MR CRADOCK'S MEASUREMENTS

(a) At upper part of the deck below the upper deck.

(b) At 4 feet below the upper deck.

(c) At 8 feet below the same deck.

(d) At lower part of platform

(e) At 4 feet below the under part of the deck.

(f) At 8 feet below the deck

(g) At 12 feet below the deck.

(h) At under part of lower deck.

(i) At 5 feet below the lower deck.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | | ***Dunira,*** | ***Asia,*** | ***Palmuτa,*** | ***Alexander,*** | |  |
| ***Additional Sections and Measurements, for obtaining the internal solid content before*** | | **East India** | **East India** | **Free Trader.** | **Free Trader.** |  |  |
| ***the first point of division of the Deck, and also abaft the fifth point of division of the*** | |  |  |  |  |
| ***Deck.*** |  |  |  |  |  | |  |
| **53. The length before the first point of division of the deck Is divided Ί <r. λ r . Hnri.h i>**  **into three equal part., and the vertical depth taken at each of JP1\* "ÎÎÎÂ?**  **these two pointe of division, F fτilβ ·«“»·« fr°n, ft,rwa"1 i,** | | **2616**  **28\*25** | **24\*66**  **25\*83** | **About 20\*08 32\*58** | **20 08 > 21\*58 >** |  | **52** |
|  | **At the under surface of the deck** | **14∙∣6** | **12-66** | **12\*1** | **10∙6 )** |  |  |
| **53. the foremost of these Vertical depths is divided into five equal 1** | **At first point of division below it** | **14\*25** | **13\*46** | **(b)12∙0** | **h) 9\*87 1** |  | **53-** |
| **parts, and the internal half-breadths taken at the under <** | **At second do.** | **13 41** | **11 66** | **(c)ll\*58** | **-** |  |
| **surface of the deck, and at each of these points of division, ∣** | **At third do.** | **11-87** | **ιo∙o** | **—** | **fl) 7-91 1** |  |  |
| **At fourth do.** | **8’0** | **6 33** | **(d)ll\*2i** | **- J** |  |  |
| **ft4. Half breadth at 2⅜ feet below the last measurement.** |  | **4\*79** | **4 33** | **—** | **—** | | **54** |
| **55. Do. 1∣ foot do. do. ∙** | **At the under wurface of the deck** | **3-41**  **17 37** | **15∙37** | **B∙46** | **12\*83 1** |  | **5δ** |
| **56. The second vertical depth from forward is divided Into five equal parts, and the internal half-breadths taken as before.** | **At first point of division below it** | **17 5** | **15\*91**  **16\*16**  **14\*83** | ***(∙j* ∣3∙62** | **12\*75**  **12\*66**  **12 0** |  |  |
| **At second do.**  **.At third do.** | **15\*66** | **(.ni3∙46** |  |  |
| **1** | **At fourth do.** | **13\*37** | **11\*75** | **(i)l3(8** | **9\*62 J** |  | **57** |
| **57∙ Half-breadth at 2⅜ feet below the last measurement,** | **.** | **916** | **8∙83** | **—** | **6 62** | |
| **58. Do. ljf<>ot do. do.** |  | **6\*87** | **6\*21** | **—** |  | | **⅛s** |
| **59. Do. 1 foot do. do.** |  | **4-5** | **—** | **—** | **4’63** | | **fty.** |
| **60. The length before the first point of division of the deck is divided into two equal parts, and the)** | |  |  |  |  | | **60** |
| **vertical depth taken, which is ....** | **J** |  |  |  |  | |  |
| **At the under surface of the deck** | m, | **—** | **—** | **-** |  |  |
| **61. This vertical depth is divided into five cqual parta, and the in-** | **At first point of division below it** | ***—,*** | **—** | **—** | **-** |  | **61** |
| **ternal hairbreadths taken at the under surtace ot the deck,<i** | **At second do.** |  | **—** | **—** | **-** | **•** |
| **and at each of these points of division,** | **At third do.** | ***—*** | **—** | **—** | **-** |  |  |
| **At fourth do.** |  | **—** | **—** | **—** |  |  |
| **62. The length abaft the fifth point of division of the deck is divided into two equal parts, and the 7** | |  |  |  |  | | **62** |
| **vertical depth taken, which is ...** | ***s*** |  |  |  |  | |  |
| ***f At* the under surface of the deck** | **\_\_** | **—** |  | **—** |  |  |
| **63. This vertical depth is divided into five equal parte, and the in­ternal half-breadth· taken at the under surface of the deck,** | **At first point of division below it** | **—** | **—** | **—** | **—** |  | **63** |
| **■(At second do.** |  | **—** | **—** | **—-** |  |
| **and at each of these points of division,** | **1 At third do.** |  | **—** | **—** |  |  |  |
| **LAt fourth do.** |  | **—** | **—** |  |  |  |
| **64. The length abaft the fifth point of division of the deck is di- ) rr. „ ,¼n⅛ t.**  **v∣ded into three equal parts, and the vertical depth taken at '∖ftc""<\*t verJJc\*l dePth ,β**  **uchortteMtwoèomuoraiTalon. iTl» ∙etond from .ft ■·** | | **26'83** | **6 58**  **220** | **19\*33**  **21\*81** | **7 46 1**  **19 87 J** | | **64.** |
|  | **At the under surface of the deck** |  | **11 75** | **11\*98** | **971** |  |  |
| **65. The aftermost of these vertirai depths iβ divided into five equal** | **At first point of divtsion below it** |  | **—** | **12\*21** | **(\*) M** |  | **6ft** |
| **parts, and the internal half breadths taken at the under** | **At second do.** |  | **—** | **11\*04** |  |
| **surface of the deck, and at each of these points of division,** | **At third do.** |  | **(a) 1204** | **613** | **—** |  |  |
| **At fourth do.** |  |  | **2\*5** |  |  |  |
| **6G. Halfbreadth at 1⅛ foot below the last measurement,** |  |  | **—** | **1∙77** |  | | **66** |
| **At the under surface of the deck** | **15 58** | **1316** | **12 63** | **10\*62** |  |  |
| **67∙ The second vertical depth from aft ia divided into five equal parts, and the internal half-breadth\* taken as before,** | **At first point of division below it At second do. .**  **At third do.** | **15 96**  **160 12\*83** | **13-46**  **1396**  **12 25** | **12 87**  **13\*46**  **9 87** | **10\*68**  **10’83**  **8\*5** |  | **67** |
|  | **At fourth do.** | **541** | **5 71** | **4\*91** | **3\*41** |  | **68.** |
| **68. Halfbreadth at 2⅜ feet below the last measurement.** |  | **30** |  |  |  | |
| **6⅛. Do. 1J loot do. do.** |  | **∣∙5β** | **379** | **3∙37** | **2 29** | | **69.** |
| **70. Do. 1 £ foot do. do.** |  |  | **1 H3** | **—** | **1\*29** | | **70.** |
| **71. Load draught of water,** | **Forward . t Aft** | **M 16**  **21\*66** | **19 5**  **20-83** | **19\*5**  **19\*5** | **17 ft !**  **J7∙5 J** | | **71.** |
| **72. Vertical distance of the under part of the principal deck (⅛!5⅛,\*t iore part θf fore channel above the water, or of the upper deck from thesurfacc< λiπk bi,1P∙** | | **5\*75** | **4 76** | **5\*46**  **5\*37** | **716**  **6 66** |  | **72-** |
|  |  |
| **of the water, ∣ Λft, ftt fore rt of m∙,zen cha∏nel** | | **7 25** | **—** | **6\*62** | **7∙16** |  |  |
| **73. Distance, on the curve, of the ⅛ide of the under part of the first** | **principal ( Forward** | **6 33** | **—** | **ft· 58** | **7\*25** |  | **73** |
| **deck above the water, or the upper deck from the surface of the< Amidship∙** | | **5 66** |  | **5\*5** | **6 75** |  |
| **water, at the same places.** | **1 Aft .** | **812** | **—** | **6\*79** | **7 33** |  |  |
| **74. Depth from under part of upper deck, or first principal deck above water, down the pumps, to )** | | **160** | **Hl!** | **2391** | **24 16** |  | **74.** |
| **skin, or inside of outside planking,** | ***f*** |  |
| **75. Depth amklships from under part ot ceiling to the inside of the outside planking.** | | **1\*75** | **1 66** | **I\*ft8** | **Γ29** | | **75.** |
| **76. Thickness of the ceiling, .....** |  | **0∙25** | **0\*2ft** | **0\*31** | **021** | | **76** |
| **77. Distance, on the upper deck, of the foremast abaft the inside of the stem,** | | **250** | **20 75** | **∣7\*∣6** | **165** | | **77∙** |
| **78. Distance, on the upper deck, of the mιzen-mast before die inside of the stern-po∙t, .** | | **320** | **23 83** | **19\*58** | **1783** | | **78.** |
| **79. Number of crew belonging to the ship.** |  | **140** | **110** | **40** | **40** | | **79** |
| **80. Number of passengers brought home,** |  | **None.** | **None.** | **24** | **16** | | **80.** |
| **81. Weight of water, in tons, .....** |  | **11** | **Could not** | **30** | **35** | | **HI.** |
| **82. Weight of provisions, in tons, ....** |  | **It** | **be obtained.** | **7** | **7\*** | | **82∙** |
| **83- Description of cargo, .....** |  | **Tea.** | **Tea.** | **Miscella-** | **Miscella** |  | **83.** |
|  |  |  |  | **neous.** | **neous.** | |  |
| **84 Weight of cargo, in tons, . . . .**  **85. Weight of ballast, in ton», carried with the above cargo.** |  | **911** | **757** | **6\*0** | **564** | | **R4.** |
|  | **270** | **125** | **85** | **None.** | | **85-** |
| **86. weight ot billet-wood oι dunnage, &o. in tons, which is used for stowing tne careo,** | | **None.** | **None.** | **15** | **W** | | **8b.** |
| **87 From whence she came, .....** |  | **canton.** | **canton.** | **Calcutta.** | **calcutta.** | | **87∙** |
| **83. The whole internal solid content, in cubic feet, from the under surface of the upper deck, with-1 out any deduction· whatever, . . . . . . . . . f** | | **161,922** | **112,609** | **64,133** | **56.050** | | **88.** |

In this article we have described the method of constructing a scale of Tonnage, or of Displacements. The manner of performing the cal­culations to ascertain the displacement of a ship has been explained in the article Ship-building ; it is therefore unnecessary to recapitulate it here. Many persons, merely for want of sufficient attention to such explanations are unable to perform these arithmetical calculations and hence the frequent great errors in the displacements of ships. The following experimental method of ascertaining, very nearly, the actual tonnage of a ship, may not therefore be altogether useless. In fact, we suggest it with the impression that it may be advantageously followed by merchant-builders.

Suppose a model of a vessel to he made on a scale of half an inch to a foot, then each cubic inch will represent eight cubic feet A cubic inch of sea-water weighs ·594 of an ounce, that is, eight cubic feet of sea-water on a half inch scale weigh ·594 of an ounce. There­fore each ton, reckoning 35 cubic feet of sea-water to the ton, will weigh 2·5987 ounces, or 5 tons will very nearly weigh 13 ounces, and will measure in bulk 217/8 cubic inches.

If a box be made to a half-inch scale, 175 feet long and 40 feet wide, interior dimensions, rectangular every way, of wood varnished, and with the end grain of the wood in the direction of the given dimensions, each 1/8 of an inch in depth of such a box will be 2183/4 cubic inches, which, according to the foregoing scale, will be 50 tons in weight.

To use this box, fill it partly with sea-water, then take the model of the vessel, which is of course supposed to be of dimensions less than those of the box. It is presumed that the launching weight is known. Suppose this, for example, to be 45 tons. Let the model float on the water, having previously observed the depth of water in the box. Load the model until the water has risen 9/89 of an inch above this observed depth, the model then evidently floats at its mean launching draught of water.

The load draught of water at which the vessel should swim is known. Load the model until it is brought to this water-line, and observe