C is a coefficient, which is 3·2 when the longitudinal seams are made with double butt straps, 3·3 when the longitudinal seams are made with lap joints and are treble-riveted, 3·4 when they are made with lap joints and are double-riveted, 4·0 when they are made with lap joints and are single riveted, and 3·5 when the longitudinal seams are welded and fitted with a single butt strap riveted over the weld;

D is the inside diameter of the outer strake of plating of the cylindrical shell, measured in inches.

When the workmanship or material is in any way doubtful, the working-pressure may be reduced by such percentage as the Chief Inspector of Machinery deems fit.

Shell-plates shall be as truly cylindrical as practicable.

14. *Methods of calculating the Strength of Riveted Joints.*—The percentage of strength of a riveted joint is found from the following formulæ, I, II, and III. I and II are applicable to any type of joint; III is applicable only to that type of joint in which the number of rivets in the inner rows is double that in the outer row. The lowest value given by the application of these formulæ is to be taken as the percentage of strength of the joint.

I. Percentage of strength of plate at joint as compared with the solid plate

$$= \frac{100\ (p - d)}{p}$$

II. Percentage of strength of rivets as compared with the solid plate

$$= \frac{100\ (S_2 \times a \times N \times C)}{S_1 \times p \times T}$$

III. Percentage of combined strength of the plate at the inner row of rivet-holes and of the rivets in the outer row

$$= \frac{100\ (p - 2d)}{p} + \frac{100\ (S_2 \times a \times C)}{S_1 \times p \times T}$$

where p = pitch of rivets at outer rows in inches;
d = diameter of rivet-holes in inches;
a = sectional area of one rivet in square inches;
N = number of rivets which are fitted in the pitch;
T = thickness of plate in inches;
C = 1·0 for rivets in single shear, as in lap joints;
C = 1·875 for rivets in double shear, as in double butt strapped joints;
S_1 = minimum tensile strength of plates in tons per square inch;
S_2 = shearing-strength of rivets, which is taken generally to be 23 tons per square inch for steel and 18 tons per square inch for iron.

15. *Percentage of Welded and Strapped Seams.*—The strength of a welded seam covered by a butt strap or straps is to be obtained by adding, as an allowance for the weld, 50 to the number which expresses the percentage strength of the rivet, or is to be taken as the percentage strength of the plate, whichever is lower.

16. *Thickness of Butt Straps.*—Where the longitudinal seams are fitted with double butt straps, each strap should have at least 0·625 of the strength of the solid plate. Where a single butt strap only is fitted, the strength of the strap should be 1·125 times the strength of the plate.

In cases where the number of rivets in the inner row is double the number in the outer row the thickness of the butt straps will require to be

$$Tb = \frac{5 \times (p - d)\ T}{8 \times (p - 2d)} \text{ for double butt straps, and}$$

$$Tb = \frac{9 \times (p - d)\ T}{8 \times (p - 2d)} \text{ for single butt straps,}$$

where Tb is the thickness of the butt strap in inches.

17. *Spacing between Rows of Rivets, and between Rivets and Edges of Plates.*—In all cases the distance from the centre of a rivet to the edge of a plate shall be at least one and a half times the diameter of the rivet-hole. In joints, whether lapped or fitted with butt straps, in which there are more than one row of rivets, and in which there is an equal number of rivets in each row, the distance between the rows of rivets should not be less than—

Zigzag riveting: Distance between centre lines of rows = $0{\cdot}33p + 0{\cdot}67d$.
Chain riveting: Distance between centre lines of rows = $2d$.