

Gluing the Spine, Rounding and Backing

[Cover to Cover: Exposing the Bookbinder's Ancient Craft](#)



The purpose of gluing the spine, or 'gluing up' as it was known in the trade, was to hold the sewn sections together, such that they did not shift when it was time to 'round' and 'back' the book. Rounding and backing did not form part of the bookbinding process until the 1500s, so glue was not required before then.



Glue brushes.

Italian round brushes made of natural hog hair bristles mounted on solid wood handles. The hog hair is a stiff bristle brush, suitable for applying PVA, paste and other cold glues as well as hot hide glues.

Round brushes tend to be the brush style of choice for applying thicker glue as they hold it better within the brush.

Since that time, a variety of glues have been used, the earliest made from animal hide. The difficulty with this and also bone glue, introduced in the 1800s, was its tendency to dry hard and become brittle. This compelled the binder to start the rounding and backing process before the glue had dried on the spine. Books glued in this manner also had a tendency to continually open to the same place, where they had initially been broken open, if they had not been systematically opened at the end of the binding process. So, by the latter part of the 19th century, when the manufacture of 'flexible' glue began, many binders embraced its use. It included a hygroscopic additive such as glycerine or sorbitol, which prevented it from drying out and essentially ensured a fully flexible binding regardless of climate. In recent years, however, synthetic glues such as PVA (Polyvinyl acetate) have been much favoured by binders. Unlike earlier glues which required heating, PVA was ready for immediate use. It was strong, mostly waterproof once set, and was not considered particularly tasty by insects.

Before gluing the back of the book, it had to be knocked perfectly square at the head and along the back. Next, it was placed either in a lying press between two pieces of board (folds facing upwards), or laid on a workbench, with a piece of waste paper between it and the bench so that the folds projected just over the bench. The waste paper was folded down over the bench to protect it from being glued and a piece of board was placed over the top section and brought evenly to the back edge

of the book. If gluing at the lying press, a short-bristled brush was dipped into the glue, a thin layer of which was then spread over the back of the book, outwards from the centre. The brush was used to work the glue such that it penetrated between the sections but, in the case of cord bindings, it was never spread over the cords, merely in the spaces between them.

This method of gluing could be problematic; set the book up in the lying press too tightly and the glue wouldn't penetrate between the sections, too loosely and the glue seeped well into the sections making the pages difficult to open. For these reasons, binders often glued up on the edge of a bench. In this process, their left hand was used to hold down the board covering the book, whilst the right hand used the brush to work the glue into the sections, at the same time wiping away any surplus. Once glued, the book was set aside to dry, and any glue that had found its way onto the cords was removed before it had a chance to harden.

Did you know...?

Before gluing a book sewn on raised cords, it is advisable to slightly untwine, but not completely fray, the cords at the end closest to the folds. This minimises the risk of damage to the sides of the book when it is placed under pressure. Opening up the cord is a simple process, easily achieved by inserting an awl or bodkin between the multiple strands which combine to make a single cord. Leaving the cords unfrayed at their loose end will reduce the chance of damage to them until it is time to completely unravel them when attaching the boards.

Rounding

In rounding, the back of the book was made convex in shape. The process not only created a smooth, curved surface which could later be titled, it distributed evenly the swell at the back of the book caused by sewing or the use of guards. If the binder omitted this step, plus that of backing, the weight of the sewn sections would eventually force the book to round itself in reverse. The spine would take on a concave form, the sewing threads would loosen, and the sections would begin to sag forwards, particularly at the top of the spine. Eventually the binding would collapse entirely. The benefits of rounding were obvious and by the 1500s, binders were rounding almost every book.



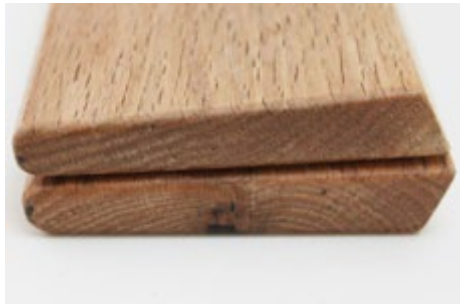
A book could be rounded before or after the cutting of its edges, however, it was ideally done whilst the glue on its spine was in a slightly moistened state. When the glue retained no tackiness that would cause it to stick to a hammer, the book was laid on the workbench with the fore-edge facing the binder. He or she then placed the thumb of their left hand against this edge, whilst the fingers of the same hand carefully drew the top sections towards their body. During this movement, the edges of the back of the book were gently tapped with the face of the backing hammer, beginning in the centre, at a point just above half way. When the sections yielded to the pressure, the book was flipped over and the process repeated, numerous times if necessary. The binder's thumb was a crucial factor here as it helped to mould the shape of the back. The shape of the round was usually at the binder's discretion, however, a book with a lot of swell at the back would tend to fall into a large round, whilst one with minimal swell produced little round or none at all.



Did you know...?

Mistakes, or a lack of attention to detail, in earlier bookbinding steps will become obvious during rounding. The book may 'start' or show steps at its fore edge, where a smooth gentle curve should have been. Although this can be the result of poor gluing up, more frequently it's associated with inferior sewing. Sections may not have been knocked tightly enough into the folds, there may have been inadequate tension on the sewing thread, particularly at the kettle stitches, or a weaver's knot (a join in the thread) may not have been embedded into the paper correctly.

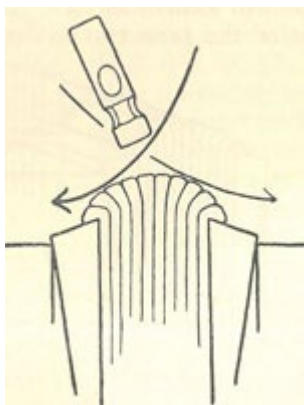
Backing



Backing boards.

These wooden boards are wedge shaped to assist in the backing process. The upper edge is bevelled away from the centre, allowing the sections to be hammered over them in a manner that forms a ridge or shoulder for the cover boards to sit.

In order that a book could withstand continual, even hard usage it needed to retain its shape. Backing essentially made permanent the round shape created during the previous rounding process. It also increased the flexibility of the book, making it easier to open and, most importantly, it created the ridge or 'joint' on each side of the back in which the boards (later the cover) would sit. Board selection was crucial at this point, as the extent of the backing required had a direct relation to the thickness of those boards. Small, lightweight books with little swell in the back required only thin boards; thicker, larger books required a heavier board to accommodate that swell.



Backing was performed before the glue had dried completely on the book's spine. It required only a few tools: a backing hammer, a set of backing boards and a lying press. Before backing, the binder made a pencil mark on the book's first and last section, close to the back, indicating the thickness of the boards to be used for the cover. This represented the width of the joint to be turned over. A backing board was then placed on either side of the book; the straight inner edge against the book itself and its shorter, wedge-shaped edge facing outwards. The top edge of the boards met with the pencilled joint mark. The book and the boards were then held at eye level to check that the boards were parallel and the book was square. If no adjustments were required, the book was lowered into the centre of the lying press with one hand, whilst the other screwed up the press evenly. The outside edges of the backing boards needed to be level with the top of the press. Once secured, the book could be backed.



Backing hammer.

This English backing hammer is made of forged steel and is used to round the back of the book. It is unique in that it has a round dome-shaped head and a claw without a notch which is also rounded and smooth so as to prevent cutting of the sections. The French hammer has a larger head and a longer claw.

Holding the backing hammer close to its steel head, and focusing on one side of the spine at a time, the binder used the rounded end to lightly 'glance' the spine from near its centre outwards to the edge. The face of the hammer was never brought down flush with the spine; blows were always at right angles from near the middle of the spine in order to gently coax one section to fold over the next. This process was repeated along the length of the spine until a smooth contour was achieved and the fullness of the swell had been brought over to the line where the joint was to be formed. The process was repeated on the other side of the spine. The hammer was then tapped along the length of the joint on both sides, with a slightly heavier hand, until it turned over sharply at right angles, thus making the ridge or 'shoulder' in which the board would sit. Occasionally it was necessary to use the claw side of the hammer to complete this process.

A successful backing saw the middle sections largely untouched, with following sections folded slightly over the next, in perfect graduation, until the first and last sections bent at a permanently creased right angle. The ideal shape for the back of the book changed over time but it is now considered to be one third of a circle.

[Did you know...?](#)

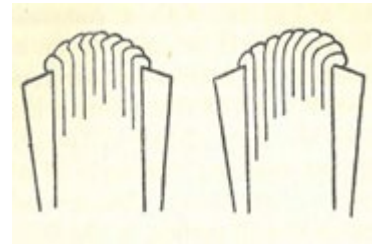


Though backing may seem simple enough, it's the one step in the bookbinding process most likely to cause uneasiness amongst the trade's novices – and rightly so. The time and energy spent on folding paper, sewing sections, gluing, rounding, even attaching endpapers (if this was done early on), could all be lost with a single blow of the hammer. If the binder hammers too hard in the centre of the book, a depression or 'valley' may be created which will be obvious once the book is covered. If they don't commence hammering high enough, however, a 'rabbit' back will form, the round taking on more of a pointed look. Direct hammer blows, instead of sideways glancing blows, will result in visible creasing to the inside margins. Above all, a crushing hammer blow to the sewing system, particularly the kettle stitches, could cut the thread, compromising the integrity of the whole structure. Over time the book would begin to collapse.

In his book, *The craft of bookbinding: A practical handbook* (1978), p.126 Eric Burdett provides an excellent account of the pitfalls of backing. A drawing of seven different backing shapes is provided, the first showing the correct form; the others showing the results of hammering too hard, too low across the back (creating the 'rabbit' back), too directly, and also off-centre, bringing about the sloping

back. Burdett also describes the slightly flatter spine shape common to bindings of the early 19th century. These coincided with the 'hollow back' and had a tendency to cave in, taking on the appearance of *De la sagesse* (pictured above), so the style is no longer preferred.

In his 1901 publication, *Bookbinding, and the care of books...* Douglas Cockerell also provided a drawing of the incorrectly backed book. Pictured to the right are the spines of two books. The first, with sections crushed by the hard, direct blow of the hammer, will surely result in visible creases to the paper inside the book. The second spine exhibits unevenly fanned sections, where hammering off-centre has brought about the sloped back.



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