

latticed shell." In the majority of them I observed that the skeleton did not consist of silex, but of a very peculiar organic substance, which I called "acanthin." At that time I divided the family Acanthometrida into four subfamilies:—(1) Acanthostaurida, (2) Astrolithida, (3) Litholophida, (4) Acanthochiasmida. The two former now represent the suborder Acanthonida, the two latter the suborder Actineliida. The number of genera which I distinguished in my Monograph amounted to nine, the number of species to fifty. By the rich collections of the Challenger this number is so much increased that we can here describe twenty-seven genera and one hundred and sixty species.

Richard Hertwig in his work on the Organismus der Radiolarien (1879, pp. 6–25) adopted my family Acanthometrida, and gave a very accurate description of its anatomical structure. He confirmed my observations that the radial spines of this family are never hollow, but solid, and that their chemical substance is not silex, but the organic matter "acanthin." He found that the simple nucleus of the Acanthometrida is commonly very early cleft, and that the peculiar brushes of filaments on the calymma, described by Johannes Müller and by me as "Gallert-cilien," are peculiar "contractile filaments," comparable to the "muscle-fibrillæ" of some Infusoria, or the "Myophan-filaments" (Myophrisca).

The order Acanthometra is here divided into two different suborders of very unequal extent and value, the Actineliida and Acanthonida. The first may be regarded as the common ancestral stock, not only of the second, but of all ACANTHARIA. In the small group of Actineliida the number of radial spines is variable and commonly indefinite, often very large (more than a hundred); they are therefore Adelacantha. The second suborder, the Acanthonida, comprise by far the greatest part of the order, and possess constantly twenty radial spines, regularly disposed after the Müllerian law; they are therefore (like all Acanthophracta) Icosacantha (compare above, p. 717).

The Actineliida possess constantly simple radial spines, without any apophyses; their form is commonly very simple and primitive. This suborder comprises three small but very different families, the Astrolophida, Litholophida, and Chiasmolida. The first family, the Astrolophida, is the original ancestral group. A large and variable, commonly indefinite number of radial spines is here united in the centre of the spherical central capsule and radiating within a spherical space. In the second family, the Litholophida, a small and variable number of radial spines (between ten and twenty) is united in the apex of a conical central capsule and radiating within the quadrant or octant of a spherical space. In the third family, the Chiasmolida, a variable number of radial spines is grown together by pairs, in such a manner that every two opposite spines (placed originally in one axis of the spherical central capsule) forms a single "diametral spine"; all these diametral spines are not united in the centre of the central capsule but only crossed loosely near the centre.