at each buttock-line take the distances of the level line from the arc, and set them off in the sheer plan, upon the line drawn square to the sheer of the transom, below the point of intersection of the square and sheer lines. From these points draw lines parallel to the sheer, and where they cut the corresponding buttock-lines, draw a curve which will represent the round-down of the transom below the sheer. To transfer this curve to the body plan, level in its intersection with each buttock-line in the sheer plan to the corresponding buttock-lines in the body plan ; through the points thus obtained pass a curve. To delineate the curve in the plan of the transoms to which the mould is to be made, proceed thus. In the sheer plan, observe the points of intersection of the sheer-lines with the buttock-lines ; take the distances of these points in the direction of the sheer to the line drawn at right angles with the sheer. Transfer these distances to the plan of the tran­soms by setting them off on each buttock-line, from the perpendicular to the transoms. Through the points thus obtained pass a curve, which will represent the mould for the upper after-edge of the transom. This curve may be corrected, by means of the square timbers, on the principle before explained with respect to the horizontal transoms. We may here remark, that, strictly speaking, the buttock-lines in fig. 32 should have been expanded, by taking their distances from the middle line in the body plan round the curve of the transom, and transferring them to the plan of the transoms. But as the variation would be very trifling, this operation is unnecessary in practice.

To lay off a cant-transom. In the sheer plan, from the perpendicular to the transoms, take the distances along the upper side of the transom to the intersection of the upper side with each buttock-line and with the bearding line. Set these distances off in the plan of the transoms, on the corresponding buttock and bearding lines, from the per­pendicular to the transoms. A curve through these spots will give the form of the transom.

To test the accuracy of this curve, in the sheer plan project the heights of the intersections of the upper sides of the transom with the square timbers and buttock-lines, to the corresponding timbers and buttock-lines in the body plan. A curve passed through the spots thus obtained will represent the transom in the body plan. Next, in the sheer plan, from the perpendicular to the transoms take the cant distances of the intersections of the transom with the square timbers and with the fashion-piece. Set off these distances in the plan of the transoms, from the perpendicular to the transoms, and through the spots draw lines parallel to the said perpendicular In the body plan take the horizon­tal distances from the middle line, to the intersections of the transoms with each square timber and square fashion­piece. Lastly, in the plan of the transoms set off these distances from the middle line on the lines just drawn, pa­rallel to the perpendicular of the transoms. The spots thus obtained should correspond with the curve previously drawn by means of the buttock-lines.

The bevellings of the transoms may be taken in the sheer plan from the buttock-lines, by placing the stock of the bevel in the direction of the upper surface of the transom, and the tongue in the direction of the buttock-line. In this case the stock of the bevel must, when applied, be placed in a fore and aft direction.

If it be thought more desirable to set off the bevellings square to the curve, it will first be necessary to lay off the under sides of the transoms, as before described with re­spect to their upper sides. This being done, in the plan of the transoms take the shortest distance apart of the upper and lower sides of the transom, at any assigned station. This distance denotes how much the transom is under a square in its depth, and therefore determines the bevelling at the assigned station.

With respect to the wing-transom, it must be observed, that the margin is of a parallel depth all round. The be­velling of the margin conforms to the direction of the fore side of the rabbet of the post. Below the margin the be­vellings are taken as before described.

Moulds may be made to the after lower edges of the transoms, which moulds are applied on the under surfaces, through the spots obtained from the bevellings.

We shall next proceed to lay off the side counter-timbers. We have already explained the manner of obtaining the projection of the after edge of the side counter-timber in the sheer and body plans. The fore edge is drawn in the sheer plan by setting off from the after edge the intended size or moulding of the timber. To draw the fore edge in the body plan, square down from the sheer plan the points where it cuts the various level lines, to the corresponding level lines in the half-breadth plan ; take the half-breadths of the ship at the points thus obtained, and transfer these half-breadths to the body plan on the corresponding level tines. Hence we obtain the projection of the fore edge of the side counter-timber in the body plan.

Now it is evident that the lines in the sheer plan repre­senting the fore and after edges of the side counter-timber do not give its true form, and that, on account of the tum­bling home of the side, a mould made to the above lines would be shorter than the timber itself. Hence it becomes necessary to expand the timber, by making it revolve on a horizontal axis at the heel until it becomes vertical. This process is thus performed. In the body plan draw a straight line, about three fourths of an inch from the upper and lower part of the fore edge of the side counter-timber, as seen in fig. 33, Plate CCCCLIII. This straight line represents the upper side of the mould ; its lower end terminates on the level line of the wing-transom at the side ; it is marked, in figs. 31 and 33, “base.” Having all the level lines marked on this line, imagine it to revolve round its lower end until it comes into a vertical position ; mark in the level lines in their new situation, and transfer them to the sheer plan, in which plan the intersections of the edges of the side counter-timber with the original level lines are to be squared up by perpendicular lines to the new level lines. Through the points thus obtained draw curves for the fore and after edges of the side counter-timber in their expand­ed or vertical position. To these curves the mould must be made.

Next, in the body plan, take the distances along the va­rious level lines, from the straight line representing the mould, to the fore and after edges of the timber. In the sheer plan let the distances just taken from the body plan be marked upon the fore and after edges of the mould at the new or expanded level lines. When the mould is ap­plied on the timber, these distances or spilings are set off in the direction of the tumbling home. After the outside of the timber is completed, the inside may conform to the scantling of the top-side.

We may observe, that instead of the spilings being mark­ed on the mould, brackets are sometimes nailed on the mould, corresponding to the spilings. These brackets are shown in fig. 31, marked *b.* In this case, when the outside of the side counter-timber is completed, the under edge of each bracket exactly conforms to the timber. For the sake of illustration, brackets are also shown in fig. 29.

To take the bevellings of the side-counter timber from the half-breadth plan, place the stock of the bevel to a fore and aft line, and the tongue to the horizontal round-aft of the various level lines. In applying these bevellings, the stock is placed on the mould to the level lines, and the tongue is placed in the direction of the tumbling home.

We have thus described some of the principal operations in laying off. We have endeavoured rather to illustrate the general principles than the details of the subject ; and