

usually different), more rarely the frontal axis (with equal right and left poles). In the zygothalamous *Spyroidea* (as in the *Stephoidea*) the formation of the shell proceeds from the sagittal ring, whilst in the polythalamous *Cyrtoidea* the latticed cephalis is always the starting point, from which a series of joints (thorax, abdomen, and in the *Stichocyrtida*, the numerous post-abdominal joints) successively arise (unipolar growth).

149. *The Ontogeny of the Phæodaria*.—The individual development of the PHÆODARIA in the simplest case stops with the skeletonless condition of the Phæodinida (*Phæodina*, *Phæocolla*), which can be immediately derived from the foregoing *Actissa*-stage by the disappearance of the pores in the greater part of the central capsule, the characteristic astropyle being developed at the basal pole (§ 60). Since this particular form and structure of the spheroidal central capsule remains the same in all PHÆODARIA, whilst the formation of their skeleton follows very different directions, it follows that further common paths of development are excluded both ontogenetically and phylogenetically. What will be laid down in this respect as regards the phylogeny of the different groups of PHÆODARIA (§§ 194–199) holds true also of their ontogeny. The relations of growth in the three dimensive axes are hence very different in the skeletons of the various groups of PHÆODARIA. This difference is best marked in the Phæoconchia, whose bivalved lattice-shells have as their ground-form the rhomboid pyramid of Ctenophora. In most Phæogramia the monaxon lattice-shell may develop simultaneously by sudden excretion at a particular moment of lorication; this is also the case with the polyaxon lattice-shells of the Phæosphæria. In their further growth the development of basal or radial apophyses is of special importance. In the majority of the PHÆODARIA these apophyses are tubes of silicate filled with jelly (often provided with an axial siliceous thread); thus their development is distinguished by complications which are absent in the case of the other three legions.

150. *Growth*.—The growth of the body in the Radiolaria, as in all other organisms, is the fundamental function of individual development (see note A). All structural relations which this richest class of the Protista exhibits may be referred to different forms of growth, either of the unicellular malacoma or of the skeleton which it produces. In general the special development of the skeleton is dependent upon that of the central capsule, and of the sarcodictyum on the surface of the calymma; in the further growth, however, the conditions are reversed, and the condition of the skeleton already formed directly determines the further development of the central capsule and of the calymma with its sarcodictyum. The four legions of Radiolaria show, speaking generally, certain characteristic differences in growth, which are due in great part to the different structure and ground-form of their central capsule. In the two legions of the Porulosa (SPUMELLARIA and ACANTHARIA), in which the central capsule is originally spherical and