

of the Challengerida (Sitzungsb. med.-nat. Gesellsch. Jena, Dec. 12, 1879, p. 5). But I united at that time the true Challengerida with the Tuscarorida, which, however, are sharply separated by the entirely different structure of their shell. In Plate A given by Dr. John Murray, and mentioned above, figs. 1-14 represent genuine Challengerida, with diatomaceous shell-structure, whilst figs. 15-20 are Tuscarorida, with porcellanous shell-structure. These latter, therefore, are more closely allied to the Circoporida, whilst the Challengerida exhibit a closer affinity to the Medusettida and Castanellida. But the two latter families never possess that peculiar extremely regular and delicate diatomaceous structure which is exhibited only by the Challengerida.

The general form of the Challengerida is rather simple, usually more or less ovate, sometimes nearly triangular, at other times subspherical. In nearly all species, with a few exceptions, the shell is more or less compressed from the two sides, so that its horizontal transverse section is not circular, but elliptical or lanceolate. In many species the shell is more or less lenticular, with a sharp or sometimes keeled margin. This margin lies in the sagittal plane of the body, whilst the two flat sides are right and left. The main axis is always perpendicular, and its oral or anterior pole is marked by the open mouth of the shell; the latter is in the living organism probably the upper pole, whilst the opposite aboral or posterior pole (often marked by large spines) is the lower pole. The dorsal margin of the mouth is usually different from the ventral, and in the majority of species this difference is so striking, that right and left sides of the body may be recognised immediately, the fundamental form being dipleuric or bilaterally-symmetrical. In a few species, however, and mainly in those simplest forms in which the ovate shell has a circular mouth without teeth, and a circular transverse section, that difference is not recognisable, and the ovate shell is monaxial, as it is in *Gromia* and *Lagena* among the Foraminifera (Pl. 99, figs. 19, 20, 22). The size of the shell is in the majority of species between 0.2 and 0.5 mm.; there are, however, some very small species, in which the diameter of the shell is only 0.05 to 0.08, or even less; and some large species, the diameter of which attains 0.8 to 0.9 mm.

The peculiar structure of the siliceous shell-wall, which we call shortly "diatomaceous," and by which the Challengerida differ from all the other PHÆODARIA, has been already represented very well by Dr. John Murray, in Pl. A. of the Narrative (vol. i. p. 266, figs. 1c-1e, 2a, 4a, 7a, 7b). This elegant diatomaceous structure is extremely similar or nearly identical with that well-known regular structure which we find in the common Diatomaceæ or Bacillariæ. The entire surface of the shell is covered with a very great number of very small pit-like depressions, perfectly regular, circular in form, equal in size, and quincuncial in arrangement. The neighbouring equidistant pits are always surrounded by regular hexagonal frames of equal size, and the prominent fine crests of these frames produce the regular hexagonal tracery, which gives to the shell such a striking similarity to that of the Diatomaceæ. According to