I. NOTE ON A RHIZOCEPHALOUS CRUSTACEAN FROM FRESH WATER AND ON SOME SPECIMENS OF THE ORDER FROM INDIAN SEAS

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My reason for describing the parasite described below is its extraordinary habitat. It was found attached to one of the type specimens (a female) of the crab *Sesarma thelxinoe* in a jungle stream, at an altitude of 700 feet above sea-level, near Port Blair in the Andamans and is, so far as I am aware, the only representative of the Rhizocephala as yet found anywhere but in the sea. Dr. de Man refers to it in his original description of its host as a *Sacculina* (*Rec. Ind. Mus.*, ii, p. 181), but it differs considerably in structure not only from that genus but from any other hitherto described. My description, being based on a single specimen not in the best condition, must necessarily be superficial, but I hope that its publication may lead to the discovery of fresh specimens, to its amplification and to the correction of any errors it may contain. A word of warning is necessary as regards the habitat of the species. Grapsid crabs as a rule breed in brackish water if not in the sea, and it is possible that *Sesarma thelxinoe*, which is only known from a small oceanic island, may visit the sea periodically for that purpose, and may there become infected by the parasite. Nevertheless, the fact that the latter contains larvae in the brood-pouch while living at an altitude of 700 feet entitles it to be included in the freshwater fauna of the Indian Empire and suggests that it is able to flourish in jungle streams, even if it also occurs in the sea.

As the Rhizocephala of Oriental waters have received little attention I may put on record the fact that *Sacculina carcini* [1] (*sensu lato*) is not uncommon on the crabs *Doclea ovis* and *Menippe rumphii* in shallow water off the coasts of Madras and Orissa and off the mouth of the R. Hughli. The Indian Museum also possesses specimens on a species of *Goniosoma* from Madras. The only other Rhizocephala from Indian seas in the collection are two somewhat shrivelled and distorted specimens which I attribute with little doubt to Geoffrey Smith's *Triangulus munidae*, although the lip of the orifice is perhaps more prominent than his figure

[1] The late Dr. J. Anderson obtained a specimen on *Thalamita crenata* from the Andamans (*Proc. Zool. Soc. London*, 1871, p. 144).

would suggest and the ring of attachment less near the centre. These apparent differences are perhaps due to shrinkage effected *post mortem*. The two specimens were attached to the abdomen of a specimen of *Munida microps* Alcock from the Bay of Bengal (480 fathoms). This rare parasite appears to confine itself to Macrura of the genus *Munida* (Galatheidae) and has hitherto been found[1] only in the Atlantic and North Sea.

SESARMAXENOS, gen. nov.

Rhizocephala with a slug-like or sausage-shaped body the main axis of which lies across the longitudinal axis of the host, the body as a whole being compressed between the ventral surface of

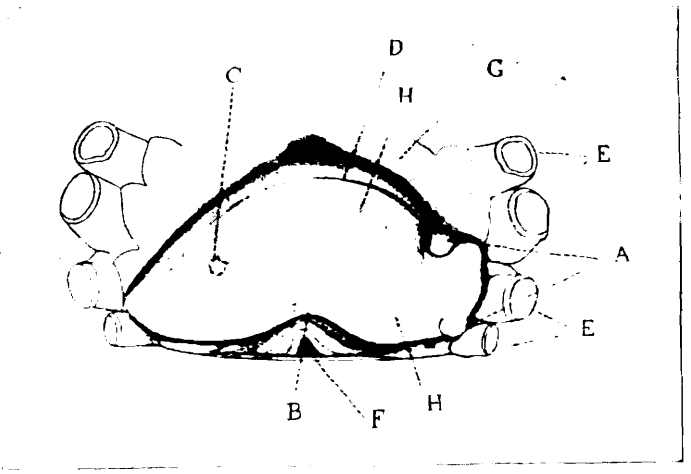

FIG. 1.—Type specimen of *Sesarmaxenos monticola*, × 4. A = orifices; B = point of attachment; C = (?) sensory pit; D = line marking separation between ovaries; E = bases of ambulatory limbs of host; F = base of abdomen (which has been removed) of host; G = ventral surface of carapace of host; H = longitudinal muscles of parasite.

the carapace and the retroverted abdomen of the host, which in the case of the only known specimen is a Grapsid crab from fresh water. The parasite is attached to the ventral surface of the crab's carapace by means of a chitinous ring apparently without roots, the ring being situated in the middle of the margin of the parasite most remote from the anterior margin of the host's carapace. There are two slit-like orifices in the mantle; they are surrounded and separated by a stout muscle, strands from which run along both surfaces of the body. The visceral mass is apparently attached to the mantle by a mesentery that surrounds the ring of attachment, being surrounded at all other points by a capacious brood-pouch, which contains larvae of the cyprid type. The

[1] See G. Smith, "Rhizocephala," *Faun. u. Flor. Golfes v. Neapel*, p. 115 (1906); and Guérin-Ganivet, *Bull. Inst. Océanographique* (Monaco), No. 189 (1910).

mantle is thin and smooth but is well provided with slender circular muscle-fibres. The two ovaries are distinct, but a testis has not been detected.

Sesarmaxenos monticola, sp. nov.

In the only known specimen of this species the body bears a close superficial resemblance to a slug with two tentacles partially withdrawn, their position being occupied by the papillae on which the orifices are situated. This end of the body is truncate, the orifices being separated by a distance a little greater than $\frac{1}{5}$ of the total length. The other end is pointed, the whole body being sinuous. The colour, after some years in spirit, has probably faded, but the surface has a purplish tinge which is most distinct at the two ends and round a small pit on the exposed surface (*i.e.*, exposed when the abdomen of the host is removed) not very far from the pointed end. This pit possibly indicates the position of the nerve-ganglion. The slit-like orifices are parallel to the

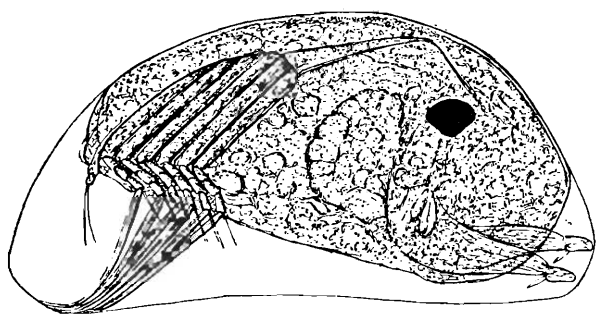

FIG. 2.—Advanced larva from brood-pouch of *S. monticola*, × 450

longitudinal axis of the host. The muscle surrounding them is powerful, its fibres crossing one another obliquely in various directions and finally constituting two distinct strands which run along the exposed surface in a somewhat divergent course.

The larvae in the brood-pouch apparently represent two distinct instars, both of the cyprid type but one larger and better developed than the other. Those of the more advanced form measure about 0·3 mm. in length and 0·149 mm. in greatest depth, the whole animal being nearly semicircular in outline. Both ends of the shell are narrowly rounded or somewhat truncate, and the ventral margin is slightly sinuous. The abdomen is minute but distinctly segmented. At its tip it bears a pair of short bristles. The six cirri are well developed, each bearing a bunch of bristles directed forwards in a slanting direction. The whole animal is strongly compressed and the shell is very thin and transparent. The eye is situated at about $\frac{1}{3}$ of the distance between the anterior and posterior ends of the shell. The smaller instar only differs in size

(0·23 × 0·1 mm.) and in having the cirri and antennae shorter. Very large numbers of larvae are present. I can find no trace of degenerate males.

The type of *Sesarmaxenos monticola* was taken by Mr. B. B. Osmaston in January, 1907, and was attached to the ventral surface of the carapace of a female (one of the types) of *Sesarma thelxinoe* de Man, which was found about 700 feet above the sea in a stream running through thick jungle on Mt. Harriet near Port Blair in the Andamans. I have searched through the whole of the collection of Grapsidae in the Indian Museum without finding another specimen of this or of any other Rhizocephalon.