

lattice-shell (primary medullary shell) a number of radial spines arises, and upon these the secondary shells are formed from within outwards.

165. *Genealogical Tree of the Prunoidea*.—The suborder *Prunoidea* is very closely related to the *Sphæroidea*, and is distinguished from it by the elongation of one axis; from the simple lattice-sphere (*Cenosphæra*) is developed a latticed ellipsoid (*Cenellipsis*, Pl. 39, fig. 1). The development of this vertical isopolar main axis is foreshadowed even among the *Sphæroidea*, in that family in which two opposite radial spines grow out of the primary lattice-sphere at the two poles of the vertical main axis (*Stylosphærida*, Pls. 13, 14). These latter pass over without any sharp boundary into those forms of *Prunoidea* whose ellipsoidal lattice-shell bears two opposite main-spines (*Stylatractida*, Pls. 15, 16). Other very intimate relationships between the *Sphæroidea* and *Prunoidea* are indicated in certain of the latter by the fact that of the two concentric lattice-shells the inner (medullary) shell is spherical, the outer (cortical) shell ellipsoidal (Pl. 39, figs. 3, 7, 8, 14, 19); often three concentric lattice-shells are present, of which the two inner are spherical intracapsular medullary shells, whilst the outer is an extracapsular cortical shell, ellipsoidal or cylindrical in form (Pl. 39, figs. 4, 12, 17, 18). Owing to the manifold nature of these phylogenetical relations and the variety of their combinations, the derivation of the individual *Prunoidea* from the *Sphæroidea* is rendered very difficult; in addition to which it is possible that the simplest *Prunoidea* (*Cenellipsis*, *Ellipsoidium*) have been directly developed from the skeletonless *Actiprunum* (a form of *Actissa* with ellipsoidal central capsule, p. 14) by the excretion of a simple ellipsoidal lattice-shell on the surface of their calymma.

The phylogeny of the *Prunoidea* is especially complicated by the formation of peculiar transverse constrictions, perpendicular to the longitudinal axis. They are wanting only in the *Monoprunida* (*Ellipsida*, *Druppulida*, and *Spongurida*); the *Dyoprunida* (*Artiscida* and *Cyphinida*, Pl. 39, figs. 9–19) possess only one such constriction (in the equatorial plane); the *Polyprunida*, on the other hand, have three, five, or more parallel constrictions (*Panartida* and *Zygartida*, Pl. 40). The chambers, which are separated off by these constrictions, may be regarded as polar sections of incomplete cortical shells.

166. *Genealogical Tree of the Discoidea*.—The suborder *Discoidea* is closely related to the *Sphæroidea*, but separated from it by shortening of one axis; from a simple lattice-sphere (*Cenosphæra*) a latticed lens or flattened spheroid is developed, whose circular equatorial plane is larger than any other section (*Cenodiscus*, Pl. 48, fig. 1). The formation of this horizontal equatorial plane is perhaps indicated in that family of *Sphæroidea* in which four crossed radial spines, lying in one plane, are developed (*Stausosphærida*, Pls. 15, 31, 42). The morphological and phylogenetical relations of the *Discoidea* to the *Sphæroidea* are precisely the converse of those of the *Prunoidea*; in the latter the vertical axis appears longer, in the former shorter than any