

# The British Printing Society

*Seeks to unite full-time, part-time, and hobby printers in friendly association  
Seeks to improve the standard of craftsmanship of its members in printing & allied crafts  
Seeks to encourage printing as a hobby.*

## Membership

Details are available from the Membership Secretary, and if a list of current office-bearers' addresses is not available, the Secretary can always be contacted through the Society's permanent address: BPS, BM/ISPA, London WC1 Group membership is available to organisations such as schools. For an annual subscription (currently £5 members receive the monthly magazine of the society, and 'Bundle', the collection of members' items posted with the magazine each month.

Services to members include a free library service by post (cost of postage must be paid) from a large collection of books on printing and related topics; technical advice from a panel of volunteer experts; a printing proficiency test and awards scheme; competitions; and many local branches, most of which meet monthly and hold informal discussions on aspects of printing.

## The Publishing Group

The Publishing Group was formed within the BPS to allow the circulation between members of more ambitious items than can be produced to go to the full number of members, e.g. booklets. A small extra subscription is charged to cover postage of the extra bundle sent each month, and members are required to contribute items themselves to qualify for membership.

## Commercial Section

This is a section within BPS for members with more commercial interests. It aims to circulate information and to organise services of use to such members. A 'Mini-convention' for commercial members is run annually. A small extra subscription is charged for membership.

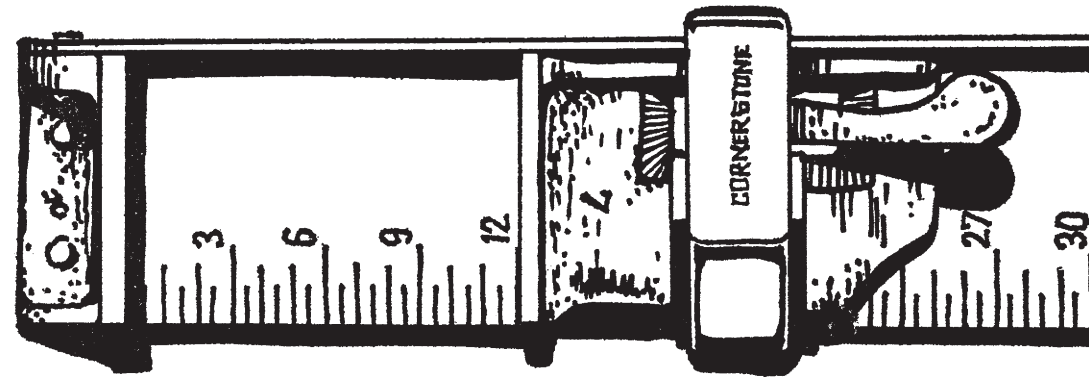
## Annual Convention

The society holds an annual convention, organised by one of the local branches dies, at the end of April each year. The format changes slightly each year, but exhibitions by suppliers, talks, films, visits to commercial firms and to members' workshops, demonstrations, and sales are usually included between social get-togethers and an annual general meeting. The Convention is run over a weekend with the Annual dinner and presentation of the Society's annual awards.

*For further details on any of these topics, consult the Members' Handbook, or write to the Secretary. Only brief details are given above*

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# Smaller Printer



## No.1: 1977

*Information for the smaller printer on  
Paper \* Type \* Inks \* Rollers  
Blocks \* Faults & Cures \* Machines*

## Introduction

This is not an official BPS publication. The society and the executive bear no responsibilities for it, or for any errors it might, (and I'm sure does) contain. I must add to protect myself, that while I have tried to ensure the information is correct, it is provided at user's risk.

Space and time have prevented me from including many things that 'night have reasonably been included. In particular, I have not included much that the litho-printer and the more commercial members might have hoped for. This is chiefly because I do not consider myself sufficiently knowledgeable on those areas to venture far into them. Perhaps other members may be able to fill the gap, and I would hope that the Commercial Section in particular could step in with the benefits of their collective experience. I hope, but certainly can't promise, to re-issue this booklet again the future. Any comments from members on what it should or shouldn't contain, or on errors in it, or extra facts that could be put in to it (space permitting), would be most welcome.

I have not included prices for items mentioned, as they date so badly, and a list of suppliers names and addresses is similarly likely to become dated, so has been omitted; in any case I only deal with a few firms myself, and to omit others would be unfair on them.

I would like to thank Mike Elliston, who assisted with advice in compiling this booklet, and despite whom the errors appear, and Tom Breakell, for his assistance with type-setting facilities. All the information comes from the many kind printers who have told me about printing through the years, many in person, and others through their writings.

I hope you find this booklet useful. Good printing!

John B Easson, THE QUARTO PRESS

### Some Books on Printing

ELEMENTARY COMPOSING & MACHINING: *Basic Letterpress* ed Lindley & Maggs, pub. BPS. Use in conjunction with the following title.

GENERAL *Printing for Pleasure* John Ryder, pub. Bodley Head.

DESIGN: *Basic Typography* J R Biggs, pub Faber. (Paperback).

TYPOGRAPHY: *Introduction to Typography* Oliver Simon, pub. Faber. (Paperback)

*Finer Points in the Arrangement and Spacing of Type* G Dowding, pub. Wace.

TYPEFACES: *Encyclopaedia of Typefaces* by Turner Berry, Jaspert, and Johnston, pub. Blandford. Invaluable despite countless inaccuracies. Expensive.

REFERENCE: *Hart's Rules for Compositors and Readers* pub. Oxford, and the *Concise Oxford Dictionary*, pub. Oxford.

ADVANCED COMPOSING: *Compositor's Work* C Pickering, pub. Pitman,

ADVANCED MACHINING: *Machine Printing* Durrant, Whitworth and Meacock, pub. Focal Press, and *Modern Letterpress Printing* R S Hutchings, pub Skilton.

The Bookshop, London College of Printing, Elephant & Castle, London sw1 stocks many books on printing, issues a list of titles available, and will accept orders by post. The BPS Library Service is described on page 12.

The simplest presses are used by the trade for *proofing*. These are *flat-bed* (the type is placed on a flat bed), and inked by hand roller, in some cases by a hand roller fitted to the machine and puller across an ink slab and the type, or on more elaborate ones, by a motorised roller inking system. Paper is laid on with or without positioning guides and grippers according to design, & a large roller pulled or driven across to apply the printing pressure. These machines vary from very cheap to several thousand pounds, according to size and complexity.

Many proof presses are *galley* presses, made to print from type still in its galley, and therefore the machine type-bed is made lower to allow for the thickness of the galley. A metal plate adapts the press for printing chases. Some are *column* presses for printing the narrow newspaper column galleys.

Next are *platen* presses, which press the whole sheet of paper & type together at once. Again the range is enormous, but light *platens* are nearly all of the *clamshell* type hinged at an edge. This is mechanically simple, but can cause uneven pressure distribution. *Heavy platens* are so-called because of their heavy cast frames for printing larger areas and bolder work, but are also often of the *parallel-approach* type, a self-explanatory term, and sometimes called an *art platen*. These do open like clamshells, but only after they are already partly open, and to make feeding paper easier.

Inking systems on platens are described as *disc* (like the Adana 8-5) and *cylinder*, where a cylinder parallel to the rollers replaces the disc. The latter, and the more rollers it has, the better, is superior in ink storage and spreading. Slab inking is even simpler than disc as the ink is spread on a metal slab which stays still while the rollers do the work of spreading.

*Cylinder* presses roll the paper over the type, with the paper wrapped round an *impression cylinder*. This method is capable of printing large areas (platens are limited to A3 and below) as pressure is applied to a small area at any one instant. Cylinder presses work on the same principle as the roll-over proof presses, but are production machines, i.e. *automatic* presses which feed the paper themselves, usually by air-suction methods of lifting the sheets. There are further kinds of large commercial machines.

Some of the commoner small machines named after firms or given special names are as follows, but please note that a few of these names are of firms that also make or made other machines.

*Peerless, Arab, Cropper, Golding* - light clamshell platens, usually treadle-operated but which can be motor-driven. All are hand-fed.

*Vicobold, Kobold* - light motorised art platens.

*Phoenix, Victoria, Autovic* - heavy art platens, motor driven, and can have automatic feeders attached.

*Adana (8-5), Model* - hand-operated clamshells.

*Farley* - hand-operated proof presses (various types).

*Soldans, Vandercook, Western* - powered precision register proof-presses.

*Thompson, Heidelberg Platen* - automatic platen presses (cannot be hand-fed).

## Letterpress Machines

# Faults & Cures

## Some Common Faults, Possible Causes, and Cures

In giving these hints, I have not described in detail the cures for all the faults as some causes, once identified, can be cured by common-sense. For example, I have suggested that setoff can be caused by over-inking; once this has been suspected, it is obvious that it can be checked by reducing the inking.

*Setoff:* Overinking: overimpression: too much or too rough handling of the printed sheets: printed stack of sheets too high: unsuitable ink for the stock - add driers. If necessary, interleave printed sheets with scrap sheets.

*Blurred print:* Check whether this is due to the paper moving during printing or just as it leaves the type, or whether it is due to the rollers not inking the type properly (wipe). A frequent cause of blurred print is dirty or worn type, but overinking and overimpression will destroy the sharpness of the correct image, or an unsuitable ink for the stock. Dirty ink-caked type can be cleaned with ordinary paint strippers, a water-washable is best - keep it clear of rollers.

*Slur:* Paper grippers not holding: too much ink, or too tacky - add reducer: press packing sheets loose or baggy: chase loose in press, or type loose in chase: chase 'bowed', i.e. type has risen up as the lock-up pressure was applied, due to non-vertical chase sides, or unsquare furniture.

*Wipe:* Rollers not set to 'kiss' type, but bumping over it: chase loose or bowed - see under Slur.

*Rising Spaces:* Chase not locked properly: lines not all set same length: chase loose or bowed (see slur).

*Misregister:* Paper moving - see under Slur: misfeeding: lay (positioning) guides moving: paper expansion or shrinkage due to change in air dampness (usually needs a few hours to show effect): feeding using a different paper edge for positioning than was used on first run, especially on badly-cut paper.

*Uneven printing:* Can be due to uneven inking or uneven pressure - see below.

*Uneven inking:* Rollers not set correctly: rollers bumping on overheight type blocks, etc: forme not planed truly flat: blocks or wood letter badly worn or mounted to wrong height - check against a new piece of type: type or blocks corroded - can cause ink not to take.

*Uneven pressure:* Individual letters, blocks, etc overheight will cause the surrounding area to be underimpressed: type off its feet, i.e. tilted, is due to slack lines and bad lockup - check all lines are set to correct measure, and lock up by applying pressure with each quoin in turn gradually, working round all quoins in stages. Other causes of uneven pressure are: Packing under printed sheet uneven: press misadjusted: chase bowed (see Slur): dirt under the type: worn type (especially wood letter): badly planed forme: burred type or spacing jamming against next character: press bed uneven or bowing with excessive pressure.

## Letterpress Machines

Many presses are named after their manufacturers, and a few of these names are given below, but these notes try to set out the main ways presses are categorised.

## Paper Measurement

*Paper Substance* is the weight of a paper, and is expressed in grammes per square metre ( $\text{g}/\text{m}^2$ ). Since an A0 sheet is one square metre in area, it is the weight of an A0 sheet in grammes. (or sixteen A4 sheets, etc)

$71 \text{ g}/\text{m}^2$  is a light printing paper,  $85 \text{ g}/\text{m}^2$  standard and  $100 \text{ g}/\text{m}^2$  heavy. Over  $220 \text{ g}/\text{m}^2$  is classified as board.

*Paper Caliper* is the thickness of a sheet measured in microns (thousandths of a millimetre).

## Paper Sizes

The printing industry went metric in 1971, which chiefly affected paper sizes and subdivisions and made obsolete a large number of paper & board sizes of long history but doubtful practicality. Many of the older sizes still survive.

### INTERNATIONAL (DIN) PAPER SIZES

The *A Series* of sizes is based on an A0 basic sheet of  $840 \times 1188\text{mm}$  (area one square metre) and each smaller size is half the one above and numbered consecutively. Thus A1 is half of A0, A2 half of A1, etc. The common smaller sizes are:

A3:  $420 \times 296\text{mm}$  or  $100 \times 70 \text{ em}$       A6:  $148 \times 105\text{mm}$  or  $35 \times 25 \text{ em}$

A4:  $296 \times 210\text{mm}$  or  $70 \times 50 \text{ em}$       A7:  $105 \times 74\text{mm}$  or  $25 \times 18 \text{ em}$

A5:  $210 \times 148\text{mm}$  or  $50 \times 35 \text{ em}$       *All em sizes to nearest whole em.*

These sizes are cut or trimmed sizes for finished jobs, and when supplied in larger sheets the *SRA Series* is normally used. These have an allowance for trimming, SRA1  $620 \times 870\text{mm}$  and SRA2 at  $620 \times 435\text{mm}$  are the commonest stock sizes but slight variations are often found.

There is a corresponding *C Series* of envelope sizes, each *C* size envelope fitting the *A* size sheet unfolded. Thus a C6 envelope ( $162 \times 114\text{mm}$ ) takes an A6 sheet flat, (or an A4 folded in four, etc).

The older paper sizes are much more complicated, and details are not given here, although some sizes are mentioned in the section on machines (*qv*). Two common cut sizes still in use are *Foolscap*  $330 \times 203\text{mm}$  or  $79 \times 48 \text{ em}$ , and *Quarto*  $254 \times 203\text{mm}$  or  $60 \times 48 \text{ em}$ , both of which are actually incorrect names!

### BOARD AND CARD SIZES

The A series given above is also used for cards (large pieces of card are called *Boards*). Stocks are usually SRA2 or the old *Royal* size of  $635 \times 408\text{mm}$ . In the smaller sizes of pre-cut cards, the old sizes are still common. Some of the most-used ones are as follows:

THIRDS       $76 \times 38\text{mm}$   $18 \times 9 \text{ em}$       EXTRA SMALLS       $105 \times 64\text{mm}$   $25 \times 15 \text{ em}$

EXTRA THIRDS  $76 \times 44\text{mm}$   $18 \times 10 \text{ em}$       LARGE       $114 \times 76\text{mm}$   $27 \times 18 \text{ em}$

TOWN       $76 \times 38\text{mm}$   $18 \times 12 \text{ em}$       COURT       $114 \times 89\text{mm}$   $27 \times 21 \text{ em}$

SMALL       $92 \times 60\text{mm}$   $22 \times 14 \text{ em}$       LARGE COURT       $127 \times 102\text{mm}$   $30 \times 24 \text{ em}$

*Double* and *Quad* sizes are respectively double and four times the basic size.

## Paper Terms

*Machine Direction* or *Grain* gives the paper different properties in different directions and is a result of the method of manufacture. Paper folds and tears best

# Paper Sizes

# Paper Terms

along the grain and books or booklets should have the grain vertical. Paper tends to curl across the grain. Large paper sizes are normally supplied Long Grain, i.e. with the grain running lengthwise.

*Bottom* or *Wire Side* is the more porous, rougher, side of the sheet, and if possible should not be used when printing one side only.

*MF* or *Machine Finished* papers are ones which have had no processing after the original manufacture. Common printing papers are usually MFs.

*SC* or *Super Calendered* papers are ones which have been polished.

*MG* papers are polished on one side only, and are often called *Poster Papers* as they are most often used for this type of work.

*Cards & Boards* are defined as having a substance (*qv*) of 220 g/m<sup>2</sup> or over.

*Cast Coated* art papers and boards are given a very high gloss coating.

*Antique* papers are soft and rough surfaced. *Antique Laid* has a definite pattern of parallel lines on the sur-

face. *Antique Wove* has a finer less pronounced mesh pattern.

*Coated* or *Art* papers are given a coating of clay, usually leaving a gloss surface for finer detail printing, e.g. of halftones (*qv*).

*Hand Made* papers are usually very rough surfaced and hard, and must be damp at the time of printing to take the ink well.

*Deckle Edges* on papers are rough edges left in the making of hand-made papers. Fancy versions of cut cards sometimes have imitation deckle edges.

*Bank* papers are thin hard papers from 8 g/m<sup>2</sup> to 60 g/m<sup>2</sup>, intended for writing.

*Bond* papers are similar to Banks but heavier: 60 to 85 g/m<sup>2</sup>.

*Cartridge* papers are hard-surfaced papers and tough, but being less absorbent, can be less ink-receptive.

*Printings* are general-purpose papers for printing, as distinct from Writings.

*Writings* are papers intended for handwriting and therefore made harder and less absorptive.

*Cover Papers* are merely papers of heavier substance (150 g/m<sup>2</sup> up, but not an exact limit), between paper and card.

## Paper Buying

Paper is sold in *Reams* of 500 sheets. Some cover papers are packed in 250s, and boards are packed in 100s.

Price lists will specify the sheet size and the g/m<sup>2</sup> of the paper (usually several weights and sizes are available) and the resulting weight in kg of 1000 sheets. This information is usually set out in a table, with sheet sizes on one side and substances across the top.

The price is given separately in pence per kg, and will depend on the size of the total order. Under 50kg (or 600 sheets of board) is termed a *Small*s order and charged at a higher rate. Many paper merchants will cut paper to size (only a few kinds are likely to be stocked and sold as cut sizes) but this is charged extra. If quantities less than the full packet are sold at all, they will be charged so much

Pages for particular firms) will supply suitable plates. Several types are available, and the following is a summary of the most common services used.

*Line* plates are made from black and white original pictures, i.e. ones with no shades of grey. *Open line* has no fine detail, *fine line* has more detail.

*Half-tone* plates are made with fine dots all over, reproducing all shades of grey from black to white, e.g. a photograph.

*Zinc* or *Magnesium* is normally used for plates, but the more expensive *Copper* is used for better quality, and *Nyloprint* or *Dycril* plates are trade names for plastic plates made by some firms; the former can also be made by printers themselves with simple equipment.

If a half-tone plate is required, the *Screen* (dots per cm) must be specified. 33 lines (of dots) per cm is used for rough papers, 40 for smooth, and 60 for very glossy papers. Finer dot screens reproduce finer detail. A half-tone is about as hard to print as a solid area the same size, & as a rough guide, a press is usually capable of printing a half-tone of a quarter of the chase size at the most.

Reversed lettering on black, lettering over photographs, shaped photograph outlines, etc, can all be provided but are charged extra. Reduction in size to as little as one sixth or enlargement up to two times is usually done at no extra and indeed it is often better to provide artwork double the required size to reduce the effect of any errors in it.

Care should be taken over providing the best possible original pictures, free from smudges, creases, pencil marks, etc, as the final plate can only be as good as the original allows, the original should be clearly marked with the size the plate is required to be (usually best done by specifying the width of the final plate).

Plates are supplied mounted on wood to type height for a small extra charge, but note that the mounts are not cut to point and em sizes, so can be awkward to lock up with type. Alternatively, re-useable mounting blocks of wood or metal can be bought from printers' suppliers, and the unmounted plates nailed, glued, or fixed with double-sided adhesive to them. Note that for mounting these plate mounts for 'original plates' must be used, as there are other heights sold.

To order a block or plate, you must specify: line or half-tone; size; mounted or unmounted; and any special requirements. The artwork must be black and white (coloured originals cost extra to photograph). If coloured work is sent, make clear whether only one block or a set for multicoloured work is required.

There is a minimum charge (currently about £3.50) for the minimum area of 100 sq cm, but some suppliers will let you include several drawings on this minimum with no extra charge. They should charge extra for each separate item, and they will do if you ask them to cut the plate into its separate pieces.

## Conversion Factors

1 inch = 25.40 mm

1 point = 0.35135 mm

1 Didot point = 0.37592 mm

UK type height = 23.32 mm

APPROXIMATIONS

3 points = 1 mm

5p piece = type height

1 kg type = 350 square em

# Illustrations

## Inks & Rollers

which hold to the surface in some way. Special inks are usually needed for this.

The two main factors that the printer needs to vary in his inks are the drying rate, and the tackiness. Drying can be speeded by the use of chemical *driers*, which speed the oxidation process, and should be used sparingly. Tackiness can be reduced by adding petroleum jelly (which also slows drying), or linseed oil, or *reducers*. The latter make the ink thinner as well. Inks can be stiffened by increasing the amount of pigment, and any colourless inert powder can be used (e.g. french chalk, flour), and these may also help when printing difficult solids.

### Roller Types and Treatment

*Composition* or *Compo* rollers are made of a mixture of glycerine and gelatine which can be remelted and re-cast quite easily and cheaply. They are excellent for inking but very sensitive to moisture and heat, and swell or shrink with the atmospheric conditions. They cannot be expected to last more than a year or so, though some do, & are very easily cut or damaged, especially when freshly-

cast. Store carefully away from damp and heat, and out of sunlight. Do not clean with water, as they will dissolve. Old instruction books describe how to recast composition rollers, though ink and roller firms do most of them nowadays.

*Rubber* rollers are made of rubber sheets wrapped round the shaft and ground down to size. They do not ink so well as composition, and are dearer, but are unaffected by moisture, and last well. In the end they become glazed and lose their resilience. Do not clean with petrol, which attacks the rubber and is dangerous in any case.

*Plastic* rollers are usually *Polyurethane*. This is expensive, has a good inking surface, as good as composition, and is unaffected by moisture. These rollers must not be left in contact with any surface while uninked, and must be used occasionally to keep them from deteriorating in storage. If unused, they will turn liquid over a year or so.

All rollers absorb colour from the inks to some degree, and so darken with age. They are also all damaged by letting ink dry on them, as the solvents to remove dried ink attack all roller materials. Rollers stored horizontally tend to sag in the middle, while ones stored vertically become bell-ended, so it is best to change them round every few months if not in use. Beware of bending roller shafts which will spoil inking accuracy.

*Cleaning* is usually done with paraffin, but more expensive White Spirit is better, as it leaves no oil film on the surfaces. Special pastes are available from ink firms for cleaning rollers and for removing dried inks (paint strippers will substitute for the latter) and sprays to delay ink drying on the machine.

Roller manufacturers will supply rollers complete for most makes of press, or will re-cover old rollers. When ordering, specify either the diameter and length of each roller, or give the type and model of press. Commercial firms usually have a fairly high minimum charge.

### Illustrations

Where illustrations are required for letterpress, a *Process Engraver* (see Yellow

extra for Breakage that they are seldom worth asking for.

Note that to calculate the cost of a ream, you multiply the cost in pence per kg by *half* the weight in kg given in the table, and add extra charges and VAT.

Some printers and stationers will sell paper, especially in cut sizes, but paper merchants are widespread, and listed in Yellow Pages. They usually stock only certain brands, and many do not stock cut sizes. As with all trade suppliers, they will usually deal with any customer for cash, but do not like small orders which involve high overheads for them. They seldom stock unusual papers, and art shops, while charging much higher prices, may be useful for the more exotic.

### Paper Storage

Paper is sensitive to moisture rather than temperature, though it reacts to both and should be stored in a cool dry place, in a wrapper, flat. Paper left in a pile with the edges exposed to dampness or dryness will develop wavy edges due to expansion or contraction of the edges.

Paper expands with moisture, more across the grain (*qv*) than along it, and papers with sides of different properties will expand more on one than the other, and as a result curl. The property can be used to test the grain direction. A square of paper placed on water or dried in a warm place, will curl to a tube along the grain direction.

### Buying Type

Type is sold in Founts which (depending on the supplier) are specified either by their weight in kg or by the number of cap *As* and lowercase as in them. Suppliers will provide a Fount Synopsis which sets out the various amounts of each letter supplied in different size founts.

For example, a supplier may say that a 24 pt type is supplied in 2kg founts, and his specimen book may show that this is about a 3*A*5*a* fount. Reference to his synopsis sheet will show that this means that there will be 3*As*, 2*Bs*, 2*Cs*, 3*Ds*, 5*as*, 2*bs*, 3*cs*, etc.

When only one character is required instead of a full fount, this is referred to as a *Sort* and a special sorts rate is charged.

Lines of 24 ems to one kg of type are as follows:

6pt - 29	10pt - 17	14pt - 12
8pt - 21	12pt - 14	18pt - 9

### Borders

One kg of borders will give approximately the following lengths:

6pt - 700 em	12pt - 350 em	24pt - 175 em
8pt - 525 em	14pt - 300 em	36pt - 115 em
10pt - 420 em	18pt - 230 em	

### Estimating Type Quantities

*Casting-off* is the term for calculating the space needed to set a given piece of text. It is possible to be quite accurate with this, but simple rules for a rough estimate are as follows. An average character is counted as one en (i.e. half the body width of the type size used), i.e. an average 10 pt letter is 5pt wide, and an average

## Paper & Type

# Type & Typesetting

word as five characters plus a space. Thus 1000 words equals 6000 characters equals 6000 ems, equals 3000 ems. If 10pt is being used, 3000 ems 10pt, set to 25 ems (12pt ems) measure, will be 3000 times 10 divided by 12 and again by 25, giving 100 lines.

For typesetting, the length of a text is calculated in ems of the type body size as described above. When charging for commercial setting, the same measure is used, but the actual length set is taken.

One kg of type with spaces is approximately 350 square ems and one kg of leads is approximately 280 square ems, but as it was found that the weights of equal areas of type could vary by as much as fifteen per cent due to the difference

between the alloys used, these figures should be used with caution. The figures below are derived from the ones quoted here, and are therefore approximate. Note also that when buying type etc, suppliers often pack amounts that are not precise multiples of one kg. As a guide when setting texts the number of lower

cases in a fount is about the number of words of text it will be able to set.

## Leads

Leads are used for interline spacing, *Clumps* are thicker (6pt and over). Plastic versions of leads are sold now, colour-coded to identify thicknesses. Leads are sold in lengths or cut to size for a small extra charge: accurately-cut leads are a great advantage for good imposition and setting.

One kilogram of leads will give approximately the following number of lengths of the thicknesses shown:

	1 point	1.5 point	2 point	3 point
12 em	286 lengths	176	143	88
15 em	228	158	114	76
18 em	176	116	88	58
24 em	143	88	71	44
30 em	114	76	57	38
36em	88	58	44	29

## Trade Typesetting Services

Some firms, including some local printers, offer trade typesetting. There are two main kinds, *Monotype* and *Linotype* (*qv*). Monotype has better designs of typefaces, allows the changing of individual letters, can match types set by hand, and can even be dissed for use in hand setting (not really a good idea, as it wears too quickly). On large jobs a small fount for hand corrections is supplied.

Linotype is easier to handle, being complete lines each in one piece, but alterations are difficult, and the quality and accuracy are often poorer. Linotype is usually cheaper than Monotype setting by about ten per cent.

Usually the charge for the job is in two parts:

1. A charge for the metal used at slightly more than the current trade cost of the alloy. This charge is refunded, less about five per cent for loss on remelting, when the metal is returned. Some firms will not refund in cash but only in credit. For an estimate of the weight of metal involved see the estimating section.

2. A charge for the work of setting. This is based on the number of ems set, and there is a minimum amount. The price is usually quoted as 'per thousand ems'.

When setting is done in metal, corrections for errors by the typesetters are done free, and a proof is usually supplied with the type.

Each size and face is charged separately (but Roman-Italic-Bold usually count as one) and display work, tabular column work, foreign languages, and setting from handwritten or badly typed copy are all charged extra.

For litho or blockmaking, metal typesetters will supply high quality proofs, called *Repro Proofs* for a small extra charge, and as the metal is not required, no metal charges are involved. For these processes it is also possible to have alternative methods of setting done commercially.

*Photosetting* provides high quality, with a wide range of faces in all sizes. It is usually available as positive or negative, and on paper or on film.

*Variotyping* or *IBM variable-width typing* is high quality typing in a near match to many typefaces in sizes up to small display.

*Carbon Ribbon Typing* is typing with a once-only ribbon for sharper images, but is limited to typewriter letter styles. Ordinary typing is too variable for good results.

## Inks

Printing inks are a mixture of a coloured powder *pigment* and an oil *vehicle*, in the past usually linseed oil, but now often a plastic. Apart from *News* inks (which do not dry, but soak into paper) the inks used by small letterpress printers can be thought of as drying by soaking into the paper slightly, and then *oxidising* by combination with the oxygen of the air, to become a solid. That brief summary omits many technical points, but is enough to explain many common problems with inks. Many kinds of inks are made to suit different speeds of printing, different processes, and different stocks. If you try to print everything with one ink, it is bound to be unsuitable to some degree sometimes. While it can be possible to get round this by putting various additives in the ink, or by other tricks, these are not really the best answer. Even if you only have one kind of coloured inks almost every printer should have at least a couple of kinds of black ink to match different kinds of papers; black for art papers, for bond papers, and for 'jobbing' on general printing papers are the normal three to stock.

The main variations in the selection of inks are as follows: Letterpress printing uses thinner inks for faster presses, and for slow platens a good stiff ink is best. Litho prints a thinner layer of ink, so needs a finer ground pigment, and stronger colour if possible. The ink has to resist water too. On the whole, litho inks will be good used for letterpress, but not vice-versa.

Soft papers need thinner inks with low 'tackiness'; harder papers (scripts and bonds) meant for printing rather than printing need stiff inks which dry without much absorption. Coated (art) papers need inks with low tack, and good pigmentation (poor inks give a blotchy 'mottled' effect.) Plastics, metal foils, etc are completely unabsorbent, so need inks that dry completely by absorption, and

# Typesetting & Inks