaving machines should have a surrounding base enclosed with a rim or raised ledge to keep the trimmings from being scattered over adjoining work benches or on the floor.

A Type-High Gage

Usually it is taken for granted that all the type, initials, borders, brass rules, mounted electrotypes, and similar material furnished to go into a printing form is reasonably accurate as to height of face and that when it is assembled in a page it will all present a uniformly level surface for the press tympan. In practice this is far from the real condition, especially in the case of many kinds of miscellaneous composition. The necessity for preserving uniform height of the face of a page is obvious. A careful compositor will seek to have his work in reasonably good condition in this respect, as well as to have his lines properly justified, when it goes from his hands to the imposing table or to the press. For this purpose a convenient tool is a small type-high gage with which he may readily test any electrotypes or other item which does not appear to be right. There are several styles of these gages furnished by dealers. The style shown in the margin is a common form, having strong fixed jaws with an opening .918 of an inch, or type-high. Its use by the compositor on any doubtful item, together with a proper rectification of

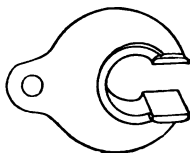


Fig. 32. Type-High Gage.

the inaccurate height, will not only save expensive time and bother at a later stage of the work, but, in case of over-high plates or types, will save the printing quality of the form. Unless this precaution is taken there is almost certain to be extra hard proof impressions of these over-high faces and serious damage may be done before the form is ready for the final printing.

Type-High Planers and Saw Trimmers

The use of engraved plates, electrotypes, and material other than cast type is now so common in nearly all classes of printing that in every composing room more or less cutting, trimming, and mortising of printing blocks is required. To do this work without proper tools is expensive and the results are usually unsatisfactory. The brass rule mitering or shaving machine, when handled carefully, will often suffice to trim small blocks one inch or less in size.

For large blocks, however, the type-high planer or the plate trimmer is necessary to obtain accurate results. There are a number of kinds of these tools, some for one purpose only and some adapted for several different purposes. Machine inventors have of late years been devising tools of this kind especially adapted for the printer's use, and in many large composing rooms these are now considered as necessary as proof presses and mechanical quoins. An intelligent knowledge of how to

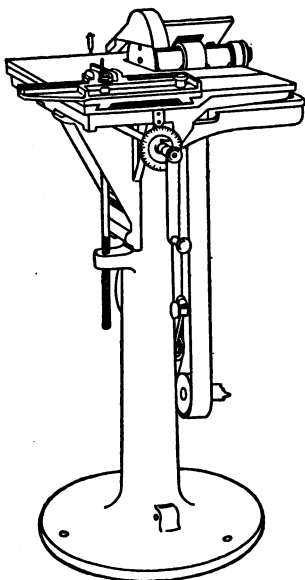


Fig. 33. The Miller Saw Trimmer, for trimming, planing, and mortising blocks.

handle them should be a part of the all-round compositor's training.

The type-high planer is made in several styles. The common apparatus consists of a flat steel table on which the plate is held face down. One style has a cutting tool in the side of a large wheel which rotates horizontally over the base of the block. Other styles have either regular revolving planer knives or straight-pull knives.

The essential features are a place to hold the block without injury to its face and a cutting tool which will shave off the bottom smoothly all over. The block should be trimmed so that it will lie absolutely flat on the imposing surface, with no tendency to rock on the corners.

It should not be left more than type-high; if there is any variation in height, it should be slightly less, rather than more, as the height of the face may be easily raised by paper or card underlay.

A simple and inexpensive tool for accurately trimming a printing block is not easy to make. An apparatus which depends chiefly upon the skill of the operator is often unsatisfactory; one person can get good results, another person poor results. A cheap tool is sometimes the most expensive, especially where much hurried work is required. If there is relatively a small amount of this work to be done it may be economy to send the block to the engraver or the electrotypier for trimming. Generally, however, it is desirable to have some kind of a tool at hand for emergencies, as it is often necessary that work of this kind must be done quickly.

The exact trimming of the sides and bottoms of printing plates is of great importance. All sides of a block should be at precise right angles with the face and bottom. Any variation in this respect will be sure to result in a lock-up of the form that will not lie solidly on the imposing table, or, if apparently so, will later spring in the form on the press. When in doubt about the accuracy of a block in this respect, try a small steel square on it.

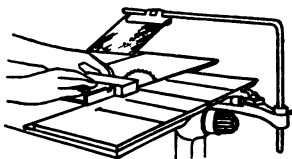


Fig. 34. Saw Table of the Miller Electroplate Trimmer.

SUGGESTIONS TO STUDENTS AND INSTRUCTORS

The following questions, based on the contents of this pamphlet, are intended to serve (1) as a guide to the study of the text, (2) as an aid to the student in putting the information contained into definite statements without actually memorizing the text, (3) as a means of securing from the student a reproduction of the information in his own words.

A careful following of the questions by the reader will insure full acquaintance with every part of the text, avoiding the accidental omission of what might be of value. These primers are so condensed that nothing should be omitted.

In teaching from these books it is very important that these questions and such others as may occur to the teacher should be made the basis of frequent written work, and of final examinations.

The importance of written work cannot be overstated. It not only assures knowledge of material but the power to express that knowledge correctly and in good form.

If this written work can be submitted to the teacher in printed form it will be doubly useful.

QUESTIONS

1. Name the chief tools a compositor needs for his individual use?
2. What is a composing stick?
3. What qualities are desirable in a composing stick?
4. Describe the earliest composing sticks, and tell when changes were made in them.
5. What was done to improve these sticks?
6. Describe the screw stick.
7. What is a news stick, and where is it useful?
8. How can a stick be made to contain two measures?
9. Describe the Grover stick.
10. Describe the Yankee job stick.
11. Describe the Buckeye stick.
12. What structural weakness is common to the styles of stick, and how may it be remedied?
13. What devices have been used to correct register in composing sticks?
14. What defect is found in most sticks heretofore common?
15. Describe the Standard composing stick.
16. What disadvantages have these sticks, and what has been done to remove it?

17. Describe the Star composing stick.
18. Give the common sizes of composing sticks.
19. What difficulty is met in using metal composing sticks, and how is it overcome?
20. What is a composing rule, and how is it used?
21. What is a make-up rule, and how is it used?
22. What is the use of bodkins and tweezers?
23. What is the danger in the use of tweezers?
24. What is a galley?
25. Of what material are galleys made, and what successive improvements have been made in their construction?
26. In what sizes do galleys commonly come, and what is the general use of different sizes?
27. How was the old-style wooden galley made and what are its advantages and disadvantages?
28. What is a peculiarity of linotype galleys?
29. How high is the usual galley rim?
30. What are the advantages and disadvantages of pressed steel galleys?
31. Describe an old-time slice galley and its use.
32. Describe a mailing list galley.
33. What is a galley lock?
34. Describe a common method of locking type in a galley.
35. Describe the spring device sometimes used.
36. What is done when a lock is needed for the foot of the galley?
37. Describe a distributing galley and its use.
38. What is a page gage, and how is it made?
39. How are pages of composition held in shape?
40. What are leads, and how are they made?
41. What are brass rules, for what are they used, and why?
42. How are leads and brass rules usually kept?
43. What are lead cutters and mitering machines, and what is their use?
44. What are thin spaces and justifiers, and why are they needed?
45. What is the wrong way and what the right for keeping this material?
46. What is important in preventing waste of this material?

- 47. What is a type-high gage, and why is it necessary?**
- 48. What difficulty arises in the use of material other than foundry-cast type in making up printing forms.**
- 49. What makes this difficulty hard to remedy?**
- 50. Name the kind of tools commonly used for trimming printing blocks on the sides and bottom.**

ADMAN — A compositor who sets advertisements, as on a newspaper or other publication.

ALLEY — The floor space between two work stands or cabinets.

ANNEX BOX — A small wood or metal cup or box attached to a type case for holding extra or special characters.

BANK — A high table with the top inclined, upon which composed type is placed temporarily. See Dump.

BELLOWS — Used for blowing out dusty cases, etc. An air pump is now often used for this purpose.

BENZINE — Commonly used for washing ink from type, rollers, etc.

BLANK CASE — A large wooden tray without partitions, or with one partition only.

BODKIN — A slender awl, often combined with tweezers, used in correcting type in the form, etc.

BOOK ROOM — A composing room in which books are the chief work done, in distinction from a job or news room.

BOX — A subdivision of a type case, in which a quantity of types of one kind is kept.

BRACKET — An arm or support, usually of metal, to hold cases on top of a stand, to hold galleys, etc.

BRASS SPACES — These are made 1-point thick and in sizes to match the different type bodies, for nice justification of type lines, etc.

BRASSES — Strips of brass used as leads in newspaper composing rooms; more durable than ordinary leads.

BROWER QUOINS — A form of iron quoin similar to the Hempel.

BEVELED STICKS — Side and foot sticks of wood or metal thicker at one end than the other, beside which wooden wedges are placed, to lock up type forms, to hold type columns firmly on galleys, etc.

CAP. — Abbreviation of capital; small cap., a small size of capital letter.

CHAMFERED RULE — Old-time term for mitered rule.

CLUMP — English trade name for a metal slug.

COMPOSING (not compositing) — Setting type.

COMPOSING ROOM — That part of a printing establishment in which type is set, proofed, imposed, locked up, and made ready for the printing press.

DEAD — Said of composed type or a printing form that has been used and is ready to be distributed or destroyed.

DISPLAY TYPE — General term applied to larger types used for headings, advertisements, etc., in distinction from types used for plain reading.

DISTRIBUTING — Putting types back in their respective boxes after use.

DUMP— The place in a composing room where dead matter is kept until it is distributed; sometimes said of a standing galley where compositors place their composed lines to be assembled for proving, etc. See Bank.

FONT— An assortment of type or other composing-room material, usually pieces which may be used interchangeably and in different combinations; a font of type, of brass rules, of metal furniture, etc.

FORM— The assembled material used for printing, usually locked up for the press. The English spelling of this word is *forme*.

FURNITURE— In printing-office speech this term is used to mean small pieces of wood or metal designed to fill blank spaces; larger than quads, leads, and slugs. Furniture is placed between pages and around forms locked in chases. It is supplied in assorted lengths and sizes and is of various styles.

GALLEY— A shallow tray used by compositors to hold type after the lines have been set and transferred from the composing stick.

GALLEY LOCK— A special device for holding composed type in place on the galley while proof is being taken.

HAIR SPACE— A very thin space, less than the five-to-em, for justifying or spacing type lines.

HEIGHT-TO-PAPER— The height of type or a plate in a printing form; the standard is .918 inch.

HELL BOX, OR HELL— The box or receptacle into which broken or discarded type is thrown.

JOB COMPOSITOR— One who does many kinds of composition, in distinction from a book or newspaper hand.

JOB GALLEY— A short galley to place on the work stand for making up pages and small forms.

JUSTIFIERS— Very thin spaces of copper, brass, or other metal, used for accurate justification; also applied to any blank material used to fill out forms for locking up.

KNEE— The movable angle piece, or slide, which fixes the measure of a composing stick.

LABOR-SAVING— Said of assortments of leads, rules, furniture, etc., provided in assorted sizes. The sizes are commonly multiples of 6-point or 12-point, and several small pieces may be combined to fill a large space, thus saving the labor necessary to cut each piece to fit its place.

LEAD— A thin strip of soft metal used to place between lines of composed type, to open up the reading matter, etc.

LEADERS— Dots or periods placed at intervals along the line to lead the eye to figures or words, or to indicate spaces to be filled in blank forms. Hyphen leaders are composed of hyphens or short dashes.

LETTER BOARDS— Movable shelves in racks, or under imposing tables, to hold standing type matter, etc.

MAKE-UP—The preparation of composed matter into pages of the required length, with headings, page numbers, etc.

MATTER—Composed type.

MEASURE—The width of a column or a page; the length of the line in the composing stick.

MITERING MACHINE—A small bench machine used to miter and shave the ends of brass rules, etc.

MORTISE—To cut out the side or the interior of a block or electroplate, to allow closer placing or insertion of other matter.

NEWS STICK—A composing stick with a fixed measure, as for the established width of a newspaper column.

PAGE GAGE—A measure to establish a uniform length of the pages in a book or other work.

POSTER STICK—A large wooden composing stick used for large types, posters, etc.

REGLET—Thin strips of wood, similar to thick leads; used for making up large pages and filling in forms.

SCREW STICK—A composing stick in which the knee is held in place by a long screw bolt.

SLIDE—Another name for the movable knee of a composing stick.

SLUG—A thick lead. See Clump.

TIE-UP—A string, strap, or device used to bind together a page of composed type until it is ready to be locked in a chase.

TWEEZERS—Small nippers for picking up types and other small pieces, especially in correcting in the form and on intricate composition.

TYPE-HIGH PLANER—An instrument for planing off the bottom of electrotypes or other printing blocks to bring them to the exact height of type.

TYPE MEASURE—A strip of card, wood, or steel having its edges marked with scales indicating ems of type sizes; usually only the sizes up to 12-point are given.

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THE following list of publications, comprising the **TYPOGRAPHIC TECHNICAL SERIES FOR APPRENTICES**, has been prepared under the supervision of the Committee on Education of the United Typothetae of America for use in trade classes, in courses of printing instruction, and by individuals.

Each publication has been compiled by a competent author or group of authors, and carefully edited, the purpose being to provide the printers of the United States—employers, journeymen, and apprentices—with a comprehensive series of handy and inexpensive compendiums of reliable, up-to-date information upon the various branches and specialties of the printing craft, all arranged in orderly fashion for progressive study.

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The Committee also desires to acknowledge its indebtedness to the many subscribers to this Series who have patiently awaited its publication.

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