Add the area of the lower water line to the area of the upper side of the keel ; multiply half that ſum by the diſtance between them, the product will be the ſolid content of that part between the lower water line and upper edge of the keel, ſupposing them parallel to each other. But if the lower water line is not parallel to the keel, the above half ſum is to be multiplied by the diſtance between them at the middle of the ſhip.

The ſolid contents of the keel muſt be next found, by multiplying its length by its depth, and that pro­duct by the breadth. Then the ſum of theſe ſolid con­tents will be the number of cubic feet contained in the immerſed part of the ſhip’s bottom, or that part below the load water line.

Determination oſ the number of Cubic Feet contained in the Bottom oſ the Eighty Gun Ship, See Plates CCCCLX. and CCCCLXI.

The fore body is divided into five, and the after bo­dy into ten, equal parts in the horizontal plane ; beſides the parts contained between the foremoſt timber and the item, and the aftermoſt timber and the poſt. The plane of elevation is alſo divided into five equal parts by water lines drawn parallel to the keel. Theſe water lines are alſo deſcribed upon the horizontal plane.

It is to be obſerved that there muſt be five inches added to each line that repreſents a frame in the hori­zontal plane for the thickneſs of the plank, that being nearly a mean between the thickneſs of the plank next the water and that on the lower part of the bottom.

|  |  |  |  |
| --- | --- | --- | --- |
| *Upper Water Line abaft Dead Flat,* | | | In |
|  | | Ft. |
|  | frame dead flat is 24 f. 10 in. | one half of |  |
|  | which is - - | 12 | 5 |
|  | frame (4) | 24 | 10 |
|  | frame 3 | 24 | 10 |
|  | frame 7 | 24 | 10 |
|  | frame 11 | 24 | 10 |
|  | frame 13 | 24 | 9 1/2 |
|  | frame 19 | 24 | *5* |
|  | frame 23 | 23 | 10 |
|  | frame 27 | 22 | 9 |
|  | frame 31 | 20 | I I |
|  | frame 35 is 16 feet 3 inches, | the half of |  |
|  | which is | 8 | 1 1/2 |
| Sum | | 236 | 7 |
| Diſtance between the frames | | 10 | I I |
| Product | | 2582 | 8 1/2 |
| Area of that part abaft frame 35 | | 78 | 0 |
|  | rudder and poſt | 5 | 6 |
| Sum | | - 2666 | 2f  2: |
| Area of the load water line from dead flat aft 5332 | | | 5 |

|  |  |  |  |
| --- | --- | --- | --- |
| *Second Water Line abaft Dead Flat.* | | | In. |
|  | | Ft. |
|  | frame dead flat is 23 feet 10 1/2 inches, the | |  |
|  | half of which is - - | 11 | 11 1/4 |
|  | frame (4) | 23 | 10 1/2 |
|  | frame 3 | 23 | 10 1/2 |
|  | frame 7 | 23 | 10 1/2 |
|  | frame 11 | 23 | 10 1/2 |
|  | frame 15 - - | 23 | 8 1/2 |
|  | frame 19 | 23 | 3 1/2 |
|  | frame 23 | 22 | 5 |
|  | frame 27 - | 20 | 10 |
|  | frame 31 | 17 | 8 |
|  | frame 35 is 8 feet *6* inches, the half of | |  |
|  | which is | 4 | 3 |
| Sum - | | 219 | 7 1/4 |
| Diſtance between the frames | | 10 | 11 |
| Product | | 2397 | 4 |
| Area of that part abaft frame 33 | | 31 | 7 |
|  | rudder and poſt | 5 | 5 |
| Sum | | 2434 | 4  2 |
| Area of the 2d water line from dead flat aft 4868 | | | 8 |
|  | *Third Water Line abaft Dead Flat* |  |  |
|  | *-* | Ft. | In. |
|  | frame dead flat is 22 feet 1 1/2 inches—half 11 | | 0 3/4 |
|  | frame (4) | 22 |  |
|  | frame 3 | 22 | 1 1/2 |
|  | frame 7 | 22 | 1 1/2 |
|  | frame 11 | 22 | I |
| frame 15 | | 21 | 5 |
|  | frame 19 | 20 | 8 1/2 |
|  | frame 23 | 19 | 3 1/2 |
|  | frame 27 | 16 | 5 |
|  | frame 31 | 11 | *2 1/2* |
|  | frame 35 is 4 feet 3 inches—half | 2 | 1 1/2 |
|  |  | 190 |  |
|  |  | 10 | I I |
|  |  | 2081 | 8 |
| Area of that part abaft frame 33 | | 14 | 5 1/2 |
|  | rudder and poſt | 5 | 6 |
|  |  | 2101 | 7 1/2  2 |
| Area of the 3d water line from dead flat aft | | 4203 | 3 |
|  | *Fourth Water Line abaft Dead Flat* |  |  |
|  |  | Ft. | In. |
|  | frame deadflat is 20 feet 1 inch—half | 10 | 0 1/2 |
|  | frame (4) | 20 | I |
|  | frame 3 - \_ | 20 | I |
|  | frame 7 » - | 19 | 11 |
|  | frame 11 | 19 | 7 1/2 |
|  | frame 15 | 19 | 0 |
|  | Carry over | 108 |  |