to the Discoidea, mainly to those which also bear on the periphery of the circular equatorial plane four crossed spines (such as *Staurodiscus*, *Stethostaurus*, *Staurodictya*, &c.). But in these cruciform Discoidea the shell and the enclosed central capsule are discoidal or lenticular, whilst in the Staurosphærida they remain spherical. Commonly the cross is quite regular, with four right angles and four equal beams; but often also it becomes more or less irregular. In some genera one pair of equal opposite spines is larger than the other pair. These forms represent the three different axes of the rhombic crystal system, whilst the common regular Staurosphærida represent those of the quadratic crystal system. The latter can be derived from the Cubosphærida (representing the regular crystal system) by reduction of one axis and loss of its pair of spines. In general the number of species (and particularly of the individuals) is much smaller in the Staurosphærida than in all other families of Sphæroidea.

The Stylosphærida (Pls. **13–17**) can be derived from the Cubosphærida by reduction of two dimensive axes and loss of two pairs of spines. Therefore, here one pair of spines only is developed, opposite in one single axis. This "monaxonial" form brings the Stylosphærida very near to the ellipsoidal Prunoidea (mainly to many two-spined forms of Ellipsida and Druppulida); but they differ from these by the spherical (not ellipsoidal) form of the central capsule and of the enclosing lattice-shell. In the greater part of the Stylosphærida both spines are of equal size and form, accurately opposite in the "main axis." But in many forms both spines become unequal in size or form, often very different. More rarely they are not accurately opposed, but placed in two different axes, intersecting at a small variable angle. The small group of Saturnalida presents a very remarkable and peculiar structure, in which both spines (at equal distances from the centre) are united by a circular or elliptical ring (Pl. **13**, figs. 15, 16; Pl. **16**, figs. 16, 17).

The Astrosphærida are distinguished from the other Sphæroidea by the great and variable number of their external radial spines (Pls. **11, 18–20, 26–30**). Commonly this number amounts to from twelve to twenty, rarely to only eight to ten, very often to thirty-two to forty or more; in many species more than one hundred are present. As already mentioned above, it would be important to distinguish between primary spines (as outer prolongations of the inner radial beams) and secondary spines (developed from the surface of the shell), but in many cases this distinction is difficult or impossible. More practical is the distinction between larger "main spines" and smaller "by-spines." The size and form of the radial spines is extremely variable. Much more important is their number and disposition. In general we can here distinguish the following different cases:—(A) radial spines are developed from all the nodal points of the network on the shell surface; (B) the number of the spines is smaller than that of the nodal points, but they are irregularly scattered; (C) the radial spines exhibit a limited number and a certain regular disposition. In this latter case the following modes of distribution seem to be the most important:—(*α*) eight spines placed in the four diagonal axes of the