a block of as tight wood as poſſible, exactly ſimilar to the parts of the propoſed draught or ſhip, by a ſcale of about one-fourth of an inch to a foot. The block is then to be ſuſpended by a ſilk-thread or very fine line, placed in different ſituations until it is found to be in a ſtate of equilibrium, and the centre of gravity will be pointed out. The block may be proved by fattening the line which ſuſpends it to any point in the line join­ing the middles of the ſtem and poſt, and weights are to be ſuſpended from the extremities of this middle line at the ſtem and poſt. If, then, the block be properly conſtructed, a plane paſſing through the line of ſuſpenſion, and the other two lines, will alſo paſs through the keel, ſtem, and poſt. Now, the block being ſuſpend­ed in this manner from any point in the middle line, a line is to be drawn on the block parallel to the line of ſuſpenſion, ſo that the plane paſſing through theſe two lines may be perpendicular to the vertical plane of the ſhip in the direction of the keel. The line by which the block is suspended is then to be removed to ſome

other convenient point in the middle line ; and another line is to be drawn on the block parallel to the line ſuſpending it, as before. Then the point of intersection of this line with the former will give the position of the centre of gravity on the block, which may now be laid down in the draught.

Chap. V. Application oſ the preceding Rules to the De­termination of the Centre oſ Gravity and the Height oſ the Metacenter above the Centre of Gravity of a Ship of 74 Guns.

In fig. 59. are laid down the ſeveral ſections in a horizontal direction, by planes parallel to the keel, and at equal diſtances from each other, each diſtance being 10 feet 0 inches 4 parts.

I. Determination oſ the Centre of Gravity of the upper Horizontal Section.

To find the diſtance of the centre of gravity of the plane 8 g o G from the firſt ordinate 8

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Ordinates. Feet. In P. | Double Ord. feet. In. P. | | | 1st Factors. | 1st Products.2d Factors. Feet In. P. | | | | 2dPr  Feet. | odu  In. | cts.  F. |
| 14 90 | 29 | 6 | 0 | 01/6 | 4 | I I | 0 | 04 | 14 | 9 | C |
| 17 1 6 | 34 | 3 | 0 | 1 | 34 | 3 | 0 | 1 | 34 | 3 | 0 |
| 18 9 0 | 37 | 6 | 0 | 2 | 75 | 0 | 0 | I | 37 | 6 | 0 |
| 19 10 0  20 7 6 | 39 | 8 | 0 | 3 | 119 | 0 | 0 | I | 39 | 8 | 0 |
| 41 | 3 | 0 | 4 | 165 | 0 | O | I | 41 | 3 | 0 |
| 21 1 9 | 42 | 3 | 6 | 5 | 211 | 5 | 6 | I | 42 | 3 | 6 |
| 21 6 3 | 43 | 0 | 6 | 6 | 258 | 3 | 0 | I | 43 | 0 | 0 |
| 21 7 9 | 43 | 3 | 6 | 7 | 303 | 0 | 6 | I | 43 | 3 | 6 |
| 21 7 9 | 43 | 3 | 6 | 8 | 346 | 4 | 0 | I | 43 | 3 | 6 |
| 21 7 6 | 43 | 3 | 0 | 9 | 389 | 3 | 0 | I | 43 | 3 | 0 |
| 21 40 | 42 | 8 | 0 | 10 | 426 | 8 | 0 | I | 42 | 8 | 0 |
| 20 10 6 | 41 | 9 | 0 | II | 459 | 3 | 0 | I | 41 | 9 | 0 |
| 19 9 0 | 39 | 6 | 0 | 12 | 474 | 0 | 0 | I | 39 | 6 | 0 |
| 17 4 6 | 34 | 9 | 0 |  | 45 1 | 9 | 0 | 1 | 34 | 9 | 0 |
| 13 1 3 | 26 | 2 | 6 | ((3 × 15) - 4) x 1/6 | 179 | 1 | 1 | 01/2 | «3 | I | 3 |
| 291 i 3 | 582 | 2 | 6 | 3897 | 3 | z |  | 554 | 4 | 3 |

|  |  |
| --- | --- |
| NowAï.27—2—ξ×10 0 4\_ 5j4 ×i°∙03-70∙5∙  Hence the diſtance of the centre of gravity of double the plane 8 g 0 G from the ſirſt ordinate  By, is \* ^ \_ “  Diſtance of this ordinate from the aft ſide of ſtern-poſt, | Feet.  70.5 ’ 3-5 |
| Diſtance of the centre of gravity from the aft ſide of poſt, | 84.0 |
| Diſtance of the centre of gravity oſ double the trapezium AR g 8 from its ordinate AR, Diſtance of this ordinate from the aft ſide of the ſtern-poſt, | 8.42  0.58  ⅛ — |
| Diſtance of the centre of gravity of this plane from the aft ſide of the ſtern-poſt, | 9.0 |
| Diſtance of the centre of gravity of double the trapezium G 0 y Ύ from its ordinate G 0, Diſtance of this ordinate from the aft ſide of the poſt, | 5∙44  »53-78 |
| Diſtance oſ the centre of gravity of this trapezium from the aft ſide of the poſt, | 159.22 |
| Diſtance of the centre of gravity of the ſection of thé ſtern-poſt from the aft part of the poſt, | 0.29 |
| Diſtance of the centre of gravity of the ſection of the ſtem from the aft ſide of the poſt. | 169.76 |