

indeed so great is their development that nearly all individuality of fascicular character is obliterated, and they appear to form a compact muscular tissue. In certain lines, however, along the sides of the rays there seems to be a tendency towards a greater and more definite development of fibres in a lineal direction, parallel to the median line of the ray. The spiracula are very few in number, quite microscopic, and occur in little groups of six to ten which are widely and irregularly distributed. The oscular orifice is large, the valves when closed forming a cone of small elevation; and the spines which compose them are somewhat irregular both in number and gradation in size.

At the base of each valve is a rather close aggregation of paxillæ whereby a more or less complete annulus is formed around the orifice; and from each of the five groups in question proceed a number of spinelets, which radiate outward from the centre and constitute a conspicuous feature.

The ambulacral furrows are very wide, subpetaloid, tapering to a fine extremity, and constricted slightly near the actinostome. The armature of the adambulacral plates consists of only one spine to each plate, which is long, cylindrical, tapering to a fine point, and placed on a small process projecting into the furrow. The aperture-papillæ are elongate, covered with a very widely expanded membrane, imparting an acumino-spatulate form.

The mouth-plates are long and thin, the pair having the appearance of being pressed together laterally, projecting aborally in a prominent rounded keel, and sloping off somewhat ploughshare-like towards the mouth. Two spinelets similar to the general adambulacral armature, only perhaps rather shorter, stand on the superficies of each plate, one on the sloping curve leading to the adoral margin, and the other aboral to this and more outward in relation to the median suture-line of the plates. These spinelets appear greatly modified both in character and position as compared with the usual robust secondary spinelets of the genus. The mouth-spines are represented by two spinelets, similar in all respects to the spines of the adambulacral armature, only rather shorter, placed on the horizontal margin of each plate, and close up to the junction with the first adambulacral plate.

The actino-lateral spines are very long, the longest being about the fifteenth from the mouth. On the inner part of the ray they are comparatively delicate when regard is had to the size of the specimen, increasing, however, in robustness as they proceed along the ray, those near the angle and the succeeding ones being strong and thick. The spines reach quite up to the median line of the interradian area; indeed in the outer half they pass beyond and overlap, whilst the longest spines which fall in the interbrachial arc are much longer than the distance between the median interradian line and the margin of the furrow. In consequence a prominent outward peak is produced in the place of the angle, the web being much contorted, and an abnormal growth not unfrequently takes place, which produces an unsightly excrescence, as well as an irregular thickening of the tissue.