

main wales ; take the depth from the under side of the deck plank to the ceiling of the hold, and deduct from the length three fifths of the breadth ; multiply the remainder by the breadth, and the product by the depth, and divide the last product by 95.

*For double-decked vessels.* — Proceed as with single-decked vessels, except for the depth take half the breadth.

## GAUGING.

Gauging signifies the art of measuring all kinds of vessels and determining their capacity or the quantity of fluid or other matter they contain. It is usual to divide casks into four varieties, which are judged of from the greater or less apparent curvature of their sides, namely : —

1. The middle frustum of a spheroid.
2. The middle frustum of a parabolic spindle.
3. The two equal frustums of a paraboloid.
4. The two equal frustums of a cone.

282 cubic inches make 1 ale gallon, or beer.

231 cubic inches make 1 wine gallon.

21,504 cubic inches make 1 malt bushel.

*To find the contents of a Cask by the Mean Diameter.*

*Rule.* — Multiply the difference of the head and bung diameters by .68 for the first variety ; by .62 for the second ; by .55 for the third ; and by .5 for the fourth, when the difference between the head and bung diameter is less than 6 inches ; but when the difference between these exceeds 6 inches, multiply that difference by .7 for the first variety ; by .64 for the second ; by .57 for the third ; and by .52 for the fourth. Add this product to the head diameter, and the sum will be a mean diameter. Square this mean diameter, and multiply the square by the length of the cask ; this product multiplied or divided by the proper multiplier or divisor, will give the contents.

1. What are the contents of a spheroidal cask, whose