

more than 0.03 or less than 0.005 mm. Their surface is either smooth or slightly spinulate. Examined in the dry state and by strong lenses, they constantly exhibit a fine, but distinct longitudinal striation, as the expression of concentric stratification. A fine axial canal or central tubule is usually visible in the axis of each rod, and often this axial canal is studded with numerous short lateral branches (Pl. 107, figs. 2, 4, 8). But very often the axial canals become rudimentary or lost, or are developed only in a part of the bars (Pl. 12, fig. 1). When they are completely developed, the entire network of the shell is drained by a reticulate system of communicating axial canals; they are probably filled by jelly in the living body. This tubular system never attains that regularity and high development which is constantly found in the Aulosphærida; and the characteristic stellate nodal points of the latter, with their astral septa, are never found in any of the Orosphærida. Moreover the wall of the tubular bars is very thin and structureless in the Aulosphærida, very thick and stratified in the Orosphærida, the enclosed canal very wide in the former, very narrow in the latter. The stratification of the concentric cylindrical lamellæ, which surround the narrow axial canal, is effected by the gradual deposition of the concentric layers, and is very similar to that which is found in the thick spicula of many sponges. The peculiar structure of the bars in the Orosphærida becomes very distinct if the skeleton be burned, or acted upon by fire for some time; it then assumes a brown colour and its surface often appears dimpled. Sometimes the concave dimples on the surface of the bars are rather deep and separated by prominent crests (Pl. 107, figs. 4, 7). The few genera of Orosphærida which are here distinguished have all the same structure, are closely allied, and differ mainly in the shape of the outer surface of the lattice-sphere. The latter is quite simple and smooth only in *Orona*. In the common *Orosphæra* (Pl. 106, figs. 1-3) it is studded with radial spines. In the most frequent form, *Orosceua*, the shell has a pyramidal or tent-shaped elevation on the base of each radial spine, and usually the bases of the neighbouring spines are connected by strong prominent crests, the edges of the three-sided or four-sided pyramids (Pl. 12, fig. 1; Pl. 106, fig. 4). This remarkable form is more or less polyhedral, with concave sides, and is similar to the characteristic shells which are represented by *Aulosceua* among the Aulosphærida, by *Sagosceua* and *Sagoplegma* among the Sagosphærida (compare Pls. 108 and 110). The pyramids or tents, however, are in these latter more regularly and distinctly developed than in the Orosphærida. The radial spines which arise from the top of the pyramids are often branched, and the branches become connected to form an outer enveloping secondary shell or a loose spongy framework in *Oroplegma* (Pl. 107, fig. 1).

The radial spines of the Orosphærida never exhibit a constant number or disposition in the individual species; their usual number is from twenty to sixty. Their form exhibits two different types, which, however, are not sharply separated; robust club-shaped and slender rod-shaped spines. The robust club-shaped spines are usually about as long as