

it after a slight bulbous inflation. Further out on the ray the spines are very delicate, tapering, and sharply pointed, with the sheath more or less prolonged and a bulbous saccular expansion developed. At about the median third of the ray, the actinal spines on alternate plates are of different sizes, the plates which bear the lateral spine having a much shorter actinal spine than the others. Thus at 130 mm. from the disk the short spines are 6 mm. and the alternating long ones 10 mm. ; at 200 mm. from the disk (in another ray), the alternating spines are 3 mm. and 10 mm. respectively, and on another 2.5 mm. and 9 mm. respectively at about the same distance. The lateral spine is articulated on a prominent tubercle-like rudimentary infero-marginal plate ankylosed on the lateral surface of the adambulacral plate. It is remarkable for its great length and delicacy, the longest spines, which are situated at about 160 to 180 mm. from the disk, measuring 35 mm. ; close to the ovarian region they are short, not more than 7 mm., but at 70 to 80 mm. from the disk they are 20 mm., and at 100 mm. from the disk 28 mm., and they increase as they proceed outward to the measure above indicated, and again diminish as they approach the extremity of the ray. The lateral spines, like the actinal spines, are encased in a very delicate, semitransparent membranous sheath, crowded with minute pedicellariæ. These spines are extremely thin and delicate, and the invested shaft does not measure more than 0.216 mm. in thickness on the average. At the proximal extremity of the spines the membrane is seen to be contracted to the rim of the articulatory head of the spine, and is not continued as a uniformly broad sheath upon the tubercle ; at the distal extremity the sheath is slightly prolonged and a bulbous sacculus is developed.

The actinostome occupies about half the actinal surface of the disk, its diameter being 14.5 mm. in a disk measuring 28.5 mm. The buccal membrane is thick and opaque. The mouth-plates are small and quite inconspicuous ; the united pair have somewhat the form of a truncate wedge, the adoral margin being almost straight and with scarcely any prominence into the actinostome. The true mouth-spines are aborted, often absent altogether, but in some instances rudiments are present ; when this is the case the spinelets of the inner pair, which are very minute, are close together and enveloped in one common membranous sheath, the whole having the appearance of a little oviform scale pressed close against the mouth-plates ; the outer pair, when present, are buried in the actinostomial membrane and appear to be merged in the ambulacral bar which crosses the furrow at the actinostome ; their individuality is lost and usually no trace can be found of them. No pedicellariæ are borne upon the rudimentary mouth-spines. Each mouth-plate bears one large robust secondary mouth-spine on its actinal surface, away from the adoral margin. There is thus a pair to each mouth-angle, and they are the only true spines present. The spines are 5 mm. in length, flattened at the tip, and slightly flaring, the flattened extremity being sometimes bifurcate. The shaft is encased in a delicate, semitransparent,