

The skeleton of the PHÆODARIA is always extracapsular, and exhibits in the majority of this legion such a characteristic shape, form, and structure, that these organisms may be easily recognised by it, even apart from the central capsule and the phæodium. In a few cases, however, the skeleton is so similar to that of some NASSELLARIA and SPUMELLARIA, that it may be accidentally confounded with it. In general the skeleton of the PHÆODARIA is much larger, and much more highly developed, than that of most other Radiolaria, and exhibits the most wonderful appearances, and the most marvellous complications, which are found in the whole world of Protists, or of unicellular organisms. The varied composition and differentiation of the skeleton alone distinguishes the numerous families, genera, and species of PHÆODARIA described in the sequel; all the fifteen families, however, agree so completely in the structure of the central capsule and the phæodium described, that we may derive them all phylogenetically from a small skeletonless family, the Phæodinida.

The chemical composition of the skeleton seems to be, in the majority of PHÆODARIA, somewhat different from that of the other Radiolaria. In a few groups only, especially in the Cannobelida (*Dictyocha*, *Mesocena*, &c.), and in a part of the Castanellida and Concharida, the substance of the skeleton seems to be of pure silica, as in the NASSELLARIA and SPUMELLARIA; these flinty skeletons, therefore, may be also found fossil. In the majority of PHÆODARIA, however, the skeleton does not consist of pure silica, but of an organic silicate; it becomes more or less intensely stained by carmine, and browned or blacked by fire; in many cases it even becomes completely burned and destroyed by the prolonged action of heat. This circumstance explains why PHÆODARIA in general are rare in deep-sea deposits, as in the common Radiolarian ooze of the Pacific, and why they are generally absent in fossil deposits. Even the pure Radiolarian rocks of the Barbados, &c., contain only a few PHÆODARIA, mainly Dictyochida.

According to the different forms of the skeleton, we may divide the legion or subclass of PHÆODARIA into two sublegions, four orders, and fifteen families. Firstly, we may distinguish as two groups the Phæocystina, without a lattice-shell, and the Phæocoscina, with a lattice-shell (compare above, p. 5). The Phæocystina comprise three different families, viz., (1) Phæodinida, without any skeleton (Pl. 101, figs. 1, 2); (2) Cannorrhaphida, with an incomplete skeleton, composed of numerous separate, not radial pieces, which are scattered around the capsule in the calymma (Pl. 101, figs. 3-14; Pl. 114, figs. 7-13), and (3) Aulacanthida (Pl. 102-105), with an incomplete skeleton, composed of numerous hollow radial tubes, which pierce the calymma and come in contact by their proximal ends with the surface of the central capsule.

The Phæocoscina, or the PHÆODARIA with a lattice-shell (embracing the great majority of the whole legion) exhibit three principal differences in the shape of their shell, and from these we distinguish the three following orders; (A) Phæosphæria, with a spherical, not bivalved shell (rarely of an ellipsoidal or lenticular, or another