(4) *Note on some Actinian Larvæ parasitic upon a Medusa from Port Phillip.*

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It has been known for a long time that the larval forms of certain species of Actinians are habitually parasitic upon Medusæ, thereby obtaining the advantages of free swimming without being obliged to possess locomotive organs of their own. I need enter into no details as to the observations of previous writers on this subject, as Professor Haddon* has already published a most valuable bibliography of larval Actiniæ parasitic on Medusæ.

According to this author, such parasitic larvæ have hitherto been found in North European seas, in the Mediterranean, on the coast of New England, and in the Southern Ocean. The object of the present brief note is to place on record the discovery of three parasitic Actinian larvæ on a Scyphomedusa from Port Phillip, which I had the good fortune to find on the occasion of the University Science Club's excursion to Cheltenham.

The Medusa upon which the specimens were found is a small monostomatous form about two inches in diameter. The bell is flattened, and the margin is notched into eight lobes, each subdivided into two halves by a deep indentation containing a tentaculocyst. The mouth is squarish, and at each corner is a rather large, somewhat flattened projection, with a much folded or crenated margin. These four projections are, of course, the oral arms. From the under surface of the Medusa, about half way between the oral arms and the margin, there arises a circle of very numerous, long, slender tentacles, arranged in eight horseshoe-shaped groups placed adradially. Each group contains about twenty-five tentacles, and the concavity of the horseshoe faces outwards. In the living animal the bell has a yellowish-brown tinge; the oral arms are of a warm sepia colour, sometimes with a

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touch of crimson lake; and the long, slender tentacles are pale, dull pink. The species is one of the *Discomedusæ*, and belongs apparently to Hæckel's genus *Desmonema*.

I have given this brief description of the Medusa in the hope that local naturalists may be induced to search for the species and its interesting parasites.

The largest of the three Actinian larvæ, all of which were obtained from the same specimen, was attached by its own oral surface to one of the oral arms of the Medusa. The position of the two smaller ones is a little doubtful—they were only observed after the animal had been preserved in spirit.

I will describe the three parasites in order, commencing with the youngest:—

(a) The youngest example is approximately hemispherical in shape, and the diameter of the oral disk is about 3 mm. after preservation in spirit. The surface of the column is marked by only a few transverse and longitudinal furrows. No terminal pore was visible under the dissecting microscope, and it may be pretty confidently asserted that none exists. Twelve tentacles are already present as short, thick, translucent outgrowths around the margin of the disk. Within these, there is an inner circle of twelve cushion-like swellings, apparently produced by division of each tentacular outgrowth into an inner and an outer lobe—the outer lobe forming the true tentacle, and the inner lobe the cushion-like swelling. Some of the cushion-like swellings are not yet completely marked out. The mouth is in the centre of the oral disk, and furrows radiate towards it from between the tentacular lobes. Transverse sections demonstrate the important fact that twelve mesenteries are already present. They also show that the longitudinal furrows on the outer surface of the column correspond in position to the insertion of the mesenteries.

(b) The next specimen is rather more advanced in development. The general shape is still hemispherical, and the diameter of the disk has increased only slightly, to about 4 mm. The transverse and longitudinal furrows on the surface are more strongly developed, but this is probably in part, though not entirely, due to the action of the reagents employed. The twelve tentacles have elongated somewhat and become more conical, and the twelve cushion-like outgrowths on the disk inside them are very well formed.

(c) I was able to observe the largest specimen in the living condition. I have already stated that it was attached by its oral disk to an oral arm of the Medusa. Its general form was elongatedly conical, swelling out somewhat beneath the insertion of the tentacles, and narrowing greatly at the other end of the column ; but doubtless the animal is capable of changing its shape to a considerable extent. The tentacles of the living animal were of a very dull, pale, bluish-grey colour. The column was very dull, reddish-brown, almost flesh-coloured, and showed longitudinal and transverse markings, probably corresponding to the grooves observed in spirit-preserved specimens. The conical tentacles are still twelve in number, but more elongated than in the earlier stages. Internally, at the base of each, is a saccular outgrowth corresponding to the similar cushion-like outgrowths noticed in the younger larvæ, but considerably larger. After preservation in spirit, the animal measured about 7·5 mm. in length and 6 mm. in diameter of the oral disk, excluding the tentacles.

I at first thought that my specimens were referable to the well known genus, *Halcampa*, and even to the species *H. clavus*, of which there is a good figure in Professor Hertwig's Report on the Challenger Actiniaria (Plate 3, Fig. 4). The presence of the remarkable outgrowths at the bases of the tentacles, however, shows that they cannot belong to that species, and even makes the generic identification doubtful. I do not think that these curious outgrowths have hitherto been observed in any other forms ; according to Haddon's figures they are entirely wanting in the British *Halcampa chrysanthellum*. They may possibly serve as adhesive organs, by means of which the parasite is attached to its host.

Actiniæ are very difficult animals to preserve, and, although I took great care, I was not very successful in the preservation of my specimens. I therefore postpone giving figures and an account of the histology of the species, until better material is forthcoming. Meantime, it seemed to me worth while to call attention to the existence of these interesting parasites in Port Phillip, and to request other naturalists to search for them should the opportunity arise. It still remains to discover the adult Actinian of which they are the larval forms.