Pls. **52, 54,** &c.). As regards the *number of radial apophyses*, three sections of Cyrtoidea may be distinguished; the Pilocyrtida with three, the Astrocyrtida with numerous apophyses, and the Corocyrtida with none (p. 1129). The last two may in general be regarded as two divergent branches from the first, for the eradiate Corocyrtida have probably been formed from the triradial Pilocyrtida by entire loss of the radial apophyses, whilst on the other hand the multiradiate Astrocyrtida have arisen from them by additions to the three primary apophyses (interpolation of interradial between the perradial ones). As regards the *constitution of the shell-aperture*, the Cyrtoidea may be divided into Cyrtaperta and Cyrtoclausa (p. 1129); in general the Cyrtoclausa (with latticed shell-aperture) have arisen from the Cyrtaperta (with simple open mouth); in many Monocyrtida the converse may be supposed, the simple basal mouth having been formed by degeneration of a basal lattice.

192. *Phylogeny of the Phæodaria.*—The legion PHÆODARIA or CANNOPYLEA is so clearly marked off from other Radiolaria by the double membrane of the central capsule and the astropyle at its oral pole, as well as by the extracapsular phæodium, that it must be regarded phylogenetically as an independent stem (§ 9). This stem is only connected at its root by *Phæodina* with the stem-form of the SPUMELLARIA, *Actissa*. The stem itself is monophyletic, inasmuch as its members may be derived without violence from the skeletonless Phæodinida (*Phæodina*, *Phæocolla*). On the other hand, the formation of the skeleton of the PHÆODARIA is undoubtedly polyphyletic, different Phæodinida having independently commenced the formation of a skeleton, and having carried it out in very different ways.

193. *Origin of the Phæodaria.*—The Phæodinida (p. 1544, Pl. **101**), which may naturally be regarded as the common stem-group of the PHÆODARIA, have their nearest relations among other Radiolaria in the Thalassicollida (p. 10); and since this family is to be regarded as the primitive group of all Radiolaria, they may be directly derived from them phylogenetically. The essential modifications by which the primitive Phæodinida have arisen from the more archaic Thalassicollida are of three kinds; (1) the doubling of the membrane of the central capsule; (2) the reduction of the numerous fine pores in the membrane and the formation of an osculum, and of an astropyle closing it, at the oral pole of the main axis; (3) the production of an extracapsular phæodium. This last may, perhaps, be regarded as a unilateral hypertrophy of the voluminous pigment masses which are deposited in the sarcomatrix of certain Thalassicollida. Of the two genera of Phæodinida hitherto known, probably *Phæodina* (Pl. **101,** fig. 2) approaches the original stem of the PHÆODARIA more nearly than *Phæocolla* (Pl. **101,** fig. 1), for the latter exhibits only the large main opening of the central capsule (astropyle), whilst the former possesses also a pair of accessory openings (parapylæ). The hypothetical stem-form (*Phæometra*) presumably had a larger number of small parapylæ (like many Circoporida and Tuscarorida), and the astropyle was probably but little differentiated from them.