

conical or rounded elevations project at the proper position. Here and there structures may be observed in which, instead of such rudiments of the four abortive rays, the latter, or at least two of them are present as well equipped with many-ribbed umbels as are the two rays usually alone developed. Carter has previously reported the occurrence of this abnormality in *Hyalonema sieboldii*.¹ I am inclined to compare the smooth processes forming the bell-shaped umbel at each end of the stem with the terminal rays of other spicules, and to regard them therefore as simple tooth or spine structures. I have never observed any trace of an axial canal within them, and find, with Marshall and others, that they are not formed in the first rudiment of the amphidiscs but develop subsequently. In *Hyalonema sieboldii* only two different kinds of amphidisc occur in the skin. On the one hand, there are large strongly developed amphidiscs, 0.42 mm. or more in length, with an umbel 0.13 mm. or more in breadth, the axial beam of which is 0.035 mm. in thickness, and more or less rough, with irregularly scattered, inconspicuously arched prominences. At each end there are about eight slightly arched umbel-rays, each of which, with a longitudinally directed basal piece about 0.07 mm. long and 0.015 mm. broad, springs from the side of the terminal portion of the axial beam, and passes externally into the ploughshare-like lateral plates, which are bent towards the surface of the umbel, and therefore at right angles to the basal plate (Pl. XXVII. fig. 7). These curved lateral plates do not usually grow together laterally, but form each a free sharp lateral border. They are continued at their free end into a lancet-shaped terminal point, while at the other extremity, near the main axis of the spicule, they end in a rounded prominence, and thus enclose between them a central terminal pit. The free margin of the basal plate exhibits a rounded edge which becomes gradually raised from the axial beam of the amphidisc, and is continued with a hook-like bend to the end of the lancet-shaped, curved, external lateral plate (Pl. XXVII. fig. 7).

The disposition of these large amphidiscs in the skin has not as yet been correctly represented by investigators. They do not lie, as Marshall, O. Schmidt, Bowerbank, Carter and others have described, tangentially in the dermal membrane, but are radially directed, so that one-half of the whole spicule projects freely from the external surface, and the other extends internally into the subdermal space. I have found them irregularly scattered, sometimes in comparative abundance, sometimes only sparsely, but could not distinguish any one region of the body as characterised by their special frequency. They occur also on the external surface of the terminal sieve-plate.

Besides these large amphidiscs with broad shovel-like umbel rays, numerous smaller forms, measuring only 0.01 to 0.016 mm. in length, occur, irregularly scattered in the dermal membrane, in no special direction, but for the most part tangentially disposed. Their umbels are terminally hemispherically curved, and consist of eight umbel-radii

¹ *Ann. and Mag. Nat. Hist.*, ser. 4, vol. xii. p. 372, and pl. xiii. fig. 22.