

majority of the other Radiolaria; in some gigantic forms the diameter of the unicellular body reaches 20 or even 30 mm.

*The Central Capsule* of the PHÆODARIA is the most important part of their body and preserves in all families of this legion the same essential structure, and nearly the same form, in striking contrast to the extraordinary variety and complication of the skeleton. As already mentioned, it differs from the central capsule of all the other Radiolaria in two most important peculiarities; firstly, the double membrane of the spheroidal capsule, and secondly, the singular structure of its constant main-opening, the astropyle. A third constant character is the considerable size of the enclosed nucleus, the diameter of which usually equals about half of that of the capsule itself.

The diameter of the capsule is, in the majority of PHÆODARIA, 0·1 to 0·2 mm., often also 0·3 to 0·4, rarely more than 0·5, or less than 0·05 mm.

The position of the central capsule is somewhat different in the four orders into which we have divided the PHÆODARIA. It lies in the centre of the spherical, concentric calymma in all the Phæocystina, or in those PHÆODARIA which possess no complete lattice-shell—Phæodinida, Cannorrhaphida, and Aulacanthida (Pls. 101–105). The Phæosphæria (comprising the Orosphærida, Sagosphærida, Aulosphærida, and Cannosphærida, Pls. 106–112) all possess a very big, usually spherical lattice-shell, and here the central capsule is much smaller than the latter and lies in its centre. Another position is constantly occupied by the central capsule in all Phæogramia (Pls. 99, 100, 113–120; the families Challengerida, Medusettida, Castanellida, Circoporida, Tuscarorida), which have a peculiar mouth on the lattice-shell, placed on the oral pole of its main axis; the central capsule lies in the opposite aboral half of the shell cavity. The Phæoconchia finally (Pls. 121–128, the families Concharida, Cœlodendrida, and Cœlographida) all possess a bivalved shell, and the capsule is here enclosed between the two valves of the shell.

The form of the central capsule is constantly spheroidal, slightly depressed in the direction of the main axis, and therefore comparable to the spheroidal form of our globe. The depression is generally very slight, so that the proportion of the minor vertical main axis to the major horizontal or equatorial axis is about 4:5 or 5:6, often even 8:9 or less; but sometimes the proportion becomes 3:4, or even 2:3, so that the capsule becomes nearly lenticular; very rarely its form becomes almost perfectly spherical (Pl. 101, fig. 1). The main axis stands always vertically, and is distinctly marked by the peculiar shape of the astropyle, placed on its oral pole. Usually this pole, in the living and freely floating PHÆODARIA seems to be the lower pole, directed downwards (as also in the NASSELLARIA); but in some families it seems to be inversely directed upwards, as in the Challengerida and Tuscarorida (Pls. 99, 100).

The two *membranes of the central capsule* possess in all PHÆODARIA a very different shape, and were in all preparations which I could accurately examine (some hundreds