

NOTES ON CUMACEA (SYMPODA) IN THE ZOOLOGICAL SURVEY OF INDIA.

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The collection of cumacea dealt with in this paper was entrusted to me for examination by Dr. S. L. Hora, Director, Zoological Survey of India, Calcutta. To him as well as to the former director, Dr. B. N. Chopra, my thanks are due, not only for giving me the opportunity to study these very interesting specimens, but also for permission to work in the laboratories of the Zoological Survey, where part of this work was carried out. The work was completed in the Marine Biological Laboratory, Trivandrum and at the Fisheries Research Station, Ayiromthengu, University of Travancore, under the guidance of Dr. C. C. John, Director of Research, to whom I am greatly indebted for all help and encouragement. My thanks are also due to Dr. Herbert M. Hale, Director of the South Australian Museum, for his valuable advice and help in the identification of certain doubtful forms.

The collection includes material gathered by the late Dr. Stanley Kemp, of the Zoological Survey of India, thirty years ago, from the Indian Coasts and stations around Andaman Islands; and some specimens received by him from the University of Amoy, China; from Prof. Ramunni Menon of the Madras University and 'Investigator' expedition.

The entire material is in a very good state of preservation and so it was possible to identify all of them except three badly damaged ones. Altogether, there are 23 species of Bodotriidae, 3 species of Diastylidae, 4 species of Nannastacidae and 1 species of Campylaspididae. One new genus and 6 new species have been proposed for the inclusion of certain hitherto unrecorded forms.

The following is a list of species:—

Family BODOTRIIDAE.

Subfamily BODOTRIINAE.

<i>Bodotria similis</i> Calman.	<i>Cyclaspis munda</i> Hale.
<i>Iphinœ crassipes</i> Hansen.	<i>Cyclaspis strumosa</i> Hale.
<i>Iphinœ calmani</i> Fage.	<i>Cyclaspis calmani</i> Hale.
<i>Cyclaspis cingulata</i> Calman.	<i>Cyclaspis bengalensis</i> , sp. nov.
<i>Cyclaspis uniplicata</i> Calman.	<i>Cyclaspis</i> sp.
<i>Cyclaspis coelebs</i> Calman.	<i>Eocuma taprobanicum</i> Calman.
<i>Cyclaspis herdmani</i> Calman.	<i>Eocuma latum</i> Calman.
<i>Cyclaspis cretata</i> Hale.	<i>Eocuma kempi</i> , sp. nov.

Subfamily VAUNTHOMPSONIINAE.

<i>Gigacuma halei</i> Kurian.	<i>Heterocuma armata</i> , sp. nov.
<i>Heterocuma andamani</i> , sp. nov.	<i>Pseudosympodomma indica</i> , Gen. et sp. nov.
<i>Heterocuma sarsi</i> Miers.	<i>Vaunthompsonia arabica</i> Calman
<i>Heterocuma africana</i> Zimmer.	

Family DIASTYLIDAE.

Paradiastylis culicoides Kemp.
Dimorphostylis horai, sp. nov.

Gynodiastylis sp.

Family NANNASTACIDAE.

Nannastacus johnstoni Hale.
Nannastacus gibbosus Calman.

Nannastacus inflatus Hale.
Nannastacus sp.

Family CAMPYLASPIDIDAE.

Campylaspis maculata Zimmer.

Family BODOTRIIDAE.

Genus *Bodotria* Goodsir.*Bodotria similis* Calman.

1907. *Bodotria similis*, Calman, *Trans. Zool. Soc. London* XVIII, 1, p. 4, pl. I, figs. 4-9.
 1913. *Bodotria similis*, Stebbing, *Das Tierreich* XXXIX, p. 27.
 1951. *Bodotria similis*, Kurian, *Bull. Cent. Res. Inst. Trivandrum* II, C, pp. 81-82.

Locality.—

Andamans, off pier, Ross Island, in sand and a little weed, 3-4 fathoms. 22/23-ii-1915. 1 adult ♂ 2.6 mm. long.

Closely resembles the specimens collected from Trivandrum. Inner side of peduncle of uropod bears serrations. Setae on peduncle and rami mostly broken.

Distribution.—Gulf of Siam 6-10 fathoms, Trivandrum and Cape Comorin 13-15 fathoms.

Genus *Iphinöe* Bate.*Iphinöe crassipes* Hansen.

1895. *Iphinöe crassipes*, Hansen, *Ergeb. der. plankton Exped.* II, p. 53, pl. vi, figs. 4-4f.
 1904. *Iphinöe macrobrachium*, Calman, *Cey. Pearl. Oyst. Fish. Rept.* II, p. 173, pl. iv, figs. 72-75.
 1951. *Iphinöe crassipes*, Kurian, *Bull. Cent. Res. Inst. Trivandrum*, C. II, pp. 85-87.

Locality.—

Andamans, off pier, Ross Island, in sand and a little weed, 3-4 fathoms. 22, 23-ii-1915. 1 adult ♂ 6.0 mm. and 1 immature ♀ 3.4 mm.

Andamans, Ross Channel, 2-9 fathoms. 1921. 1 adult ♂ 5.7 mm. and 1 adult ♀ 5.9 mm.

The immature female agrees with *I. macrobrachium* Calman, from the Gulf of Manaar. In adult female dorsal median carina not prominent and no teeth visible except the small tubercles on the carapace. Eye-lobe large, with 3 prominent pigmented lenses. Peduncle in male bears 12 spines on inner margin, of which 4 are large. In female 8 large spines and about a dozen smaller ones present on inner side of peduncle as against 5 or 6 strong spines described by Calman *loc. cit* First joint of endopod of male only slightly longer than second and bears 11 spines on inner margin; second joint with 12 spines, of which the distal 4 very long and plumose.

Distribution.—Gulf of Guinea, Gulf of Manaar, South Africa 4-38 fathoms and Trivandrum 13-16 fathoms.

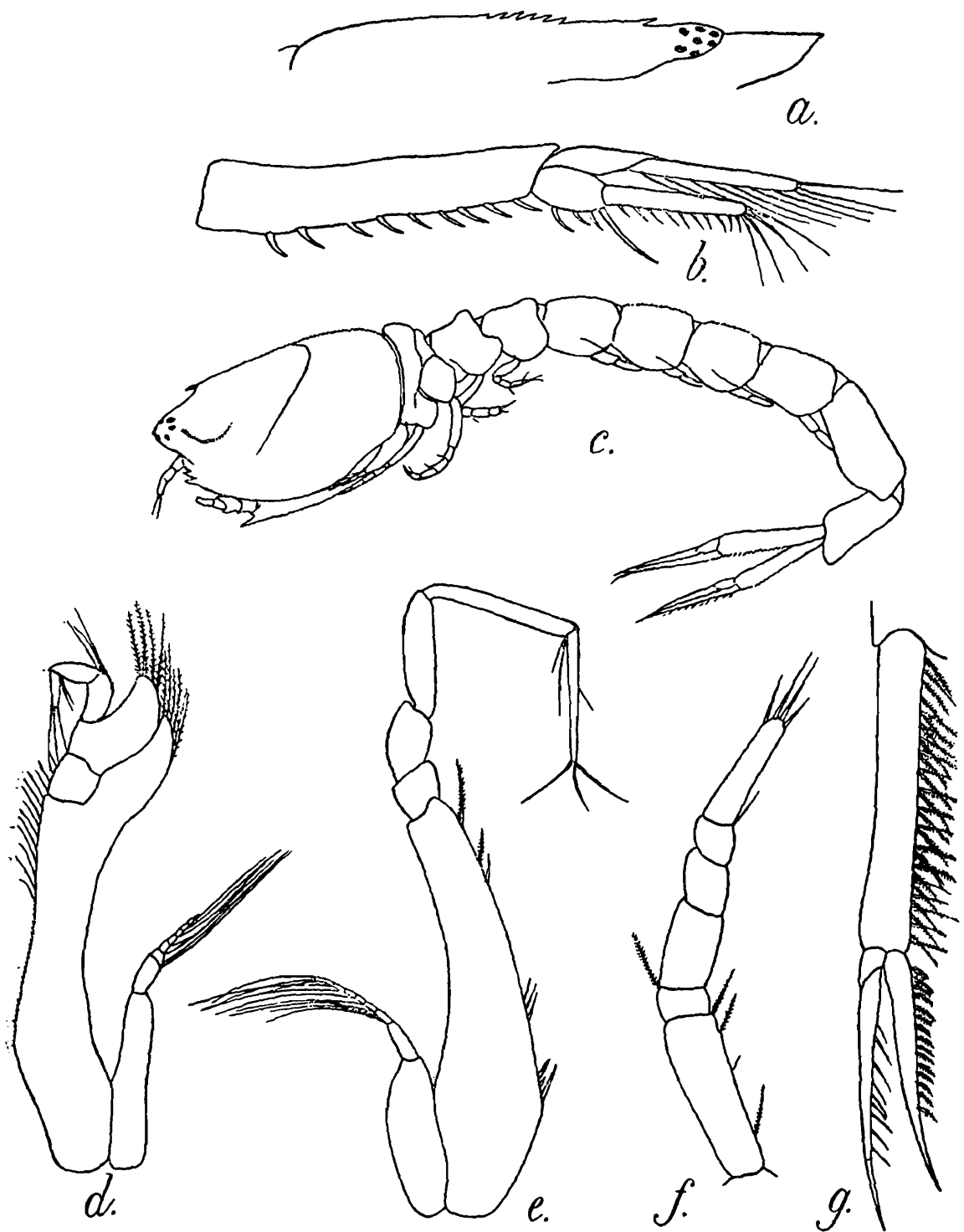
Iphinöe calmani Fage.

1907. *Iphinöe* sp., Calman, *Trans. Zool. Soc. London* XVIII, p. 28.
 1945. *Iphinöe calmani*, Fage, *Archiv. de Zool. Expt. et. Gen.* 84 (3), p. 189, figs. 15-19.

Locality.—

Andamans, Brigade creek, 2-5 fathoms, on bottom of decaying vegetation. 21-ii-1915. 4 adult ♀♀, the largest 5.3 mm. long.

Teeth on carapace (fig. 1a) 7 prominent, the first one large, and separated from the rest by a wide space. Length of carapace slightly more than double its height.



TEXT-FIG. 1.—*Iphinoe calmani* Fage.

a. Dorsal side of carapace and pseudorostrum, female $\times 35$; b. Uropod, female $\times 58$; c. *Cyclops uniplicata*, juv. male, lateral view $\times 22$; d. *Cyclops calmani*. Third maxilliped, male $\times 47$; e. First pereopod, male $\times 47$; f. Second pereopod, male $\times 85$; g. Uropod, male $\times 47$.

Peduncle of uropod (fig. 1b) longer than rami, bears 9 spines, on inner margin: inner ramus smaller than the outer, two-jointed, first joint less than half as long as second.

Distribution.—Annam. Fage considers that immature specimens recorded from Siam as *Iphinoe* sp. by Calman *loc. cit.* is also referable to this species.

Genus *Cyclaspis* Sars.

Cyclaspis cingulata Calman.

1907. *Cyclaspis cingulata*, Calman, *Trans. Zool. Soc. London* XVIII, 1, p. 7, 15, pl. iv, figs. 1-10.

1913. *Cyclaspis cingulata*, Stebbing, *Das Tierreich* XXXIX, p. 36, 37, fig. 16.

Locality.—

“Kilakarai, Ramnad District, S. India, 0-2 fathoms, from weeds. February 1913.” 5 adult ♀♀ 4.5-4.9 mm.

The specimens in the present collection almost agree with the description and figures of immature female of Calman (*loc. cit.*).

Dorsal median keel extends from 5th pedigerous somite to 5th pleon. somite and bears backwardly directed serrations. Peduncle of uropod as long as telsonic somite, which is produced in between uropods. Inner and outer margins of peduncle slightly serrated, the serrations on inner margin being more prominent. Endopod slightly longer than exopod and bears 8-11 small teeth followed by a stout spine on inner side. Distal end of endopod more tapering than in Calman's figure of immature female. Exopod with slightly serrated margins and possessing a few small spines on outer margin in its proximal half.

Distribution.—Gulf of Siam 9-18 m., immature females and adult males 4.2 mm.

Cyclaspis uniplicata Calman.

1907. *Cyclaspis uniplicata*, Calman, *Trans. Zool. Soc. London* XVIII, 1, p. 13, pl. iv, figs. 11-20.

1913. *Cyclaspis uniplicata*, Stebbing, *Das Tierreich* XXXIX, p. 36.

Locality.—

Andamans, off pier, Ross Island, in sand and a little weed. 22/23-ii-1915. 2 immature ♂♂ 3.5 mm., 2 adult ♀♀ 4.4 mm. long.

Adult female.—The specimens almost agree with the original description of immature female by Calman (*loc. cit.*). The bifid tooth at the antero-lateral border of carapace longer and more pointed than what is shown in Calman's figure. The single tooth on the carapace very distinct, and the dorsal profile behind it faintly serrated. First pedigerous somite distinct dorsally as a narrow band. Peduncle of uropod without setae, but strongly serrated on inner edge. Endopod as long as exopod, tapering to a sharp point, serrated on both sides, and bearing about 8 short spines; exopod with serrated margins, 2 terminal setae, and 3 spines on inner edge.

Immature male.—Body more strongly built than in female. Abdomen thicker. Serrations on the dorsal side of carapace behind the tooth more prominent than in female. Teeth at the antero-lateral corner of carapace better developed and slightly separated from each other.

First pedigerous somite indistinct (fig. 1-c), second dorsally crested, and the last somite shows dark brown pigment spots in the alcohol preserved specimens.

Peduncle of uropod unarmed, except for the serrations on inner edge. Endopod with 9 spines on inner side and exopod with 7 setae on inner edge and two at the tip.

Distribution.—Gulf of Siam 5-10 fathoms, immature females 4.9 mm. long.

Two young and imperfect specimens recorded by Calman¹ from the Gulf of Manaar as "*Cyclaspis sp.*" are also referred to this species by Stebbing.

***Cyclaspis coelebs* Calman.**

1917. *Cyclaspis coelebs*, Calman, *Brit. Ant. Exped.* 1910, *N.H. Rept.* III, 5 pp. 150, 151, fig. 5.

Locality.—

Andamans, off pier Ross Island, in sand and a little weed, 3-4 fathoms. 22/23-ii-1915. 1 adult ♂ 4.2 mm.

Anterior median half of carapace carries 4 blunt prominences, which give a wavy appearance to the dorsal profile. Exo-skeleton strongly calcified, carapace and the rest of body showing a pitted appearance. The faintly marked oblique ridge described by Calman (*loc. cit.*) behind the middle of carapace not discernible.

Peduncle of uropod one-ninth² longer than the last abdominal somite and slightly shorter than rami³.

Distribution.—Spirits Bay, New Zealand, 0-2 m., 5 males.

***Cyclaspis herdmani* Calman.**

1904. *Cyclaspis herdmani*, Calman, *Ceyl. Pearl Oyst. Fish. Rept.* II. pp. 171, 172, pls. iii, iv, figs. 56-66.

1913. *Cyclaspis herdmani*, Stebbing, *Das Tierreich* XXXIX, p. 32.

¹ Calman *Rept. Ceyl. Pearl. Oyst. Fish.* II, p. 160 (1904).

² One-fourth longer than the last abdominal Somite—Calman, *Brit. Ant. Exped.* 1910 *N.H. Rept.* III, 5, pp. 150, 151.

³ Peduncle of uropod slightly longer than the rami—Calman *loc. cit.*

Locality.—

Andamans, off pier, Ross Island, in sand and a little weed, 3-4 fathoms. 22/23-ii-1915. 1 ovigerous ♀ 3.6 mm., and 1 adult ♂ 4.7 mm.

In female, ocular lobe large, with distinct eye lenses. Surface of carapace shows pitted appearance. Peduncle of uropod $1\frac{1}{3}$ the length of the last abdominal somite ($1\frac{3}{5}$ in Calman's specimens).

Distribution.—Gulf of Manaar, 7 fathoms; several specimens.

Cyclaspis cretata Hale.

1944. *Cyclaspis cretata*, Hale, *Rec. S. Austral. Mus.* VIII, 1, pp. 91-95, figs. 19, 20.

Locality.—

Andamans, off pier, Ross Island, in sand and a little weed, 3-4 fathoms. 22/23-ii-1915. 1 ♀ 4.1 mm., 2 ♂♂ 4.4 mm.

Nine corneal lenses distinct in males, but lenses smaller and less conspicuous in females. In both sexes, the total length of the exposed pedigerous somites more than half the length of carapace, though according to Hale, *loc. cit.*, the exposed pedigerous somites together are less than half as long as the carapace in female. The dorsal notch on the telsonic somite deeper in male than in female and propodus of first peraeopod in female slightly shorter than in Hale's specimens.

Peduncle of uropod about two-thirds as long again as telsonic somite (only one-third as long again as telsonic somite—Hale), bears numerous plumose setae and spines on inner margin. Endopod, with about 8 proximal spines on inner margin, followed by a row of smaller spines and serrations, up to about two-third its length.

Distribution.—New South Wales, 8 ft.; South Australia, 3-9 fathoms.

Cyclaspis munda Hale.

1944. *Cyclaspis munda*, Hale, *Rec. S. Austral. Mus.* VIII, 1, pp. 134-136, figs. 53, 54.

Locality.—

Andamans, off pier, Ross Island, in sand and a little weed, 3-4 fathoms. 22/23-ii-1915. 1 adult ♂ 4.0 mm. long.

In lateral view dorsal margin of carapace shows three tubercular projections in the anterior half and a slight elevation at the posterior end. Dorsal carina of carapace more prominent in its anterior half. Antero-lateral tubercles behind pseudo-rostral sutures more pronounced than in the specimens from New South Wales (Hale *loc. cit.*); oculae lobe large, with distinct corneal lenses, pseudorostral lobes do not meet in front of eye-lobe. Second, fourth and fifth pedigerous somites crested dorsally. Appendages same as in type specimen.

Distribution.—New South Wales, 30-35 m.

Cyclaspis strumosa Hale.

1948. *Cyclaspis strumosa*, Hale, *Rec. S. Austral. Mus.* IX, 1, pp. 13-19, fig. 7-9.

Locality.—

Andamans, Ross channel, 2-9 fathoms. 1921. 1 Sub-adult ♂ 3.5 mm.

Andamans, off pier, Ross Island, 3-4 fathoms. 22/23-ii-1915. 3 immature ♀♀ 3.8 mm. and 1 sub-adult ♂ 3.7 mm.

In both sexes carapace, free thoracic somites and first five pleon somites dorsally carinated. In female, lateral tubercles in the middle region of carapace well developed. Pleon, in male, only as long as the cephalothorax where as in Hale's description of sub-adult male, pleon is one-tenth longer than cephalothorax. Pleopods stumpy, pleon somites with rough, slightly serrated dorsal margin. Basis of first peraeopod in male about twice as long as rest of limb though in Hale's specimens it is only one and a half times as long as rest of limb, Hale *loc. cit.* Its outer margin weakly serrated. Peduncle of uropod slightly shorter than the sub-equal rami, rami of male longer than that of female; both peduncle and rami with slight serrations and spinules.

Distribution.—Western Australia, Queensland.

***Cyclaspis calmani* Hale.**

1907. *Cyclaspis levis*, Calman, *Trans. Zool. Soc. London* XVIII, 1, pp. 8, 9, pl. V, figs. 6-8.

1944. *Cyclaspis calmani*, Hale, *Rec. S. Austral. Mus.* VIII, 1, p. 112.

Locality.—

Andamans, Stream at Corbyn's Cove North, Stone bed. 5 adult ♂♂ 4.8 to 5.9 mm. long (2 damaged).

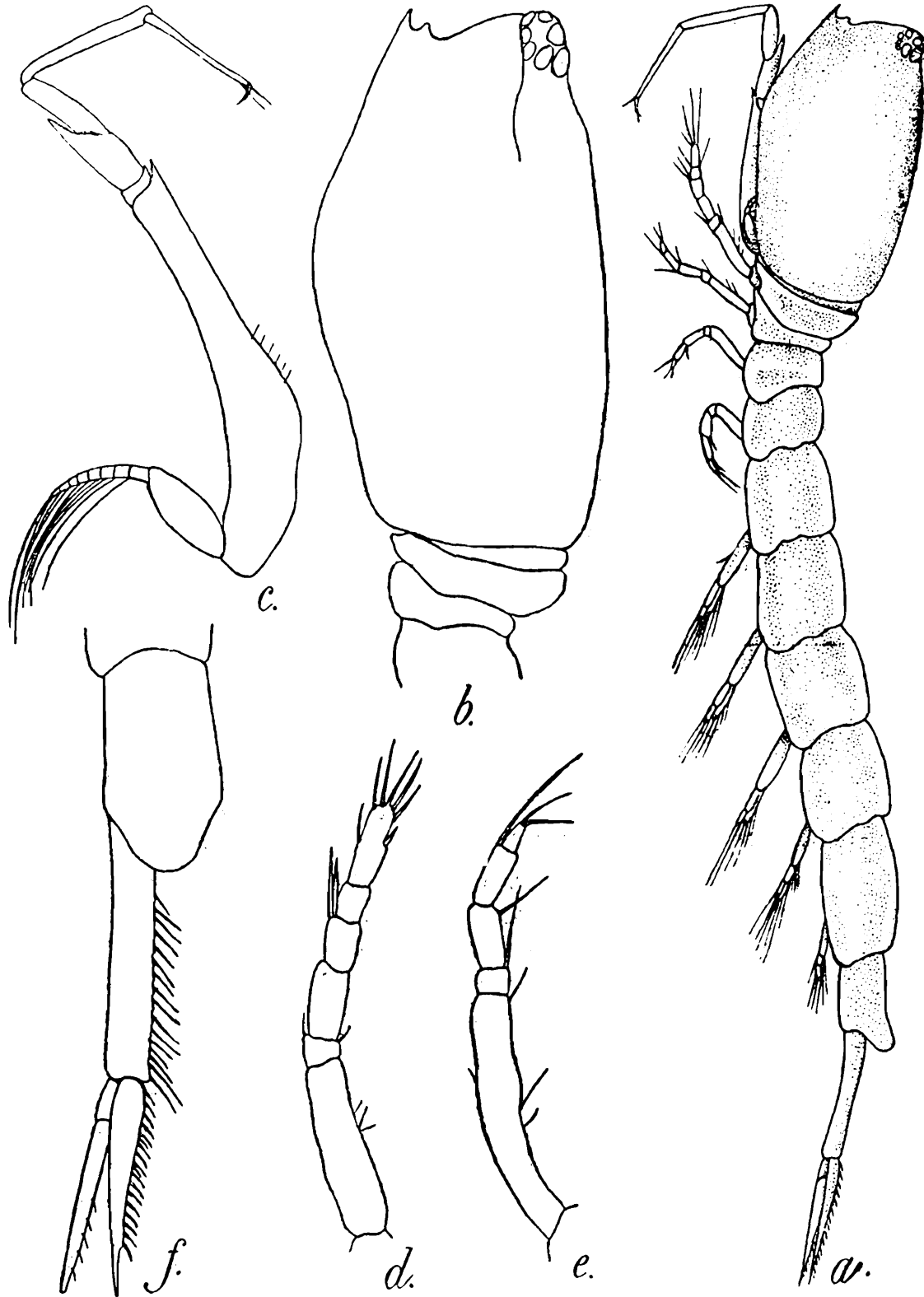
Calman (*loc. cit.*) identified some adult females of *Cyclaspis* measuring 7.16 mm. and a single damaged male from New Zealand as belonging to *C. levis* Thompson. But later, Hale (*loc. cit.*) observed that Calman's specimens were different from Thomson's and created a new species for the reception of Calman's specimens. His description however did not include the characters of the male, since the single specimen which he had at his disposal was badly damaged. The important characters of the males in the present collection are therefore discussed here.

Adult male.—Integument slightly calcified and finely reticulated, giving the appearance of very shallow pittings on the surface. Carapace not much compressed, a faint median carina visible. Pseudo-rostral lobes barely meet in front of the ocular lobe; ocular lobe large, with prominent lenses. Carapace about twice as long as its height, breadth slightly greater than height. Free thoracic somites carinated on the sides, together about half as long as carapace. Abdomen sub-equal to cephalo-thorax.

Third maxilliped (fig. 1d) short, basis and merus with prominent lateral projections bearing setae.

First peraeopod (fig. 1e) with basis having 6 to 7 teeth and plumose setae on inner side. Basis shorter than rest of the appendage by the length of ischium, dactylus and carpus sub-equal, propodus about one and a half times as long as dactylus.

Second peraeopod (fig. 1f) stout, with basis as long as the next three tions ; dactylus longer than the preceding two joints, bears 4 spines at jhe extremity. Peduncle of uropod (fig. 1g) slightly longer than rami, with numerous plumose setae and hairs on inner side. Rami sub-equal to last abdominal somite. Exopod smaller than endopod, bears a long



TEXT-FIG. 2.—*Cycloaspis bengalensis*, sp. nov.

a. Lateral view, male $\times 24$; b. Side view of carapace, male $\times 50$; c. First peraeopod, male $\times 85$; d. Second peraeopod, male $\times 85$; e. Third peraeopod, male $\times 85$; f. Uropod, male $\times 47$.

stout spine at the extremity and 9 spines on inner margin. Endopod with 15 plumose spines and numerous short teeth on inner side.

Distribution.—New Zealand, surface to 15 fathoms.

Cyclaspis bengalensis*, sp. nov.Locality*.—

Andamans, Ross channel, 2-9 fathoms. 1921 Single adult ♂ 4.6 mm. long.

Adult male.—(fig. 2a). Integument thick. Eye-lobe large, with three large and a few small corneal lenses. Pseudo-rostral lobes do not meet in front of eye-lobe. Carapace about two-seventh as long as total length of animal, its height about half its length and width slightly greater than height. Carapace, possesses a dorsal median carina which vanishes towards the hinder part. Antero-lateral angle of carapace bears a sharp, anteriorly directed curved tooth, the tip of which stands on a level with the tip of eye-lobe. Dorsal to this tooth is a projection as in *C. caprella* Hale.¹

All five pedigerous somites exposed dorsally, together measuring about half as long as carapace, first somite short, one-third of second.

Pleon longer than cephalothorax, with a prominent mid-dorsal carina on the first five somites. Telsonic somite distally produced between uropods.

First antenna, with basal segment long, second short, third longer, than second.

Basis of third maxilliped distally produced, its tip reaching the distal end of the similar process of merus ; distal process of both bear plumose setae. Ischium very small, merus as long as the combined length of carpus and propodus, dactylus smaller than propodus and sub-equal to ischium, carpus one and a half times as long as propodus.

First peraeopod (fig. 2c) extends forwards beyond eye-lobe by the last two segments. Basis equal to the combined length of next four joints, broad inner margin bears 6-8 slender spines at about the middle, its apex which extends beyond ischium bears a long tooth on inner side, ischium short ; merus with a tooth-like prolongation on outer side, which reaches to about the middle of carpus. Propodus as long as the preceding two segments. Dactylus slender, slightly smaller than propodus, bears a curved spine at the tip subtended by two setae.

Basis of second peraeopod (fig. 2d) also equal to the combined length of next four joints. Dactylus long, equal to total length of carpus and propodus, carpus with two long spines at its distal end.

Third peraeopod (fig. 2e) has basis longer than rest of the limb.

Fourth and fifth peraeopods smaller, due to shortening of basis of the appendages.

Peduncle of uropod (fig. 2f) longer than telsonic somite, shows faint serrations on both sides and bears numerous setae on inner side as in *C. herdmani* Calman.² Exopod³ slightly shorter than peduncle. Endopod

¹ Hale, *Rec. S. Austral. Mus.* V, 4, fig. 2 a. (1936).

² Calman, *Rept. Cey. Pearl. Fish.* II, p. 171. (1904).

³ As the tip of the only exopod in the specimen is broken the presence of spines or mucrones at the tip, which Hale (1944, *Rec. S. Austral. Mus.* VIII, pp. 63-142) mentions as an important character for the identification of the species of this genus could not be

sub-equal to exopod, slightly serrated on both sides, resembles that of *C. herdmani*, and bears 18 indurated spines. On inner side of exopod 5 spines visible.

Type specimen.—C3182/1, Zoological Survey of India, Calcutta.

Cyclaspis bengalensis sp. nov. agrees with *C. caprella* Hale from S. Australia in the presence of an acute forwardly directed spine on each side, below the antennal angle and in the nature of the third maxilliped. But it differs remarkably in the shape of carapace, pedigerous somites and first peraeopod.

The resemblance of this species with *C. herdmani* Calman is only superficial, for there is marked difference in the nature of the first, second, and third peraeopods and the carapace. *C. bengalensis* sp. nov. resembles *C. hornelli* Calman¹ in the nature of the peraeopods and uropods, but the presence of two antero-lateral teeth on each side of carapace and a distinctly visible first pedigerous somite distinguishes it from the other related species.

Cyclaspis sp.

Locality.—

Andamans, stream at Corbyn's cove North, Stony bed, 1 damaged ♂ 4.7 mm.

Carapace laterally compressed. Pseudo-rostral lobes just meet in front of the large eye-lobe, which has prominent lenses. Integument with well marked reticulations and pittings. Carapace about two-fifth as long as total length of animal, its height slightly less than its length.

Third maxilliped with distal elongated lobe of basis reaching the extremity of similar process of merus.

Second peraeopod with basis about two-fifth the length of the appendage, ischium half of merus, sub-equal to carpus and propodus. Dactylus long, more than double the length of propodus, bears 4 stout spines at its extremity. Carpus with a plumose seta at the inner edge of its distal end.

As uropods and first peraeopods are missing and the abdomen crushed, identification of the species is not possible. However, it seems to belong to the "*levis*" group of Hale².

Genus **Eocuma** Marcusen.

Eocuma taprobanicum Calman.

1904. *Eocuma taprobanicum*, Calman, *Cey. Pearl. Oyst. Fish. Rept.* II, p. 161, pl. i, ii, figs. 1-28.

1913. *Eocuma taprobanicum*, Stebbing, *Das Tierreich* XXXIX, p. 20.

1951. *Eocuma taprobanicum*, Kurian, *Bull. Cent. Res. Inst. Trivandrum* II, C, pp. 94-95.

Locality.—

"Port Blair, Andamans 2.5 fathoms, S. Kemp". Reg. No. 9250/10 1 adult ♀ 8.7 mm. long and 1 adult ♂ 10.4 mm. long.

Andamans, Brigade creek, 2.5 fathoms, 21-ii-1915 3 ♀♀, largest 5.1 mm. long and 2 ♂♂ 5.7 mm. long (specimens slightly damaged).

Orissa Coast ; 24-ii-1916

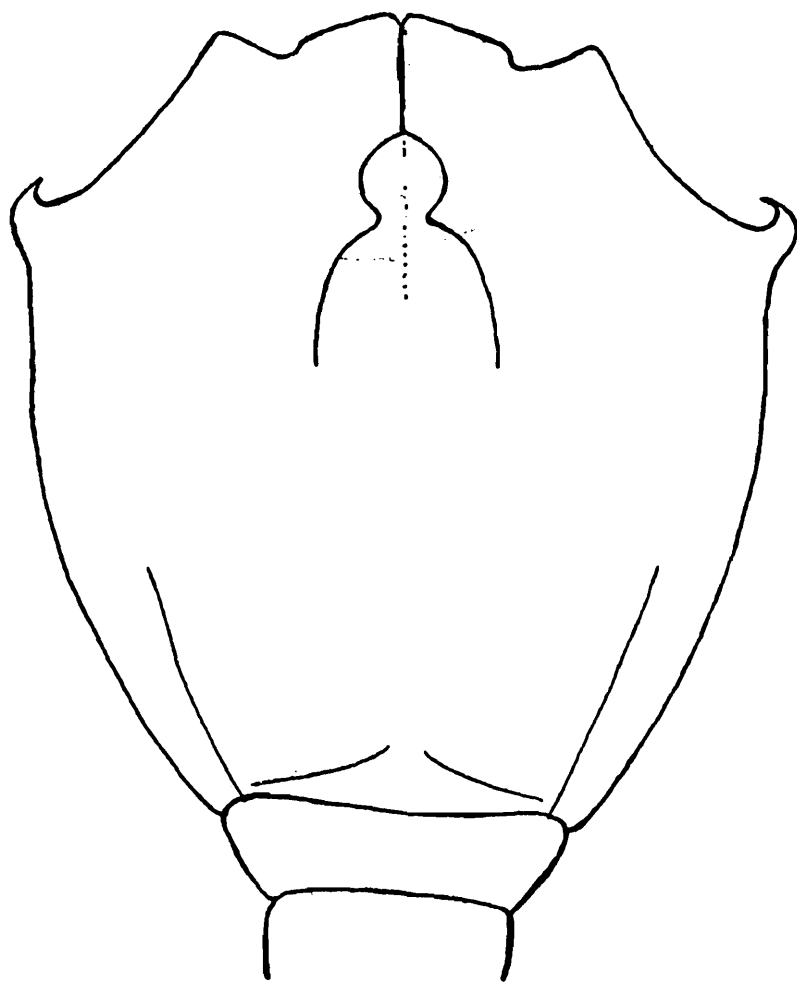
1 damaged ♂.

¹. Calman, *Rept. Cey. Pearl. Fish.* II, p. 172. (1904).

² Hale, *Rec. S. Austral. Mus.* VIII, pp. 63-142 (1944).

Male specimens closely agree with the type description of Calman *loc. cit.* In female, external to pseudorostrum, antero-lateral angle shows a small curved tooth, directed forwards, the tip of which stands behind the extremity of pseudo-rostrum. Peduncle of uropod in female bears three or four plumose setae as in the specimens from Trivandrum, Kurian *loc. cit.* Endopod possesses in its proximal half, seven plumose setae on inner edge; exopod naked, except for minute serrations on outer edge.

Distribution.—Gulf of Manaar 6 to 9 fathoms, Travancore coast 12 to 15 fathoms.



TEXT-FIG. 3.—*Eocuma latum*, Calman. Female, dorsal view of carapace $\times 28$.

***Eocuma latum*¹ Calman.**

1907. *Eocuma lata*, Calman, *Trans. Zool. Soc. London* XVIII, 1, pp. 22, 23, pl. vi, figs. 7-12.

1913. *Eocuma latum*, Stebbing, *Das Tierreich* XXXIX, p. 22.

1951. *Eocuma latum*, Kurian, *Bull. Cent. Res. Inst. Trivandrum* II, C, pp. 96-97.

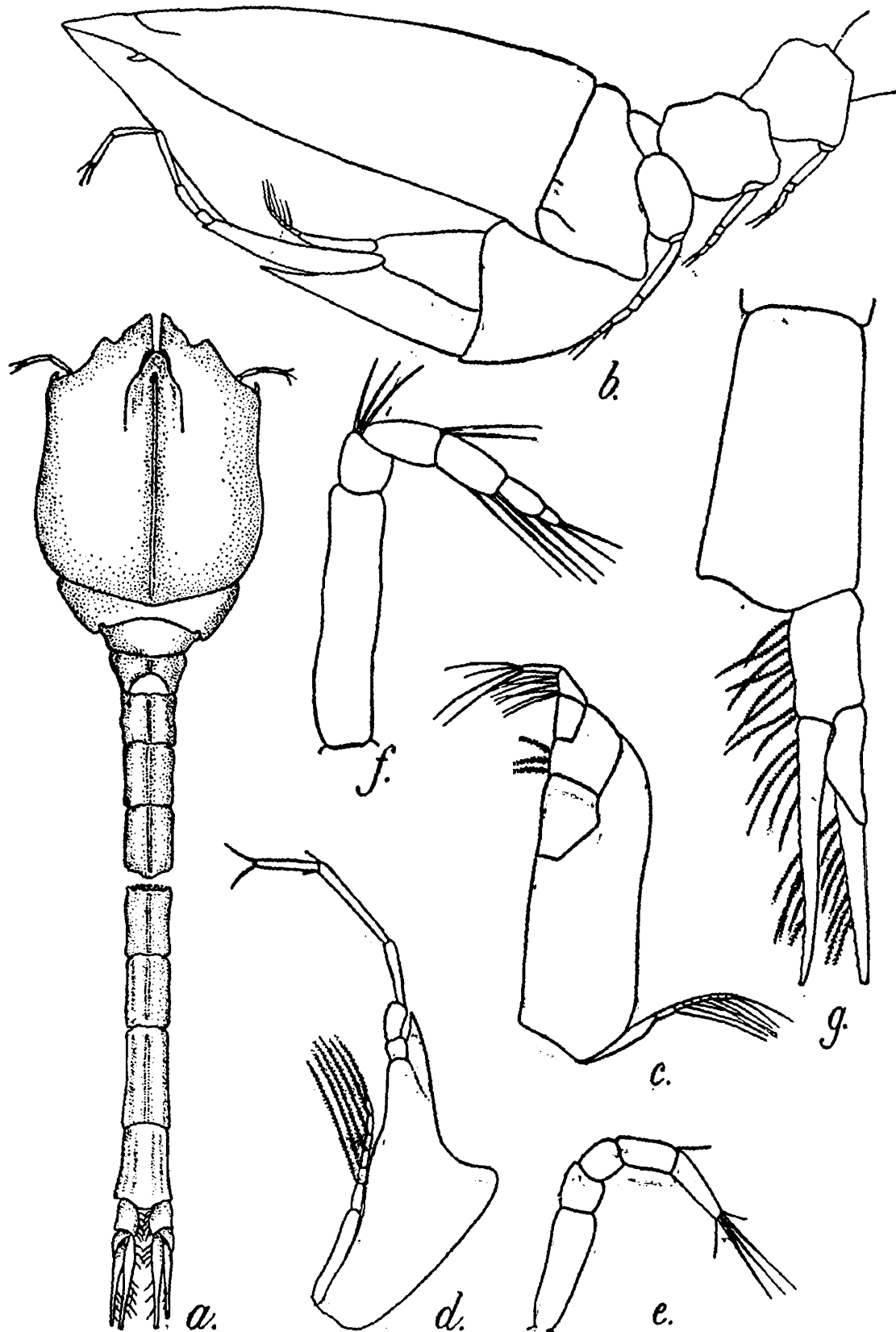
Locality.—

“Byichkwaaw Bay, Tavoy, Surface tow net, ‘Investigator’—1911” Single adult ♀ 9.4 mm. long.

In his description of immature female, Calman (*loc. cit.*) observes that “the pseudo-rostrum is prominent and formed as seen from above of two rounded lobes. External to these on each side, the antero-lateral margin forms and obtusely triangular tooth, with an acute spiniform point turned forwards. . .” But in the present specimen, th

pseudo-rostral lobes are not distinctly rounded and instead of the obtusely triangular tooth at the antero-lateral margin, there is only a rounded knob-like projection on each side (fig. 3).

Difference is also noticed in the armature of the uropods. There are four plumose setae on the inner edge of the peduncle as against one



TEXT-FIG. 4.—*Eocuma kempfi*, sp. nov.

a Dorsal view, female $\times 6$; b. Side view of cephalo thorax, female $\times 13$; c. Third maxilliped, female $\times 24$; d. First pereopod female $\times 24$; e. Second pereopod, female $\times 85$; f. Third pereopod female $\times 85$; g. Telsonic segment and uropod, female $\times 24$.

mentioned by Calman and about a dozen plumose setae on the inner side of endopod (Calman *ibid* mentions only one plumose seta and three spinules). Exopod also possesses four smaller setae on the inner side of its proximal half.

The differences from the type may be due to the disparity in age of the individuals ; the present specimen is an adult female where as the type is only immature female 3.9 mm. long.

Distribution.—Gulf of Siam 5 to 10 fathoms, Trivandrum 12 fathoms.

***Eocumá kempi*, sp. nov.¹**

Locality.—

“Madras, collected by Prof. Ramunni Menon, 19-ii-1911” 1 ovigerous ♀ 14.2 mm. long.

Ovigerous female (fig. 4a). Body rigid, integument calcareous and brittle, with reticulations. Ocular lobe longer than broad and pseudo-rostral plates meet in front of it for about one sixth the length of carapace. Lenses and pigment in eye-lobe indistinct.

Carapace one-third as long as total length of body ; depth about one-third its own length ; maximum width three-quarters its length, the widest part being towards the hinder region. Carapace bears a prominent dorsal median carina commencing from the centre of eye-lobe and extending to hind end. Lateral cornua small and tooth like, mounted on antero-lateral lobes of carapace, and not formed as lateral prominences of antero-lateral lobes of carapace as in other species of the genus. A second lobe present on each side of carapace in between lateral cornua and pseudo-rostrum as in *E. lata* Calman,² but here a spine absent at the summit of the lobe.

Free pedigerous somites together about as long as half the length of carapace ; first somite indistinct, second large, third small and partially covered dorsally by the projections of second and fourth somites. A dorsal median carina prominent on second, fourth and fifth pedigerous somites. Lateral tumidities present on all free pedigerous somites.

Pleon³ long and slender, longer than cephalothorax ; penultimate segment longest ; telsonic somite expanded towards hind end for the articulation of uropods. Dorsal median carina present on first four somites.

Joints of third maxilliped (fig. 4c), expanded sideways to function like opercles ; basis very broad, about as long as total length of the succeeding four joints, its distal outer corner produced into a long curved process which reaches to about half the length of a similar process of merus ; ischium two and a half times as long as merus excluding its distal process ; carpus slender, slightly longer than merus, external distal process of merus reaches the extremity of carpus ; propodus smaller than merus, conical and bears long setae on its inner edge ; dactylus double the length of propodus with setae at the free end.

¹ Named in honour of the Late Dr. Stanley Kemp.

² Calman, *Trans. Zool. Soc. London* XVIII, 1, pp. 22, 23, pl. vi, figs. 7-12 (1907).

³ Pleon broken in to two.

First peraeopod (fig. 4d) small and slender, not extending beyond pseudo-rostrum; basis broad and flattened, slightly smaller than rest of limb, its distal half tapering and produced beyond articulation of ischium into a long sharply pointed process as in *E. travancoricum* Kurian¹ reaching to almost the distal extremity of merus; ischium small, only half as long as the curved merus; carpus slender, thrice the length of ischium; propodus longer than carpus and dactylus smaller than carpus.

Second peraeopod (fig. 4e) very short; basis less than total length of next three joints; merus and carpus sub-equal; propodus longer than carpus and smaller than the conical dactylus, which bears three or four long setae at the extremity.

Third, fourth and fifth peraeopods almost similar, with long basis.

Peduncle of uropod (fig. 4g) about one-third as long as telsonic somite bears 8 plumose setae on inner margin; rami sub-equal, more than twice the length of peduncle, both endopod and exopod bear numerous setae on their inner edges.

Type specimen.—C 3186/1, Zoological Survey of India, Calcutta.

E. kempfi, sp. nov. agrees with *E. producta* Calman² in the shape of the eye-lobe and the pseudorostrum, but differs from it in the shape of the carapace and appendages. *E. kempfi* is unique in its large size, in the presence of a tooth-like lateral cornua on the carapace and in having very broad basis for the third maxilliped and first peraeopod.

Subfamily VAUNTHOMPSONIINAE.

1944. *Vaunthompsoniinae*, Hale, *Trans. Roy. Soc. S. Austral.* 68 (2), p. 233.

1951. *Vaunthompsoniinae*, Kurian, *Bull. Cent. Res. Inst.* II, C, pp. 100, 101.

The key to the genera in the sub-family Vaunthompsoniinae, Hale (*loc.cit.*) may be modified as follows so as to include the genera, *Gigacuma* Kurian³ and *Pseudosympodomma*, Gen. nov.

- | | |
|---|--------------------------|
| 1. Basis of third maxilliped greatly expanded interiorly.
First peraeopod with joints curiously expanded | 2 |
| Basis of third maxilliped not expanded interiorly. First peraeopod devoid of curious expansions | 4 |
| 2. Pleon unusually short, never more than two-thirds as long as cephalothorax. First antenna strongly geniculate with joints of peduncle sub-globose | <i>Gephyrocuma</i> Hale. |
| Pleon not unusually short, at least as long as cephalothorax. First antenna not strongly geniculate and joints not globose | 3 |
| 3. Telsonic somite sub-truncate, scarcely produced posteriorly. Basis of third maxilliped with large inner distal lobe and basis of first peraeopod with no distal lobe | <i>Zenocuma</i> Hale. |
| Telsonic somite well produced posteriorly. Basis of third maxilliped without inner distal lobe | <i>Pomacuma</i> Hale. |

¹ Kurian, *Bull. Cent. Res. Inst.* II, C, pp. 97-99 (1951).

² Calman, *Trans. Zool. Soc. London.* XVIII, 1, pp. 24, 25 (1907).

³ *Bull. Cent. Res. Inst.* Trivandrum II (c) pp. 100-101 (1951).

4. Second peraeopod with a distal brush of setae on propodus and dactylus, but no spines. Fourth peraeopod of female with small exopod *Leptocuma* Sars
- Second peraeopod without brushes of setae on terminal joints, but with spines at least on dactylus. Fourth peraeopod of female without exopod. 5
5. Dorsal plate of telsonic somite subtruncate posteriorly and not produced between bases of uropods 6
- Dorsal plate of telsonic somite rounded or somewhat angular posteriorly and produced between bases of uropods 7
6. Dorsal plate of telsonic somite truncate posteriorly. Endopod of pleopod with narrow external process. External distal portion of basis of third maxilliped not produced *Cumopsis* Sars.
- Dorsal plate of telsonic somite excavated posteriorly. Endopod of pleopod without external process. External distal portion of basis of third maxilliped produced as a prominent lobe *Heterocuma*, Miers.
7. Third maxilliped with external distal portion of basis absent or not strongly produced and with ischium short (much wider than long); merus much longer than ischium, but shorter than carpus *Vaunthompsonia* Bate.
- Third maxilliped with external distal portion of basis prominently produced and with ischium at least as long as wide, sub-equal in length to merus and carpus 8
8. Eye absent 9
- Eye present 10
9. Pseudo-rostral lobes meeting in front of ocular lobe. Telsonic portion of last pleon somite much shorter than rest of somite *Bathycuma* Hansen.
- Pseudo-rostral lobes not meeting in front of ocular lobe. Telsonic portion of last pleon somite as long as rest of somite *Guassicuma* Zimmer.
10. Fourth peraeopod of male with exopod *Glyphocuma* Hale.
- Fourth peraeopod of male without exopod 11
11. Third peraeopod with exopod *Symphodomma* Stebbing.
- Third peraeopod without exopod 12
12. Eye-lobe linguiform, with a cluster of lenses at the extremity. Distal process of basis of first peraeopod reaches beyond the extremity of merus *Pseudosymphodomma* Gen. nov.
13. Eye-lobe not linguiform. Distal process of basis of first peraeopod stops behind the extremity of merus *Gigacuma* Kurian.

Genus **Gigacuma** Kurian.**Gigacuma halei** Kurian.

1951. *Gigacuma halei*, Kurian, *Bull. Cent. Res. Inst.* II, C, pp. 102-105, pl. ii-iv, figs. 25-43.

Locality.—

"Off puri, Orissa 4 to 4½ fathoms, m.s. 24-iii-1916 s.w.k. Cumacea" 29 ♀♀, largest 14.2 mm. long, mostly ovigerous.

Off Ganjam 7 to 8 fathoms, Marine survey. January 1890. Reg. No. 5024/10 2 adult ♂♂ 9.0 mm. and 8.5 mm. long.

Specimens in the present collection closely agree with the type. Spine like projection at the inner distal corner of basis in first peraeopod larger and better developed. Armature of uropods also similar to that in type, but in some specimens four stout spines are prominent on peduncle.

Distribution.—Trivandrum, Vizhingom and Cape Comorin (Travancore), 12 to 15 fathoms.

Genus **Heterocuma** Miers.

1879 *Heterocuma*, Miers, *Proc. Zool. Soc.* London, p. 22.

1913. *Heterocuma*, Stebbing, *Das Tierreich* XXXIX, pp. 48, 49.

This genus is so far represented only by 4 forms collected from China and Japan Seas and Africa Coasts. Fage (1924)¹ considers that the presence of a two-jointed exopodite on the second and third peraeopods in *Heterocuma intermedia* brings together the two genera *Sympodomma* and *Heterocuma* and adds justification for including both the genera in the same family—viz. Bodotriidae. *Heterocuma* may be identified from its ally *Cumopsis* by the excavated dorsal plate of telsonic somite which is not produced between uropods, by the absence of an external process on the endopod of pleopod and by the prominent distal lobe of the basis of third maxilliped.

Two new species are proposed here for the reception of specimens from Andamans, Madras and Orissa Coasts.

Key to the species of *Heterocuma* Miers.

- | | |
|---|----------------------------|
| 1. Carapace with distinct median dorsal carina . | 2 |
| Carapace without a median dorsal carina | 5 |
| 2. Exopodites of second and third pairs of peraeopods simple and undivided. | 3 |
| Exopodites of second and third pairs of peraeopods divided into 2 articles | <i>intermedia</i> Fage. |
| 3. Pseudo-rostral lobes do not meet in front of eye-lobe. Fourth and fifth pedigerous somites carinated. First joint of endopod of uropod shorter than second | <i>andamani</i> , sp. nov. |
| Pseudo-rostral lobes meet in front of eye-lobe. Fourth and fifth pedigerous somites not carinated. First joint of endopod of uropod longer than second | 4 |

¹ Fage, *Bull. Mus. Nat. Hist.* XXX, pp. 364-367 (1924).

4. Carapace without granules. Carinae on pleon feeble . *sarsi* Miers.
 Carapace with tuberculiform granules. Carinae on first five pleon somites strongly marked *sarsi* Var. *granulatum* Miers.
5. Pseudo-rostral lobes meet in front of eye-lobe. Joints of endopod of uropod sub-equal *africana* Zimmer.
 Pseudo-rostral lobes do not meet in front of eye-lobe. First joint of endopod of uropod longer than second *armata*, sp. nov.

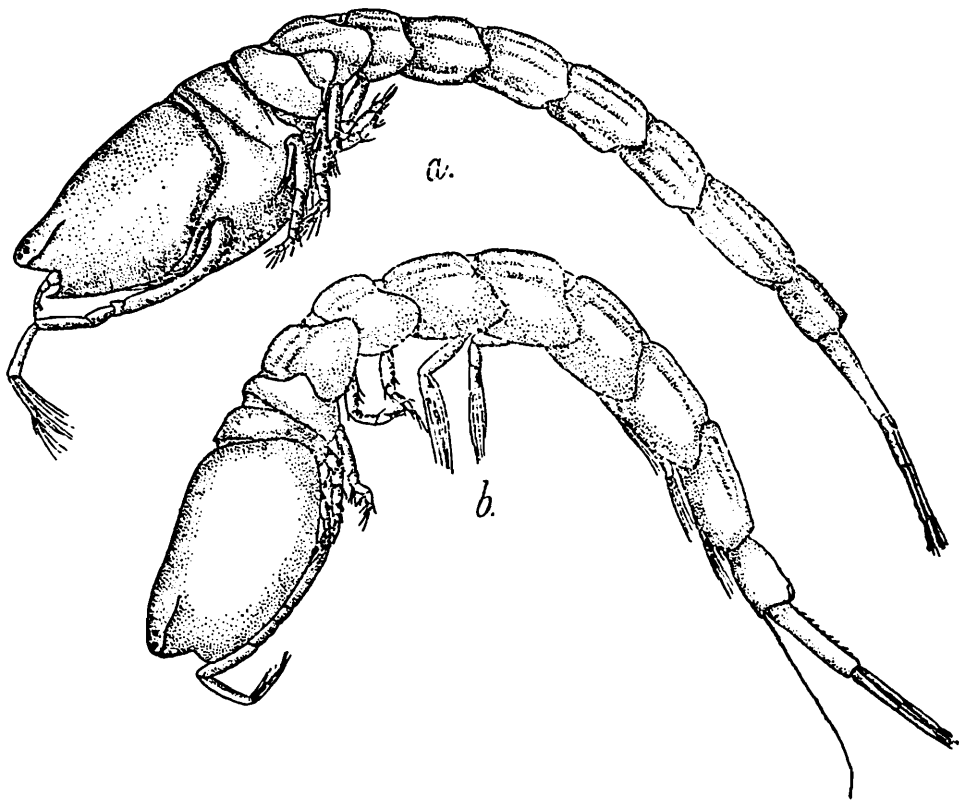
***Heterocuma andamani*, sp. nov.**

Locality—

Andamans, Off pier, Ross Island, 3 to 4 fathoms. 22/23-ii-1915 39♀♀; 7♂♂

Andamans, Ross channel, 2 to 9 fathoms. 1921 4♀♀; 1♂.

Andamans, stream at Corbyn's cove North (Andamans 9) 1♀.



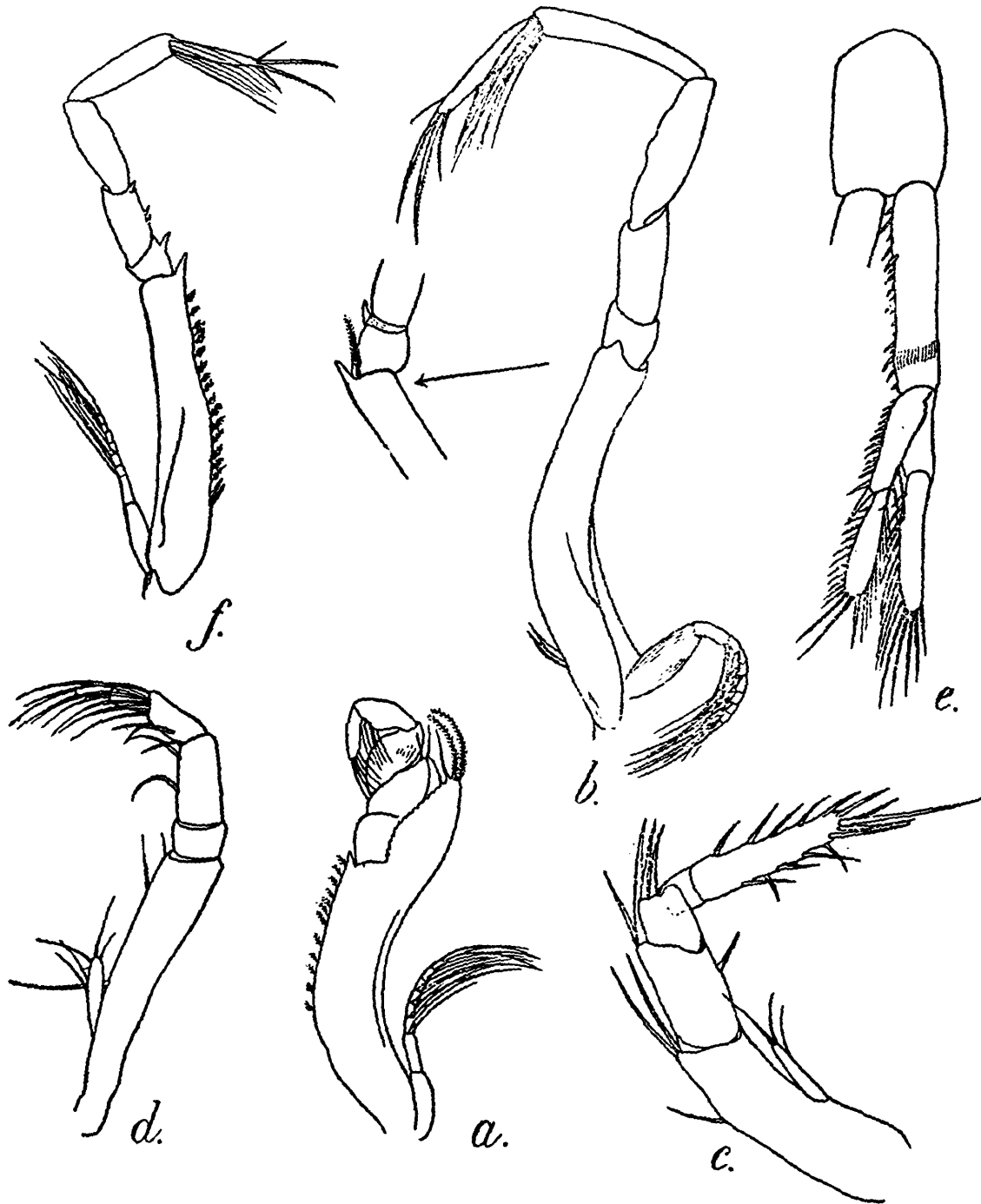
TEXT-FIG. 5.—*Heterocuma andamani*, sp. nov.
 a. Lateral view, female $\times 12$; b. Side view male $\times 12$.

Ovigerous female.—Length 7.9 mm. (fig. 5a). Resembles *H. sarsi* var. *granulatum* in shape, but smaller in size. Carapace smooth, except for the dorsal median carina which is prominent in the anterior half of carapace, towards the distal half it is faint and gets doubled. Pseudo-rostral lobes do not meet in front of eye-lobe. Eye-lobe pigmented with 3 lenses; subrostral notch deep, antero-lateral angle of carapace acute, and bears a short sharp tooth. Lateral margins of carapace show faint serrations anteriorly.

Free thoracic region as long as carapace, first pedigerous somite arrow and visible only dorsally, second large and more than three times as long as the first, fourth and fifth somites with a pair of prominent carinae on each side, situated above the lateral articulation of the somites.

A dorsal median carina extends from first pedigerous somite to last pleon somite. First five somites also with prominent dorso-lateral and lateral carinae as in *var. granulatum*. A faint infero-lateral carina noticeable in the first four pleon somites. Telsonic somite, only with a single dorso-lateral pair of carina.

Basal joint of first antenna large, serrated on inner edge and slightly shorter than the combined lengths of the succeeding two sub-equal joints.



TEXT-FIG. 6.—*Heterocuma andamani*, sp. nov.

a. Third maxilliped, female $\times 35$; b. First peraeopod, female $\times 35$; c. Second peraeopod, female $\times 50$; d. Third peraeopod, female $\times 50$; e. Telsonic segment and uropod, female $\times 22$; f. First peraeopod, male $\times 35$.

Second antenna resembles that of *H. sarsi*, but the large proximal joint bears 8 stout plumose setae on inner edge, where as there are only 4 setae in the allied species.

First maxilliped has a broad propodus and bears 6 sharp teeth on inner side.

Second maxilliped with broad propodus ; dactylus very small, less than half the preceding joint, bears at its tip a long, strong spine.

Basis of third maxilliped (fig. 6a) longer than the rest of limb, its external distal lobe almost reaching the extremity of a similar process of merus and bears two plumose setae at the summit and strong serrations and a few setae on inner side.

Basis of first peraeopod (fig. 6b) shorter than rest of limb. As in *H. sarsi* two spines present towards the base on inner side. Distal end of basis produced into a sharp, dagger shaped tooth on inner side. Ischium also with a short tooth on inner side towards its distal extremity ; carpus and propodus sub-equal, the latter possesses a group of long setae at its distal end ; dactylus only four-fifth as long as its preceding joint, bears at its extremity two long, stout, serrated spines in addition to the smaller setae and spines.

Basis of second peraeopod (fig. 6c) short, smaller than the rest of limb, bears a single jointed exopod, which does not reach the extremity of the segment that bears it. Dactylus long and clothed with spines and setae.

Third peraeopod (fig. 6d) slender basis longer than the total length of the succeeding joints, exopod resembles that of second peraeopod.

Peduncle of uropod (fig. 6e) longer than last pleon somite, bears numerous short spines on inner margin. Rami longer than peduncle. Endopod some what shorter than exopod, two jointed, first joint slightly smaller than second, bears 12 spines on inner margin, of which the last one very long and stout ; second joint also clothed with numerous long setae and spines on the margins and extremity.

Adult male.—Length 7.3 mm. (fig. 5b). Carapace as in female. Pseudo-rostral lobes do not meet in front of eye-lobe. Sub-rostral notch shallow. In young male, antero-lateral angle of carapace bears a tooth as in female, but in adult male antero-lateral angle not produced, but truncated.

Free thoracic portion slightly shorter than carapace, first pedigerous somite small and visible only dorsally, fourth and fifth somites bear lateral, dorso-lateral and median carinae which are distinct in young as well as in adult specimens.

Pleon longer than cephalothorax, with carinae on somites as in female.

Appendages of male more or less as in female, but smaller in size. Basis of first peraeopod (fig. 6f), possesses numerous small plumose hairs on inner margin, merus with a pair of small teeth on inner margin near its base.

Peduncle of uropod resembles that of female, bears 20 unequal spines on inner margin, slightly shorter than endopod, which in turn is shorter than exopod. First joint of endopod smaller than second, carries 10 spines, of which the last one large, second bears 12 graded spines, fringing inner margin and extremity. Exopod also carries numerous setae.

Type specimen.—Kept in the Zoological Survey of India.

The present species, though it superficially resembles *H. sarsi* and the *var. granulatum*, a careful study of the appendages and the proportionate lengths of the carapace, free thorax and abdomen shows that it is quite distinct from the allied Japanese forms. *H. andamani*, sp. nov. may be distinguished from the related species by the shorter pseudo-rostral lobes, the carinated fourth and fifth pedigerous somites, the nature of the second antenna in female, and the endopod of uropod, the first joint of which is shorter than the second.

Heterocuma sarsi Miers.

1879. *Heterocuma sarsi*, Miers, *proc. Zool. Soc. London*, pp. 22, 58, pl. iii, fig. 3.

1913. *Heterocuma sarsi*, Stebbing, *Das Tierreich XXXIX*, p. 49.

1951. *Heterocuma sarsi*, Kurian, *Bull. Cent. Res. Inst. Trivandrum*, II, C, p. 105.

Locality.—

“One tube of crustacea received from the University of Amoy, China for Dr. S. Kemp, 12-ii-1924”: One adult ♀ 16.5 mm. long.

Adult female.—Cephalothorax shorter than abdomen, dorsal median carina of carapace prominent only in its anterior half, the shallow depressions mentioned as occurring on the sides of carina¹ not noticed. Eye-lobe longer than broad, with dark pigmented eye, lenses indistinct.

Dorso-median carina indistinct on pleon somites. The long stout tooth at the distal end of basis of third maxilliped reaches beyond the limit of ischium; external prolongation of merus long and bluntly produced, reaching almost the extremity of the broad carpus.

Basis of first peraeopod with a long stout tooth at its distal end, which reaches to about four-fifths the length of the next joint; ischium also prolonged distally into two short prominences.

Slight differences also noticed in the joints and armature of uropods. Peduncle longer than last pleon somite, bears 19 spines on inner margin. Exopod equal in length to peduncle, bears 33 plumose setae fringing inner edge and extremity. Endopod slightly smaller than exopod. (Peduncle shorter than exopod and sub-equal to endopod, Miers *loc. cit.*) First joint of endopod long, bears 18 short spines and a large distal spine on inner margin and 15 plumose setae on outer border; second joint carries 12 spines on inner margin and 10 plumose setae on outer side.

Distribution.—Korean and Japanese Seas, 73 to 91 m., adult male and immature female; Trivandrum 15 fathoms, immature males.

Heterocuma africana Zimmer.

1921. *Heterocuma africana*, Zimmer, *Mitt. Zoolog. Mus. Berlin* x, pp. 129-131, figs. 25-27.

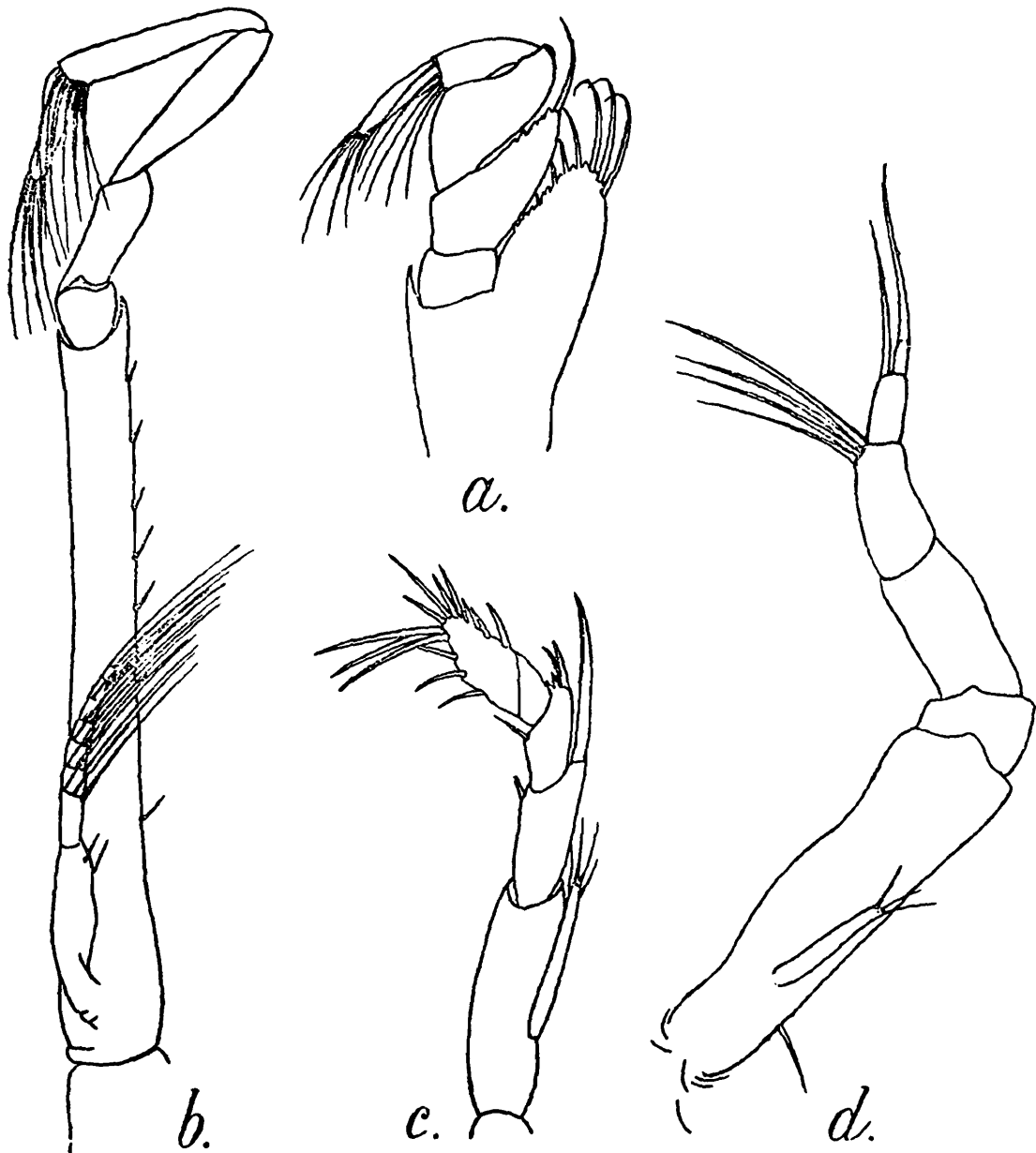
Locality.—

Andamans, Off pier, Ross Island, 3 to 4 fathoms 22/23-ii-1915: 1 adult ♀ 7.7 mm. and 1 adult ♂ 8.1 mm. long.

¹. Calman, *Ann. Mag. Nat. Hist.* (8) VI, pp. 612-614, pl. x, figs. 1-13 (1910).

Zimmer (*loc. cit.*) recorded this species from "half grown animals and young forms", the largest specimen measuring only 4 mm. in length, collected from Free Town (West Africa). The notable characters of the adult specimens in the present collection and their differences with the type are given below.

Adult female.—First peraeopod longer than in type, last two joints and half of fifth joint extending in front of pseudo-rostrum; dactylus very small, being only half the length of sub-equal carpus and propodus.



TEXT-FIG. 7.—*Heterocuma africana* Zimmer.

a. Third maxilliped (distal part) male $\times 65$; b. First peraeopod, male $\times 45$; c. Second peraeopod, male $\times 65$; d. Third peraeopod, male $\times 65$.

Second peraeopod imperfect, but basis shows the complete exopodite which resembles the one described by Zimmer (*ibid.*).

Exopod of third peraeopod smaller than in second. Peduncle of uropod slightly smaller than penultimate somite (peduncle equal to penultimate somite, Zimmer *ibid.*), carries 12 spines on inner margin in place of 7 described by Zimmer. Endopod equal to peduncle, first

joint sub-equal to second. Armature of endopod also different from that of type. Fringing inner margin and extremity of first and second joints are 10 and 11 spines respectively, compared with 6 spines on each of the two joints in type. Exopod slightly longer than endopod and bears numerous long setae and spines on inner margin and free end.

Adult male.—Resembles female in all essential characters. Height of carapace about half its length, sub-rostral notch shallow, sub-rostral angle blunt and rounded, without tooth. Eye-lobe longer than broad, with lenses indistinct as in female. Pleon slightly longer than cephalothorax, telsonic somite dorsally constricted at about its middle.

Third maxilliped (fig. 7a) almost as in female (Zimmer *ibid.*), basis distally produced into a lobe which bears 8 plumose setae fringing inner margin and tip.

Carpus and propodus of first peraeopod (fig. 7b) sub-equal, the latter with very long setae at its inner distal corner; dactylus very short, only half as long as preceding segment, bears long terminal setae.

Basis of second peraeopod (fig. 7c) slightly shorter than rest of limb, ischium suppressed as in female. The strong spine at the end of merus longer than the segment that bears it. Two smaller spines also present at outer distal corner of carpus. Dactylus long and bears numerous spines around distal half and extremity of the segment. Exopod rudimentary, reaches slightly beyond the end of basis and bears terminal setae.

Third peraeopod (fig. 7d) with stout basis, which is sub-equal to rest of limb. Exopod short, only one-third the length of basis.

Peduncle of uropod slightly smaller than penultimate segment and bears numerous spines on inner margin. Endopod shorter than peduncle, first joint nearly equal to second and bears 10 short spines on inner margin and a large spine at its extremity; second joint carries 13 spines fringing inner margin and free end, those at extremity being very long. Exopod slightly longer than endopod, resembles that of female in armature.

Heterocuma armata, sp. nov.

Locality.

“Off Puri, Orissa, 4-4½ fathoms. 24-iii-1916. s.w.k.”: 2 ♀♀ (1 adult & 1 ovigerous 4 mm. long.

“Madras Station 13”: 1 adult ♀ 4.7 mm. long.

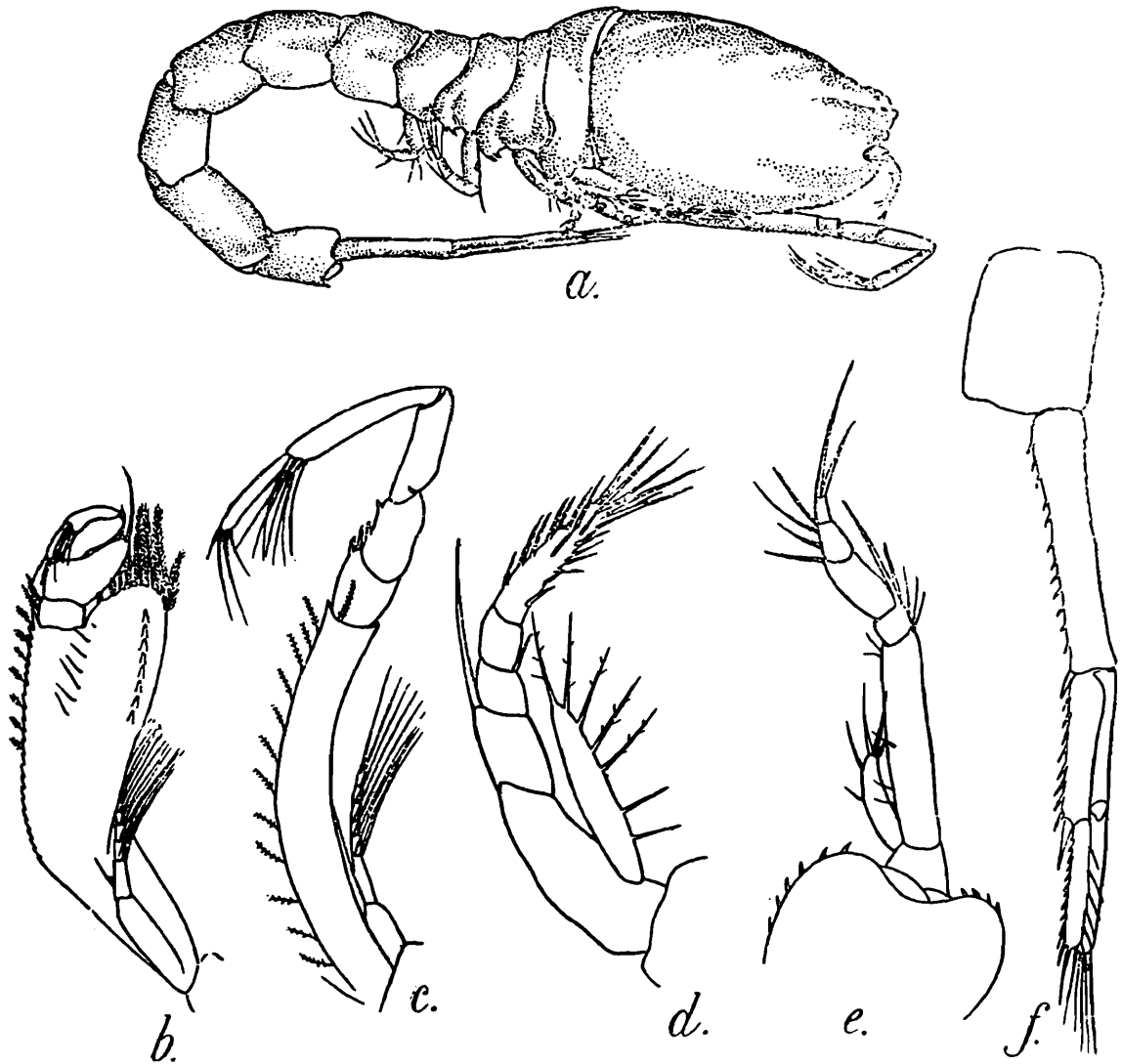
Adult female (fig. 8a).—Pseudo-rostral lobes do not meet in front of eye-lobe, which is slightly upturned. Eye-lobe as broad as long, eye pigmented, three small lenses discernible. Carapace stout, about one-quarter longer than the free thorax, and its dorsal profile slightly wavy. Carina not present on carapace. Sub-rostral notch deep. Antero-lateral angle slightly rounded; lateral margins of carapace serrated in its anterior half.

Surface of body reticulated and pitted in appearance.

First pedigerous somite small, visible only dorsally; second large, about twice as long as third. All thoracic somites devoid of carinae. Pleural lobes of third and fourth somites large, each bearing on its side five or six backwardly directed sharp teeth in its hinder half, of which at least two or three are visible in side view without dissection.

Pleon slightly longer than cephalothorax, devoid of carinae, telsonic somite only two-thirds as long as its previous segment.

Basal joint of first antenna stout, serrated on inner side, slightly longer than the sub-equal second or third joint.



TEXT-FIG. 8.—*Heterocuma armata*, sp. nov.

a. Lateral view female $\times 22$; b. Third maxilliped female $\times 58$; c. First pereopod female $\times 58$; d. Second pereopod, female $\times 73$; e. Third pereopod, female $\times 73$; f. Telsonic segment and uropod, female $\times 50$.

Basis of third maxilliped (fig. 8b) longer than rest of limb, very broad especially at distal end, its inner margin distinctly serrated and provided with small plumose setae. Lateral side of outer distal lobe of basis bears a longitudinal ridge with 8 stout teeth.

First pereopod (fig. 8c) stout, extends in front of pseudo-rostrum by the last three joints; basis shorter than rest of limb, prolonged distally into a sharp tooth on inner side; ischium long, with two spines at inner distal corner; merus also with two smaller teeth on its inner

margin ; carpus sub-equal to merus ; propodus longer than carpus or dactylus.

Basis of second peraeopod (fig. 8*d*) stout, smaller than rest of limb, prolonged distally into a blunt tooth on inner side ; ischium suppressed ; merus as long as total length of the succeeding two joints ; carries at inner distal corner a long stout spine which reaches to about half the length of dactylus ; dactylus long and bears numerous spines and stout setae. Exopod of second peraeopod long, single-jointed, reaches to almost the extremity of merus and carries 7 or 8 ciliated setae. Possession of a long exopod on second peraeopod distinguishes this species from other species in the genus.

Third peraeopod (fig. 8*e*) slender, with long basis. Exopod small, reaching only to half the length of basis, carries two setae at the extremity and three or four setae on the stem.

Peduncle of uropod (fig. 8*f*) longer than last pleon segment, bears 13 spines on inner edge, of which last one large. Endopod shorter than peduncle, two jointed ; first joint longer than second, bears 10 spines, of which the distal one large ; second joint serrated on inner side, bears 12 spines and 4 to 6 setae fringing inner edge and extremity. Exopod slightly longer than endopod, well clothed with setae and spines.

Type specimen.—C 3195/1, Zoological Survey of India, Calcutta.

The present species is represented only by female specimens and these can be distinguished from other allied species by the slightly wavy profile of carapace, the enlarged pleural lobes of third and fourth pedigerous somites bearing anteriorly directed teeth, the broad and flattened third maxilliped bearing a row of teeth on the lateral face of the distal lobe of basis and by the stout second peraeopod which has large single jointed exopod reaching beyond the extremity of ischium.

Genus *Pseudosympodomma* nov.

Ocular lobe narrowly linguiform, with a cluster of lenses at the anterior end as in *Sympodomma* Stebbing¹. Pseudo-rostral lobes do not extend in front of eye-lobe. Five pedigerous somites exposed, the first short and visible only dorsally. Pleon longer than cephalothorax, telsonic somite well produced posteriorly.

First antenna with two-jointed accessory flagellum. Mandible with strong molar processes ; second maxilliped with broad basis ; basis of third maxilliped with a large distal lobe ; merus expanded as in *Sympodomma*. First two pairs of peraeopods with well developed exopods in both sexes and succeeding peraeopods as in *Gigacuma* Kurian² without any trace of exopod. Basis of first peraeopod not as long as rest of limb ; second peraeopod has a long and slender dactylus. Endopod of uropod two-jointed. Five pairs of pleopods in male.

Genotype : *Pseudosympodomma indica*, kept in the Zoological Survey of India.

¹Stebbing. *Rec. S. Afri. Mus.* X, p. 138 (1912).

²Kurian, *Bull. Cent. Res. Inst. Trivandrum* II, C, p. 100 (1951).

Evidence of sexual dimorphism is noticed in this genus as in the genus *Glyphocuma* Hale.¹ The ovigerous female specimen possesses a dentate crest on the carapace, where as in the adult male the crest is smooth and devoid of serrations. However, young specimens are not available to prove the validity of this presumption as in the case of *Glyphocuma*.

Though this genus comes close to *Glyphocuma*, it differs from the latter in the absence of exopods on the third and fourth peraeopods in both sexes and in having the merus of the third maxilliped more expanded externally. *Pseudosympodomma* resembles *Gigacuma* Kurian, chiefly in the possession of well developed exopods on the first two peraeopods and in the absence of any trace of exopod on the succeeding legs ; but differs from it in the possession of the narrow linguiform eye-lobe ; in the nature of the third maxilliped, first and second peraeopods and the incised condition of the carapace in the ovigerous female.,

The resemblance of this genus to *Sympodomma* Stebbing is not less significant. The general shape of the body, the nature of the armature on the carapace in female, the presence of carinae on the carapace, thorax and abdomen ; the linguiform eye-lobe with cluster of lenses the short pseudo-rostral lobes and the nature of the second peraeopods, agree with that of *Sympodomma*. But the present genus is distinct from the related genus in the absence of exopod on the third peraeopod in both sexes. In this connection it may not be out of place to discuss the position of Stebbing's *S. africanus*. On consulting with Dr. H. M. Hale, Director of the South Australian Museum as regards the relation of the present species with *S. africanus* Stebbing, he informs² " in discussing this genus (*Sympodomma*) one comes up against the fact that there is doubt as to whether Stebbing's *africanus* has exopods on the third legs. " In Stebbing's description of the species he says " exopods to the third pair were not satisfactorily made out, but may be presumed as they occur in both sexes of the allied Japanese species viz. *Heterocuma diomedae* and *H. weberi* recorded by Calman " In his figure of *S. africanus*³ no trace of exopod is shown on the third peraeopod. As exopods have been noticed by Stebbing only on the first and second peraeopods, the species may be removed from the genus *Sympodomma* and as suggested by Hale (*ibid.*) it is probable that *S. africanus* Stebbing is referable to the present genus.

***Pseudosympodomma indica*, Gen. et. sp. nov.**

Locality.—

"Kilakarai, Ramnad Dist. from weeds 0-2 fathoms. February 17-1913 s.w.k."
Ovigerous ♀ 9.7 mm., adult ♂ 8.8 mm. long.

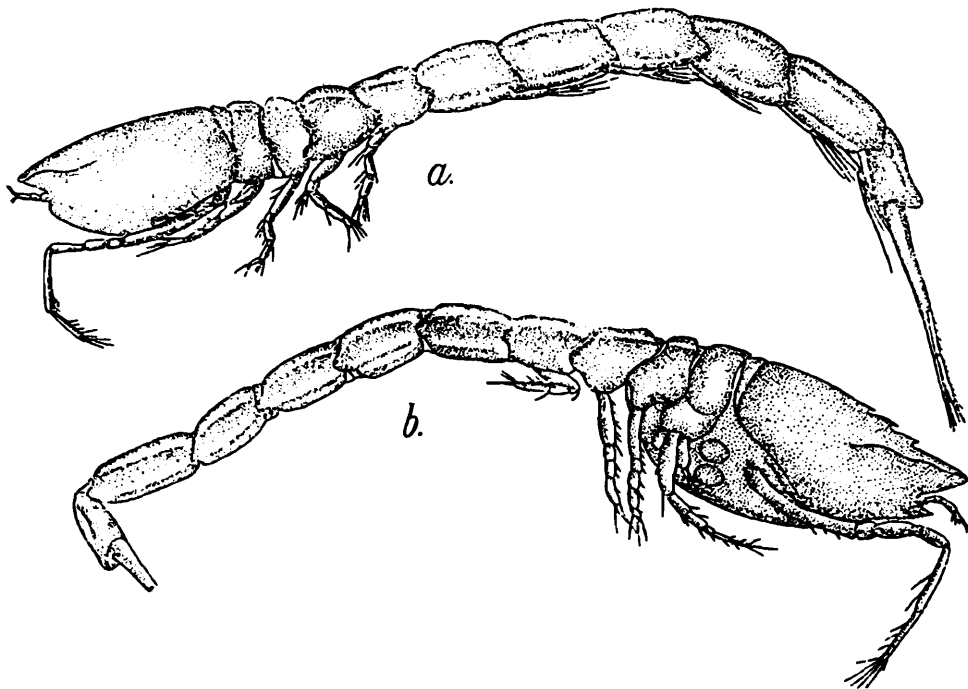
¹ Hale, *Trans. Roy. Soc. S. Austral.* 68 (2), p. 268 (1944).

² Extract of a letter from Dr. H. M. Hale, Director of the South Australian Museum.

³ Stebbing, *Ann. S. Afri. Mus.* X, pl. L (1912).

Adult male.—(Fig. 9a). Carapace about one-fifth of total length of animal, and depth half its length ; surface smooth, except for the distinct median dorsal carina, which bifurcates towards its hinder half, the two arms running close and parallel to each other. Dorsal profile of carapace slightly arched. Antennal notch obtuse, antennal angle rounded. Anterior half of the infra-lateral margin of carapace bears about 12 serrations, of which those in front are more prominent. Ocular lobe narrow and linguiform as in *Sympodomma*, its anterior part pigmented and shows 7 large lenses. Pseudo-rostral lobes short, and not extending beyond the distal extremity of eye-lobe.

Total length of pedigerous somites same as that of carapace ; first somite small and devoid of carinae ; second about twice as long as first, and possesses a dorsal median carina ; third, fourth and fifth bear dorsal and dorso-lateral carinae, the latter being more pronounced. Fourth pedigerous somite with a narrow pleural extension, which overlaps the posterior part of the preceding somite.



TEXT-FIG. 9.—*Pseudosympodomma indica*, Gen. et. sp. nov.
a. Lateral view, male $\times 18$ b. Lateral view, female $\times 18$.

Pleon nearly one and a half times as long as cephalo-thorax, first five somites possess dorsal and dorso-lateral carinae as in pedigerous somites and a faint infra-lateral projection. Telsonic somite shows only a weak lateral carina which is prominent only in its centre.

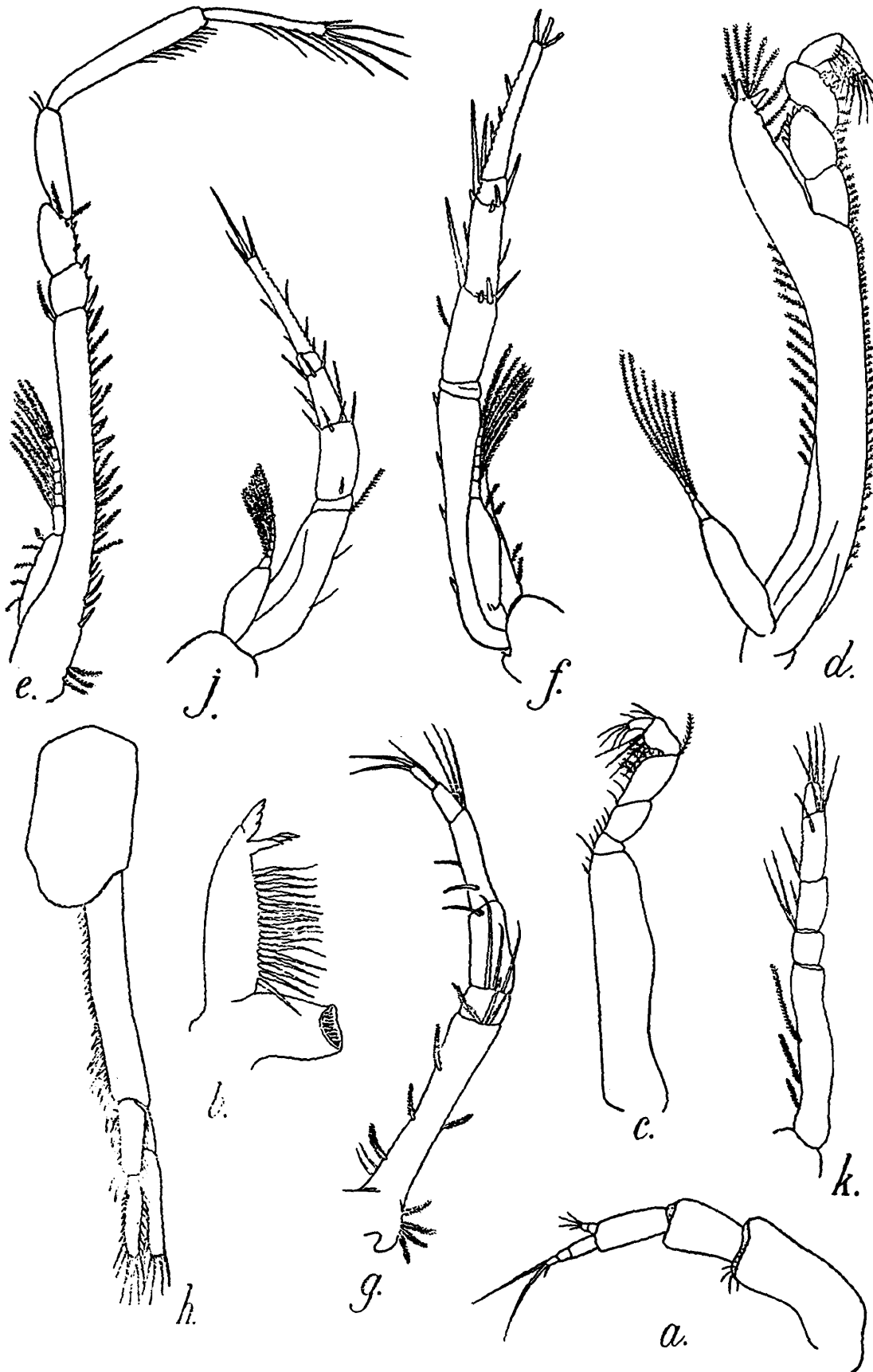
Basal joint of first antenna (fig. 10a) stout and as long as combined length of the succeeding two joints ; last joint slender ; accessory flagellum two-jointed.

Mandible (fig. 10b) with 17 spines arranged in a row and a strong molar process.

Basis of second maxilliped (fig. 10c) broad, $1\frac{1}{4}$ as long as rest of limb.

Basis of third maxilliped (fig. 10d) longer than total length of the remaining joints, clothed with setae on both sides ; its external distal lobe large, reaching beyond middle of carpus and with two strong teeth

and plumose setae; merus expanded as in *Symoodomma*, bears a few teeth and setae on outer side; carpus broad, with three stout teeth on



TEXT-FIG. 10.—*Pseudosympodomma indica*, Gen. et. sp. nov.

a. First antenna, male $\times 73$; b. Mandible, male $\times 73$; c. Second maxilliped, male $\times 50$; d. Third maxilliped, male $\times 50$; e. First pereopod, male $\times 35$; f. Second pereopod, male $\times 50$; g. Third pereopod, male $\times 50$; h. Telsonic segment and uropod, male $\times 32$; j. Second pereopod, female $\times 35$; k. Third pereopod, female $\times 35$.

inner side in addition to 5 or 6 small setae ; propodus smaller than sub-equal merus and carpus, expanded distally on inner side and bearing a group of long setae ; dactylus small, with long setae on inner side and at free end.

Basis of first peraeopod (fig. 10e) slender, shorter than rest of limb, bears long spines and plumose setae on inner side ; ischium and merus sub-equal, the latter produced distally over carpus, which is twice as long as merus ; propodus long and stout ; dactylus slender and as long as carpus.

Second peraeopod (fig. 10f) with basis only $\frac{5}{7}$ as long as rest of limb, bears short blunt spines on inner side ; ischium distinct though small, merus and carpus sub-equal, merus with a long stout spine on inner side at extremity and three small spines on outer side, carpus with two long unequal spines on inner side and two or three small spines on outer side. Propodus short ; dactylus long and slender bearing spines on the serrated margin and extremity. A well developed exopod present.

Third (fig. 10g) fourth and fifth peraeopods resemble those of *Glyphocuma*, but devoid of any trace of exopod, peduncle of uropod (fig. 10h) slender, about $1\frac{1}{4}$ as long as telsonic somite and one and a half times as long as rami, bears numerous short and long spines, of which those towards the distal end longer. Endopod slightly shorter than exopod, two-jointed ; first joint shorter than second, bears 13 spines on inner side, of which the distal one very large ; second joint with 21 graded spines on inner side and extremity.

Ovigerous female.—(fig. 9b) Length 9.7 mm. Closely resembles the male. Body proportions as in male. Eye-lobe narrower, apex occupied by numerous small lenses. Dorsal median carina of carapace with three conspicuous teeth projecting forwards as in *Sympodomma africanus* Stebbing¹. Carinae on carapace, thorax and abdomen as in male. Antennal notch deep. Lower margin of carapace serrated as in male, antero-lateral angle acute, with a prominent antero-lateral tooth.

First peraeopod as in male, but with a lesser number of spines and setae on basis.

Uropod missing.

S. africanus Stebbing, which as already suggested may be included in the present genus, can be differentiated from *p. indica* by the following distinctive characters :

P. indica, Gen. et. sp. nov.

P. africanus Stebbing.

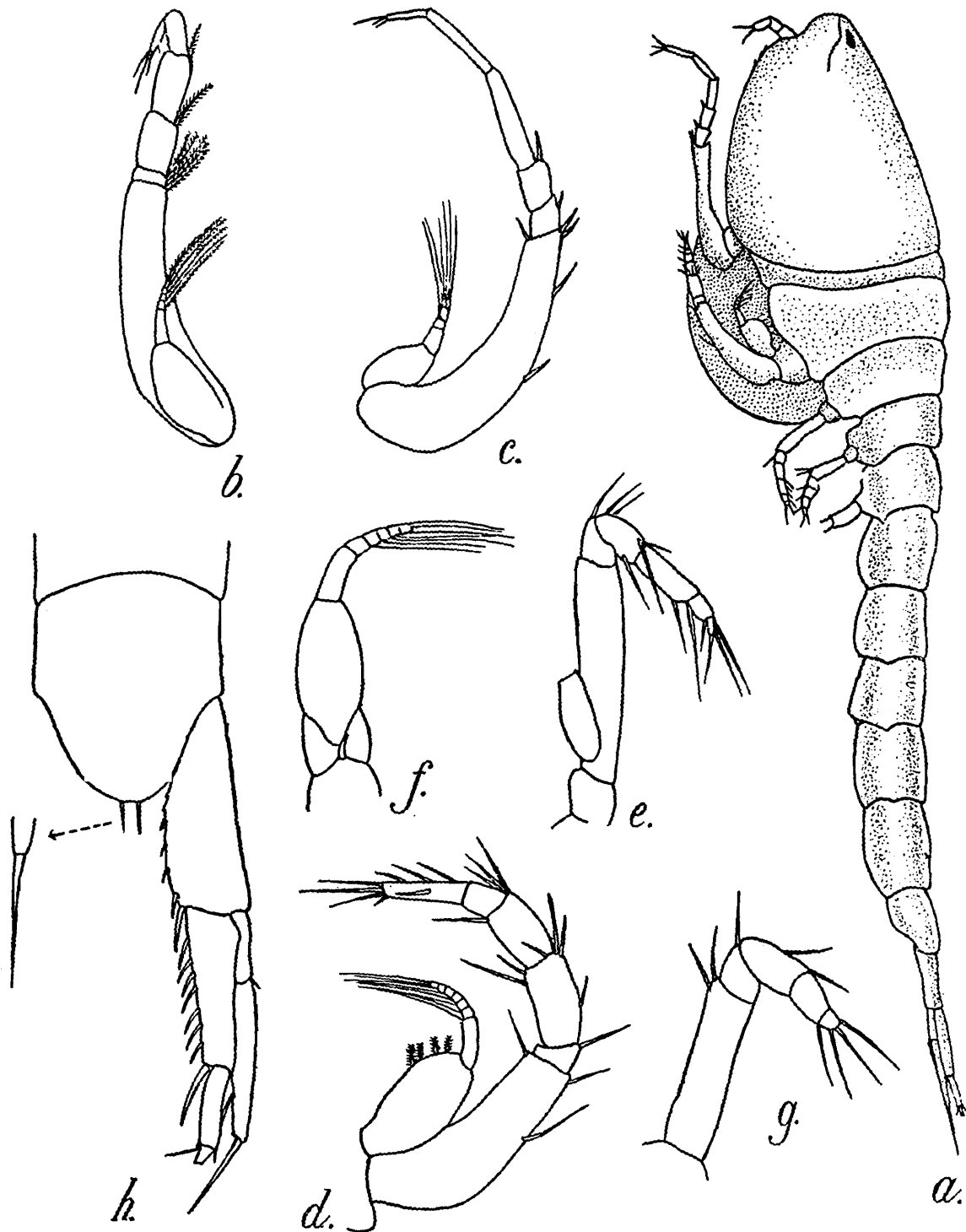
- | | |
|--|---|
| 1. Basis, merus and carpus of third maxilliped dentate ; distal lobe of basis reaches beyond middle of carpus. | 1. Basis, merus and carpus of third maxilliped without teeth ; distal lobe of basis stands behind the extremity of merus. |
| 2. First peraeopod has basis, ischium and merus bearing short, stout spines on inner margin. | 2. First peraeopod without spines, only setae present. |
| 3. Exopod of uropod longer than endopod. First joint of endopod, shorter than second. | 3. Exopod of uropod shorter than endopod. First joint of endopod twice as long as second. |

¹ Stebbing, Ann. S. Afr. Mus. X, pp. 138, 139 (1921).

Genus *Vaunthomponia* Bate.*Vaunthomponia arabica* Calman.

1907. *Vaunthomponia arabica*, Calman, *Trans. Zool. Soc. London.* XVIII, 1, pp. 29-30, pl. VII, figs. 20-24.

1913. *Vaunthomponia arabica*, Stebbing, *Das Tierreich* XXXIX, p. 11.



TEXT-FIG. 11.—*Vaunthomponia arabica* Calman.

a. Lateral view, female $\times 31$; b. Third maxilliped female $\times 85$; c. First pereopod, female $\times 85$; d. Second pereopod female $\times 85$; e. Third pereopod (left side—broken exopod), female $\times 122$; f. Third pereopod, podexo of right side, female $\times 122$; g. Fourth pereopod, female $\times 85$; h. Telsonic segment and uropod, female $\times 85$.

1944. *Vaunthomponia nana*, Hale, *Trans. Roy. Soc. S. Austral.* 68 (2), pp. 266-268, Figs. 28, 29.

1949. *Vaunthomponia nana*, Hale, *Rec. S. Austral. Mus.* IX, 2, pp. 118, 119, fig. 6.

Locality.—

Andamans, stream at Corbyn's Cove North (station 9).
Single ovigerous ♀ 3.4 mm. long.

Ovigerous female.—(fig. 11a) Pseudo-rostral lobes truncated as in type (Calman *loc. cit.*), meet in front of the pigmented eye-lobe. Carapace about one-fourth the total length of body, dorsal profile curved, but the curve not so pronounced as in the male specimen figured by Calman (ref. fig. 20 *ibid.*), it is more marked than in the figure by Hale.¹ Width of carapace 4.5 its length, sub-equal to height. Carapace and free pedigerous segments possess a dorsal median carina; infra-lateral margins concave as in male; antennal angle rounded, bearing 3 small teeth on each side, of which the hinder most one very small.

All five pedigerous somites well exposed, their total length more than that of carapace.

Pleon shorter than cephalothorax, last somite produced as a semi-circular expansion between uropods, bearing 2 slender setae at the extremity as in male (Calman *Ibid.*), but distal end of telsonic somite not serrated, resembling fig. 29 of Hale (*Ibid.*).

Eggs in marsupium, large, and spherical.

Basal joint of first antenna stout; second small; third slender, longer than second, and carries two flagella.

Third maxilliped (fig. 11b) resembles that of male (Hale *ibid.*, fig. 29). Basis not produced distally, with plumose setae at extremity, ischium small, merus and carpus sub-equal, propodus smaller than carpus and longer than dactylus.

First peraeopod (fig. 11c) short, extends beyond pseudo-rostrum by the length of its last segment, agrees with fig. 6 of Hale (1949). Basis sub-equal to combined length of next 4 joints, ischium and merus sub-equal, carpus twice the length of ischium, propodus longer than dactylus and smaller than carpus.

Second peraeopod (fig. 11d) stout, resembles that of male described by both Calman and Hale. Basis stout, about as long as combined length of the succeeding 4 joints; dactylus long, more than double the length of propodus.

Third peraeopod (fig. 11e) with exopod well developed, basis longer than rest of limb (exopodite of left side and endopodite of right side broken).

Fourth (fig. 11g) and fifth peraeopods shorter, without exopod.

Peduncle of uropod (fig. 11h) as in male, equal in length to last abdominal somite, bears 7 spines on its inner edge, of which the distal one longest. Endopod subequal to exopod, distal joint slightly stouter than half of proximal. Proximal segment with 8 spines on inner side, of which distal one the longest. Distal joint with faintly serrated inner margin and tip bears a stout seta (only basal portion of seta present) subtended by two smaller ones.

¹ Hale, *Trans. Roy. Soc. S. Austral.* 68(2), fig. 28 (1944).

The male specimen of *V. arabica* has been described by Calman (*ibid.*) from specimens 3.1 mm. long from Suez Canal and Aden. In the shape of carapace, second peraeopod and uropods, the female in the present collection resembles the male specimen described by Calman. *V. nana* Hale was first described from an incomplete male specimen 1.9 mm. collected from South Australia. Hale (1944, p. 268) observes "it seems close to *arabica* Calman (Suez and Aden) but the carapace is of different shape, the basis of the first peraeopod is still shorter and stouter, also proportions of the joints of last pair of peraeopods seem to be distinctive" But, later (Hale 1949, pp. 118, 119) a few more specimens measuring 3.1 to 3.4 mm. were collected from western Australia, which makes him doubt whether the South Australian type described by him is after all a dwarf variety of *arabica*, in view of the fact that the first and second peraeopods and uropods described (Hale 1949, fig. 6) agree with the type *V. arabica* Calman.

The female specimen in the present collection agrees with *V. nana* Hale, in the nature of the pseudo-rostrum, pleon, third maxilliped, first and second peraeopods and uropods. Considering the similarity of the two species described as *V. arabica* Calman (male) and *V. nana* Hale (male) and the close resemblance of the Andaman specimen (female) with these two species, it may be presumed that all of them belong to the same species and since *V. arabica* has precedence, *V. nana* may be regarded as a synonym of the former.

Family DIASTYLIDAE.

Genus *Paradiastylis* Calman.

Paradiastylis culicoides Kemp.

1916. *Paradiastylis culicoides*, Kemp, *Mem. Ind. Mus.* V, PP. 398-402, figs. 3-5.
 1951. *Paradiastylis culicoides*, Kurian, *Bull. Cent. Res. Inst.* II, C, pp. 106, 107.

Locality.—

"Waltair, station 5. 24-1-1921."

97 specimens, mostly ♀♀; adult ♀ 2.2 mm.;
 adult ♂ 2.1 mm. long.

Specimens closely resemble the type from Chilka Lake. Body in female stouter than in male. Lateral ridge on carapace distinct in female, faint or absent in male. Peduncle of uropod in female shorter, only a little more than double the length of last pleon somite; in male about three times the length of telsonic somite.

P. culicoides was first recorded from the Chilka Lake from the surface of mud at a depth of 6-12 ft. It is stated that they are "a permanent inhabitant of the main area of the lake, living in water that varies in specific gravity from 1.000 to 1.015" and that when the salinity of the water increased to the same percentage as that of the sea water outside the lake no specimens were found. The present record of the species is therefore interesting, since the collection was taken from the open sea, 5 years later, not far away from the type locality.

Distribution.—Chilka Lake 1 to 2 fathoms, Trivandrum 15 fathoms.

Genus *Dimorphostylis* Zimmer.*Dimorphostylis horai*, sp. nov.¹*Locality.*—

“ From Nankauri Oct. 20:1922 ”.

2 adult ♂♂ 5.0 mm. long (one damaged).
2 ovigerous ♀♀ 5.1 mm. long (one damaged).

Andamans, Ross channel, 2 to 9 fathoms. 1921.

1 damaged ♂ 4.4 mm. long.

Ovigerous female. (fig. 12). Integument thin and fragile. Carapace about one-third the total length of body, its height slightly less than half its own length, dorsal profile slightly serrated in the anterior region. A dorso-lateral fold runs backwards from the pseudo-rostrum around base of frontal lobe and extends beyond the middle of carapace. Side of carapace bears three obliquely curved carinae, of which the lowest, *i.e.* the one nearest the margin broken into two.

Pseudo-rostrum acute, meet in front of eye-lobe for about one-seventh the length of carapace. Ocular-lobe rounded, seen projecting above in side view.



TEXT-FIG. 12.—*Dimorphostylis horai*, sp. nov. Lateral view, female $\times 11$.

Pedigerous somites 5 distinct, together about half as long as carapace.

Pleon smooth, shorter than cephalothorax. Telson (fig. 14a) long, cylindrical, more than double the length of last abdominal somite, reaches beyond peduncle of uropod with a narrow post-anal region. Dorsum in front of post-anal region of telson marked by a depression with a ‘U’ shaped raised margin, almost as in *D. australis* Foxon¹.

First antenna slender, first joint of peduncle longer than second and sub-equal to third, bears two flagella, outer one longer.

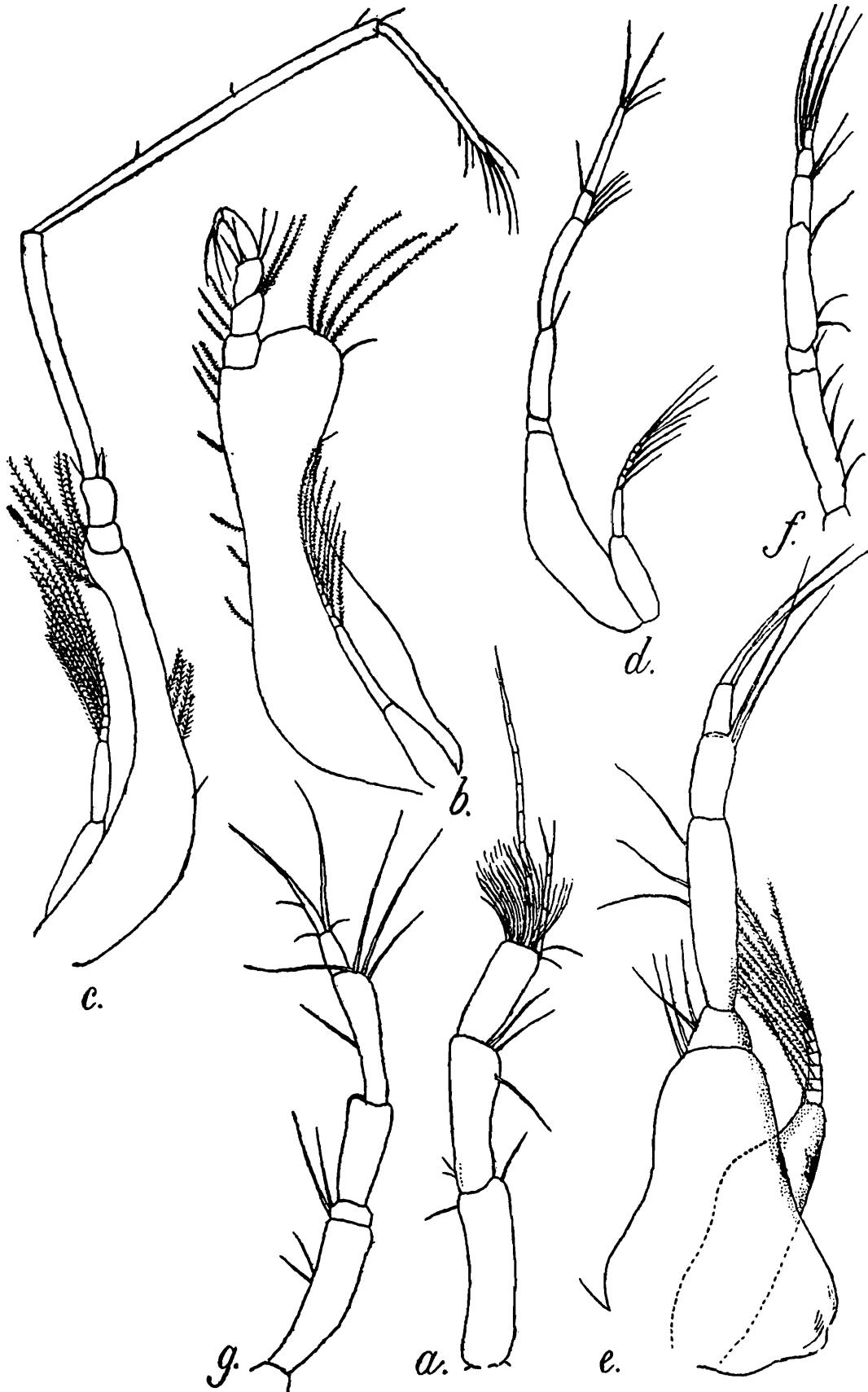
First peraeopod long, reaching beyond pseudorostrum by the last two joints and one third of carpus; second peraeopod with exopod; exopod absent on third peraeopod.

Peduncle of uropod (fig. 14a) narrow, about twice as long as last abdominal somite, bears 4 slender setae on inner margin. Endopod longer than peduncle three-jointed; first joint about as long as second and third combined, which are sub-equal. Spines on inner margin of the three joints of endopod, 8, 2, and 2 respectively and a long seta at the extremity of third joint. Exopod smaller than endopod, bears numerous spines on the margins and 2 long setae at extremity.

¹ Named after Dr. S. I. Hora, Director, Zoological Survey of India.

¹ Foxon, *Great Barrier Reef Exped.* 1928-'29 *Sci. Rep.* IV, 2, pp. 387, figs. 5-10(1932).

Adult male.—Carapace slightly longer than in female, lowest pair of carinae faint. Antero-lateral angle of carapace rounded.



TEXT-FIG. 13.—*Dimorphostylis horai*, sp. nov.

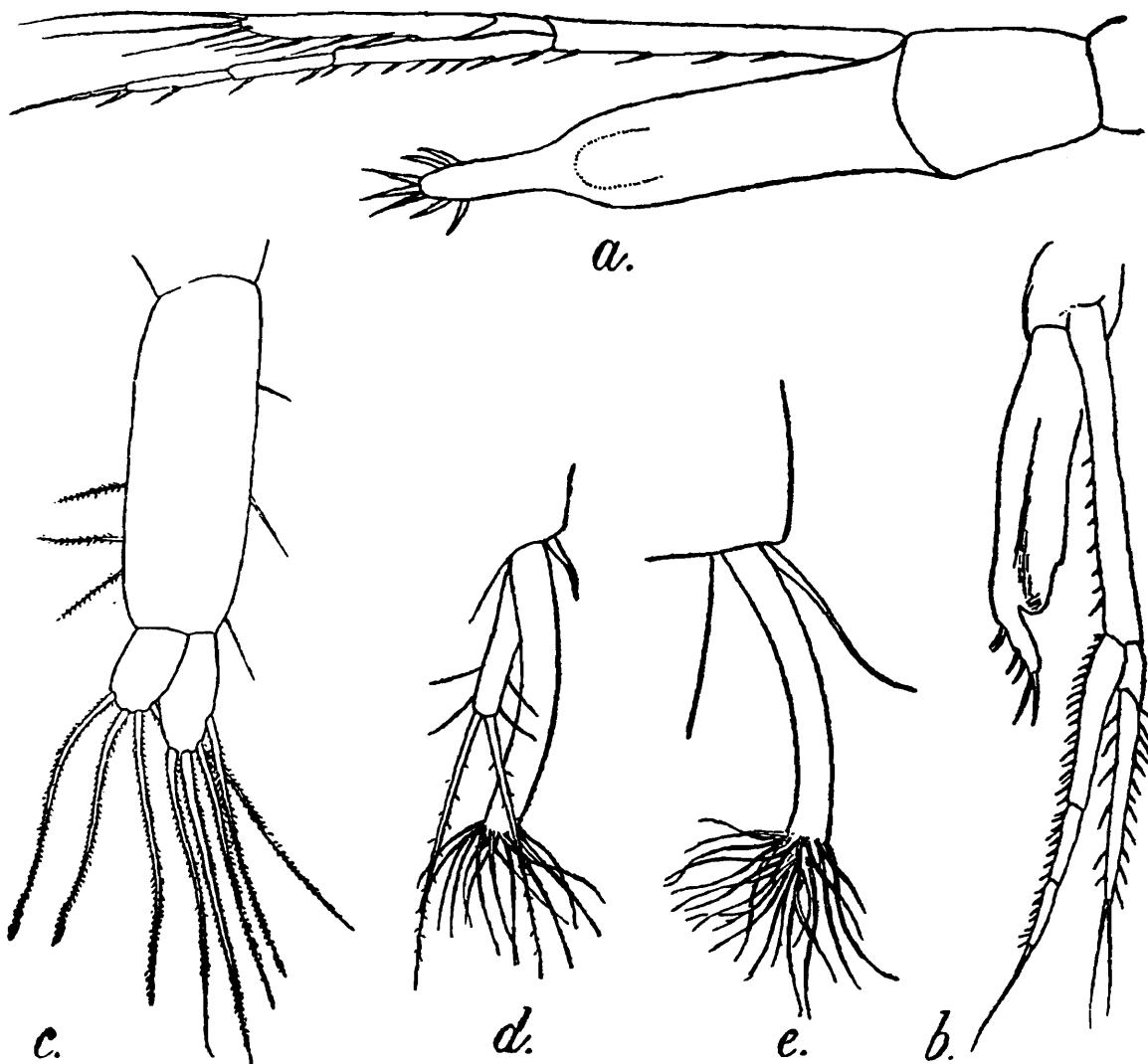
a. First antenna, male $\times 85$; b. Third maxilliped, male $\times 85$; c. First pereopod, male $\times 47$; d. Second pereopod, male $\times 47$; e. Fourth pereopod, male $\times 85$; f. Fourth pereopod, female $\times 47$; g. Fifth pereopod, male $\times 85$.

Cephalothorax about one and a half times as long as pleon. A stout curved tooth present on the ventral median margin of first pleon somite. Telson reaches beyond peduncle of uropod, but slightly smaller than in female, only six spines noticed on the post anal part of telson.

First antenna (fig. 13 *a*) with first joint longer than second; third shorter than second, bears two-jointed flagella and a tuft of setae at the tip.

Flagellum of second antenna reaches beyond extremity of uropod.

Third maxilliped (fig. 13 *b*) with a dialated basis, thrice as long as rest of limb, segments of which successively increase in length to propodus, which is twice as long as dactylus.



TEXT-FIG. 14.—*Dimorphostylis horai*, sp. nov.

a. Telson and uropod, female $\times 47$; *b.* Telson and uropod, male $\times 47$;
c. First pleopod, male $\times 255$; *d.* Third pleopod, male $\times 255$; *e.* Fourth pleopod, male $\times 255$.

First peraeopod (fig. 13 *c*) elongate, carpus reaching to level of pseudo-rostrum. Basis, half as long as rest of limb; ischium and merus small; propodus half as long again as carpus and twice as long as dactylus.

Second peraeopod (fig. 13 *d*) with basis almost half as long as rest of limb. Merus, carpus, and dactylus almost equal, propodus only one-third of dactylus.

Third and fourth peraeopods bear exopods. Basis broad, almost as long as rest of limb.

Fifth peraeopod without exopod, basis slender, only half as long as rest of limb.

Pleopods (fig. 14 *c, d, e*) present on the first four abdominal somites of which first two biramous, while the next two in the form of slender processes with terminal tuft of hairs.

Peduncle of uropod (fig. 14 *b*) slightly shorter than telson and bears 8 to 10 short spines on inner margin. Endopod with first joint about half as long again as second and third joints combined. Spines on inner margin 19, 8 and 8 on the three joints respectively. Exopod with about 20 setae fringing the sides and extremity.

Dimorphostylis horai, sp. nov. resembles *D. australis* Foxon in having four pairs of abdominal appendages in male, a pre-anal portion of telson much longer than the sixth pleon somite and in the possession of a 'U' shaped raised ridge on the dorsum of the telson. But, it differs from the latter in the absence of an exopod on the fifth peraeopod in male, in having a long post-anal region for the telson and in the nature of the thoracic appendages.

D. horai, sp. nov. resembles *D. subaculeata* var. *praecoxa* Hale,¹ in the absence of an exopod on the 5th peraeopod in male, and in the nature of the first peraeopod. But, it differs from the latter mainly in the possession of a long telson, in the proportionate lengths of the joints of the uropods and in the absence of a spinous carapace and pleon.

D. horai, sp. nov. could be distinguished from all other species of the genus, by the long, cylindrical telson divisible into a pre-anal and post-anal part, and which is much longer than the sixth pleon somite and extends backwards beyond the peduncle of uropod.

Genus *Gynodiastylis* Calman.

Gynodiastylis sp.

Locality.—

"Palk strait, Marine survey" hauls up to 12 fathoms. Reg. No. 9093.

6

1 damaged ♂ approximate length 4.9 mm.

Telson small, more or less as in *G. polita* Hale, bears two backwardly directed setae. Exopods present on the first four peraeopods. First peraeopod broken. No trace of pleopod on abdomen.

Peduncle of uropod slender, slightly longer than endopod, bears 12 spines on inner margin. Endopod of uropod two-jointed, first longer than second; bear 6 and 2 spines on inner margins of the two joints respectively. Exopod shorter than endopod, bears stout setae, those at the terminus being long.

¹ Hale, *Trans. Roy. Soc. S. Austral.* 69 (2) pp. 185-187 (1945).

Family NANNASTACIDAE.

Genus *Nannastacus* Bate.*Nannastacus johnstoni* Hale.

1945. *Nannastacus johnstoni*, Hale, *Rec. S. Austral. Mus.* pp. 165-168, figs. 14, 15.

Locality.—

Kilakari. 12-ii-1913 1 adult ♀ 1.6 mm.
1 (damaged) ♂ 2.6 mm. long.

Andamans, Ross channel, 2-9 fathoms, 1921. 1 adult ♂ 1.8 mm. long.

Specimens closely agree with the type description except that the hairs on carapace and abdomen are rather scarce.

Distribution.—New South Wales, Queensland.

Nannastacus gibbosus calman.

1911. *Nannastacus gibbosus*, Calman, *Trans. Zool. Soc. London* XVIII, pp. 355-356, pl. xxxiii, figs. 16-21.
1913. *Nannastacus gibbosus*, Stebbing, *Das Tierreich*, XXXIX, p. 170.
1945. *Nannastacus gibbosus*, Hale, *Rec. S. Austral. Mus.* VIII, 2, p. 148.

Locality.—

Andamans, Stream at Corbyn's Cove North. (station 9). One ♀ 1.8 mm. long.

Specimen agrees with the description of Calman (*loc. cit.*) except that peduncle and endopod of uropod are slightly shorter, and the body is covered with lesser number of setae.

Distribution.—Gulf of Siam, 5 fathoms.

Nannastacus inflatus Hale.

- Nannastacus inflatus*, Hale, *Rec. S. Austral. Mus.* VIII, 2, pp. 159-162, figs. 10, 11.

Locality.—

"Kilakarai, 0-2 fathoms, 12-ii-1920. s.w.k." 1 ♀ 1.8 mm. long.

Specimen slightly crushed in the third somite of pleon, agrees with Hale's type description. But peduncle of uropod slightly less than three-quarters as long as telsonic somite. Corneal lenses of paired eyes distinct. Inner margin of endopod with three stout spines and numerous smaller ones in between.

Distribution.—Australian Coasts.

Nannastacus sp.*Locality.*—

"Kilakarai, Feb. 1913. S.W.K.". 1 damaged ♀ about 1.9 mm. long.

Identification of species is not possible since the specimen is badly crushed.

Family CAMPYLASPIDIDAE

Genus *Campylaspis* Sars.*Campylaspis maculata* Zimmer.

1907. *Campylaspis maculata*, Zimmer, *Zool. Anz.* XXXI, p. 371.
1913. *Campylaspis maculata*, Stebbing, *Das Tierreich* XXXIX, p. 197.
1945. *Campylaspis maculata*, Hale, *Rec. S. Austral. Mus.* VIII, 2, p. 183.

Locality.—

Andamans, Off pier, Ross Island, in sand and a little weed; 2 ♀♀ 2.5 mm. long.
3-4 fathoms, 22/23--ii-1915.

Resemble the type except that dactylus of second peraeopod is longer than carpus and carapace bears prominent tuberculate ridges.

Distribution.—South Georgia 75 m.