

protoplasm, forms a vibratile-spore or "flagellate-spore." This division in the Acantharia and in the social (or colonial) Peripylea begins very early, in all other Radiolaria much later, immediately before propagation.

*The Endoplasm* or "endosarc," or "intracapsular protoplasm" or "inner sarcode," in all Radiolaria originally fills that space within the capsule, which is not taken up by the nucleus. It seems to be employed mainly for the purpose of propagation, becoming divided earlier or later into numerous small particles, each of which surrounds a small particle of the nucleus and forms together with it a flagellate-spore. Besides this the endoplasm of the Radiolaria seems to have a great significance for the nutrition, mainly for the interchange of materials. It becomes very often vacuolate or alveolate, filled with smaller or larger spherical drops of fluid; it produces very commonly smaller fat-granules or larger oil-globules, and further pigment-granules of different colours, more rarely crystals and other peculiar enclosed parts.

*The Membrane* or "capsule-membrane" is the most typical and characteristic part of the body of a Radiolarian, sufficient of itself to separate this class from all other Rhizopoda. At the same time, by its different shape it presents the best means for the systematic distinction of the four subclasses or "legions" of the class. The membrane is composed of a special organic matter (probably nearly related to chitin) and combines density with elasticity to a high degree. Observed with a high power of the microscope its margin (or section) appears commonly simple-edged, but often in larger forms distinctly double-edged.

The legion PHÆODARIA is distinguished by a double membrane (the thinner inner and thicker outer membranes being separated by an interval); in the three other legions it is simple. The membrane completely separates the intracapsular from the extracapsular body, both communicating only by certain pores or openings in the membrane. With reference to this important communication, the whole class can be divided into two subclasses, Holotrypasta and Merotrypasta: the HOLOTrypASTA contain the Peripylea and Actipylea, in which the membrane is pierced by innumerable very small pores; the MEROTrypASTA consist of the Monopylea and the Cannopylea, in which the membrane exhibits only one large main opening, distinguished in the former by a peculiar "porous area," in the latter by an "osculum" or a prolonged tubule.

*The Calymma* or "jelly-veil" is the most characteristic part of the extracapsular body in all Radiolaria; in the majority of the class it is the most voluminous part of the whole body, being much more voluminous than all the other parts taken together. The calymma is a structureless, clear, and transparent jelly-envelope, which always includes the whole central capsule and often also the whole extracapsular skeleton. Owing to the high degree of its consistence, this jelly-veil takes a very important part in the formation of the extracapsular skeleton, furnishing the matrix for the deposition of its tangential parts.