

length is 40 inches, bung diameter 32 inches, and head diameter 24 inches? *Ans.* 97.6 gallons.

Solution.— $32 - 24 = 8$; $8 \times 7 = 5.6$; $5.6 \div 24 = 29.6$ = mean diameter; $29.6 \times 29.6 = 876.16$ = square; $876.16 \times 40 = 35046.40$, which being divided by 359.5, the divisor for imperial gallons, will be equal to 97.6 gallons.

By the gauging rule —

Set 40 on C. to the G. R. 18.79 on D. against

24 on D. stands 64.99 on C.

32 on D. stands 116.2 on C.

+ 116.2

3)297.39

99.13 gallons.

Dr. Hutton's General Rule for finding the Contents of Casks.

Add into one sum 39 times the square of the bung diameter, 25 times the square of the head diameter, and 26 times the product of the two diameters; then multiply the sum by the length, and the product again by .00031 $\frac{1}{2}$ for the contents in gallons.

EXAMPLE.

1. What are the contents of a cask whose length is 40 inches, and the bung and head diameters 32 and 24?

Ans. 93.4579 gallons.

$32 \times 32 = 1024$; $1024 \times 39 = 39936$

$24 \times 24 = 576$; $576 \times 25 = 14400$

$32 \times 24 = 768$; $768 \times 26 = 19968$

$74304 \times 40 = 2972160$

.00031 $\frac{1}{2}$

93.4579

Gauging is the art of finding what quantity of liquor is contained in a cask when partly empty. And it is consid-