The third mode of junction, by central concrescence of all twenty spines, was formerly regarded by me as an important peculiarity, sufficient for the separation of subfamilies and genera (Monogr. d. Radiol., 1862, pp. 399, 401; Prodromus, 1881, p. 466). But I found afterwards that in many species where the twenty spines commonly remain separated, accidentally they grow perfectly together and form one single piece of acanthin—a starrulet with twenty rays. Therefore I now think it is more natural to divide those species only into different subgenera.

A fourth and a very different mode of junction, quite sufficient for the distinction of different families, is the concrescence in pairs of every two opposite spines, lying in one diameter (in *Acanthochiasma* and *Chiastolus*). Here we obtain a number of "diametral spines" (each composed of two originally opposed radial spines) and all these diametral spines are crossed loosely near the central point of the body without any solid and permanent apposition (Chiastolida). However, in some species of this peculiar family the central part of the diametral spines is twisted like a screw or spirally convoluted (Pl. **129**, figs. 2, 3).

The Form of the Radial Spines in the ACANTHARIA is extremely varied, and constitutes the main characters for the distinction of nearly four hundred species. But all these different forms may be reduced phylogenetically to three different fundamental forms:—(*a*) the cylindrical (with circular transverse section), (*b*) the two-edged (with elliptical or lanceolate transverse section), and (*c*) the four-edged (with square transverse section). No doubt the first (*a*) is the original primitive form, from which the two others are secondarily derived. Triangular spines never occur in the ACANTHARIA, whilst, however, they are common in the Sphærellaria. The first and original form, the cylindrical spine, is either a true cylinder of equal thickness in its whole length, or it is more or less conical. Rarely the spine is in the distal half spindle-shaped, and thicker than in the basal half. The second form, the two-edged spine, is more or less compressed from two opposite sides; its two edges are either more blunt, rounded, or more acute, sharp; its transverse section in the former case is elliptical, in the latter case lanceolate or rhomboidal. Sometimes the two edges are broader and in the form of two thin opposite wings. The two-edged spines may be occasionally shorter, triangular or lanceolate, at other times longer sword-shaped or linear. The third form, the four-edged spine, has constantly a square transverse section; the sides of this square are either even or concave; in the latter case the four edges are broadened and wing-like, but in the former case not. The quadrangular spines are either prismatic (of equal breadth throughout their whole length) or pyramidal (becoming gradually thinner towards the distal apex).

The Apex of the Radial Spines, or their free distal end, is in the majority of ACANTHARIA simple, conical. In the minority it is either truncated or bifid, or four-sided pyramidal, often with two, rarely with four prominent parallel teeth. In some forms