as to touch the lower edge of the keel at the same time. The ſeveral risings of the floor and heights of the cutting down line are marked on the rising ſquare, and the half breadth of the keel ſet off from the side of it.

The moulds being thus prepared, we ſhall apply them to mould timber 7. The timber being firſt properly ſided to its breadth, lay the bend mould upon it, ſo as may beſt anſwer the round according to the grain of the wood ; then lay the rising ſquare to the bottom of the bend mould, ſo that the line drawn acroſs the bend mould at timber 7 may coincide with the line repre­ſenting the middle of the keel upon the riſing ſquare ; and draw a line upon the timber by the side of the ſquare, or let the line be ſcored or cut by a tool made for that purpoſe, called a *raſeing knife @@(* e ) ; this line ſo raſed will be the side of the keel. Then the ſquare muſt be moved till the side of it comes to 7 on the bend mould, and another line muſt be raſed in by the side of it to repreſent the middle of the keel. The other side of the keel muſt likewiſe be raſed after the ſame manner, and the point 7 on the riſing ſquare be marked on each side of the keel, and a line raſed acroſs at theſe points to repreſent the upper edge oſ the keel. From this line the height of the cutting down line at 7 muſt be ſet up, and then the riſing ſquare may be ta­ken away, and the timber may be raſed by the bend mould, both inſide and outſide, from the head to the floor firmark ; or it may be carried lower if neceſſary. After the ſirmarks and head of the timbers are marked, the bend mould may likewiſe be taken away, and then the hollow mould applied to the back of the ſweep in ſuch a manner that the point 7 upon it may interſect the upper side of the keel, before ſet off by the riſing ſquare ; and when in this poſition the timber may be raſed by it, which will complete the outſide of the timbers. The inſide of the timbers may likewiſe be formed by the hollow mould. The ſcantling at the keel is given by the cutting down before ſet off. The mould muſt be ſo placed as to touch the ſweep of the inſide of the tim­ber formed before by the bend mould, and paſs through the cutting down point.

The uſe of the ſirmarks is to find the true places of the futtocks ; for as they are cut off three or four inches ſhort of the keel, they muſt be ſo placed that the futtock and floor ſirmarks may be compared and co­incide. Notwithſtanding which, if the timbers are not very carefully trimmed, the head of the futtock may be either within or without its proper half breadth ; to prevent which a half breadth ſtaff is made uſe of.

The half breadth ſtaff may be one inch ſquare, and of any convenient length. Upon one side of it are ſet off from one end the ſeveral half breadths of all the timbers in the after body, and thoſe of the fore body upon the oppoſite side. On the other two ſides are ſet off the ſeveral heights of the ſheer, the after body on one side, and the fore body on its oppoſite. Two ſides of the ſtaff are marked *half breadths,* and the other two ſides *heights oſ the ſheer.*

The ſtaff being thus prepared, and the floor-timbers

faſtened on the keel, and levelled acroſs, the futtocks muſt next be faſtened to the floor timbers ; but they muſt be ſet firſt to their proper half breadth and height. The half breadth ſtaff, with the aſſiſtance of the ram line @@\*, ſerves to ſet them to the half breadth : for as the keel of a boat is generally perpendicular to the horizon, therefore the line at which the plummet is ſuſpended, and which is moveable on the ram line, will be perpendicular to the keel. Whence we may by it ſet the timbers perpendicular to the keel, and then ſet them to their proper half breadths by the ſtaff : and when the two ſirmarks coincide, the futtock will be at its proper height, and may be nailed to the floor timbers, and alſo to the breadth ribband, which may be ſet to the height of the ſheer by a level laid acroſs, taking the height of the ſheer by the ſtaff from the upper ſide of the keel ; by which means we ſhall diſcover if the rib­band is exactly the height oſ the sheer ; and if not, the true height may be ſet off by a pair of compaſſes from the level, and marked on the timbers.

Chap. VI. Of *the Practice of Ship-building.*

The elevation, projection, and half-breadth plans, oſ a propoſed ſhip being laid down on paper, we muſt next proceed to lay down theſe ſeveral plans on the mould loft of the real dimenſions of the ſhip propoſed to be built, and from which moulds for each ſeparate part are to be made. The method of laying down theſe plans, from what has been already ſaid, will, it is preſumed, be no very difficult taſk to accompliſh, as it is no more than enlarging the dimenſions of the origi­nal draughts ; and with reſpect to the moulds, they are very eaſily formed agreeable to the figure of the ſeveral parts of the ſhip laid down in the mould loft.

Blocks of wood are now to be prepared upon which the keel is to be laid. Theſe blocks are to be placed at nearly equal diſtances, as of five or six feet, and in ſuch a manner that their upper ſurfaces may be exactly in the ſame plane, and their middle in the ſame ſtraight line. This laſt is eaſily done by means of a line ſtretched a little more than the propoſed length of the keel ; and the upper planes of theſe blocks may be verified by a long and ſtraight rule ; and the utmoſt care and pre­caution muſt be taken to have theſe blocks properly bedded. Each block may be about six or eight inches longer than the keel is in thickneſs ; their breadth from 12 to 14 inches, and. their depth from a foot to a foot and half.

The dimenſions of the keel are to be taken from the mould loft, and the keel is to be prepared accordingly. As, however, it is ſeldom poſſible to procure a piece of wood of ſufficient length ſor a keel, eſpecially if for a large ſhip, it is, therefore, for the moſt part neceſſary to compoſe it of ſeveral pieces, and theſe pieces are to be ſcarſed together, and ſecurely bolted, ſo as to make one entire piece. It muſt, however, be obſerved, that the pieces which compoſe the keel ought to be of ſuch lengths, that a ſcarf may not be oppoſite to the ſtep of any of the maſts. Rabbets are to be formed on each ſide of the keel to receive the edge of the planks next

@@@[m]\* See next Chapter.

@@@(e) The term *raſeing* is uſed when any line is drawn by ſuch an inſtrument inſtead of a pencil.