keel to the top of the side, The upper end of the timbers may be determined by taking the ſeveral heights of the upper part of the top side above the top-timber line, and ſetting them off above the top- timber line on the correſponding timbers in the body plan. The lower parts of the timbers are ended at the rabbet of the keel as follows : With an extent of 4 1/2 inches, the thickneſs of the bottom, and one leg of the compaſſes at the place where the line for the thick­neſs of the keel intersects the baſe line ; with the other leg deſcribe an arch to interſect the keel line and the baſe. Then six one point at the interſection of the arch and keel, and from the point of interſection of the keel and baſe deſcribe another arch to interſect the for­mer. Then from the interſection of theſe arches draw one ſtraight line to the interſection of the keel and baſe, and another to the interſection of the lower arch and the keel, and the rabbet of the keel will be deſeribed at the main frame. All the timbers in the middle part of the ſhip which have no riſing terminate at the interſection of the upper edge of the rabbet with the baſe line ; but the lower part of the timbers, having a riſing, end in the centre of the rabbet, that is, where the two circles interſect. Thoſe timbers which are near the after end of the keel must be ended by ſetting off the half-breadth of the keel at the port in the half- breadth plan, and describe the tapering of the keel. Then at the correſponding timbers take off the half-breadth of the keel ; ſet it off in the body plan, and deſcribe the rabbet as before, letting every timber end where the two circles for its reſpective rabbet interſect.

To deſcribe the side counter or ſtern timber, take the height of the wing tranſom, the lower counter, up­per counter, and top-timber line at the side ; from the ſheer plan transfer them to the body plan, and through theſe points draw horizontal lines. Divide the diſtance between the wing tranſom and lower counter into three equal parts, and through the two points of diviſion draw two horizontal lines. Draw alſo a horizontal line equidiſtant from the upper counter and the top-timber line in the ſheer plan, and transfer them to the body plan.

Now, from the point of interſection of the aft side of the ſtern timber at the side, with the wing tranſom at the side in the ſheer plan, draw a line perpendicular to the middle line in the half-breadth plan. Draw alſo perpendicular lines from the points where the upper and lower tranſoms touch the ſtern-poſt ; from the points of interſection of the ſtern timber with the two horizontal linesdrawn between, and from the interſection of the ſtern timber with the horizontal line drawn between the upper counter and top-timber line. Then curves muſt be form­ed in the half-breadth plan for the ſhape of the body at each of theſe heights. In order to which, begin with the horizontal or level line repreſenting the height of the wing tranſom in the body plan. Lay a slip of paper to that line, and mark on it the middle line and the timbers 37, 35, 33, and 29; transfer the slip to the half-breadth plan, placing the point marked on it for the middle line exactly on the middle in the half-breadth plan, and ſet off the half-breadths on the correſponding timbers 37, 35, 33, and 29, and deſcribe a curve through theſe points, and to interſect the perpendicular drawn from the ſheer plan. In like manner proceed with the horizontal lines at the heights of the coun­ters, between the lower counter and wing tranſom,

above the upper counter and top-timber line 5 and from the interſections of the curve drawn in the half-breadth plan, with the perpendicular lines drawn from the ſheer plan, take the diſtances to the middle line, and ſet them off on the correſponding lines in the body plan ; ‘then a curve described through the ſeveral points thus ſet off will be the repreſentative of the ſtern timber.

The round-up of the wing tranſom, upper and lower counter, may be taken from the ſheer draught, and ſet off at the middle line above their reſpective level lines in the body plan, by which the round-up of each may be drawn. The round aft of the wing tranſom may alſo be taken from the ſheer plan, and ſet off at the middle line, abaft the perpendicular for the wing tran­ſom in the half-breadth plan, whence the round aft of the wing tranſom may be deſcribed.

The after body being now finiſhed, it remains to form the fore body ; but as the operation is nearly the ſame in both, a repetition is therefore unneceſſary, ex­cept in thoſe parts which require a different proceſs.

The ſoremoſt timbers end on the item, and conſequently the method of deſcribing the ending of them differs from that uſed for the timbers uſed in the after body. Draw a line in the body plan parallel to the middle line, at a diſtance equal to the half of what the ſtern is ſided. In the ſheer plan take the height of the point of interſection of the lower part of the rabbet of the ſtern with the timber which is required to be ended, and ſet it off on the line before drawn in the body plan. Then take the extent between the points of interſection of the timber with the lower and upper parts of the rabbet, and with one leg of the compaſſes at the extremity of the diſtance laid off in the body plan deſcribe a circle, and the timbers may then paſs over the back of this circle. Now, by applying a ſmall ſquare to the timber, and letting the back of it interſect the point ſet off for the lower part of the rab­bet, the lower part of the rabbet and the ending of the timbers will be deſcribed.

The foremoſt timbers differ alſo very much at the head from thoſe in the after body : For ſince the ſhip carries her breadth ſo far forward at the top-timber line, it therefore occaſions the two foremoſt frames to fall out at the head beyond the breadth, whence they are called *knuckle* timbers. They are thus deſcribed : The height of the top-timber line being ſet off in the body plan, ſet off on it the top half breadth taken from the half-breadth plan, and at that place draw a perpendi­cular ; then from the ſheer plan take the height of the top of the side, and ſet ſt off on the perpendicular in the body plan : Take alſo the breadth of the rail at the top-timber line in the ſheer plan, and ſet it off be­low the top-timber line at the perpendicular line in the body plan, and the ſtraight part of the knuckle timber to be drawn will be determined. Then from the laſt mentioned point ſet off deſcribe a curve through the points ſet off for the timber down to the upper breadth, and the whole knuckle timber will be formed. It will hence be ſeen that thoſe timbers forward will fall out beyond the main breadth with a hollow, contrary to the reft of the top side, which falls within the main breadth with a hollow.

The fore and after bodies being now formed, the wa­ter lines muſt next be deſcribed in the half-breadth plan, in order to prove the fairneſs of the bodies. In this draught the water lines are all repreſented parallel to