

Composition

COPY: PREPARATION AND ORGANIZATION

Type was set up from copy, manuscript in the case of a new work, probably printed if it was for a new edition.¹ In the very early days copy was often an old manuscript book, and even when copy was specially written for the printer it was common until well into the seventeenth century for authors to write on quires of folded sheets. From the later seventeenth century copy was more usually written on loose leaves of paper, which were more convenient for the printer.

Manuscript copy, as printers often complained, might be an ill-written author's draft much blotted and corrected, but it seems that a good many manuscripts intended for the printer were fair-copied, either by the author or by a professional scribe. Hornschuch, in his correctors' manual of 1608, implied that it was normal for vernacular manuscripts to be fair-copied for the printer, adding that the scribes who did it cared more for calligraphic elegance than for the accuracy of the text.²

The copy having been delivered to the printing house, various decisions had to be taken about the size and form of the printed book that was to be set from it. These were necessarily the responsibility of the master or his deputy, who had to get in the paper that would be needed and to fit the book's production into the work pattern of the shop. The master might also interest himself in the detailed typographic design—Plantin insisted on seeing a specimen page before composition began³—but much of it was left to the compositor to decide on the basis of 'house style' and the precedents of similar books.^{3a} At the same time the copy might be 'prepared'—read through, corrected, and annotated—probably by the corrector if the house was large enough to employ one. Copy-preparation by the corrector was apparently common in continental Europe in the seventeenth and eighteenth centuries, and the practice was recommended to English printers by Smith in his manual of 1755.⁴

¹ On copy of the hand-press period see Simpson, P., *Proof-reading in the sixteenth, seventeenth and eighteenth centuries*, Oxford 1935 (repr. 1970); and Hellinga, W. Gs., *Copy and print in the Netherlands*, Amsterdam 1962. I have also referred to an unpublished paper by R. L. Beare on continental proofs and copy of the seventeenth century.

² Hornschuch, H., *Ὁρθοτυπογραφία*, Lipsiae 1608, p. 22.

³ Voet, L., *The golden compasses*, ii.

^{3a} Some authors gave clear instructions for the layout of their books; see Greg, W. W., *Collected papers*, Oxford 1966, pp. 99–100, for an example of 1591; and U.L.C., Add. MS. 7913, f. 1^b, for one of 1692.

⁴ Beare, R. L., op. cit.; Moxon, J., *Mechanick exercises*, eds. Davis and Carter, 2nd ed., Oxford 1962, p. 192 and n.; Smith, J., *The printer's grammar*, London 1755, p. 273.

Many examples of printers' copy have survived from the hand-press period, some of them annotated with instructions concerning layout, italicization, capitalization, etc. Copy, manuscript or printed, can generally be recognized even in the absence of such notes by the marks—sometimes very faint—with which the compositors indicated the endings of the type-pages (see p. 50), and by such signs as set-off from fresh-made proofs, inky thumb-marks, and a general air of dog-eared grubbiness.

Although a rough estimate of the length of the book had to be made at the very beginning in order to come to a decision about format, it was then necessary to know its length more precisely, chiefly so that the right amount of paper for the edition could be ordered.^{4a} To this end the compositor—or sometimes the master or overseer—'cast off' the copy by counting words and by computation according to the sizes of type and page that had been decided on.⁵ Casting off also helped the overseer to allot work on the book, and enabled informed final decisions to be made about its typographical details so that, for instance, the text would not overrun the last whole sheet by a page or two.

Printed copy, or the manuscript of a poem or verse play, could easily be cast off with such accuracy that the exact contents of each type page could be predicted, and even a prose manuscript could be cast off with fair accuracy by a skilled man, although this was much more difficult. With the copy accurately cast off, setting could begin anywhere in the book, and more than one part of it could be set in type at a time.

Casting off made it possible to set sheets 'by formes', when the compositor set all the pages for one side of the sheet and sent them to be printed before the pages for the other side of the sheet were set, instead of setting all the pages for the sheet one after the other in their proper order. In spite of its awkwardness—for the two series of pages for the two sides of a sheet were not consecutive but had to interlock with each other—setting by formes appears to have been a common practice in English and in some continental printing up to the mid seventeenth century. Several books set from prose manuscripts in sixteenth-century London have pages of regular length on one side of the sheet (that is, in one forme), and pages of irregular length on the other (four octavos printed by Thomas Marshe in the 1560s, for instance, and the first edition of Sidney's *Defence of poesie*, printed by Thomas Crede in 1595);⁶ probably these books were cast off with less than perfect accuracy and then set by formes, a forme with regular pages preceding one with irregular pages which had to be made to fit with what had already been set

^{4a} Format was (and is) often decided by convention; see pp. 300–4 below.

⁵ Moxon, J., op. cit., pp. 239–44.

⁶ Bond, W. H., 'Casting off copy by Elizabethan printers', *Papers of the Bibliographical Society of America*, xlii, 1948, pp. 281–91.

and printed. Again, study of recurring types in London-printed verse plays of the later sixteenth and early seventeenth century proves that a high proportion of them were set by formes, individual pieces of type being found in both formes of a pair; the first folio of Shakespeare (London 1623) is only the most celebrated example.⁷ Setting by formes was also practised in Madrid at this period, a late occurrence being Calderón's *Tercera parte* (a verse quarto, Madrid 1664).⁸

The reason for setting by formes is not entirely obvious. The practice certainly makes a limited stock of type go further, and some of the London printers who set by formes around 1600 were chronically short of type. But other printers who were not short of type also set by formes, Plantin for instance who had books set by formes up to about 1565 and then changed to continuous setting.⁹ The method of 'half-sheet imposition', moreover (see p. 83), which was known before 1500, saves just as much type as setting by formes in foldings other than folio, and is much easier to manage. It may be that setting by formes was an early trade practice (deriving perhaps from the normal method of copying manuscript books by the side of the sheet rather than by consecutive pages) which was later abandoned on account of its inconvenience, soonest in countries with an advanced printing technology. Plantin, as we saw, gave it up in the 1560s, and it has not been recognized in Dutch, French, or German printing after 1600;¹⁰ it persisted in England until the second, and in Spain until the third, quarter of the seventeenth century; Moxon mentioned it in 1683 only to dismiss it as undesirable;¹¹ and it does not appear to have been used at the Cambridge University Press around 1700, or at the Bowyer or S.T.N. offices in the eighteenth century.¹²

Preparation and casting off completed, the copy was given out to individual compositors for setting in type. How it was divided was influenced by the size of the shop. Where there were no more than two or three compositors there appears to have been a tendency for individual workmen to concentrate on particular books (often several books at a time), and to set at least whole sheets or whole formes. Where there were a larger number of compositors in the complex work-flow of concurrent production, small divisions of copy ('takings' or 'takes') were handed out to whoever was ready for them, so that the setting of sheets, formes, and even individual pages were on occasion shared between different compositors. Shared setting

⁷ Hinman, C., *The printing and proof-reading of the first folio of Shakespeare*, Oxford 1963, *passim*.

⁸ Cruickshank, D. W., 'The printing of Calderón's *Tercera parte*', *Studies in bibliography*, xxiii, 1970, pp. 230-51. Current work by R. M. Flores suggests that the first edition of *Don Quixote* (prose, Madrid 1604-5) was also set by formes.

⁹ Voet, L., *op. cit.* ¹⁰ Beare, R. L., *op. cit.*

¹¹ Moxon, J., *op. cit.*, pp. 210-11. ¹² See the bibliography, pp. 393-4.

seems to have been uncommon in the small English printing houses of the seventeenth century,¹³ but it is referred to in the sixteenth-century records of the Plantin-Moretus house, and in Bowyer's records of the 1730s;¹⁴ and the compositors' marks on surviving continental copy of the seventeenth century often imply shared setting.¹⁵ Eventually—by the mid eighteenth century in France—compositors formed 'companionships' for the efficient and equitable distribution of work for shared setting (see p. 192). When setting was shared the compositors involved might work either simultaneously or consecutively; simultaneous shared setting (especially if it took place in two or more different printing houses, as was not uncommon in London around 1600)¹⁶ might result in pages or sections of irregular length.

SETTING TYPE¹⁷

The compositor's apparatus was in three main parts. There were the type cases, which have already been described (pp. 34-6), and which were propped up for use on a timber frame at a convenient working height; a composing stick, which was a hand-held tray in which pieces of type from the case were assembled; and galleys, larger trays on to which lines of type were transferred when the composing stick was full.

The earliest frames seem to have been no more than a pair of trestles on which the large case of the single lay was placed, but later on more elaborate structures were used, with a double slope on top for the two cases of the divided lay, and often incorporating racks for storing cases; double frames were also made, so that cases of another fount could be put up, or italic alongside the roman. Until the mid seventeenth century compositors generally sat to their work, but from then on it became more usual to compose standing up, an easier position for fast work.¹⁸

Sheets of copy were put up on the case, either folded into a special clip called a 'visorium'—the normal continental method up to the nineteenth century—or held against the right-hand side of the upper case by an arrangement of weights and string, as was usual in England in the later hand-press period and probably before.¹⁹ The compositor then took his stick in his

¹³ It was not normal in dramatic printing *c.* 1600, and Moxon assumed that one compositor would set at least a whole sheet.

¹⁴ Voet, L., *op. cit.*; McKenzie, D. F., 'Printers of the mind', *Studies in bibliography*, xxii, 1969, pp. 64-74. ¹⁵ Beare, R. L., *op. cit.*

¹⁶ Greg noted several examples in *A bibliography of the English printed drama to the Restoration*, e.g. no. 202.

¹⁷ The classic early description of the compositor's trade is Moxon, J., *op. cit.*, pp. 193-246.

¹⁸ The early illustrations (up to Saenredam, 1628, for instance) generally show seated compositors; Moxon (1683, p. 33) specifies the standing position.

¹⁹ Moxon, J., *op. cit.*, p. 204; Hansard, T. C., *Typographia*, London 1825, pp. 408-9.

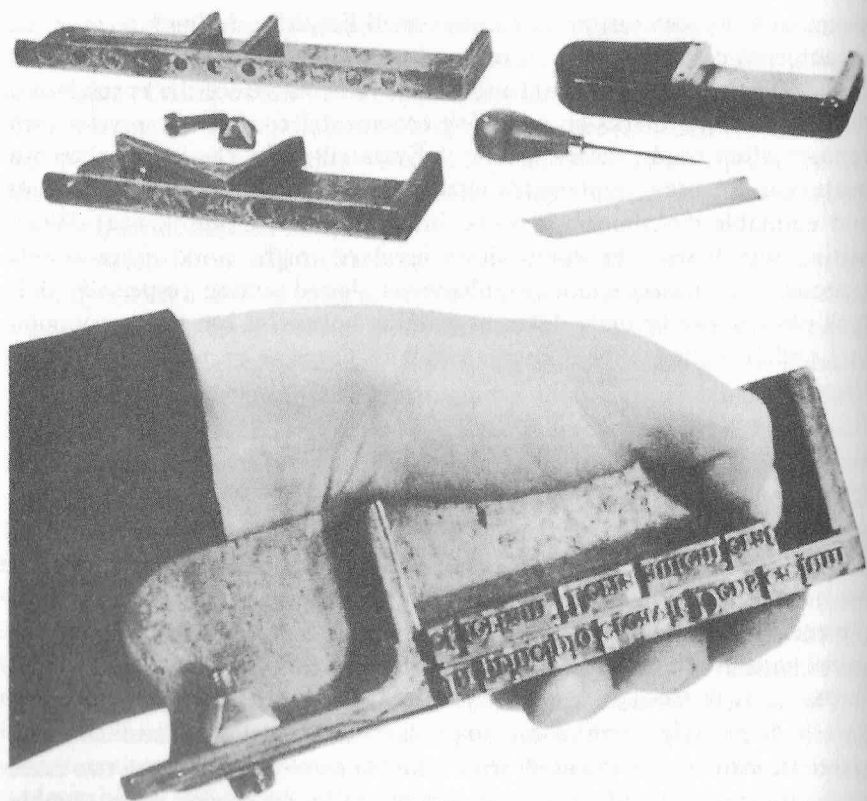


FIG. 24 (a, b). Nineteenth-century English compositors' equipment. (a) A stick with two slides for setting text and marginal notes in parallel, a fixed wooden stick for newspaper columns and an ordinary stick in parts, together with a bodkin and a setting rule; the design of the two iron sticks was established by the mid seventeenth century. (b) Setting the bible in double pica. The first line contains an error due to foul case, the second has a turned letter; there is a setting rule between the lines.

left hand, read the first few words of his text, and began to pick up the type with his right hand.

The adjustable slide of the stick had first to be set to the 'measure', the length of the line of type required and thus the width of the column of type in the book. This measure was generally a multiple of the body size of the type being used, and was obtained by laying the right number of letters 'm' on their sides in the stick, pushing the slide up to them and screwing it up tight.²⁰ Alternatively the stick could be set with a gauge made of a strip of wood or metal, or simply by measuring the position of the slide against a printed page or a line of set type.²¹

Having set the stick the compositor placed a setting rule (a strip of brass

²⁰ Smith, J., *The printer's grammar*, London 1755, pp. 196-7.

²¹ Moxon, J., *op. cit.*, p. 203-4.

rule of the right length) against its back plate and started to pick up the letters of the first word in the copy. Each piece of type was 'sighted' in the case before it was taken up to see which end had the letter cast on it and to locate its nick,²² but the compositor did not look at it again as he carried it towards the stick, his eyes being engaged in sighting the next letter. He felt its shank, however, between the thumb and first two fingers of his right hand, to ensure that it was not obviously thicker or thinner than it ought to be, and placed it under his left thumb in the left-hand corner of the stick, face up and with the nick away from the back plate. The subsequent letters of the word followed one by one, the stick in the compositor's left hand following his right as it moved about the case from box to box; and when the word was finished he put in a space and proceeded to the next.

In due course the compositor came towards the end of his measure, and his stick contained a line of type which read (from his point of view) from left to right but of which the letters were upside down and mirror-fashion. At this point he found, nine times out of ten, that the last word would not fill his measure precisely, so he either drove the line out (if he had too much room) or got it in (if he had too little) by altering the amount of space between some or all of the words in the line. First, probably, he read the line in the stick and corrected any mistakes, which could be mended much more quickly now than later, though not all compositors did so in spite of the fact that they had to correct their errors in their own time.²³ Then he changed the spaces between the words one by one until the line was a tight sliding fit in the stick, picking out rejected spaces and choosing additions or replacements from his central box of mixed spaces. This process, which gave a straight right-hand margin on the printed page, was called justification. Short lines were justified with spaces and quads so that they would lock up tight in the forme with the rest.

Moxon in the seventeenth century specified two sorts of spaces: thick spaces measuring four to the 'em' (the body size of the type concerned),²⁴ which is the same as the modern printer's middle space; and thin spaces, which measured seven to the em, considerably thinner than the modern thin space and in fact what would now be called a hair space.²⁵ By the middle of the eighteenth century, however, English printers were using thick spaces of three to the em, middle spaces of four to the em, and thin spaces of five to the em, which is the system still in use; and a similar development appears to have taken place in France during the second quarter of

²² See fig. 1, p. 9; the nick established the orientation of the letter.

²³ Fertel (1723, p. 45) urges the compositor to correct line by line in the stick, whereas Moxon says nothing about it; practice probably differed from compositor to compositor.

²⁴ Used thus the em is not a particular measurement but varies with the body. The term could also mean specifically the pica em, or about 4.2 mm. ²⁵ Moxon, J., *op. cit.*, p. 103 n.

the eighteenth century.²⁶ But nowhere during the hand-press period were spaces of different widths kept apart in separate boxes of the case, a practice dating from the early nineteenth century.

It was sometimes necessary (or at least helpful) to justify by splitting a word at the end of the line, adding a hyphen and carrying the remainder over to the next line although, since the position of the break in the word was governed by convention, the spacing usually had to be altered as well. Until the later seventeenth century it was also permissible to simplify justification by varying the spelling of some words and by employing contractions; see pp. 344-6 for more about this.

Before proceeding to set the second line, the compositor removed the setting rule from the back of the stick and placed it in front of the line which had just been set; its purpose was to increase the stability of each new line as it was assembled, and to enable its individual types to slide sideways during justification, unimpeded by any slight roughness of the line beneath. The second line was then set, and was followed by another, and so on until the stick was full. The number of lines that the stick could take depended of course both on its size and on that of the type, but in England was typically from three to six. The compositor emptied the lines from an English stick of this sort on to a wooden tray called a galley, which lay on the right-hand side of his upper case. To do this he put the stick down on the lower case and, using his setting rule and a similar strip of wood (reglet) as supports, he applied pressure evenly round the block of type with the fingers and thumbs of both hands for the transfer. Set type can behave like a fluid, and any clumsiness at this point could cause new-set type to collapse into 'pie' (muddled type).

At all periods, but uncommonly before the eighteenth century, the lines of type might be 'leaded', thin strips of typemetal, reglet, or card being slipped in between each one in order to spread the lines out vertically. The leading might be done either in the stick (in which case quads were often set at the ends of the lines in order to prevent thin pieces of type from slipping up and down beside the ends of short leads), or after the lines had been transferred to the galley and were being made up into a page.

Moxon's deep, adjustable composing stick, which remained the normal English pattern and was also used apparently in Holland, Germany, and Scandinavia,²⁷ was not the only sort of stick used in the hand-press period. Wooden composing sticks without slides were used for bookwork in the

²⁶ Smith, J., *The printer's grammar*, London 1755, p. 111; Fertel, M. D., *La science pratique de l'imprimerie*, Saint-Omer 1723, pp. 16-17; *Encyclopédie*, v. Paris 1755, s.v. 'espace'.

²⁷ Moxon himself was following Dutch practice; German sticks were illustrated in the eighteenth-century manuals, and Scandinavian sticks in Bengtsson, B., *Äldre typografisk teknik*, Stockholm 1946, p. 41.

sixteenth century, and for jobs in narrow columns (encyclopedias, newspapers, etc.) until the end of the nineteenth century (fig. 24).²⁸ Although wooden sticks were not in themselves adjustable, they could be used for measures narrower than their fixed settings by starting or ending each line with a particular amount of spacing material, which was removed when the stick was emptied.

French adjustable sticks were not so deep as English ones, and were emptied as each line was set. Setting rules were not used, and the compositor emptied the justified line by holding the stick in his left hand, placing a strip of wooden reglet on the front of the line and picking it out with his right hand alone (fig. 25). This was quickly done and probably took no more time over-all than the English method of emptying the stick with both hands every four or five lines.

Long lines of type—more than about 20 cm.—which were common in display work such as the title-pages of large books, might be set straight on to the galley or the imposing stone. In the nineteenth century, and perhaps before, adjustable broadside sticks were made, usually of wood and measuring as much as 100 cm. in length.

It may be as well to emphasize at this stage that real (as opposed to theoretical) printing was a complex craft carried out by fallible and inconsistent human beings of widely different capabilities. It was usual to set type in the way that has just been described, but the old printers were men, not abstractions, who had good days and bad ones; who got on each other's nerves and lost their tempers; who had moments of disastrous clumsiness; and who improvised and botched without hesitation whenever their tools or materials did not precisely meet the needs of the moment. For every generalization that is made about the history of printing technology, for every rule supposedly observed by hand printers, there may have been an exception; or—for there was no rule about this either—there may not.

Even the ablest compositors made mistakes, as is shown by Benjamin Franklin's account of setting up Willem Sewel's *History of the Quakers in Philadelphia* in 1728: 'It was a folio, pro patria size [i.e. foolscap], in pica, with long primer notes. I compos'd of it a sheet a day, and Meredith worked it off at press; it was often eleven at night, and sometimes later, before I had finished my distribution for the next day's work, for the little jobs sent in by our other friends now and then put us back. But so determin'd I was to continue doing a sheet a day of the folio, that one night, when, having impos'd my forms, I thought my day's work over, one of them by accident was broken, and two pages reduced to pi, I immediately distributed

²⁸ [Plantin, C.], *Dialogues*, Anvers 1567, pp. 242-3; illustrated in Bengtsson, op. cit., p. 41.

and compos'd it over again before I went to bed.²⁹ One wonders whether the two pages of the broken forme were as well set the second time as the first.

Then there was the continual drunkenness at work of the journeyman Hans van Leuven *alias* Elzevier (who was the father of the founder of the famous Elzevier Press). Plantin of Antwerp sacked him in 1573, but hired him again a few days later. And there was the curious behaviour of Plantin's compositor Michel Mayer, who in June 1564 spent Sunday, Monday, Tuesday, and Wednesday in a brothel, then went to sleep on a box in his room on Thursday morning, and finally packed his things and left the establishment without saying a word to anyone; Mayer too was hired again later by Plantin.³⁰

Disruptive behaviour was not confined to the workmen. The following account of a quarrel which took place in about 1540 between Thomas Platter and Balthasar Ruch, partners in a printing business in Basel, comes from Platter's autobiography. Platter had offended Ruch, who was looking for a chance to get his own back: 'On one occasion, while it was still Fair time and we could not finish printing the works we had been given, we were also printing on our days off, and we had been printing all that Sunday; then the journeymen had to be fed and paid overtime. That night I was correcting a proof at about eleven o'clock when Balthasar began needling me, and finally swearing and saying "I don't know what you're on about, you from the Valais—whatever we do, it's wrong!" . . . I answered his nastiness back. He says nothing, but taking hold of a heavy pine board he gets behind me while I am working on the proof and is on the point of bringing it down on my head with both hands. Then I look round and see the blow coming, I jump up and ward it off with my arm. Then we were hitting each other and struggling; he scratched my face badly and tried to gouge my eye out with his fingers. When I saw what he was up to, I drew back for a punch and hit him so hard on the nose that he fell on his back and lay there for some time, so that his wife stood over him and cried out "Mercy! You've done my husband in!" Meanwhile the journeymen, who had just gone to bed, hearing the row quickly got up again and came downstairs. He was still lying there, my scratched face was still bleeding. Soon afterwards he got up and wanted to attack me again. "Let him come," I said, 'I'll give it him, and better!' Then the journeymen shoved me out of the door. . . . Next day our partners came in. They were displeased, as were the men, that we should be the masters, and should behave towards each

²⁹ Franklin, B., *The life of Benjamin Franklin written by himself*, ed. Bigelow, J., 3 vols., London 1879, I, pp. 189-90. The edition of Sewel referred to by Franklin is Sabin 79604.

³⁰ *Gedenboek der Plantin-dagen, 1555-1955*, Antwerp 1956, p. 245, nn. 2, 3.

other in this way.³¹ Again, one wonders whether that proof was ever properly read.

Before going on to consider what the compositor did next, we should consider the possibility that type was occasionally set from dictation. This can never have been a common practice: however fast a compositor picks up type, he has time to read his copy while his hands are at work, and dictation could not significantly increase his output; dictation, moreover, is inherently less accurate than ocular copying as a method of transcription. Nevertheless there is an account of a sixteenth-century Swiss scholar, Heinrich Pantaleon, who was employed in the 1540s in the Basel printing house of Michael Isengrinius, a firm which specialized in learned printing, as a *lector*; and it is clearly stated that he dictated copy to the compositors.³² There is no other evidence for the practice, however, and it is possible that Pantaleon's eighteenth-century biographer had misunderstood a description of the method of proof-correction normal in the hand-press period whereby a reader (or *lector*) read the copy aloud to the corrector (see p. 112). A few actual errors in printed texts do appear to have resulted from mis-hearing, rather than mis-reading, the copy (p. 352), but they are not necessarily evidence of setting from dictation; they are more likely to have been introduced into the text during dictation for manuscript fair-copying, or during proof-correction by reading aloud.

PAGE AND GALLEY

Galleys are two- or three-sided trays, nowadays made of metal and three or four times as long as they are wide. Until almost the end of the hand-press period, however, long galleys were unknown, and the compositor emptied his stick on to a wooden tray not much larger than the page he was setting. For composition was always by pages, not (as it was later) by galleys. Galleys were therefore made in various sizes to suit different pages—they were sometimes known as octavo, quarto, or folio galleys—and the larger ones

³¹ Platter, T. and F., *Zwei Autobiographien*, ed. Fechter, D. A., Basel 1840, pp. 91-2, translated.

³² Zeltner, J. K., *C.D. correctorum in typographijs eruditorum centuria speciminis loco collecta*, Nürnberg 1716, pp. 408-9. The Latin text is quoted by McKerrow (pp. 243-4), and may be translated: 'After this he [Heinrich Pantaleon] was handed over to Johannes Bebelius, printer of Basel, and for a time acted as reader in the house of Isengrinius. For at one time, as distinct from today's practice, one person was picked out from amongst the others in order to read aloud from the manuscript in a clear voice to the typesetters what was to be printed. As a result, those who set up the words they heard from the reader's mouth made short work of it; and it was read out from three or four sheets to a like number of compositors. But in our time, as everyone knows, he whose task it is to do the initial setting up is accustomed to have the copy in front of his eyes for him to see. This method, which was doubtless changed because of the ignorance of the printers, appeals to me most since it takes time into account and is less subject to daydreaming.' The last sentence is equally obscure in the original: 'Qui modus haud dubie propter ignorantiam Typographorum mutatus, cum temporis rationem habeat, & hallucinationibus minus est [*sic*] obnoxius, maxime mihi arridet.'

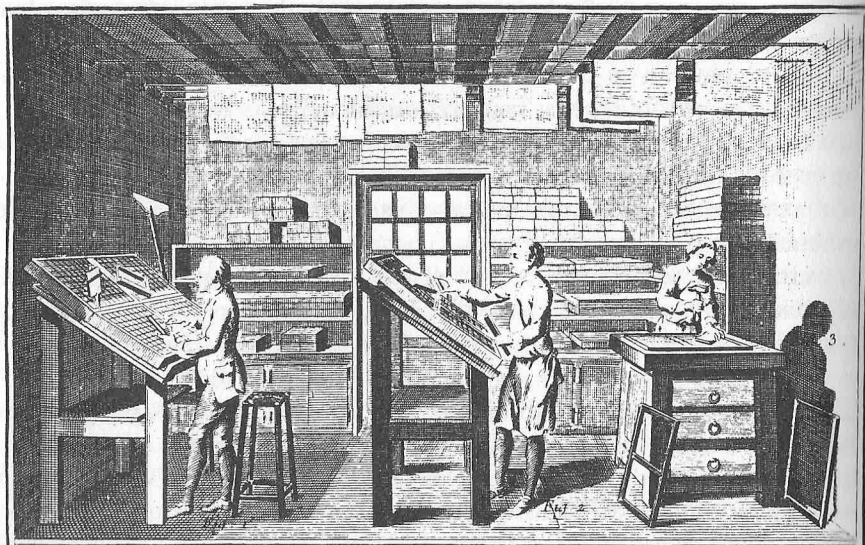


FIG. 25. A French composing room of the mid eighteenth century. A visorium and page galleys can be seen on the upper cases, and a compositor is emptying his stick one-handed in the French way. Two empty chases stand by the imposing stone, where a third compositor is planing down a forme; between them are the quoin- and furniture-drawers. Perfected sheets are hung up on cords to dry the paper, having been lifted by means of the peel which stands by the wall on the left. The far end of the room serves as a warehouse. (*Encyclopédie*, planches vii, Paris 1769, 'Imprimerie en caractères', pl. 1.)

generally had a false bottom called a 'slice' which could be withdrawn with the type on it when a page was finished.

When the compositor had set the right number of lines for his page and put them on to the galley, he marked the place in the copy where the new type page ended, and added a marginal note giving the number of the next page both in the book and in the sheet; this was chiefly in order to correlate copy and printed page for the corrector, but it might also help the compositor to impose the pages in the right order and give them their page numbers. A typical annotation of this sort (actually written in the margin of the printed copy for a book printed at Basel in 1563)³³ was $\frac{601}{9DD}$ meaning that the *next* page to be set would be numbered 601, and that it would be the ninth page—not the ninth leaf—of signature 2D. Annotations in the same or in a closely similar form were made in English printing houses from the later sixteenth century until after the end of the hand-press period.

The compositor next added the headline, with running title and page number; and the direction line at the bottom of the page, containing the catchword (the first word of the next page) and, on certain pages, the signa-

³³ B.N. Rés. m. z. 13, sig. C4^a.

ture (see the next section). Finally he tied the whole page round with string (page cord) to keep it together, transferred it from the galley to a paper wrapper and put it on to some convenient surface for storage until he was ready to assemble it with other pages for printing. After the first sheet or two of a book, the compositor took headlines and direction lines from the pages of a sheet that had already been printed (see p. 109).

SIGNATURES



Books were printed, as we have seen, not leaf by leaf but on large sheets of paper with a number of pages on each side, which were later folded up to make groups of leaves. It was necessary, when assembling the sheets of a book, to get them the right way up and in the right order; and to this end each sheet was signed on the first page with a letter of the alphabet so that they could readily be arranged in alphabetical order; similar signatures were also placed on the rectos of a few leaves after the first of each sheet in order to help the binder with his folding.

Overwhelmingly the commonest signatures were the 23 letters of the Latin alphabet (A to Z, omitting I or J, U or V, and W), a convention deriving from the manuscript period.^{33a} The twenty-fourth sheet was then signed Aa (etc.), the forty-seventh Aaa, and so on. It was usual for duplicated signature-letters to be set out in full, but English printers in the eighteenth century preferred to set 3A for Aaa, 6A for Aaaaaa, etc. Signatures on rectos after the first of each sheet were distinguished by numerical suffixes; the second signed recto of sheet Aa, for instance, would be signed Aa2 (or in England, perhaps, 2A2). Thus Bb3 would be found on the third recto of the twenty-fifth sheet, and 5C4 on the fourth recto of the ninety-fifth sheet.

The precise form of the signatures varied from time to time and from place to place.³⁴ It was common in the sixteenth century to begin the series of signatures for the text with a lower-case alphabet, a-z, and to continue with A- or aa- (or less commonly with Aa- or AA-). A characteristically English habit was to begin the main signature alphabet with B, rather than A, to allow for a sheet of preliminaries signed A, and following up as usual with Aa- (or 2A-). Roman rather than arabic numerals for suffixes (e.g. Aij rather than A2) were widely used until the end of the sixteenth century, but later were a French peculiarity.

^{33a} A rare variant used at the Jaggard house in early seventeenth-century London was a 20-letter signature alphabet, omitting X, Y, and Z.

³⁴ Sayce, R. A., 'Compositorial practices and the localisation of printed books, 1530-1800', *The Library*, xxi, 1966, pp. 1-45.

The signing of preliminary leaves varied even more widely; the sensible practice of signing the main series A- and the preliminaries a- was always quite common, and English printers who began the main series with B would often sign the preliminaries A a b c (etc.). But it was even commoner to use symbols in forms such as * ** ***, or even (without logical order) * † ¶ § (etc.). During the fifteenth and sixteenth centuries printers got over the resulting difficulties by adding (usually adjacent to the colophon) a summary of the signatures called the register.

PRELIMINARIES, PAGINATION, CATCHWORDS, ETC.

The preliminary leaves or sections (which were nearly always printed after the text of a book except in reprints, and sometimes even then) consisted essentially of the title-page, the author's or publisher's prefatory matter and, sometimes, a table of contents. Fifteenth-century books generally had no preliminaries, but were signed by the printer in a colophon at the end. After the general adoption of title-pages around 1500, colophons lost their former importance, but they remained relatively common until well into the seventeenth century, and they never disappeared entirely.

It was common practice from early times to protect a book by leaving the first leaf blank, and it was this leaf that was made to serve the useful purpose of carrying a short-title of the book printed on it; which then developed into the full title-page announcing the title and author of the book, and soon giving the name of the printer and the place and date of publication as well. By the seventeenth century it was becoming common to protect the title-page with an initial blank leaf; which in turn, by the eighteenth century, often had a short-title printed on it (the half-title);³⁵ and in lavishly-printed books the half-title itself would occasionally be protected by a preliminary blank leaf.

Like the text, the title-page was set from copy, which might indicate roughly how it was to be set out. Details of the layout, however, and choice of type were commonly left to the compositor.³⁶

Most books had headlines, an extra line of type and quads above the text of each page, which included the running title and the numerals of the foliation or pagination. The numbering of leaves gave way to the numbering of pages late in the sixteenth century, although there were isolated survivals of the earlier practice until the mid eighteenth century.

³⁵ Nineteenth-century printers called the half-title the 'bastard title', and used the term 'half-title' for the book title used as a heading for the first chapter of a volume.

³⁶ Hellinga, W. Gs., *Copy and print in the Netherlands*, Amsterdam 1962, pl. 147 shows a manuscript layout for a title-page of 1682; but the choice of type for titles was commonly left to 'the taste and judgment of the compositor' until the end of the nineteenth century (Gould, J., *The letter-press printer*, 6th ed., London [c. 1892], p. 26).

It became usual in the mid sixteenth century to complete each page with the first word of the following page set as a catchword at the end of the direction line. The practice was intended to help the compositor to get the pages in the right order for printing,³⁷ but, although the full use of catchwords was general in English and in most continental printing until the later eighteenth century, they were not always considered necessary. Special forms, such as catchwords on verso pages only, or only on pages without signatures, are found from time to time in French and German books, while Parisian printers normally set catchwords only on the last page of each gathering.

DISTRIBUTION

The distribution of set type back into the cases took place alternately with setting in order to keep both type and compositors occupied. When his case was getting low—it would begin to run out of individual lower-case sorts when it was down to between a quarter and a third of its full weight—the compositor stopped setting and turned to pages of type from a forme (probably of the same book) that had already been printed off, and which were waiting on the stone or on a special galley, stripped of their headlines and direction lines (see p. 109). He lifted about five lines from the top of the nearest page on a setting rule and balanced it on his left hand, with the face of the letter towards him and the last line uppermost. Then he picked up about 2 cm. of type from the right-hand end of the uppermost line (i.e. the last word or two of the last line) with the thumb and forefinger of his right hand, read it, and dropped the pieces of type one by one into their proper boxes; and so on, inch by inch and line by line, until the case was replenished.

A full pair of cases of the divided lay contained about 27 kg. of type, of which about 20 kg. was available for setting; the remaining 7 kg. consisted of capitals and rarely-used sorts which remained in the case when the common sorts ran out. Set type weighed about 0.0175 kg./cm.², so that a full pair of cases sufficed for something like 1150 cm.² of matter; that is 5½ pages the size of this one, or just over two pages of the Shakespeare first folio.

It appears that Jaggard's fount of pica roman would run to no more than about eight pages of the First Folio, but that his compositors probably worked most of the time from two pairs of cases, not four, at least half the fount being set up at any one time. There is also some evidence that, in Jaggard's small shop, particular compositors tended to work from particular

³⁷ Moxon, J., *op. cit.*, 237-8.

cases.³⁸ In the nineteenth century, when there was plenty of type, a man would work at his own frame, carrying cases to it from the general stock.

OUTPUT

In the earlier hand-press period, compositors' output was measured, rather roughly, by the page or by the sheet; later a more accurate measurement by ens was adopted, which it will be convenient to use here. One en is half an em of any size of type, and the number of ens in a setting of type is proportional to the number of pieces of type in it. This line is $29\frac{1}{2}$ 11-pt. ems long (59 11-pt. ens); while this whole page contains 2,794 11-pt. ens and would contain about 3,055 individual pieces of type, including spaces.

From 1785, when a scale of prices for piece-work composition was laid down in London, right up to the present century, a 'normal' rate of 1,000 ens per compositor per hour was postulated in England, this rate including the distribution of an equivalent quantity of set type and the correction of the compositor's own mistakes.³⁹ Distribution (which took from a quarter to a third as long as setting) and correction both took time, so that this rate actually involved setting at 1,500 ens per hour or more.

Competent workmen could certainly achieve this output. Piece-work hands at the Cambridge University Press at the end of the nineteenth century had to demonstrate their ability to keep it up for a succession of 54-hour weeks before they might be promoted to become time hands (who were paid by the hour, and dealt with such things as make-up and authors' corrections).⁴⁰ Good compositors at the Harper Establishment in New York in the 1850s could set from 2,000 to 3,000 ens per hour;⁴¹ and in type-setting competitions in America in the 1880s the remarkable rate of 4,000 ens per hour (corrected, but not including distribution) was regularly achieved.⁴²

But, although a net rate of 1,000 ens per hour may have been a convenient and even a practicable norm in the nineteenth century, evidence from the hand-press period shows that we must abandon any idea of an earlier normal rate. Even at the Cambridge University Press around 1900, where the 1,000-en norm was supposed to prevail, elderly piece-work compositors were earning only one-third of the wages earned by colleagues still in the

³⁸ Hinman, C., *The printing and proof-reading of the first folio of Shakespeare*, Oxford 1963, i, pp. 39 ff.

³⁹ Howe, E., *The London compositor*, London 1947, p. 59.

⁴⁰ Scurfield, G., *A stickful of nonpareil*, privately printed, Cambridge 1956, p. 21. But Southward wrote in 1900: 'There are many compositors who can set more than 2,000 ens per hour, but we know also that the average performance of an office of 50 men, on book or jobbing work, is less than 1,000 ens an hour' (*Modern printing*, iv, London 1900, p. 87).

⁴¹ Abbott, J., *The Harper establishment*, New York 1855 (repr. Hamden 1956), p. 60.

⁴² Barnes, W. C., McCann, J. W., and Duguid, A., *A collection of facts relative to fast typesetting*, New York 1887, *passim*.

prime of life.⁴³ And in the eighteenth century and before, when the full working week was not 54 hours long but a soul-destroying 72 hours—12 hours a day, Monday to Saturday—we find both that actual output varied enormously from time to time and from compositor to compositor, and that it was generally far less, seldom more than a half, of the later theoretical norm of 1,000 ens per hour.

In 1683 Moxon, writing of journeymen's piece-work contracts, indicated that compositors' daily rates, and therefore their output, could vary by factors of up to two;⁴⁴ and Charles Manby Smith, writing of his work as a compositor in Paris in the 1820s, mentioned a good compositor in his shop who regularly worked four times as fast as his less competent neighbour.⁴⁵ Details of the actual weekly output of the compositors at the Cambridge University Press at the beginning of the eighteenth century show fluctuations, both collective and individual, by factors of up to three, spread over periods of months as well as of weeks. The average weekly output of the fastest compositor over the year 1701-2 was 38,000 ens, but he was also capable of setting 64,000 ens per week for five weeks; another compositor set an average of 27,000 ens per week for a period of 80 weeks, then 20,000 per week for a further period of 59 weeks, yet on one occasion he set 60,000 ens per week for a fortnight.⁴⁶

The highest of these actual rates (64,000 ens per week) fell short of the later norm (which would have required 72,000 ens per 72-hour week) by more than 10 per cent, possibly because the Cambridge compositors included make-up and imposition amongst their tasks, jobs which were often done by clickers (p. 192) or by time hands in the nineteenth century; and there is indeed no evidence that 1,000 ens per hour was regularly achieved anywhere in the hand-press period. But the grosser discrepancies—such as the Cambridge compositor who for months on end turned out only a third of what he could do at top speed—require another explanation; and it is to be found in the labour conditions of craft printing.

The most important factor, perhaps, was the variable flow of jobs, which could keep journeymen short of work for long periods, and even force them into part-time employment either with another printer or outside the trade altogether. There was also a widespread tendency amongst piecemen, who sold their labour as a commodity, to work for no longer and earn no more than they required for their immediate needs; and their response to the grinding monotony of repetitive labour and over-long hours was frequent

⁴³ Scurfield, G., *op. cit.*, p. 25.

⁴⁴ Moxon, J., *op. cit.*, p. 327; and see p. 173.

⁴⁵ Smith, C. M., *The working man's way in the world*, London 1853 (repr. London 1968), p. 62.

⁴⁶ McKenzie, D. F., *The Cambridge University Press 1606-1712*, Cambridge 1966, i, chs. 3, 4; *idem*, 'Printers of the mind', *Studies in bibliography*, xxii, 1969, pp. 7-22.

absenteeism. The great fluctuations in output found at Cambridge in the early eighteenth century were in fact normal for the hand-press period; the records of the Plantinian business in the sixteenth and seventeenth centuries, and of a variety of eighteenth-century houses all show comparable variations.

The next stage of the compositor's work was to impose the pages he had set into formes. In order that this process may be fully understood, we must first consider the paper on which books were printed, the nature of which partly determined their shapes and sizes.

Paper

MANUFACTURE¹

The manufacture of paper, which in the twelfth century, expanded from printing, and by the beginning of the fifteenth century paper were being made and traded in many parts of Europe, paper-making was a stable technique for a long time, with only a few minor improvements in equipment and a few general fluctuations in paper quality due to changing conditions; but the methods of manufacture, were practically the same as those used indeed long before.

The raw material of white paper was flax or hempen—rags, which the paper-maker first put by in a damp heap for a few days, and then the rags were next cut up into small pieces, which they were pounded to a pulp (or mangle), the impurities being carried off through a sieve. This took place in two or three stages, and was done by a rotary machine invented in Holland in the sixteenth century, but minced the rags into pulp, which they came to be called, not only several times faster than stamping, but the stuff made in hollanders resulted in a better paper. Their economic advantages were so great that by the eighteenth century there were paper-mills in Holland, France, and England.

The final stuff was transferred to a vat, which was about 1.6 m. by 0.8 m., with a capacity of 100 gallons. It was diluted there with water to the consistency of porridge; it was kept tepid with a fire underneath the vat, and it was stirred up once or twice a day.

The team at the vat consisted of the paper-maker (pronounced *koocher*), assisted by two boys. The vat itself, were a pair of moulds and a felt slightly larger than the moulds, which were twins, were oblong re-

¹ A generalized account assembled from the accounts of Balston's and Barcham Green's hand-vats in the early eighteenth century.