

The family *Chiastolida* (or *Acanthochiasmida*) differs from all other *ACANTHARIA* in the peculiar mode of union of the radial spines; these are grown together in pairs in the centre of the body, so that every two spines opposite in one axis of the body form together one single diametral spine. All diametral spines are loosely crossed in the middle of the central capsule, or connected by a peculiar screw-like winding, but not united firmly.

I established the family *Acanthochiasmida* in my *Monograph* (1862, p. 402) upon the single genus *Acanthochiasma* (with three species), in which only ten diametral spines are constantly found; I derived these from the twenty radial spines of the common *Acanthometra*, supposing that every two opposite spines of the latter (lying in one axis) were grown together in the centre, whilst the intimate connection of the twenty radial spines in the common centre was dissolved. This opinion was afterwards confirmed by Richard Hertwig, who observed *Acanthochiasma* intact in the living state. Although two species of this genus are cosmopolitan and very common, the number of species is very small; I could add to those three older known forms only a single new species.

Another genus of this family, *Chiastolus*, was observed by me only in a single specimen, but it is extremely interesting. It has sixteen diametral spines, disposed quite regularly after the same law of the thirty-two spines of *Actinastrum* which we described above (compare above, p. 729). Therefore we cannot doubt that the former is derived from the latter in the same way, every two opposite radial spines (of one axis) being grown together to form a single diametral spine. As we place *Acanthometron* (with twenty spines) and *Actinastrum* (with thirty-two spines) in two different families, it would perhaps be more convenient to separate also *Acanthochiasma* and *Chiastolus* as representatives of two different families—*Acanthochiasmida* (with ten diametral spines) and *Chiastolida* (with sixteen diametral spines).

As we derive *Acanthochiasma* from *Acanthometron* by conrescence in pairs of the twenty radial spines, the Müllerian law of *Icosacantha* must be employed also to the ten diametral spines of the former, therefore two of them are equatorial, four tropical, and four polar spines. In the same way we may employ the new law of disposition found in the thirty-two radial spines of *Actinastrum* equally to the sixteen diametral spines of *Chiastolus*, which we derive from the former, four of them are equatorial, eight tropical, and four polar spines (compare above, p. 732).

*The Central Capsule* of the *Chiastolida* is spherical, and exhibits in general the same shape as in the *Acanthonida*, and specially in the *Astrolonchida*. Of course every diametral spine pierces the capsule twice, at two points diametrically opposed. In some species of *Acanthochiasma* the central capsule is formed very late, so that it seems often to be absent. A very accurate description of the capsule and its nucleus, as well as of the calymma and the pseudopodia, is given by Richard Hertwig in his *Organismus der Radiolarien* (1879, pp. 10–18). The pseudopodia are very numerous, and sometimes bear reddish granules.