

Working in Letterpress

Details supplied by Eric Greenhill, a letterpress machine-minder and son of Cyril Greenhill who was formerly a letterpress minder himself. He describes working on a Miehle two-revolution press.

The preparation process for letterpress printing began in the Composing Department where, when a job or part of a job had been approved for printing, compositors working on flat ‘imposition’ tables, called ‘stones’, arranged assembled pages consisting of metal type and halftone images, the set-up of which was determined by the way the printed sheet was to be folded. A ‘forme’ contained all the pages that were to be printed on a particular sheet of a book or magazine. It was, in turn, enclosed within a rectangular metal frame called a chase.

The chases’ contents (there could be more than one) had to be locked tightly into place for safe transport from composing room to letterpress machine room, and for manoeuvring onto the ‘bed’ of the press itself. This locking-up was done using quoins – wedges, or expanding mechanical devices – originally made of wood. These had to be adjusted until nothing was loose, so that the chase could be lifted up. The quoins needed constant checking: if a forme wasn’t used for a few days, and the weather changed, the wooden quoins could loosen and the contents of the chase would fall apart.¹

The chase, once locked, was slid onto an adjustable-height table (called a trolley) whose top was then tilted up to a near-vertical position before the chase was wheeled along to the printing press. Smaller formes were moved around on their edge on a kind of two-wheeled angle bracket, then physically lifted into position on the press by the minder (journeyman), with the help of the assistant. It took two people to do this.

On the bed of the press, the machine minder had to take measurements and adjust the sizes of chases to make them fit. This involved putting “furniture” (usually wooden blocks) around a forme, a plate, or a chase, or between two chases, to keep all items firmly in place. Everything was then locked together using adjustable quoins.

It was also essential to ensure that the chases were in the correct position in relation to the paper that was to be printed. For this, the press bed also had clamps.

Sample sheets were then printed. For colour work, ensuring correct positioning of each chase was critical. Yellow was printed first but was hard for minders to distinguish on paper. It was followed by magenta, cyan (blue), and then black. Throughout, the minder had to work to obtain and maintain correct weight and colour and to ensure correct colour ‘register’ – i.e., to ensure that each colour was printed very precisely on top of the others.

The resulting printed sheets would then go to pre-makeready. This was highly skilled work, involving a 7-year apprenticeship. WARNING: Pre-makeready and the makeready process that came next pretty well defy verbal description. They were clear as a bell to those who had trained for and done

¹ We are talking here about hot-metal type, as used in the printing industry until the advent of photocomposition in the 1960s and 1970s. Hot-metal type was mostly cast using either Monotype (one letter or space at a time) or Linotype (one line at a time), and it was essential that the metal casting equipment be maintained with great care, otherwise it could be difficult or impossible to firmly lock up the contents of a chase. Linotype casting was particularly susceptible to negligent maintenance, the result being lines (‘slugs’) that were slightly wedge-shaped. –*ed.*

this work but they are confounding for those who have never actually seen the work done – especially on a large, cylinder letterpress machine such as the one referred to here. However, there can be no doubt about the complex and exacting nature of the process. As Eric described it:

You take a pull² (print). You go over the print, looking at the *back* of the sheet, at the impression. You cut the sheet into halves or quarters, depending on its size, and put it on a slanting board under strong sidelight, in order to see light and heavy impressions on the reverse side. Highlights will look smokey, murky, if the impression is too heavy; so you might have to lighten those areas up. You patch up (or pack) the low bits behind the sheet and cut from the sheet other parts that are too high.

You take a print. For yellow, you would do a makeready with a ‘dirty yellow’, in order to be able to see what was happening. You had to check that all halftone blocks were type high. You had to check position on the sheet. You had to go back to the Composing Department to have the sheet ruled up, to make sure that alignment and page imposition had been done correctly.

You would then re-dress the impression cylinder, ‘packing’ as needed: 7 or 8 sheets of supercalendered paper plus a new top sheet (manila).

After the position has been okayed, you start the makeready. This is the most difficult part of the job, the second-most-difficult being the registration of the formes.

If a forme contained halftones, it was necessary to increase the pressure exerted on them by the impression cylinder of the press, and this was done by using an ‘overlay’.

We would be provided with mechanical overlays (either a chemical chalk overlay or a 3M overlay – thinner for highlights than for solids). All halftones were pulled on special paper, washed out in a chlorine bath.

Or there could be hand-cut overlays. You would take three pulls on supercalendered paper. Cut out solids, stick on a base sheet. With the next sheet, you would cut out highlights and paste those on. There could be up to three levels of this.

The overlays had to be attached to the impression cylinder in the correct position; you would take an impression on a sheet, take the top sheet off and other sheets, and take a pull.

At the front of the cylinder there are clamps to hold all packing and the outer (manila) sheet together and in place. The top sheet is kept tight with a ratchet. If you go down five or six sheets of packing and stick one overlay in the front end, you smooth it from front to back with a damp rag so that when the dampness dries you get a tight sheet. To get an impression of the tight sheet, you slide a bit of card under the top sheet (what we called “carding up”). You always used small pieces of card, positioned to affect only the halftone illustration.

In some shops you did your own cutting of overlays; in others, there were people who *only* cut overlays all day long.

The overlay created more pressure on solids than on highlights. (Interlaying might lift the halftone pieces off the base.) Stereos (solid plates of type metal cast from a papier-mâché or plaster mould,

² In printers’ parlance, you ‘pull’ a proof on the press (i.e., take an impression) of the forme awaiting printing.

taken from the surface of a forme of type) were usually thick at the outside edges and thin at the middle, so interlaying could correct this. We used overlays for *quality* work.

Then you examine a new pull, but this time the *face* of it. You can't add more and more packing; you get slurring (smearing) if the cylinder is under- or over-packed.³ So you do a patch-up, [stick it up](#) and check. By now, everything should be okay. Take a pull and get the colour sorted out: check ink ducts, ink flow, doctor blade.

Then do a wash-up and get rid of all makeready ink. Add ink to duct, check a sheet. You may find that you need a second wash-up to get good clean colour. Do this and check the results.

Take a proof to Quality Control for a check, and then adjust further as needed.

During production, you keep pulling 'doubles'⁴ to check register. If there is movement on yellow, not much can be done other than to start over.

For one- and two-colour printing there were always two people on the press – a minder and an assistant.

The work was finicky and demanding in the extreme – and time-consuming. It could take up to 16 hours per colour, so up to 64 hours in total to makeready a four-colour job.

Once makeready was done, and if good hard packing was used, it would not 'give' during a print run. Soft packing (using antique paper, for instance) was good for overcoming or masking imperfections in a typeface; it could reduce makeready times. But if something went through the press and made a dent in the cylinder, the minder would have to dampen the cylinder packing and run a hot iron over the area to get rid of the problem.

Most letterpress printing was done on single-colour machines, so for a two-, three-, or four-colour job you had to run the same sheet through again, for each colour, after the initial colour had been printed. You had to keep 'pulling doubles' by taking early pulls and putting them through later to surprint, to ensure you weren't losing register. Any of the machine's mechanical settings could be at fault if this happened. Grippers need to be reset for every job. Drop guides rest on the sheet and lift it up just after front lays lift and the grippers grip.

Register, especially in the days before climate control, was also affected by humidity, because, of course, paper is notoriously unstable. Printed sheets had to be covered by the minder and assistant between runs. You worked as a team. You generally worked with the same assistant all the time. Quality control was the responsibility of the minder, but if the assistant spotted a problem, he would draw attention to it.

The ink came in cans and was poured into a narrow ink duct. Within the duct, you used wedges ('clumps') to control the amount of ink across the sheet. The ink was thick, in consistency not unlike oil paint.

³ The surfaces of the impression cylinder and of the pages of type on the bed of the press must meet each other at precisely the same speed. Over- or under-packing can cause slurring by adversely affecting the radius of the impression cylinder.

⁴ A quad sheet is a sheet of either 'quad demy' (35" x 45") or larger, such as 'eight crown' (40" x 60").

As for ink adjustment, if the yellow had hardened since it was printed, the red wouldn't 'take' on it, and would reticulate. In this case, someone would have to run over every sheet with a dry cloth to disturb the surface of the yellow ink to make the red ink 'take' (this could mean rubbing 10,000 sheets!!); we used SafeFix, machine oil, anything, to make the ink take. The oldsters would add concoctions of their own making and wouldn't tell anyone what was in them. The skill came in knowing what and how much to add. You couldn't just add ink out of a tin.

To avoid the offsetting of ink (i.e., the unwanted ghosting of not-quite-dry ink onto the adjacent sheet after printing), you had to use anti-setoff spray (a gum spray); you had to blast it out across the whole sheet, which meant you could only hand-interleave at a set speed and couldn't interleave a quad sheet⁴ (too big).

The presses ran at between 1,000 and 1,500 impressions per hour. Presses fitted with honeycomb beds ran slightly faster, as they were lighter and their return required less energy to drive the reciprocating mechanism of the bed of the press. It was easier to get good register with these beds, as the plates were mounted on with clips that allowed for small adjustments. The reciprocating bed of a Miehle was very heavy, like a tank, and only so much speed was possible.

Once a job was finished, the formes went back to the Comps and were either left standing to be used again in a future printing or were broken up by someone in Comps (called a 'diss' hand – usually, but not always, the same person/people; it depended on the workload).⁵

As for who did what, there was job demarcation. Minders did the makeready on their own. The assistant would be moving away the previous job, cleaning the machine, getting in the paper, fetching and carrying. Each function was jealously guarded. Assistants were not allowed to be on the side of the press where the machine's control buttons were. With unions like NATSOPA, if any inroad was made, the union would claim that part of the job as theirs.

The press room was noisy, and it was dangerous. Printing machines *are* dangerous. But, if you used all the safety guards, you couldn't do your job.

Rate of pay on these presses? I started at 12/6d a week [just over 60p today] and I recall 16 shillings a week [80p today] around 1944. There were pay grades, based on locale. London was Grade 1. For a journeyman in Aylesbury (Grade 4), pay was £3/12/6 a week [just over £3 60p today].

Having worked in letterpress elsewhere, I can say with assurance that Sun were more advanced, more sophisticated than other companies, and more into pre-makeready, thus reducing preparation time on the press itself. Sun also used honeycomb beds before most other printers because the company needed higher productivity.

⁵ It should be noted that this was normally done only if founder's type had been used (that is, type from a type foundry), the 'diss hand' returning each individual letter to its proper location in the type 'case' in which the font was stored. Material set using the in-house Monotype system could be re-melted for re-casting, or 'dissed' (i.e., distributed back into a case, if needed for future use and if in good enough condition and not worn).