the aft ſide of the faſhion-piece on the horizontal plane (fig. 14.), dotted lines may be drawn parallel to them to repreſent the fore-ſide, making *nx* (fig. 15.) the perpendicular diſtance between the lines repreſenting fore and aft ſides of the faſhion-piece. By these lines form the fore-ſide of the faſhion-piece in the ſame man­ner as the aft-side was formed. The water lines on the fore-ſide of the plane of the faſhion piece muſt, however, be firſt drawn in fig. 13. thus : Draw the lines *e b, c d* parallel to W M, and whole perpendicular diſtances therefrom maybe equal to *ac* and *z e* (fig. 15.) reſpectively. Draw a line parallel to WF (fig. 13.) through the point where the line *c d* interſects the fifth water line. Draw a line parallel to *a* A through the point where the fourth water line interfecta the line *cd;* in like manner proceed with the other water lines. The fore-ſide of the faſhion-piece is now to be deſcribed by means of theſe new water lines, obſerving that the diſ­tances in the floor plane muſt be ſet off from the line *e b,* and not from WM, as in the former caſe ; and a curve deſcribed through the points 5, 3, 2., 1, where theſe diſtances reach to, will repreſent the fore-ſide of the faſhion-piece.

The neareſt diſtance between the points 5, 3, 2, l and the aft ſide of the faſhion-piece is what the bevelling is beyond the ſquare when both ſtock and tongue of the bevel are perpendicular to the timber. Make M p (fig. 16 ) equal to the breadth of the timber, and M5 equal to the perpendicular diſtance of the point 5 (fig. 13.) from the aft ſide of the faſhion-piece, and join 5p. In like manner proceed with the others, and the bevellings at theſe parts will be obtained ; but, in order to avoid confusion, the perpendiculars 4, 3, 2, (fig. 13.), inſtead of being laid off from M (fig. 16.), were ſet off from points as far below M as the other ex­tremities of the lines drawn from theſe points are below the point p.

Prob. VIII. To describe the tranſoms of a round poop.

The tranſoms are faſtened to the ſtern-poſt in the ſame manner that the floor-timbers are faſtened to the keel, and have a riſing called the *flight* ſimilar to the ri­ling of the floor-timbers. The upper tranſom is called the *wing* tranſom, the next the tranſom, and the others the *first, ſecond,* and *third* tranſoms in order. The wing tranſom has a round aft and a round up : the round up of the deck tranſom is the ſame as that of the beams.

The faſhion-piece of a ſquare tuck muſt be firſt described, together with the three adjacent frames, by the method to be explained. The part of the ſtern above the wing tranſom is to be deſcribed in the ſame manner as before, and may therefore be omitted in this place. The part below the keel of the faſhion-piece is alſo the ſame in both caſes. Let fig. 17. repreſent the faſhion- piece of a ſquare tuck, and the three adjoining frames. Divide the interval AB into four equal parts in the points C, D, E, and draw the perpendiculars AF, CG, DH, EI, and BK : theſe will be portions of water lines anſwering to the ſeveral tranſoms.

Let theſe water lines be deſcribed on the floor plan (fig. 18.), in which ABC repreſents the wing transom. Deſcribe the arch *bC* to reconcile the curves A b and CE. Let LEG be the water-line anſwering to the lower part of the faſhion-piece, the diſtance be­

tween the points L and A. being equal to the exceſs of the projection of the point A beyond that of B (fig. 20.). Draw CK (fig. 18.) perpendicular to AM, and make the angle KCM equal to about 25. degrees, and CN will be the projection of the faſhion-piece on the floor-plane. Make AB (fig. 19.) equal to AB (fig. 17.) Divide it into four equal parts, and draw the perpendiculars AF, CH, DI, EK, and BG. Make A F equal to CM, and BG equal to MN, and draw the curve FHIKG, having a leſs curvature than the faſhion-piece of the ſquare tuck s *o p gn.* Make MO,MP, MQ, equal to CH, DI, and EK rtſpectively. Divide AL (fig. 18.) into four equal parts, and to theſe points of diviſion draw curves through the points O, P, Q, ſo as to partake partly of the curvature of *Ab* C E and partly of that of LNF, but moſt of the curvature of that to which the propoſed curve is neareſt ; and hence the form of the ſeveral tranſoms will be obtained.

In order to repreſent the curve of the faſhion-piece on the plane of projection, make the lines AF, CG, DH, EI, and BK (fig. 17.) reſpectively equal to the perpendicular diſtance of the points C, O, P, Q, and N. From the line AN(fig. 18.),and through the extremities of theſe lines, draw the curve FGHIK.

It remains to lay down the projection of the faſhion- piece on the plane of elevation. In order to which, di­vide the line AB, fig. 20. (equal to AB, fig. 1 7. ) into four equal parts, and through the points of diviſion draw the perpendiculars AF, CG, DH, EI, and BK} make AF (fig. 20.) equal to the perpendicular diſtance of the point C from the line BL (fig. 18.) In like manner make the lines CG, DH, EI, and B K ( fig. 20. ) reſpective­ly equal to the perpendicular diſtances of the points O, P, Q, and N, from the line BL(fig. 18.); and acurve drawn through theſe points will be the projection of the faſhion- piece on the plane of elevation.

Prob. IX. To deſcribe the intermediate frames in the after body.

For this purpoſe the midſhip and ſtern frames muſt be drawn in the plane of projection. A s the main frame contains the greateſt capacity, and the ſtern frame is that having the leaſt, it hence follows that the form and dimenſions of the intermediate frames will be be­tween theſe ; each frame, however, partaking moſt of the form of that to which it is neareſt.

Let ACDE (fig. 21.) be the main frame on the plane of projection, and FGH the ſtern frame ; and let there be any convenient number of intermediate frames, as *nine.* Draw the floor ribband CF, and the breadth ribband GD. Divide the curves CD, FG, each into the ſame number of equal parts, as three, in the points K, M ; L, N ; and draw the ſecond and third ribbands KL, MN. In order to divide theſe ribbands ſo as to form fair curves in different sections, various methods have been propoſed. One of the beſt of theſe, being that which is chiefly employed by the French constructors, is by means of an equilateral triangle, which is constructed as follows.

Draw the line ME (ſig. 22.), limited at M, but produced towards E : take M 1 equal to any convenient extent ; make 1, *2* equal to thrice that extent, 2, 3 equal to five times, and 3, 4 equal to ſeven timed the above extent ; and continue this diviſion to E, always increaſing by two. until there be at many points as there