The Sphærellaria differ from the Collodaria in the possession of a perfect siliceous skeleton, which is originally a latticed spherical shell, enveloping the central capsule. By modification of this fenestrated sphere arises an enormous mass of different forms, which we dispose in twenty-eight families, and these in four larger groups, sub-orders or sections,—Sphæroidea, Prunoidea, Discoidea, and Larcoidea.

The Sphæroidea, the common ancestral group of the Sphærellaria, possess a skeleton which is either a simple fenestrated sphere, or composed of two or more concentric latticed spheres, which are united by radial beams; more rarely it becomes more or less spongy.

The Prunoidea are derived from the Sphæroidea by prolongation of the latticed sphere in one axis; the skeleton therefore becomes here ellipsoidal or cylindrical (often with annular transversal constrictions).

The Discoidea on the contrary must be derived from the Sphæroidea by shortening in one axis; here therefore the fenestrated shell becomes more or less lenticular or iscoidal (often with radial spines or arms in the equatorial plane, on the circular margin).

The Larcoidea, the fourth section, differ from the three foregoing sections by the different growth of the shell in three different dimensions of space; therefore here the fenestrated shell becomes "lentelliptical," or a "triaxial ellipsoid," its length, breadth, and height being different.

The Skeleton consists in all SPUMELLARIA either of pure *silica* or of a peculiar silicate. The siliceous bars and beams constituting it are invariably *solid*, as also in the NASSELLARIA, never hollow, as in the PHÆODARIA. Never is the skeleton composed of acanthin, as in all ACANTHARIA. Whilst in the first order of SPUMELLARIA, Collodaria, the form of the spicula, or the scattered needles, composing the skeleton, is very simple, *never latticed*, in the second order, the Sphærellaria, it is constantly latticed or fenestrated, often also spongy.

The geometrical fundamental form of the lattice-shell in the Sphærellaria is originally spherical (homaxon), as preserved in all Sphæroidea; in the Prunoidea and Discoidea it becomes monaxon, with one single axis (prolonged in the former, shortened in the latter); in the Larcoidea it becomes triaxon, by different growth in three principal axes, perpendicular one to another. The further development of radial parts of the skeleton in these three axes is very important for the "promorphology" of the Radiolaria.

The Malacoma, or the whole soft body of the SPUMELLARIA as opposed to the skeleton, exhibits some differences of structure in two different groups, which were separated formerly (1862) as Monocyttaria and Polycyttaria, corresponding to the "Radiolaria monozoa and polyzoa" of Johannes Müller (1858).

The Monocyttaria (or the Spumellaria solitaria) live isolated as single cells—like