

monostatic or unistable, since the two poles of the principal axis are always more or less different from each other. (5) The *Ground-forms* of the skeleton are, therefore, for the most part grammotypic (centraxon) or zygotypic (centroplan), rarely spherotypic. The two legions of the Osculosa are distinguished chiefly by the principal opening (osculum) being closed by a porous plate (porochora with its podoconus) in the NASSELLARIA (OR MONOPYLEA), and by a radiate cover (operculum with its astropyte) in the PHÆODARIA (OR CANNOPYLEA).

5. *The four Legions of Radiolaria.*—The four principal groups of Radiolaria, to which we have given the name “legions,” are natural units, since the most important peculiarities in the structure of the central capsule are quite constant within the limits of the same legion, and since all the forms in the same legion may be traced without violence to the same phylogenetic stem. The four legions are, however, related to each other, in so far as they all exhibit those characters which distinguish the Radiolaria from other Protista. The two which compose the Porulosa (§ 3) seem somewhat more nearly related to each other than to the two which make up the Osculosa (§ 4). When, however, the attempt is made to bring them all into a phylogenetic relationship, it undoubtedly appears that the SPUMELLARIA (OR PERIPYLEA) are the primitive stem, out of which the other three have been developed as independent branches. All three have been derived, probably independently, from the most ancient stem-form of the SPUMELLARIA, the spherical *Actissa*.

6. *Peripylea or Spumellaria.*—Those Radiolaria which we call “PERIPYLEA” on account of the constitution of their central capsule, or “SPUMELLARIA” on account of the nature of their skeleton, are separated from the other three legions of the class by the combination of the following constant characters:—(1) The *Membrane* of the central capsule is single and evenly perforated all over by innumerable fine pore-canals, but without any larger principal opening (osculum). (2) The *Nucleus* always lies centrally in the SPUMELLARIA monozoa and is serotinous, for it divides only at a later period into the nuclei of the spores; in the SPUMELLARIA polyzoa it is precocious, and divides early into many small nuclei. (3) The *Pseudopodia* are exceedingly numerous and distributed evenly over the whole surface of the central capsule. (4) The *Calymma* contains no phæodium. (5) The *Skeleton* is seldom wanting, is never centrogenous, and is always siliceous. (6) The *Ground-form* of the central capsule is originally spherical (often modified); that of the skeleton is also spherical or, in the majority of cases, derived in different ways from the sphere.

7. *Actipylea or Acantharia.*—Those Radiolaria which we call “ACTIPYLEA” on account of the constitution of their central capsule, or “ACANTHARIA” from the formation of their skeleton, are separated from the other three legions by the combination of the following constant characters:—(1) The *Membrane* of the central capsule is single and