

PART I.
OF FORWARDING.

As the gathering of the sheets of a book, after they have been printed and dried off, is nearly always performed at the printer's, it will not be necessary to enter into any details on that subject, but to consider as the commencement of binding, the operation of

FOLDING,

which is of great importance, the beauty of a book depending on its being properly and correctly folded, so that, when it is cut, the margin of the different pages may be uniform throughout, and present no transpositions, to the inconvenience of the reader and deterioration of the work.

The various sizes of books are denominated according to the number of leaves in which the sheet is folded; as folio, quarto, octavo, 12mo, 16mo, 18mo, 24mo, 32mo, &c. Each form presents a certain number of pages, so disposed that, when the sheet is properly folded, they will follow the numeric order. In commencing the folding of any work, particular attention should be paid, in opening out the quires or sets, to observe that the *signatures* follow each other

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alphabetically, and, if consisting of two or more volumes, that the whole of the sheets belong to the right one.

Although each form is folded in a different manner, it will not be requisite to detail the whole, as a description of the octavo and twelvemo will amply furnish an idea of the proper way of folding the larger and smaller sizes.

Octavo.—The sheets being placed on the table with the signature, which will be seen at the bottom of the first page, turned towards the table at the corner nearest to the left hand of the workman, will present pages 2. 15. 14. 3. below, and above, with their heads reversed, pages 7. 10. 11. 6. (reading from left to right). The sheet is then taken with the left hand, by the angle to the right, and creased with the *folder* in the right hand, in the direction of the *points* made in the printing, taking care, by shading to the light, that the figures of the pages fall exactly one on the other, which will be 3 upon 2, and 6 upon 7, and thereby presenting uppermost pages 4 and 13, and above 5 and 12. The top part of the sheet is then brought down, with the left hand, upon the lower, pages 5 and 12 falling upon 4 and 13, directed properly, and again folded. The sheet then presents pages 8 and 9, which are then folded evenly, 9 upon 8, forming the third fold and finishing the sheet.

Twelvemo.—The signature to this size, when placed before the workman, should be at the top on his left hand, and towards the table, the sheet pre-

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senting pages 2. 7. 11., 23. 18. 14., 22. 19. 15., 3. 6. 10. On the right, pages 11 14. 15. 10., are separated from the others by a larger space, in the middle of which are the points, indicating the proper place where the ⁷ pages should be cut off. The *Folder* detaches this part, and placing page 11 upon 10 makes a fold, and 13 upon 12, which will be uppermost, finishes the folding of what is called the *inset*, and which bears the signature of the sheet it has been separated from, with the addition of a figure or asterisk, as A 5, or A*. The remaining eight pages are folded in the same way as the octavo, and when done the inset is placed in the middle of it, taking care that the head lines arrange properly.

Books are sometimes printed in what is called half sheets, but they are folded the same, after cutting them up; the octavo in the direction of the points, the twelvemo in *oblong* direction of the paper, and laying them apart from each other. There are also oblong octavos, which are folded in the middle in a line with the points, the second fold in the same direction between the heads of the pages, and the third on the length of the paper.

In the first fold of the octavo sheet is shown the manner of folding the folio, and in the second the quarto: the twelvemo also presents us with the eighteens, after the sheet is cut into three divisions: little or no difficulty will be experienced in folding any other size that may occur, attention to the disposition of the pages and signatures being only required.

It will often be found necessary to refold a book which, previous to being bound, may have been done up in boards, sewed, or otherwise. This should in all cases be carefully attended to, after the book has been taken to pieces, the back divested of the glue and thread, and the corners or other parts which may have been doubled, turned up. This is usually done by examining if the margin at the head and fore-edge is equal throughout, bringing those to their proper place that are too short, and cutting those that are longer than the general margin. By these means an uniformity will be presented after the edges of the book are cut, which could never be attained if not attended to whilst the book is in this state.

The sheets of the book being all folded, are gathered together, beat up between the hands on the table to bring them even, and then

COLLATED,

to see that the whole of the sheets belong to the same work and volume, as also that none are wanting. This is done by taking the book in the right hand by the upper corner of the fore-edge, and with the left, opening the sheets on the back and letting them fall successively one after the other. The signatures will be thus seen in alphabetical or arithmetical order, as A. B. c. &c., or 1. 2. 3. 4. &c., to the last, which should always be examined to ascertain that it is the completion of the book. By these means any sheet in-

correctly folded is also detected. Books in folio and quarto are generally collated with a needle or pricker, by raising the sheets singly from the table, but this practice should be resorted to as little as possible, as the work is liable to be damaged. If any sheet is wanting or belongs to another volume, or is a duplicate, the further progress of the work must be suspended, till the imperfection is procured or exchanged. Those that have been wrong folded must be corrected, and any *cancel*s occurring in the work, cut out, and replaced by the reprints which will generally be found in the last sheet of the book. It is usual also with some binders to place any plates belonging to the volume, at this period, but as the liability of damage to them is great in the process of *beating*, it will be much better to perform that operation after the book is brought from the stone, for which directions will be given. The book being found correct, will be ready for the beating-stone.

BEATING, PRESSING, &c.

The first operation is commenced by shaking the volume upon the stone by the back and head, so as to make the whole even, and facilitate the division of it into as many equal parts, which are called *sections* or *beatings*, as may be judged necessary according to the thickness and other circumstances. A section is then taken and well beaten over, drawing it with the hand towards the body so as to bring the various

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parts successively under the hammer, and carefully avoiding striking more blows in one part than the other, except giving the edges a slight extra tap round. The section is then turned, and the like proceeding gone through; as also on each side after it has been separated, and the bottom part placed on the top, the middle of the section being thereby brought under the action of the hammer. This being done, the sheets are replaced in their proper order, and two or three taps with the hammer given to make them lay even. In beating those books with which, from their value, greater care is required, it is usual to place a guard or waste leaf of paper on each side of the section, to avoid any stains or marks which the stone or hammer might be liable to make.

It requires more skill than actual strength in beating, the weight of the hammer being nearly sufficient for many works. Attention must be paid to the hammer descending parallel to the surface of the stone, to avoid marking or cutting the sheets with the edge. Figure 3. plate v. shows the manner of holding the hammer, &c.

Before beating a book, care should be taken to observe if it has been recently printed, for if so it would *set off* by being beaten too much. This will be easily ascertained by referring to the date at the foot of the title or by smelling the ink it has been printed with, which, being composed partly of oil, will not have got perfectly dry. This will particularly be the case with machine printed works. As, how-

ever, it is frequently necessary to bind a volume immediately after being printed, it will be requisite to take every precaution against its setting off, which would destroy the beauty of the work. It is the practice of some to put the book into an oven after the bread has been taken out, or into a stove heated sufficiently to dry the ink and make it search into the paper; but as these means are not without danger of getting the paper blackened or soiled, it is a better plan to interleave the sheets with white paper, which will receive all the ink set off. Should the sheets have been hotpressed, which is readily distinguished, this precaution will not be necessary.

When employed at the beating stone, the workman should keep his legs close together to avoid *hernia*, to which he is much exposed, if, with the intention of being more at ease, he contracts the habit of placing them apart.

A rolling press has lately been invented as a substitute for the beating which books require previous to being bound. This will be fully described in the chapter on presses, where an engraved representation is given. Its operation is quicker and its power of compression greater, in a proportion of five sixths. A boy sits in front of the press and gathers the sheets into packets, by placing two, three, or more upon a tin plate of the same size, and covering them with another plate, the number of sheets depending on the stiffness and thickness of the paper. The packet is then passed between the rollers and re-

ceived by the man who turns the winch, who has time to lay the sheets on one side, and to hand over the tin plates by the time that the boy has prepared the second packet. These machines have been introduced into offices of great extent, and from the economy of time and abridgment of labour, with the best results; but it is a question whether they will ever become general in those where the business is limited, and their use but little called for.

After beating, should there be any plates to the work, they, as before stated, must now be placed among the text. Great care must be taken to make the justification of the plates uniform with the text, by cutting off any superfluity at the head or back, and by placing them exactly facing the pages to which they refer, pasting the edge next to the back. Any that may be short at the head must be brought down, to preserve an uniformity. It is advisable to place a leaf of *tissue paper* before each plate, particularly when newly printed, as the ink of copper-plates is longer in drying than that of letter-press. When a work contains a great number of plates, which are directed to be placed at the end, they are sewn on the bands by overcasting, which operation will shortly be treated of in full.

The book being now ready for pressing, is taken in sections, according to the work, and the judgment of the workman, and placed between pressing boards, the size of the volume, one on the other, and conveyed to the *standing-press*, which is pulled down as

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tight as possible by the *press-pin*. To compress them the more, a *capstan* or winch is employed.

After the book has been sufficiently pressed, it will be necessary again to *collate* it, to correct any disarrangement that may have taken place during the beating and pressing.

SAWING THE BACKS.

This operation is performed to prevent the bands on which a book is sewn, appearing on the back. After beating the book up well on the back and head, it is placed between two *cutting boards*, the back projecting a little over the thick edge, and tightly screwed in the *laying* or *cutting press*, the whole being elevated sufficiently to prevent the saw damaging the cheeks of the press. Then with a *tenant saw* the proper number of grooves are made, in depth and width according to the diameter of the band intended to be used, which will depend on the size of the book. A slight cut must also be given above the first and under the last band, for lodging the *chain* or *kettle stitch*. It is very necessary that the saw should be held parallel with the press, without which precaution, the grooves being deeper on one side than the other, the work will present, when opened, a defect to the eye.

The *end papers*, which should consist of four leaves of blank paper, folded according to the size of the book, are now prepared and one placed at the beginning and end of each volume.

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SEWING.

According to the number of *bands* wanted, must be attached to the loops on the cross-bar of the *sewing-press* (see figure 1, plate v.), as many pieces of cord, of proper length and thickness, and fastened with the aid of the *keys* in the groove of the press as nearly equal in tightness as possible. When this is done the back of the first sheet of the book is placed against the cords, which must be moved upwards or the contrary to the marks of the saw, when the small screws at each end under the cross-bar must be moved upwards till the strings are equally tight. All this being disposed, the book is commenced sewing by placing the end paper, which has no marks of the saw, on the sheet before laid down, and sewing it throughout, leaving a small end of thread to form the knot, after sewing the first sheet, which is then taken from under and sewn the whole length.

There are various ways of sewing, according to the size and thickness of the sheets of a book. A volume consisting of thick sheets, or a sheet containing a plate or map, should be sewn singly the whole length, in order to make the work more secure and solid. Great care should also be taken not to draw the thread too tight at the head or foot of the book, and to keep the back slightly swelled, the beauty of the binding depending much on this when the volume is backed.

When a book is sewed *two sheets on*, three bands