|  |  |  |  |
| --- | --- | --- | --- |
| *Fourth Water Line afore Dead Flat.* | | | |
|  | Ft. | | In. |
| ’S  -0  ΓJ  j2 | r frame dead flatis 20 feet I inch—half | 10 | °4 |
| frame E | 20 | ©4 |
| frame I - - | 19 | 3 |
| frame N - ∙ | 16 | 5 |
| frame Q~  .frame W is 2 feet 9 inches—-half | 11 | 2 |
| I | 44 |
| Sum | | 78 | 34 |
| Diſtance between the frames | | ÏO | 11 |
| Product | | S54 | 8 |
| Area oſ part before W, with the item and gripe | | 8 |  |
| ιo∣ |
| Sum | | 863 | 2 |
| Area of fourth water line from dead flat for w,ard | |  |  |
| 1727 | ιl |
|  | *Fifth Water Line afore Dead Flat.* | |  |
|  |  | Ft. | In. |
| 4□  C3  <u  « | ſ frame dead flat is 17 feet 2 inches—half 8 | | 7 |
| frame E - | ι6 | 9 |
| frame I - - | 14 | 10 |
| frame N | 10 | 94 |
| frame Qjs *5 feet—*half | 2 | 6 |
| Sum | | 53 | 54 |
| Diſtance between the frames | | 10 | TI |
| Product - - \* | | 583 | 7 |
| Area of part afore <3 | | 26 | 24 |
|  | item and knee | 5 | ιι4 |
| Sum - - | | 615 | 9  2 |
| Area of the fifth or lower water line from dead flat forward | |  |  |
| 1231 | *6* |
| Area of the upper fide of the keel | | 87 | 4 |
| Sum - - - - | | 1318 | 10 |
| Half  Diſtance between the lower water line and | | 659 | 5 |
| keel | | 4 | I |
| Content of the part contained between the | |  |  |
| lower water line and the keel in cub. feet | | 2692 | 74 |
| Half the area of the load water line | | 1343 | *9* |
| Area of the ſecorjd water line | | 2435 | 0 |
|  | third water line | 21*15* | 4 |
|  | fourth water line | i727 | if |
| Half the area of the fifth or lower water line | | *6Ιξ* | 9 |
| Sum .... | | 8236 | Ilf |
| Diſtance between the water lines | | 4 | 1 |

|  |  |
| --- | --- |
| Cubic feet contained between the lower and Ft. | In/ |
| load water lines - 33634 | 2⅛ |
| Cubic feet contained between lower water |  |
| line and keel - - 2692 | 7f |
| Content of the keel and falſe keel - 196 | 6 |
| Content afore midſhip frame under water |  |
| when loaded - - 365 2 3 | 4 |
| Content abaft midſhip frame - 74050 | 6 |
| Content under water - - 110573 | 10 |
| Weight of a cubic foot of ſalt water 74 | lbs. |
| Weight of the whole ſhip with every thing  on board - - 8182463.8 lbs. | |

As the weight of the ſhip, with every thing on board, found by this calculation, is equal to that found by eſtimate ; it hence appears that the water line is properly placed in the draught. It now only remains to find whether the body is constructed ſuitably thereto, that is, whether the ſhip will be in her natural poſition when brought down to that line. For this purpoſe a perpen­dicular muſt be erected 27 feet 1/4 inch, abaft dead flat, which will be the middle between the two perpendicu­lars and the place where the centre of gravity ſhould fall, that the ſhip may ſwim on an even keel. The ſolidity of that part of the bottom contained between the ſaid perpendicular and dead flat is then to be calculated, which will be found to be 25846 feet 7 inches.

|  |  |  |
| --- | --- | --- |
| Solidity of the bottom afore dead flat between the middle and dead flat | 36523 £ 25846 | . 4 in. 7 |
|
| Solid content of the fore part of the bot­tom | 6236Q | II |
|
| Solidity of the bottom abaft dead flat | 74050 | 6 |
| ..«-i ■ between the middle and deadflat | 25846 | 7 |
| Solid content of the aft part of the bot. fore part of the bottom | 48203 | I I |
| 62369 | I I |
| Difference | 14166 |  |
| Half, | 7083 |  |

Hence the after part of the ſhip’s bottom is too lean by 7083 cubic feet, and the fore part as much too full. The after part must therefore be filled out until it has received an addition of 7083 feet, and the fore part muſt be drawn in till it has lost the ſame quantity, and the bottom will then be conſtructed ſuitable tothe ſhip’s ſwimming on an even keel.

Chap. IX. *Of the Tonnage of a Ship.*

This is a queſtion of equal importance and difficul­ty. By the tonnage of a ſhip is meant the weight of every thing that can with ſafety and expediency be ta­ken on board that ſhip for the purpoſe of conveyance: it is alſo called the s*hip's burthen ;* and it is totally different from the weight of the whole as she floats in the water. It is perhaps beſt expreſſed by calling it the *weight of the cargo.* It is of importance, becauſe it is by this that the merchant or freighter judges of the fitneſs