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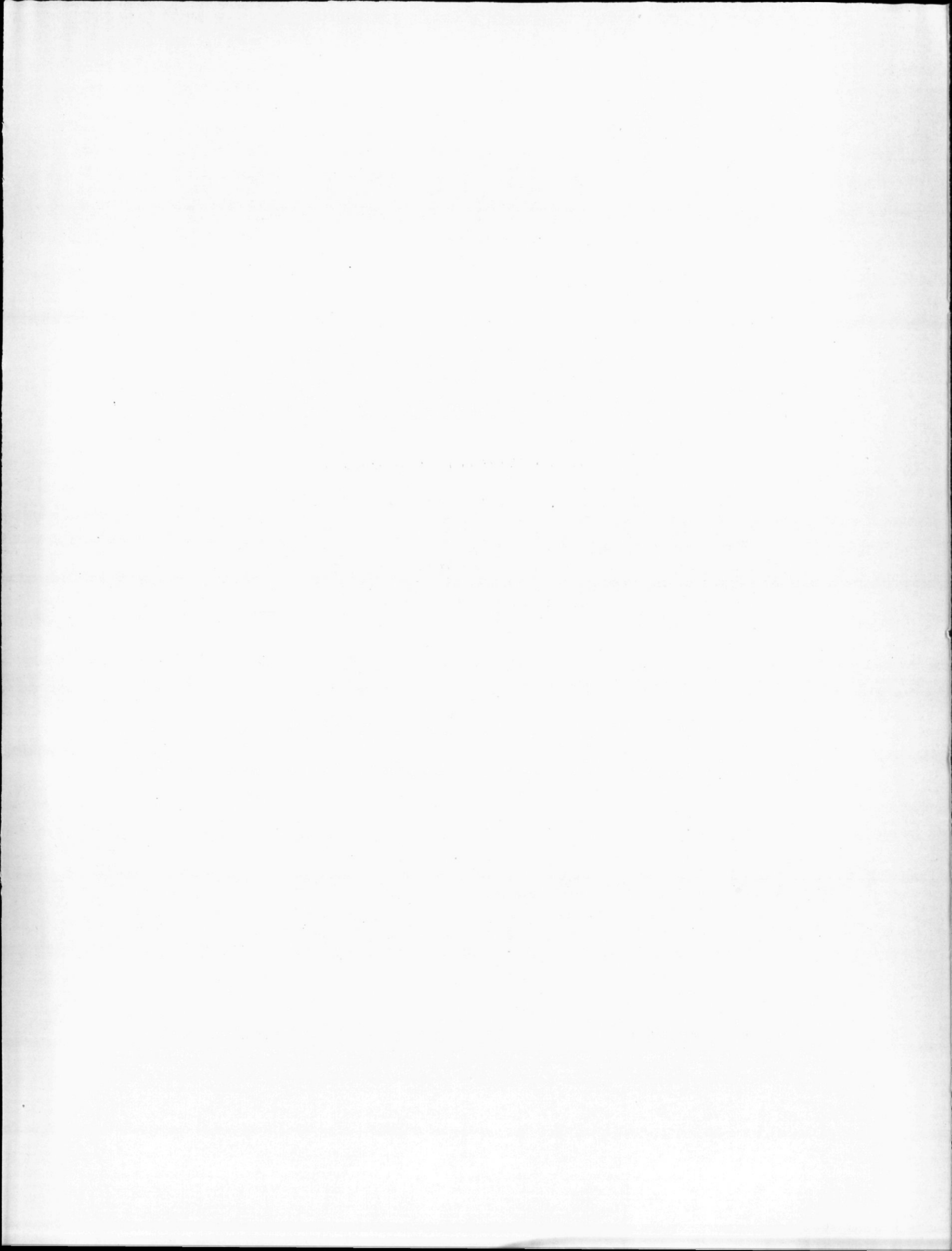
STOMATOPOD LARVAE

BY

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Three tubes containing stomatopod larvae from the above expedition were entrusted to me for report by Dr. Van Straelen, all from Manokwari, North New Guinea, dated 10.III.1929 (labelled Tube 4, 5, 6). Tube 4 contained one specimen, tube 5, 2 specimens and tube 6 one specimen.

Tube 4 contained an Alima larva of *Squilla*, almost certainly identical with Borradaile's 1907 *Alima spinigera* from the Western Indian Ocean. Tube 5 contained two large Alima larvae of *Squilla* which belong to the well known and widely distributed *Alima hyalina* Leach, the adult of which has not yet been determined. Tube 6 contained a *Gonodactylus* species in the post-larval stage, almost certainly *Gonodactylus chiagra*, which comes between the latest larva described by Brooks (1892) and a young stage found by Jurich (1904). All three species are interesting as, although the larvae of many stomatopods have been described and much is known as to the sequence of the stages yet we still know only a few individual life histories, especially of those from the Pacific. An important addition to this knowledge has been given to us recently by Komai and Tung (1929) from Japan in the description of almost the whole series of the larvae of *Squilla oratoria* with several others not identified. This work throws much light on the growth of Alima larvae and compared with others from the Atlantic we see that they are very much like many of these. In fact the differences in the various Alima larvae of different species of *Squilla* are often small and insignificant, although one is able to separate them into groups. Kemp (1913) deals with the systematics of the adults from the Indo-Pacific and shows that the species of *Squilla* are for the most part different in the Atlantic and Pacific. He (1915) records six species and a variety from the region of the Philippine Islands and others have been recorded from the New Guinea region.

Alima spinigera (?) BORRADAILE

(Figs. 1, 2.)

One specimen of what is almost certainly this species. Borradaile (1907) describes and figures it from Wasin, British East Africa. The long intermediate spines on the telson is very characteristic and unusual and the general form agrees. Borradaile's specimens measured 16.5 mm. and 12.5 mm. respectively in length.

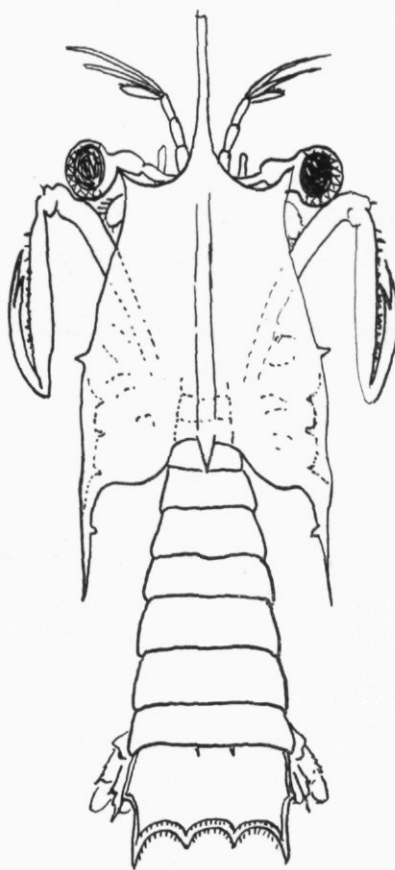


Fig. 1. — *Alima spinigera* (?), 13 mm. long.

The present larva measures 13 mm. from the tip of the rostrum (broken) to the end of the telson. Both larvae apparently belong to the *Alima bidens* group, originally described by Claus (1871) and later found by Brooks (1886). Others belonging to this group are described by Tattersall (1906) and Foxon (1932). The larvae all have a precociously developed predacious claw with one or more spines already free on the last segment, carapace nearly the same length as the

abdomen which is broad, no lateral denticles on the margin of the carapace in front of the centre. There may or may not be a central tooth sticking out from the carapace margin and a few teeth behind this, a posterior central spine on the carapace and a dorsal keel.

The present larva has two teeth ventrally on the broken rostrum, a keel down the centre of the carapace dorsally, terminating in a posterior spine, a tooth on the inside of each lateral spine, and a central tooth sticking out from the lateral margin behind which are three teeth bent inwards.

The intermediate spines on the telson are longer than the sub-median. Except for the keel, this corresponds with *A. spinigera*. The abdomen widens out to a telson which is broader than long, there are two spines dorsally on the

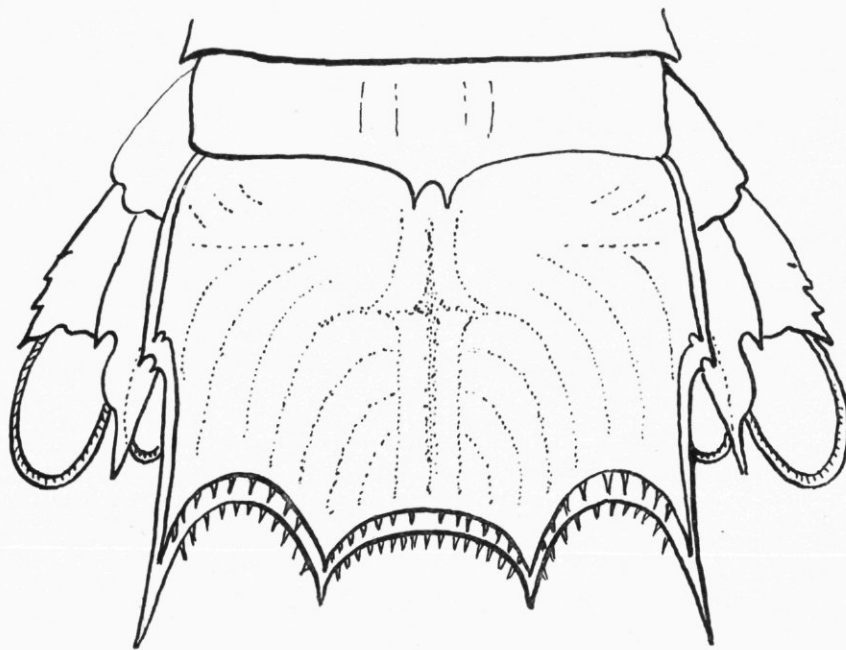


Fig. 2. — Telson and uropods of *Alima spinigera* (?).

sixth abdominal segment, four spines are present on the external limb of the exopodite of the uropod and there is a very distinct pattern on the telson. The predacious claw has one free spine besides the terminal spine. The pleopods still have the gills covered but there are rudiments of setae showing below the outer and inner limbs of the uropods possibly indicating that this is a last larval stage.

Foxon (*op. cit.*) attributes his larva, which is very similar to, but not identical with, the present one, to *Squilla lata*. It is indeed very probable that both these larvae belong to the *Squilla lata* group. It is an interesting fact however that the larva here described has a pattern on the telson which seems to fore-

shadow the pattern on the adult *Squilla lata* and also that it came from very near the locality where originally Brooks (*op. cit.*, 1886) procured his adult *Squilla lata* (New Guinea).

Alima hyalina LEACH

(Figs. 3, 4.)

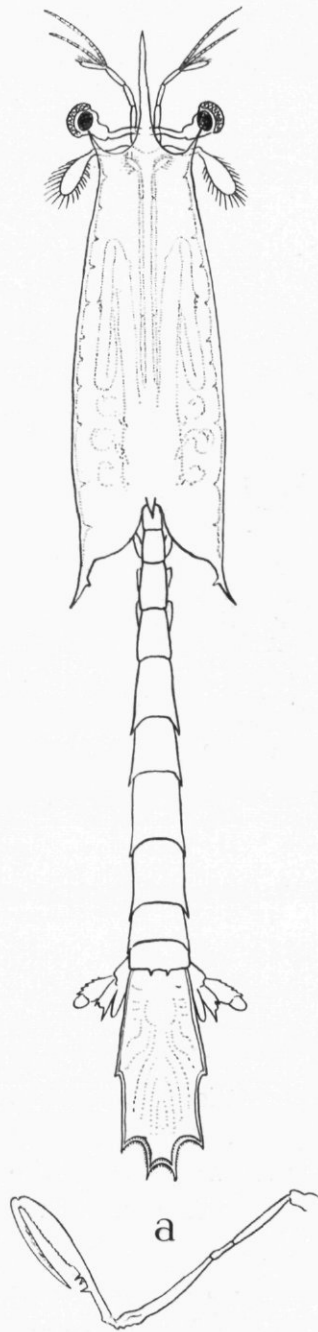


Fig. 3. — *Alima hyalina*,
42 mm. long.
a. predacious claw.

Two specimens of probably the last stage of this well-known and widely distributed larva. Both measure 42 mm. in length from the tip of the rostrum to the end of the telson. It is easily recognised by its very long telson and elongated body and is known from tropical regions of both Atlantic and Pacific Oceans. It has for long been a matter of conjecture as to what the adult is, the fact that so few species of *Squilla* are common to the two regions making the matter very difficult to settle without some definite knowledge of the metamorphosis. Hansen (1895) has suggested the Atlantic species *Squilla dubia* although fully realising that it has not been found in the Pacific. Brooks (1886) thought that the adult must have a long telson. It is not, however, necessary for a larva with a long telson to change to an adult having one, for we see from the larva of *Squilla oratoria* that the telson may be long in the larva and short in the adult. Indeed the *Alima* larva of *S. oratoria* described by Komai and Tung (*op. cit.*) is so like *Alima hyalina* in structure that the adult cannot be very far removed from it; nevertheless as these authors state, the adults of *Squilla nepa* and others closely related, are so very near to *S. oratoria* that the larvae must be very closely related also, and therefore *Alima hyalina* would probably not belong to the *oratoria* group. There remain in the Pacific *Squilla hieroglyphica* and its relatives which have the predacious claw with the same number of teeth and the exopodite of the uropod with not many more than in *S. oratoria*; moreover the telson is not very short in both *S. hieroglyphica* and its close relative *S. laevis* and of a simple structure which might easily come from *Alima hyalina*. This is merely a suggestion.

It is possible that the different larvae attributed to *Alima hyalina* from so many different localities may belong to different species. The older authors give very little detail in their descriptions and drawing. Brooks' (1886) descriptions and figures from St. Vincent (Cape

Verde?) are detailed and agree in essentials with the present larvae, the oldest larvae being almost the same size, but Claus's *Alima gracilis* (*A. hyalina*) is 54 mm. long and the proportions are different. *Alima* larvae are known to vary much in size but this is a very large difference. The present larvae both have 11 marginal spines on the carapace. Other specimens described or figured by various authors have different numbers and, judging from the figures, the proportions of the parts differ.

Exact descriptions and drawings of this larva are much wanted, but especially it is urged that those having the opportunity shall hatch out the post-larva from the late living larva.

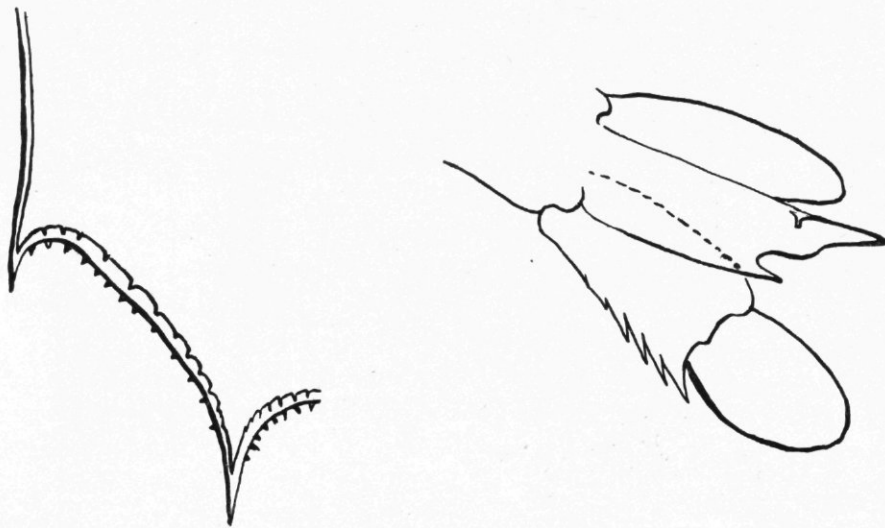


Fig. 4. — Part of telson and uropod of *Alima hyalina*.

Gonodactylus chiagra (FABRICIUS) ?

(Fig. 5.)

This well known and widely distributed species is found along the shores and islands of all tropical seas and the present specimen is a post-larva almost certainly to be attributed to it. It is already recorded for the Philippine Islands and regions round about, the larvae have been described (Brooks, 1892) and various later stages. The stage to hand is however one which has not as yet been described or figured for it is intermediate between Brooks' late stages and a young of the adult form the telson of which is figured by Jurich (1904).

Length from tip of rostrum to end of telson 9 mm. Long almost straight body, short carapace with rostrum rounded at the sides and coming to a point in front, eyes the same width all along, predacious claw without teeth, extensive

gills on the pleopods, telson with 15 submedian denticles, the submedian tooth jointed, one external, intermediate, and secondary teeth with one denticle. Outer branch of exopod of uropod with 10 teeth besides the terminal one, inner branch with two teeth, the outer larger and longer than the inner one, setae on the outer lobe and on the endopod. Last abdominal segment somewhat rounded and bearing 4 posterior teeth.

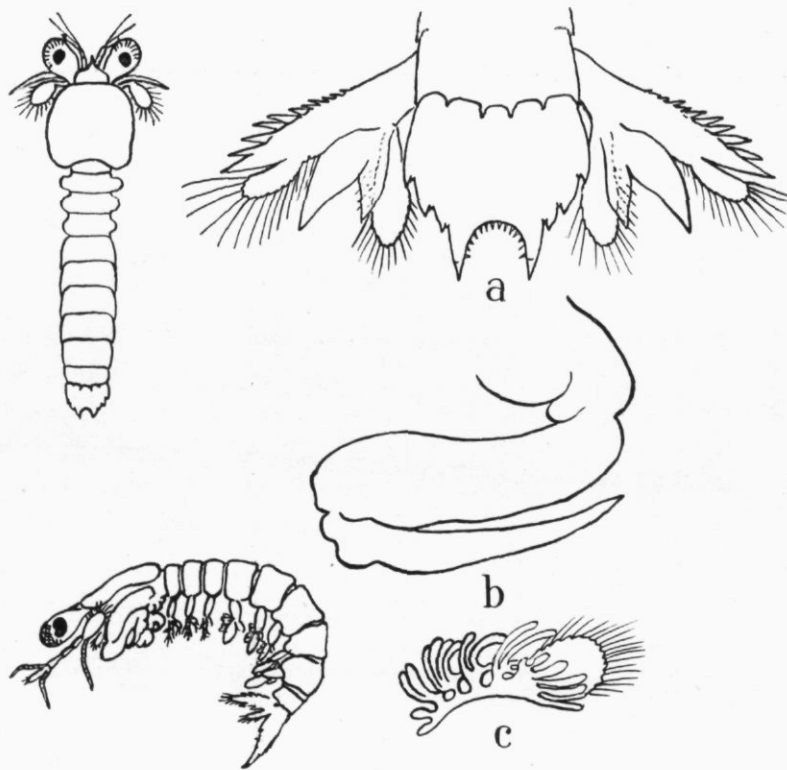


Fig. 5. — *Gonodactylus chiagra* (?) post-larval stage, 9 mm. long.
 a. telson and uropods, b. predacious claw, c. gill and part of pleopod.

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