

## LESSON ONE

Printing Terms and Names

As befits an old and honorable vocation, printing has acquired, over the past four hundred years, names for various tools of the trade which reflect its history. Printing is also an up-and-coming business, with many changes during the past few years, so in addition to the old names, there are new ones for recent accessions to the printer's equipment. Perhaps many of them are familiar to you already, but a review will not hurt.

Measurement By "Points"

Type is manufactured on the point system, which was adopted by the majority of type foundries in 1887, after many years of argument, and much confusion. Previous to that, type sizes were named, but unfortunately the name size of one founder was often different than another's. If a printer bought pica size type from a type founder, he could not be sure that it would match what he already had on hand. Obviously this was a serious condition, but the high cost of changeover for the type foundries prevented action. Finally, in 1878, one foundry burned down, and its owners took the opportunity of beginning anew on the point system. Within ten years the rest followed suit.

In the point system of measurement the inch is equal to roughly 72 points. Actually 72 points equal .99648 of an inch, but for all practical purposes we can consider them equal to the full inch. Twelve points equal one pica. Half a pica, or six points, is a nonpareil, but that is not so important as the point-pica relationship.

Standards in other countries do not entirely follow ours, but we need not consider them here. American type is .918 of an inch high, which is likewise different than many foreign standards.

Measurement By "Ems"

Equal to the point measurement in importance is the way widths of type are calculated. They are based on the em, or square. A six point piece of type an em wide is actually six points wide, the eight point is eight points wide. The em, therefore, varies with the size of the type. Half a square, or half an em is called an en. Spaces which are one-third the width of an em are called 3-em spaces (really they are 3-to-em) and a quad three ems wide is known as a 3-em quad. Thus the scale works two ways from the 1-em quad; wider, 2-em, 3-em, narrower, en space ( $\frac{1}{2}$ -em), 3-em space, 4-em space, 5-em space. The thinnest



space, the hair, is not exactly divisible in the em, but varies between one and two points, depending on the size of the type. As a matter of fact the bigger ones are actually cast to the nearest width in points or some easily divisible size thereof. Since letters are likewise point set (as it is called) the spacing of lines is greatly simplified over what it would be if the older, strict division of the em were used, regardless of point measurement.

For example, take 8 point. Four em spaces are cast 2 points thick, 3-em spaces three points, and en spaces 4 points. All figures in most styles of type are cast en-quad, (in 8 point, for instance, four points thick), so that columns of figures can be easily set and corrections made without respacing.

While strictly speaking a printer probably should say a given column is 12 picas (2 inches) wide, he will usually call it 12

ems — that is, 12 pica ems. If not otherwise noted, a width or length in ems is equivalent to the same number of picas. The pica and pica em is the only survivor of the old days when names were used for type sizes. Old timers call 6 points a nonpareil, but that custom is gradually dying out.

### Point and Standard Line

In the old days there was no uniform position on the body for the face of the type. As a result no two styles of type could be used in the same line without being in a ragged up-and-down formation, unless cardboard, paper or leads were used at top and bottom to jockey them into line. This was eventually cured by placing the face in a standard position on the body, so that all type of a given class and size will line together. The largest part was put on what is called Common Line. Type having caps only — no lower case — could be put on a lower line, as it did not have to allow for letters like y, g, etc. Type like Copperplate Gothic is cast on what is called Title Line, which gives the opportunity of getting bigger letters on the body. On the other hand there are some faces, like the scripts which have such long loops or descenders that they must be put higher on the body, and these use Art Line. Common

**TITLE** Common Art Line

**TITLE** Common Art Line

*Illustration shows three of the four standard lines and how they can be aligned using 11-point leads. Specimens shown are on 12 point body.*

Line, Title Line, Art Line, and one other, which provides for even longer descenders — Ultra Line — are called Standard Lines.

Type is further made workable together by so casting the differ-

## **TWELVE & EIGHT POINT IN 1**

*Illustration shows two sizes of type aligned by using one point leads.*

ent point sizes that you can, if you wish, use for example, six and eight point together or any other combination with spacing materials of point dimensions. This is point line.

### To Sum Up

If you keep in mind that for all practical purposes there are 72 points or 6 picas in an inch, and that an em is the square of the size type you are working with, you'll have the basic printer's measurements in hand, and be able to understand catalog and other descriptions.

### The Spacing Materials

#### A Printer Uses

Type, cuts and other devices for making printed impressions must be kept in their proper places, not only in the printing frame or chase, but in relation to each other. For this the printer has a variety of articles.

First he has spaces and quads, which, if the printing art were not slightly encrusted with names for things dating back hundreds of years, would probably be called just spaces. When they are thin, such as are used between words, they are called spaces. If they are bigger, such as used at the end of sentences, they are called quads. Their various sizes will be found under "Measurements by Ems".

The printer must be able to have a greater or lesser space between lines, and for this he has leads and slugs made of metal similar to that in type, but a little softer. Once again, a slug is nothing but an overgrown lead. If it is one to five points thick it is called a lead. If it's six or more points thick, it is called a slug. Otherwise, there is no difference,



*Leads in various lengths*

and they are all used for the same purpose. Leads and slugs are made in strips 24 inches long, and come in ten pound packages. They may also be purchased cut to various lengths. The printer will find it better to purchase a lead cutter, so that he can buy them in the standard 24 inch lengths and cut to size as desired. For use, see "How to Set Type" in Lesson Three.

For filling spaces greater than six points, and for use around the whole form — on all four sides — there is wood reglet and furni-



*Wood Reglet and Furniture*

ture. As with spaces, quads, leads, slugs, the difference between the two is of size. Those below two picas in width are called reglet, from the French word for rule. Two pica or larger are called furniture. Both come in yard lengths which may be sawed up into any desired size, and there are so-called labor saving assortments of various lengths and quantities.

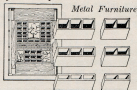
Four pica (48 Point) wood furniture is almost square, so the top is grooved to make easier the correct use of it in the form. In other words, the 4 pica side is grooved, and it should be placed in the form either up or down, but not sideways.

Reglet and furniture comes in cut sizes, as well as in yard lengths. The easiest way to cut it is with a circular power saw, which, if it has a metal cutting blade, can be used for leads and

slugs as well. However, any fine tooth wood or metal saw will do.



Aside from wood furniture, there are metal quotations and metal furniture, which supplement large quads and wood furniture. Here again we have a slight distinction in names, but based on the method of manufacture rather than the size. The outside dimensions are the same, and both are more or less hollowed out in the center to save metal. Quotation style furniture, which is cast on type casting machines, is not made so big as the ordinary kind. Sizes start at 2 x 4 picas (24 x 48 points) so it is obvious that metal furniture can be used not only for filling in blank spaces in a type form, but at the ends of lines of type 24 points in size or greater, in place of quads.



Wood can shrink and swell, although printer's wood furniture is well oiled to prevent warping or changing in size as far as possible. The older it is, the more likely it is to be inaccurate. Metal furniture, either the quotation variety or the ordinary, is absolutely accurate, and stays that way.

Iron furniture is made in large sizes, and is also very accurate. It costs more than type metal furniture because it requires more finishing. So called railroad furni-

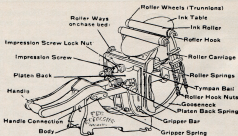
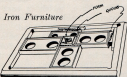


Diagram shows names of the parts of an Excelsior Press

ture is made roughly like an I-beam. On the whole, however, those first described are the mainstays of the job printer.



In printing language, metal always refers to type metal or some similar alloy. If some other variety is meant, like brass or iron, it is so designated. Metal rule is a type metal variety, brass rule is never called that.

One point spacing material 24 inches long is also available in brass. For half point strips there is copper of the same dimensions except thickness. Both the brass and copper are cut up into point sizes, six point, eight point, etc., and used for thin spaces between letters and words. They are then designated as brass and copper thin spaces. Brass one point leads have one advantage over metal leads in that they are more durable, but they cost more, and in shops where much linotype or similar material is used, and thrown into the melting pot with-

out reuse, the type metal kind are preferred because they can be melted along with the rest of the form, eliminating the trouble of picking them out.

When a type form has a border or rule around it, corner quads are often used to bind the corners firmly together. Corner quads are

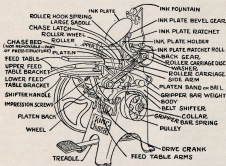
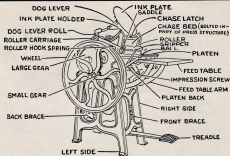


ell-shaped pieces of type metal or brass, two or more points in thickness, and usually 4 picas long on each side. Mitered corners are especially helped in appearance by them, and they prevent shifting of the border or rule when the form is in the press.

### Press Parts and Their Names

With the multiplicity of presses on the market, it is not possible to go very deeply into the names of various press parts, but contact with many printers, when they want to purchase very common replacements, indicates there is much confusion.

Shown here are diagrams of a hand press and a couple of simple treadle or power jobbers. While the names used by various manufacturers for similar parts is not



always the same, there is enough similarity so that familiarity with one will help you in identifying parts on others.

A good example of the number of names for a single part may be found in the wheels or trunnions which are used on each end of the inking rollers. While most manufacturers either call them wheels, trunnions or trucks (this last is hardly correct descriptively), we have seen almost twenty other terms used for the same article.

Another confusing term is gripper, or gripper finger, or gripper bar. The gripper bar is the bar on which the grippers (which hold

the paper to be printed) are mounted, and they are adjustable for handling large or small stock. Gripper fingers are small pieces of metal which may be placed on the grippers in various positions. If the margin on the job to be printed is insufficient for using the grippers themselves, gripper fingers can often be so mounted that they hold the stock without interfering with the printing surface. In such cases the grippers themselves are set at the sides where they will carry the fingers to best advantage.

The circular plate on platen presses which carries the ink is variously known as the ink plate,

ink table or ink disc. The rollers and wheels are fitted into roller hooks on some presses, on others into saddles or trucks, which move them up and down between the ink plate and the chase, which holds the form of type, etc. The hooks or saddles are carried by a roller carriage, which is actuated by toggles, gears, or various mechanisms, depending on the make and kind of press.

The chase rests against the chase bed, and is held in place by a latch. The paper or card stock which is to be printed is placed on the platen (pronounced platen), and the platen is supported by the platen back. Some presses have large bolts or screws for regulating platen pressure, impression or position, others have cams or similar devices.

The rollers travel up and down ways or tracks, which, if the rollers are cast to the proper diameter, will give the correct amount of contact between roller surface and type form. Adjustable wheels are sometimes used to compensate for shrinking or swelling of rollers. When, in spite of everything, the rollers instead of turning properly, slide or slur over the form, bearers or supporters may be locked into the chase beside and parallel to the ways. These provide bearing surface for the roller composition itself, and keep the rollers turning. On large work this is not often necessary, but when it is, or if an impression of the bearers transfers to the stock being printed, a piece of stiff paper or cardboard is glued to the grippers in such a position that it will come between the bearers and the stock.

On most treadle and power presses, a device called a throw-off is used to release the impression if the sheet is not fed straight or if it falls down out of place. Without this it would be

difficult to stop the press in time to prevent paper spoilage. The throw-off usually works by cam action on the platen back, directly or indirectly, but however designed it results in keeping the platen from making contact with the type form. The throw-off lever is on the left hand side of the press, where it can be easily moved by the operator.

The tympan material (paper, pressboard, etc.) on the platen, the padding against which the sheet to be printed rests, is held in place by tympan bails — bands of metal which slip over the top and bottom edges of the platen and keep the tympan smooth and taut.

The press may or may not have an ink fountain, which acts at the top of the ink plate to provide a continuous supply of ink on long runs of good size work which would otherwise require frequent stopping of the press for re-inking.

Nowadays there are all kinds of rollers, but no matter what they may be made of, the surface they present to the ink and type form must be approximately like the ball or inside of your hand — firm, but pliable.

They should be free from pits and cuts. Care should be taken when running jobs with rule in them that they do not damage your rollers. An extra, older pair can be advantageously kept on hand for use on such jobs which are likely to damage your good ones. Most rollers of standard printer's composition will retain their condition best if kept coated with oil when not in use.

If the printer is familiar with such comparatively simple presses as these, he should be able to master more complicated machines without too much trouble, given adequate instruction material for the particular kind to be operated.

**Handy Estimating Table**

	Size of Type, points								
	6	8	10	12	14	18	24	36	48
Weight of 1 line (36 picas long) ounces.....	2	2½	3¼	4	4¾	6	8	12	16
Number of lines (36 picas long) to a pound.....	8	6	4¾	4	3¼	2½	2	1½	1
Number of inches to a pound.....	48	36	28¾	24	20½	15	12	8	6
Number of picas to a pound.....	288	216	172½	144	121¾	96	72	48	36
Number of ems to a pound.....	576	324	307	144	106	64	36	16	9
Number of points to a pound.....	3456	2592	2073	1728	1486	1152	864	576	432

**Number of Leads to a Pound**

Length	1 point	2 point	6 point
4 pica	390	195	65
5 "	312	156	52
6 "	260	130	44
7 "	222	111	36
8 "	195	97	32
9 "	173	87	28
10 "	156	78	26
11 "	142	71	23
12 "	130	65	22
13 "	120	60	20
14 "	111	55	18
15 "	104	52	17
16 "	97	48	16
17 "	92	45	15
18 "	87	43	14
19 "	82	41	13
20 "	78	39	13
22 "	71	35	11
24 "	65	32	10
30 "	52	26	8

**Ems in Square Inches of Type**

Square Inches	6 Pt.	8 Pt.	10 Pt.	12 Pt.
1	144	81	52	36
2	288	162	104	72
3	432	243	156	108
4	576	324	208	144
5	720	405	260	180
6	864	486	312	216
7	1008	567	364	252
8	1152	648	416	288
9	1296	729	468	324
10	1440	810	520	360
11	1584	891	572	396
12	1728	972	624	432
13	1872	1053	676	468
14	2016	1134	728	504
15	2160	1215	780	540
20	2880	1620	1040	720
40	5760	3240	2080	1440
42	6048	3402	2184	1512
45	6480	3645	2340	1620
48	6912	3888	2496	1728

(The above table is not complete, but the missing gaps can be readily filled by simple printers' arithmetic.)

**Old Type Size Designations**

**Before Point System**

**Was Adopted**

Brilliant ..	3½	Point
Diamond ..	4½	Point
Pearl ..	5	Point
Agate ..	5½	Point
Nonpareil ..	6	Point
Minion ..	7	Point
Brevier ..	8	Point
Bourgeois ..	9	Point
Long Primer ..	10	Point
Small Pica ..	11	Point
Pica ..	12	Point
Two-line Minion or English..	14	Point
Three-line Pearl ..	15	Point
Two-line Brevier ..	16	Point
Great Primer ..	18	Point
Two-line Long Primer or Paragon ..	20	Point
Two-line Small Pica.....	22	Point
Two-line Pica ..	24	Point
Two-line English ..	28	Point
Five-line Nonpareil ..	30	Point
Four-line Brevier ..	32	Point
Two-line Great Primer.....	36	Point
Double Paragon ..	40	Point
Seven-line Nonpareil ..	42	Point
Four-line Small Pica or Canon ..	44	Point
Four-line Pica ..	48	Point
Nine-line Nonpareil ..	54	Point
Five-line Pica ..	60	Point
Six-line Pica ..	72	Point

Note that nonpareil is still used for some 6 point designations, also pica for 12 point.

The agate line, 5½ points, comes from the term for that size, agate, and is used in figuring the advertising in magazines and newspapers. Thus, when an advertiser speaks of using 7 lines, he doesn't mean seven type lines, necessarily, he means half an inch of space.

**Lesson One—Questions**

1. What is the equivalent in inches of a point? A pica?
2. What is an em? An en? A 3-em space?
3. Describe the various kinds of spacing materials you have at

- your disposal, if you are a printer.
4. What is the difference between a lead and a slug? Reglet and furniture?
  5. What are corner quads, and what are they used for?
  6. What is the function of the grippers? How can a sheet be held when the margins are close or non-existent?
  7. What is the platen?
  8. What is a throw-off?
  9. When is an ink fountain useful?
  10. What are the tympan bails, and what are they used for?
  11. Describe the condition of a good roller.

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## The Printer's DICTIONARY

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### A

**Accent**—A mark over a letter to show on which syllable the ac-

ACCENTED LETTERS    PIECE ACCENTS  
 Ä Ń Ŧ Ū ä ü ö    ~ ° ^ / ••

cent falls, or in foreign type a mark over the letter to show how the letter is pronounced. Accents are furnished separately from type, so that they may be placed over letters, in which case they are called piece accents, but the most popular form are letters with the accent cast over the top of them in one piece.

**Addendum** — Material to be added, very often matter not ready when a book is made up, consequently placed in the front or the back of the finished job.

**Advance Copy**—Copy of book or periodical furnished to reviewers, advertisers or others in advance of regular day of publication.

**Agate Line**—Originally used as the name of a size of type in the days before the point system came into use, it is now the common measure of advertising space in magazines and newspapers. There are 14 agate lines in an inch. When you see advertising space priced

at so much per line, you will know that they refer to agate lines. Naturally that does not restrict you to lines of that size—it is only a way of measuring and charging for the space used.

5 point type like this is within  
2 per cent of the old agate size.

**Albertype** — A print from a photo-gelatine plate, similar to a colotype and related to gravure (both to be explained later).

**Alignment**—If the bottom of all letters are on an even imaginary line, they are in correct alignment. This excepts, of course, lower case letters like y, p, and others with normal "descenders."

**Alloys**—A combination of metals. Type metal is an alloy, largely of antimony, lead and tin, with various substances added by different manufacturers to give it greater wearing qualities.

**Ampersand**—The character used in place of the word "and"—(&).

**Angle Lockup**—Form locked in chase at an angle for ease of feeding, ink distribution or otherwise.

**Antimony**—One of the constituent metals in type, used largely because it helps to make the type hard and long wearing.

**Antique**—Type with a face similar to Egyptian (including Egyptian itself), that is, a roman with no hairline and with serifs. Many of the newest faces are "antique".

**Egyptian Bold**—This is antique type

Also used for describing eggshell finished book and cover papers.

**Appendix**—Material placed in the back of the book, helping to explain or amplify the text.

**Aquatone**—Another photo-gelatine process used for illustrating, particularly in reproducing paintings and other works of art.

**Ascenders**—That part of a lower case letter which lies above the common height of the letter. These letters have ascenders — l, b, d. These letters do not—e, a, o, etc.

*(To be continued)*