

triangular meshes. The Aulosphærida differ in the development of the peculiar nodal cavities and astral septa, by which the thin-walled cylindrical tubes of the articulated network are separated in the stellate nodal points. The Cannosphærida, closely allied to these latter, also differ in the articulated network, and further in the possession of an internal concentric shell. The Castanellida are sometimes similar to the Orosphærida, but distinguished by a peculiar large shell-mouth and a network of different shape.

The Orosphærida belong to the biggest Radiolaria, and the lattice-work of their spherical shell is of a ruder and coarser shape than in any of the other families of this class. Nevertheless they have been hitherto perfectly unknown, and were first discovered by the Challenger. We have been able to distinguish in the collection four genera and twenty-seven species. This strange fact may be explained by the circumstance, that they are in general rare, and restricted to a few localities, and that probably all the species are inhabitants of great depths. Complete shells also are rarely found, whilst broken fragments of their big shells, easily recognisable by the coarse irregular meshes and the thick stratified bars, are met with frequently in the Radiolarian ooze of some Pacific Stations, especially at Stations 265 and 268, at a depth of 2900 fathoms.

The lattice-shell of the Orosphærida is usually spherical, or an endospherical polyhedron (Pl. 106, fig. 4); rarely one axis is somewhat prolonged, so that the shell becomes slightly ellipsoidal (Pl. 106, fig. 1). Its diameter is usually between 2 and 3, often also between 2 and 1 mm., rarely more than 3, or less than 1 mm. The largest shells observed attained 5 to 6, the smallest 0.5 to 0.6 mm. Their general habit is very characteristic, so that they may be easily distinguished from all other spherical lattice-shells, especially from the Castanellida and from the simple Monosphærida (*Cenosphaera*, *Acanthosphaera*), with which I confounded them in the beginning (hence the first shell observed, figured in 1878, was placed among the Monosphærida in Pl. 12). A closer examination of the coarse network and of the peculiar structure of its thick bars always enables one to recognise even small isolated fragments of broken shells.

The meshes of the coarse network exhibit in all observed Orosphærida a very irregular form and unequal size; the majority are usually more or less quadrangular, more rarely they are triangular, pentagonal or hexagonal, very rarely rounded. They are often arranged in parallel rows, which seem to be determined by prominent crests, connecting the bases of the radial spines (Pl. 12, fig. 1; Pl. 106, fig. 4, &c.). The diameter of the meshes is usually between 0.05 and 0.1, often 0.1 to 0.2, rarely more than 0.25, or less than 0.025 mm. In *Oroplegma*, which develops an outer loose, spongy shell around the inner primary shell, the big meshes of the former become much larger and very irregular (Pl. 107, fig. 1).

The coarse bars which separate the large meshes of the irregular network are very thick and massive, cylindrical, usually of unequal thickness, straight or slightly curved, never angular or prismatic. Their diameter is usually between 0.01 and 0.02, rarely