|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Fest. | în. | L. | Feet. | In. | L. | F-et. Ir. | L. |  | Feet. | Γn. L. |
| Brought over 15 | 6 | 9 | 3° | I | 6 | 148 3 | 2 |  | 3° | 5 6 |
| 0 | 8 | 0 | 1 | 4 | O II | 14 8 | Ο | I | I | 4 o |
| 0 | 8 | 0 | I | 4 | 0 12 | 16 0 | Ο | I | I | 4 0 |
| 0 | 8 | 0 | I | 4 | O 13 | 17 4 | Ο | I | I | 4 θ |
| 0 | 8 | 0 | I | 4 | 0 \* ((3×15)-4) | × ⅛ 9 1 | 4 | of | 0 | 8 0 |
| χ8 | 2 | 9 | 36 | 5 | 6 | 205 4 | *6* |  | 35 | i 6 |

|  |  |
| --- | --- |
| Hence the diſtance of the centre of gravity of double . 20ς 4 6  this plane from its firſt ordinate is , " ×ιo 0 4 | |
| 205.57  e= X 10.83 β= . .  ∙35i^l2 j | 58.65 |
| The diſtance of this ordinate irom aft fide of poſt = | I3∙5° |
| Hence the diſtance of the centre of gravity of this plane front the aft-ſide of the poſt is | 72.15 |
|
| Diſtance of the centre of gravity of double the rectangle AR *a* 8 from its ordinate AR | 6.4-5 |
|
| Diſtance of this ordinate from the aft ſide of the poſt | 0.58 |
|
| Diſtance of the centre of gravity of this rec­tangle from the aft fi.de of the poſt | 7∙03 |
|
| . Diſtance of the centre of gravity of the fore­moſt rectangle from its ordinate 7' 7 e 7’ | 1.25 |
|
| Diſtance oſ this ordinate from the aft ſide of the poſt | 153-78 |
|
| Diftaκce of the centre of gravity of this rec­tangle from the aft ſide of the poſt | 155∙03 |
|
| Diſtance of the centre of gravity of the ſec- tion of the poſt from its aft ſide | 0-29 |
|
| Diſtance of the centre of gravity of the ſec- tion of the ſtem ſrom the aft ſide of the poſt | 169.76 |
|
|
| Now the areas of theſe ſeveral plans being calculated will be as follows. | |
|
| 352.2536, the area of double the plan  8 *a ∕jG,* and its momentum |  |
|  |
| 352.2536×72.15 = 25415.0972 | |
| ſl 7.1570, the area of double the rectan­gle AR *a* 8, and its mo­mentum 17. 1570×7.03 = | 120.6137 |
|
|
| .3.3250, the area of the foremoſt rec­tangle, and its momentum 3.3250×i55.03 = | 5r5∙4747 |
|
|
| ;Ο·77, the area of the ſection of the  port, and its momentum 0.77×0.29 = | 0.2233 |
|
|
| ■O.77, the area of the ſection of the  ſtem and its momentum 0.77×169.76 = | 130.7152 |
|
|
| •74.2756 Sum 26182.1242 | |
| 26182.1242  Then , — 69.95, the diſtance oſ the  374.2756 y \_  centre oſ gravity oſ the whole ſection from the aft fide oſ the.poſt. | |
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| VIII. *Determination oſ the Centre of Gravity οfthe eighth Plane.* | |
| This plane is equal in length to the ſeventh horizon-, tal plane, and its breadth is equal to that of the keel. The diſtance between the ſeventh and eighth planes is three feet, but which is here taken equal to 2 feet nf inches. | |
|
|
|
|
| Diſtance between the aft fide of the poſt and | 13∙5 |
| the ſirſt ordinate |
| Fourteen intervals between the fifteen ordi­nates, each interval being 10.03 ^eet | 140.42 |
|
| Diſtance of the lait ordinate from the fore foot | 2.2 |
| Hence the length of the eighth plane is | 156.12 |
| Which multiplied by the breadth | 1∙33 |
| Tlιe product iβ the area of this plane | 208° |
| The diſtance of its centre of gravity from the aft ſide of the pqſt, being equal to half its length, is | 78.06 |
|
|

The centres of gravity of theſe eight planes being found, the diſtance of the centre of gravity of the bot­tom oſ the ſhip from the aft ſide of the poſt, and alſo its altitude, may from thence be eaſily determined.

From the principles already explained, the diſtance of the centre of gravity of the bottom from the aft ſide of the poſt, is equal to the ſum of the momentums of an infinite number of horizontal planes, divided by the ſum of theſe planes, or, which is the ſame, by the ſolidity of the bottom. As, however, we have no more than eight planes, we muſt therefore conceive their mo­mentums as the ordinates of a curve, whoſe diſtances may be the ſame as that of the horizontal planes. Now the ſum of theſe ordinates minus half the, ſum of the ex­treme ordinates being multiplied by their diſtance, gives the ſurface of the curve ; of which any ordinate what­ever repreſents the momentum of the horizontal plane at the ſame altitude as theſe ordinates ; and the whole ſurface will repreſent the ſum of the momentums of all the horizontal planes.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Hor. Planes. Fact. Products. | | | Momentums. Fact. | | Products. |
| 5974.16 | of | 2987.08 | 5O3O37∙73 | of | 251 518.86 |
| 5592∙27 | I | 5592∙27 | 473560.21 | I | 47356θ 21 |
| 4939∙27 | I | 4939.27 | 422084.77 | I | 422084.77 |
| 4169.50 | I | 4169.50 | 357735∙-ι | I | 357735∙21 |
| 3365-42 | I | 3365∙42 | 288729.20 | 1 | 288729.20 |
| 23f>6.46 | I | 2366.46 | 199022.48 | I | 199c22.48 |
| 374.27 | I | 374∙27 | 21682.12 | I | 2∣682.12 |
| 208.00 | θf | 104.00 | 16236,48 | Of | 8118.24 |
|  |  | 23898.27 |  |  | 2022451.09 |
| 2022451.09  Now 23898 27 “ t'ιe ſtiftance oſ the | | | | | |
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