means excluded. For even in the skeletonless primitive genus of all the SPUMELLARIA, *Actissa* (as well as in the social *Collozoum*), there are found, in addition to the usual spherical types, other species (or subgenera, p. 12) whose central capsule is not spherical but a modification of the sphere; in *Actiprunum* ellipsoidal; in *Actidiscus* lenticular; in *Actilarcus* lentelliptical; if such modified forms of *Actissa* were to develop their lattice-shells independently, then their form would correspond to that of the central capsule; and such simple ellipsoidal, discoidal, and lentelliptical lattice-shells might have been the primitive forms of the Prunoidea, Discoidea and Larcoidea.

164. *Genealogical Tree of the Sphæroidea.—Cenosphæra*, the simplest form of the spherical lattice-shell, may be unhesitatingly regarded as the common stem-form of all the Sphæroidea (pp. 50–284, Pls. 5–30). *Cenosphæra* (p. 61, Pl. 12) arose directly from *Actissa* simply by the silicification of the spherical exoplasmatic network of the sarcodictyum around the central capsule, on the surface of the concentric calymma. From this simple siliceous extracapsular lattice-sphere all other forms of Sphæroidea have arisen, in the main by the manifold combination of two simple processes, first by the formation of radial spines on the surface of the lattice-sphere, and second, the addition of concentric spherical lattice-shells. Both processes may be utilised as the foundation for a systematic treatment of the Sphæroidea (compare pp. 52–58).

If in the Sphæroidea the characteristic number and disposition of the *radial spines* be regarded as the most important heritable peculiarity of the different families, then we have the following natural arrangement:—(1) Liosphærida, without radial spines; (2) Cubosphærida, with six radial spines (opposite in pairs in three axes perpendicular to each other); (3) Staurosphærida, with four radial spines (in two axes crossed at right angles); (4) Stylosphærida, with two opposite radial spines (in the vertical main axis); and (5) Astrosphærida, with numerous regularly or irregularly distributed radial spines (eight to twenty or more). If, on the contrary, more stress be laid upon the number of the concentric lattice-shells, then we have the following artificial grouping:—(1) Monosphærida, with one simple lattice-sphere: (2) Dyosphærida, with two concentric lattice-spheres; (3) Triosphærida, with three; (4) Tetrasphærida, with four; (5) Polysphærida, with numerous (five to twenty or more) concentric lattice-shells; (6) Spongosphærida, with a spongy spherical shell. In general the former arrangement appears more natural than the latter, since the number of primary radial spines, which grow out from the primary lattice-sphere, determines their ground-form from the outset, whatever may be the number of secondarily added shells. Strictly speaking, according to the view adopted, those Liosphærida which have several shells, on the outer surface of which there are no radial spines, ought to be classified according to the number and arrangement of their internal radial connecting beams and distributed among the other families. The practical application of this correct principle meets, however, with great difficulties. Also in many cases the phylogenetic relations of the different Sphæroidea are more complicated than would appear from both these classificatory principles. In general their phylogeny will quite correspond with their ontogeny, since from the innermost first formed