

resistance to mechanical influences and almost disintegrating under the eyes of the observer, and on the other hand forming a firm gelatinous shell, comparable to cartilage in hardness, elasticity, and power of mechanical resistance. In many Radiolaria of large dimensions with an alveolar calymma (especially in numerous Collo-daria and PHÆODARIA) this may be split by means of dissecting needles and the central capsule extracted like the stone from a cherry, and then it is easy to ascertain that the firmness and elasticity of this jelly-veil are not less than those of a cherry. The different degrees of consistency in the various Radiolaria may be dependent either upon the relative amount of water which they contain, or upon qualitative or quantitative variations in the organic substance of which the jelly consists. Great importance is to be attached to the considerable consistency of the calymma, because it furnishes the indispensable groundwork for the deposition of many parts of the skeleton and particularly of the lattice-shells.

85. *The Primary and Secondary Calymma.*—In most Radiolaria the external form and volume of the calymma are different at different stages of growth, and this difference is mainly dependent upon the development of the skeleton. Hence it is advisable to distinguish in general the primary from the secondary calymma. The *primary calymma* is in the great majority of Radiolaria a perfect sphere, in the middle of which lies the concentric central capsule; on the surface of this gelatinous plate the primary spherical lattice-shell is secreted in most SPUMELLARIA and Acanthophracta, as well as in those PHÆODARIA which possess a spherical shell; in the remaining PHÆODARIA also and in the NASSELLARIA, where the lattice-shell is not spherical but monaxon, it is secreted on the surface of the primary calymma. This takes place at a definite time, very important in the development of the Radiolarian, which for the sake of brevity we shall term the "*lorication-period.*" Since the firm surface of the primary calymma furnishes the necessary foundation for the deposition of the primary lattice-shell, it is of the greatest mechanical significance in all shell-bearing Radiolaria. The *secondary calymma* arises only after the lorication-period by further growth of the primitive jelly-mantle and in the fully developed Radiolarian usually encloses wholly or partially the external parts of the skeleton, in consequence of which it assumes the most various forms. Very often the secondary calymma is polyhedral, being stretched between the radial spines of the skeleton, the distal ends of the latter then forming the fixed points of the gelatinous polyhedron.

86. *The Extracapsular Vacuoles and Alveoles.*—The calymma of the Radiolaria usually appears completely homogeneous and hyaline without any structure; sometimes it encloses numerous clear vesicles, vacuoles or alveoles, and then assumes a frothy appearance, the expression of a more or less distinct alveolar structure.