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On some Indo-West Pacific Bopyridae (Isopoda, Epicaridea) in
the collections of the Zoölogisch Museum, Amsterdam

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ABSTRACT

Four bopyrids are described. *Pleurocryptina indica* Nz. & B. à B., 1929, is recorded from Mauritius; it was previously known from the East Indies. *Bopyrina brachytelson* Nz. & B. à B., 1923, is compared with other members of the genus. *Metacepon pleopodata* n. sp., a parasite of *Litocheira setosa* collected in Amboina (Indonesia), is a species with an aberrant male morphology. Another species, parasitic on *Metopograpsus oceanicus* in Sumbawa (Indonesia), is tentatively attributed to *Megacepon*, a genus with uncertain affinities.

INTRODUCTION

After the completion of Nierstrasz & Brender à Brandis' (1923) report on the Indo-West Pacific Epicaridea, chiefly originating from the Siboga Expedition, and preserved in the Zoölogisch Museum, Amsterdam, several additional samples accumulated, partly found on Siboga decapods, partly from other sources. In the present paper we report upon a number of interesting Bopyridae; the Hemiarthrids will be reserved for a future study. We are indebted to Dr. T. Wolff (Zoologisk Museum, Copenhagen), who made the type material of *Pleurocryptina indica* Nierstrasz & Brender à Brandis (1929) available to us.

SYSTEMATIC SECTION

***Pleurocryptina indica* Nierstrasz & Brender à Brandis, 1929**

Figs. 1—3

Material examined. — 1 ♀ + ♂, on *Galathea* sp., Mauritius, lagoon of Flic-en-Flacq, depth 1—2 m, Feb. 3, 1964, J. H. Stock coll.

Description. — Female: Length 2.5 mm, width 1.7 mm; pleon 0.6 mm. Asymmetry 20°.

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Cephalon important (fig. 1), fissured in the upper and lower part of its mediodorsal side. Eyes present. Frontal lamina rather wide, folded back against the front of the head.

Antennules apparently composed of three segments, antennae of five; the distal end of the latter is long and slender. Maxillipeds (fig. 2a) ending in a small palp provided with three setae; its anterior part carries cilia all around. Posterior border (fig. 2b) having well-developed external lamellae; the internal ones are only indicated by a vestigial tubercle; the median part is likewise smooth.

The metamerisation of the pereion is complete, except in the middle of the first two somites. Lateral bosses quite distinct on the first four somites. The corresponding coxal plates are mostly as wide as the adjacent boss. Lateral margin of the last three pereionites entire. Marsupium incompletely closed; incubational plates 2 to 4 not at all overlapping, although the female carried an egg mass. First oostegite (fig. 2c) consisting of two rounded parts, the anterior one slightly shorter than the posterior one; internal ridge completely smooth. Second pair of marsupial plates (fig. 2d) cordiform, the next ones of elongate shape; the fifth plate does not possess the usual fringe of setae, its external margin being simply ciliated like that of the preceding plates.

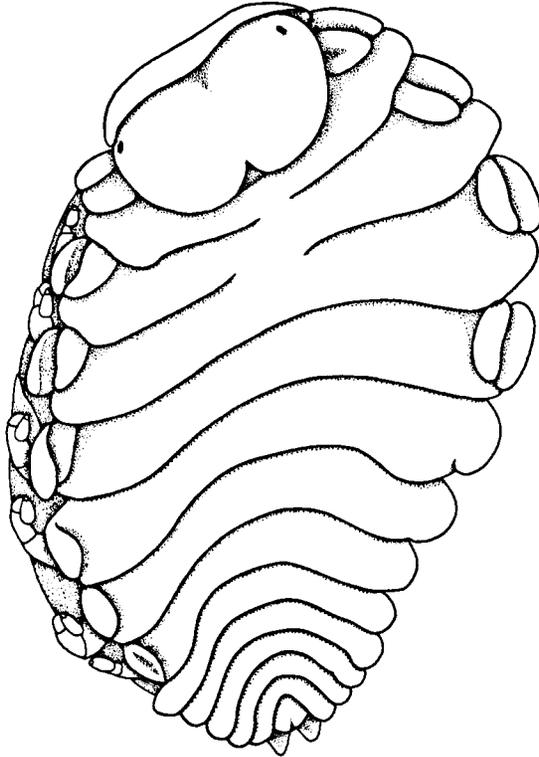


Fig. 1. *Pleurocryptina indica* Nierstrasz & Brender à Brandis, 1929, female dorsal.

Pereiopods increasing slightly in size towards the posterior end, without boss on the basipodite.

Pleon (fig. 2e) 6-segmented. Lateral plates of the first five somites relatively short and rounded. Pleopods decrease in length posteriorly; they are not visible in dorsal view; they are biramous on pleonites 1 to 4, with subequal rami, with the exception of the right appendage of the first somite which is provided with a long and slender endopodite; the pleopods of the fifth pleonite are uniramous.

Uropods simple, lamellar, almost as well developed as the last pleural laminae and extending partly beyond the pleon.

Male: Length 1.5 mm, width 0.6 mm; pleon 0.4 mm. Cephalon narrower than the thorax, from which it is well separated (fig. 2f). Eyes present. Antennules and antennae (fig. 3a) 3- and 5-segmented, respectively; both appendages armed with setae, spines, and ciliated scales. Maxillipeds (fig. 3b) relatively strongly developed, almost reaching to the distal end of the

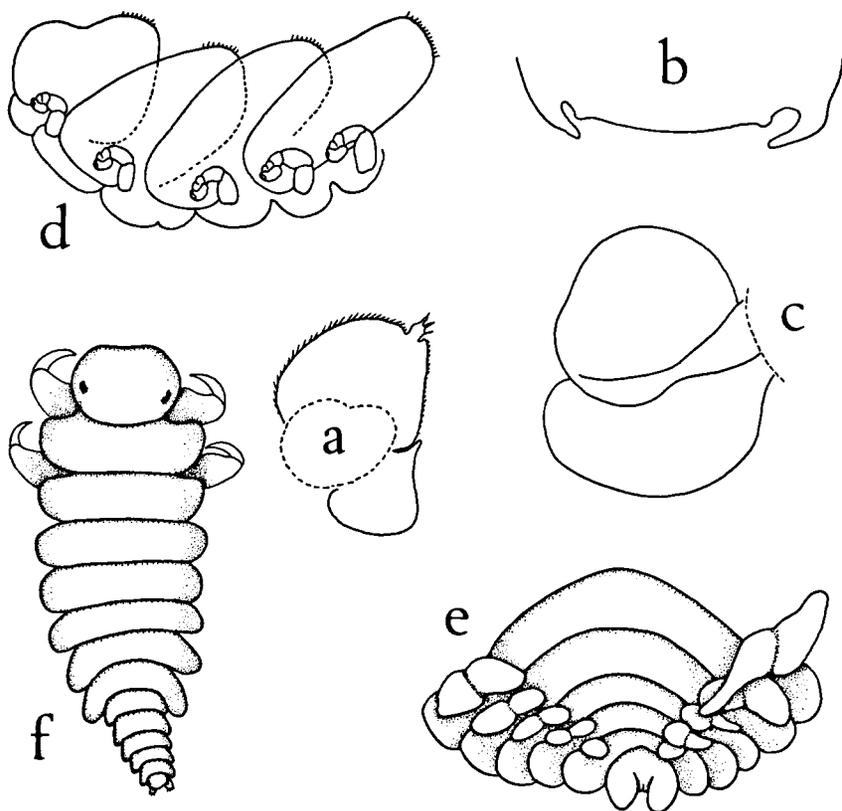


Fig. 2. *Pleurocryptina indica* Nierstrasz & Brender à Brandis, 1929. a, maxilliped, ♀; b, posteroventral border of cephalon, ♀; c, first oostegite, ♀; d, oostegites 2 to 5, ♀; e, dorsal side of pleon, ♀; f, body in dorsal view, ♂.

rostrum, clearly 2-segmented and ending in 3 setae.

Pereion slightly decreasing in width starting from the third somite; the lateral margins of the last thoracomere are extending backward as to enclose the first pleonite. Pereiopods (fig. 3c) of decreasing size from anterior to posterior; P1 and P2 have a better developed propodus than in the remaining legs, where this article, just as the dactylus, diminishes slightly in length; the merus in all pereiopods is largely covered with groups of densely implanted long setae. No medioventral tubercles.

Pleon consisting of six somites, short, much narrower than the thorax; its lateral margins pointing backward. Pleopods uniramous; the five pairs have the shape of flat oval lamellae, and are pendent. Pleotelson rounded. Uropods (fig. 3d) present, lamellar like the pleopods, but covered with groups of setae resembling the situation found in the antennae and pereiopods.

Remarks. — The only member of the Pseudioninae in which the male possesses foliaceous pleopods is *Pleurocryptina indica* Nierstrasz & Brender à Brandis, 1929, found on a *Galathea* sp. (like the present material), in the Banda Sea. Apart from this particularity, the material from Mauritius corresponds perfectly with the holotype ♀, from which it differs only by the endopodite of the first pleopod on the right side, so curiously elongate, and by the posterior border of the pleotelson that is rounded instead of pointed. We must point out that the fifth pair of pleopods of the holotype of *P. indica*, indicated as biramous in the original diagnosis, proves to be uniramous, as in the present material. As far as the male is concerned, the second pair of legs

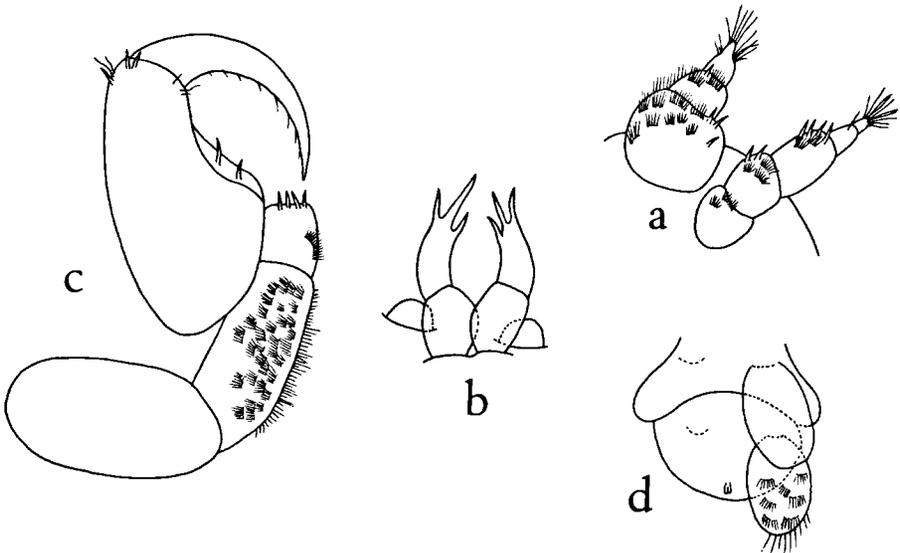


Fig. 3. *Pleurocryptina indica* Nierstrasz & Brender à Brandis, 1929, male. a, antennule and antenna; b, maxillipeds; c, pereopod 1; d, uropod.

is slightly more developed than in the allotype, but the remaining characters are absolutely identical, in particular the curious chetotaxy of the pereopods and uropods. As far as we know, a similar setation has never been observed elsewhere in the male sex. By this character, as well as by the 2-segmented maxillipeds and the pleonal appendages which have retained the lamellar structure as encountered in the last larval stage, *Pleurocryptina* has to be considered one of the most primitive Bopyridae, classified side by side with *Pleurocryptella* and *Parapleurocryptella*.

***Bopyrina brachytelson* Nierstrasz & Brender à Brandis, 1923**

Fig. 4

Material examined. — 1 ♀ + ♂, on *Periclimenes brevicarpalis* (Schenkel), Singapore (specimen imported alive for the Aquarium of the Zoological Gardens of the Royal Zoological Society, Natura Artis Magistra, Amsterdam, in 1966).

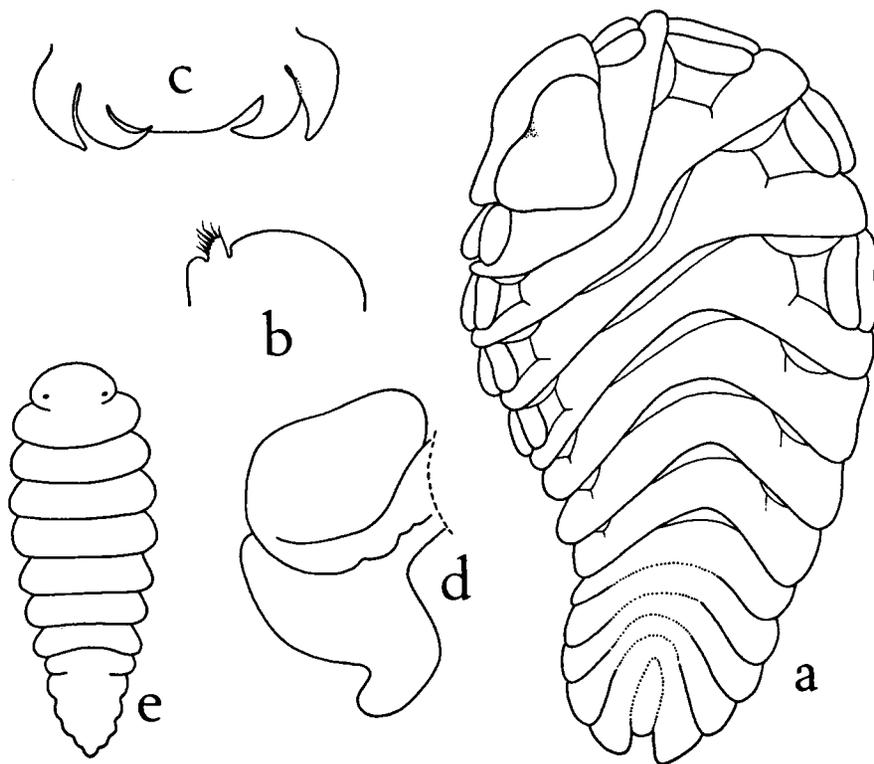


Fig. 4. *Bopyrina brachytelson* Nierstrasz & Brender à Brandis, 1923. a, body in dorsal view, ♀; b, maxilliped, ♀; c, posteroventral border of the cephalon, ♀; d, first oöstegite, ♀; e, body in dorsal view, ♂.

Description. — Female: Length 7.3 mm, width 4.1 mm; pleon 2.5 mm; asymmetry 62°.

Cephalon triangular (fig. 4a), distinctly delimited from the thorax. Eyes absent. Frontal lamina well developed, narrower at the short side where it forms a shallow excavation.

Antennules, implanted closely together, 3-segmented; antennae 2-segmented. Maxillipeds (fig. 4b) ending in a setiferous palp. Posterior margin (fig. 4c) provided with two pairs of smooth lamellae, curved inward, and about of equal size; the median part is slightly convex.

All pereion somites separate. Lateral bosses well-developed on the first four somites, just as the narrow coxal plates. Lateral margin of the posterior three somites entire. Marsupium open. First pair of oostegites (fig. 4d) subequal, showing a recurved posterodistal lobe; the internal ridge is vaguely lobulated. The incubational plates 2 and 3 have the same and an elongate form; 4 and 5 are gradually longer; the last plates overlap and carry a fringe of setae.

Pereiopods increase slightly in size in posterior direction; all provided with a boss on the upper side of the basipodite.

Pleon consisting of 6 somites, the delimitation of which is rather well visible dorsally. Lateral plates more or less convex. Pleotelson short, with a curved posterior margin, deeply framed within the fifth pleural laminae. Four pairs of uniramous pleopods, distally drawn out and decreasing notably in length. No uropods.

Male: Length 1.6 mm, width 0.6 mm; pleon 0.4 mm.

Cephalon for the greater part fused with the thorax. Eyes present. Antennules separated, consisting like the antennae of two articles. Maxillipeds not distinguishable.

Pereion slightly increasing in width towards its median part. Pereiopods of equal structure and size, all ending in a pointed dactylus, which is half as long as the propodus. No medioventral tubercles.

The six somites of the pleon are indicated by notches in the lateral border, and by a partial dorsal segmentation line for the first somite. Pleopods: four pairs represented by a sclerotized zone grading from oval in front to rounded more backward. Neither uropods nor anal spines; pleotelson, however, scaly.

Remarks. — The present parasite belongs to the group of *Bopyrina* having the female pleotelson retracted between the 5th lateral plates. With the exception of *B. pleurocephala* Monod, 1933, well-characterized by its extreme asymmetry and only provisionally classified with this genus, the other species allocated here appear to be curiously similar. The criteria indicated by Chopra (1923) and retained by Shiino (1939a) to distinguish these species, pertain chiefly to the relative proportion of the abdomen in the two sexes and the degree of fusion in the male, rather vague characters the value of which is uncertain, since two of the four species thus characterized are only known from single specimens.

The shape of the last pleural laminae of the female is also taken into consideration by the authors. In *B. andamanica* Chopra, 1923, known from 4 specimens, these plates look more pointed than in the present specimen or than in the other members of the genus belonging in this group. Therefore, we think it justified to attribute the parasite of *Periclimenes brevicarpalis* to *Bopyrina brachytelson* Nierstrasz & Brender à Brandis, 1923, which has priority over the two species described by Chopra in the same year, *B. kossmanni* and *B. gracilis*, and which resembles these so closely that their distinction needs confirmation.

The species has been obtained previously (probably on the same host) in Bali, and was later found near the Kei Islands on an unidentified Pontoniine shrimp (Nierstrasz & Brender à Brandis, 1923, 1929).

Metacepon pleopodata n. sp.

Figs. 5, 6a-f

Material examined. — 1♀ (holotype) + ♂ (allotype), on *Litocheira setosa* (A. Milne Edwards), Siboga Expedition Sta. 181, Amboina, 34—54 m. (This material was cited by Tesch, 1918a).

Description. — Female: Length 2.8 mm, width 2.0 mm; pleon 0.7 mm.

Cephalon dorsally swollen, but not divided into two distinct lobes (fig. 5a). Eyes indistinct. Frontal lamina regular, relatively short. Antennules and antennae appear to consist of 3 and 4 segments, respectively, Maxillipeds (fig. 6a) ending in a long, recurved palp devoid of setae. Posterior border with two pairs of smooth lamellae, the outer one longer than the inner.

Pereiopods without mediodorsal bosses. Lateral bosses on the first four somites. On the same somites, one finds rudimentary coxal plates. Marsupium closed. First oostegite (fig. 6b) consisting of two parts of about equal size, the posterior part being triangular in shape; internal ridge hardly tuberculated. Remaining marsupial plates very large, in particular the third and the fourth. Pereiopods increasing in size from anterior to posterior, without boss on the basipodite.

Pleon of six somites. Lateral plates long and digitate on the first five somites, decreasing in size posteriorly. Five pairs of pleopods, likewise digitate; endopodite well developed, though shorter than the exopodite; the latter shorter than the corresponding pleural lamina. Uropods simple, resembling the last pleopods.

Male: Length 1.6 mm, width 0.5 mm; pleon 0.5 mm. Cephalon separated from the thorax (fig. 5b). Eyes present. Antennules (fig. 6c) separate, 3-segmented. Antennae 4-segmented. Maxillipeds not distinguishable.

Pereiopods slightly enlarged in its middle section. Pereiopods (figs. 6d-e) having a propodus that changes little in size; the dactylus, which is long and arched in the first two pairs, gets shorter in the next pereiopods, where its

length shifts from two-thirds to less than half of that of the propodus. Each pereionite bears a medioventral tubercle.

Pleon of six somites (fig. 6f). Pleopods bag-shaped, well-developed on the anterior five somites. No uropods; the pleotelson, however, forms two posteroexternal lobes.

Remarks. — As far as the female is concerned, the present material can be classified immediately with the monotypic genus *Metacepon* Nierstrasz & Brender à Brandis, 1931 (compare their key in the same publication). On the other hand, the male morphology disagrees clearly from the diagnosis, by the simultaneous presence of medioventral tubercles and pleopods (hence the proposed specific name), both of which are lacking in the type-species, *M. leidyi*. According to the taxonomic criteria actually used to distinguish the Ceponid genera, one would be justified to create a new genus for the parasite of *Lithocheira setosa*. The erection of a new genus is postponed for the moment, since it appears to us that it is first necessary to revise the different forms of the most closely related genus, *Dactylocepon* Stebbing, 1910, which is distinguished from *Metacepon* by one character only, and in our eyes a character of minor importance, viz. the digitations on the posterocephalic lamellae in the female.

Thanks to the cooperation of Dr. T. Wolff of the Zoologisk Museum,

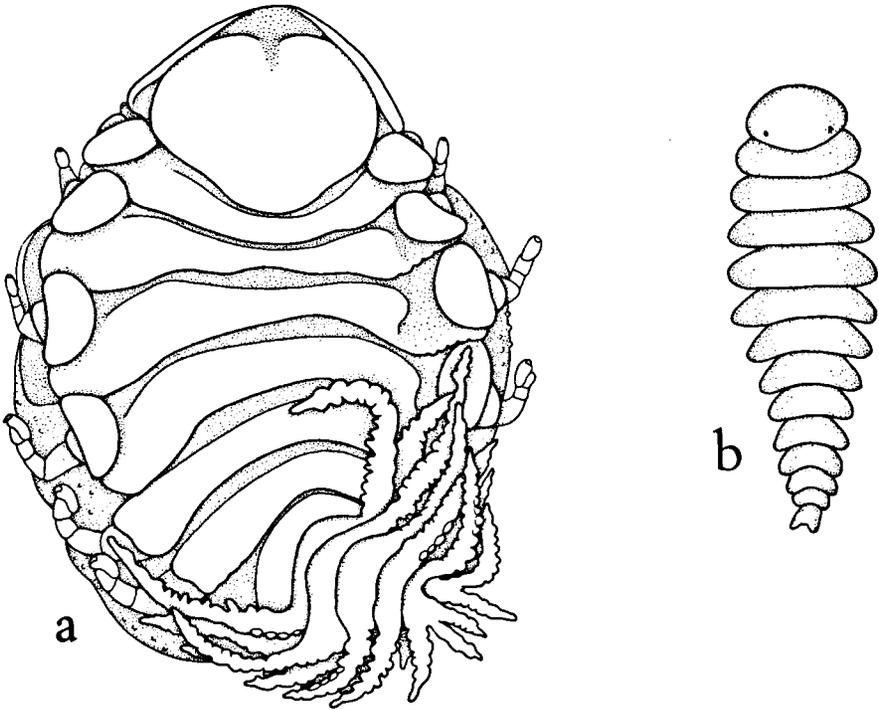


Fig. 5. *Metacepon pleopodata* n. sp. a, female, in dorsal view; b, male, in dorsal view.

Table I. Distinctive characters of the males of the two known species of *Metacepon*.

Character	<i>M. pleopodata</i> n. sp.	<i>M. leidyi</i> Nz. & B. à B.
Antennae	4-segmented; last segment small; segments 3 and 4 with distal setae.	3-segmented; last segment larger; segments 3 and 4 without distal setae, but with a single denticle.
Propodus P1-P2	not much more strongly developed than in P3-P7 (ratio lengths propodus P1/P7 = 1.16).	much longer than in P3-P7 (ratio lengths propodus P2/P7 = 1.40).
Medioventral tubercles	present	absent
Pleopods	bag-like, clearly visible	oval zones appear only after clearing up

Copenhagen, we were able to re-examine the type specimens of *Metacepon leidyi* Nierstrasz & Brender à Brandis, 1931 (fig. 6g-i). We found additional differences between the males of *leidyi* and of the new species in the antennae and in the pereopods (cf. Table I), whereas the female of *M. pleopodata* n. sp. differs only in the longer posterocephalic lamellae and the less digitate pleonal appendages.

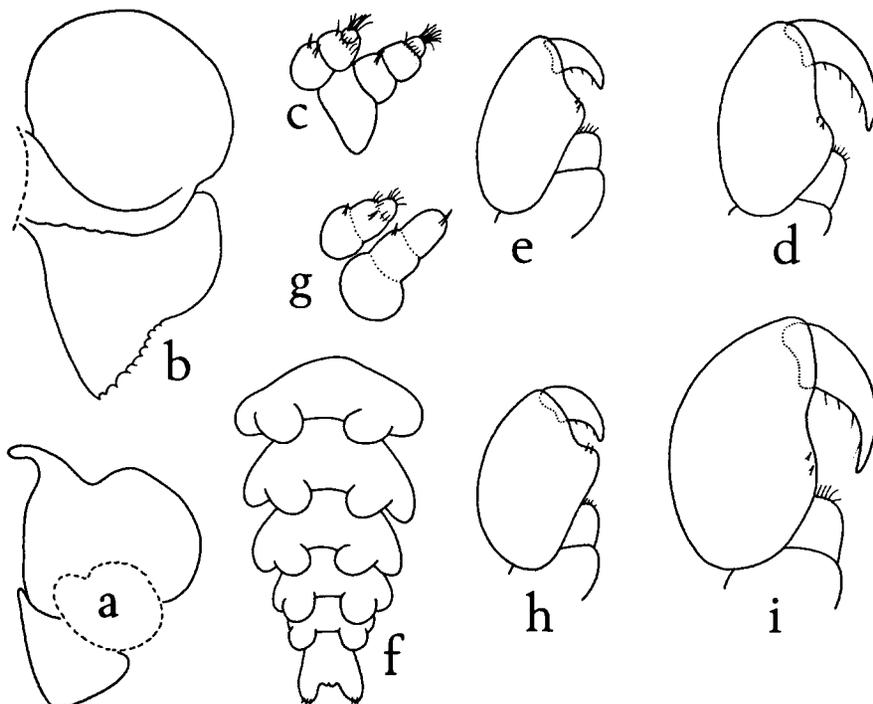


Fig. 6a-f: *Metacepon pleopodata* n. sp. a, maxilliped, ♀; b, first oöstegite, ♀; c, antennule and antenna, ♂; d-e, pereopods 1 and 7, ♂; f, ventral view of the pleon, ♂.

Fig. 6g-i: *Metacepon leidyi* Nierstrasz & Brender à Brandis, 1931, male. g, antennule and antenna; h-i, pereopods 7 and 1.

? *Megacepon* sp. (aff. *Portunicepon goetici* Shiino, 1934.)

Figs. 7—8

Material examined. — 1 ♀ + ♂, on *Metopograpsus oceanicus* Jacquinot & Lucas, Siboga Expedition Sta. 47, Bima Bay, Sumbawa (Flores Sea), 55 m. (Material mentioned by Tesch, 1918b).

Description. — Female: Length (without uropods) 6.6 mm, width 4.1 mm; pleon 1.7 mm. Asymmetry 25°.

Cephalon slightly cordiform, produced, but not clearly bilobate (fig. 7a). Eyes indistinct. Frontal lamina rather narrow. Antennules 3-segmented; antennae 5-segmented. Maxillipeds (fig. 8a) with a digitiform palp. Posterior border (fig. 8b) provided with two pairs of slender lamellae; its median part forming two rounded, flabby lobes.

Pereion with distinct metamerisation, Lateral bosses very pronounced on the first four somites, larger on the right than on the left. Coxal plates not apparent. Mediodorsal bosses (fig. 8c) on somites IV to VI, but not on somite VII. The latter somite is deeply embedded, rounded in section, and very narrow; its diameter is a quarter of the width of the body. Marsupium closed.

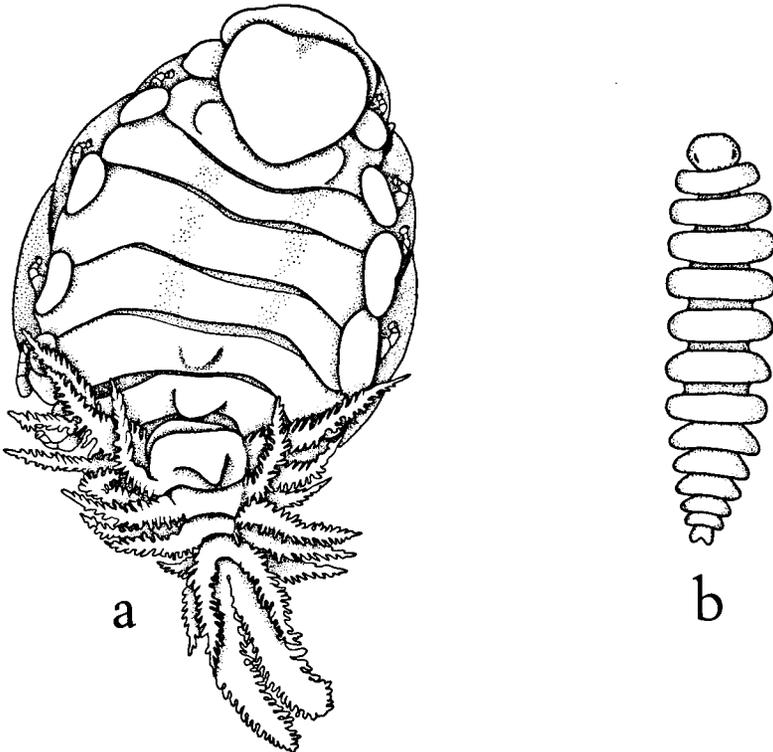


Fig. 7. ? *Megacepon* sp. (aff. *Portunicepon goetici* Shiino, 1934). a, female, dorsal view; b, male dorsal view.

First pair of oöstegites (fig. 8d) with an excavated, subquadrangular anterior portion; the internal ridge is ornamented with some ten digitations, the proximalmost of which being longer than the others; the posterior portion is more or less trapezoidal, very strongly developed, reaching at the left side the level of the lower border of the fourth lateral boss; its contralateral homologous part is a little shorter. The other marsupial plates have a slightly concave anterior margin, and a broadly convex inferior margin; only the last pair bears some, though short, setae; the external surface of this plate is strongly granulated.

Pereiopods resembling those of *Leidyia*, increasing in size towards P5, decreasing subsequently; the very robust basipodite is devoid of a boss and the propodus is miniscule.

Pleon consisting of 6 somites; the second, much more voluminous than the others, forms a median boss which is larger than the bosses on the thorax. Lateral plates (fig. 8e) finely digitated, decreasing in size posteriorly. Pleopods biramous, likewise digitated; endopodite well-developed; the exopodite of pleopods 2 to 5 of the same size as the corresponding lateral plate; this exopodite is twice as long as the right endopodites, $1\frac{1}{2}$ times longer than the left ones; on the first pleonite, the three projections are equal on one side, whereas on the other side the pleural lamina is shorter than the pleopodal exopodite. Uropods simple, very wide, in fact twice as wide as the fifth lateral plates.

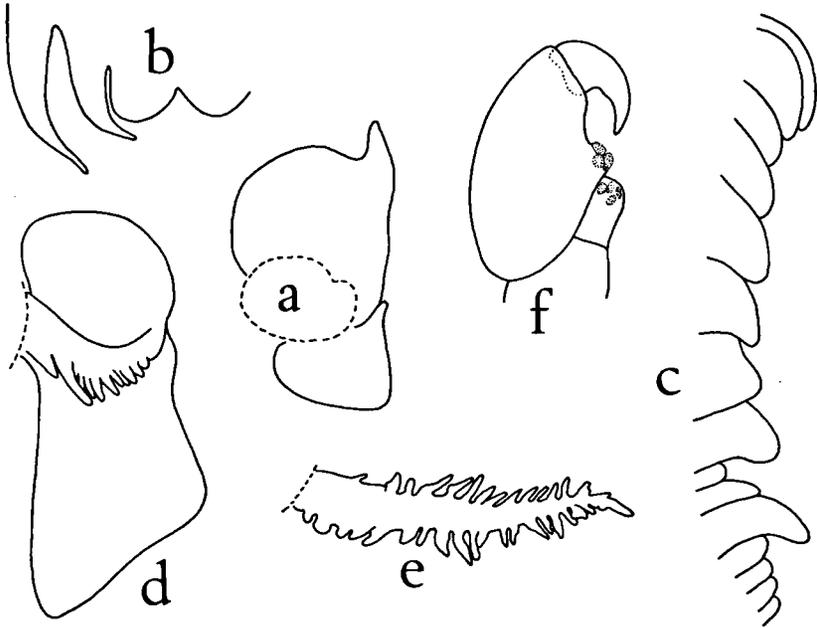


Fig. 8. ? *Megacepon* sp. (aff. *Portunicepon goetici* Shiino, 1934). a, maxilliped, ♀; b, posteroven-tral border of the cephalon, ♀; c, mediadorsal bosses (contour), ♀; d, first oöstegite, ♀; e, lateral plate, ♀; f, pereiopod, ♂.

Male: Length 2.4 mm, width 0.6 mm; pleon 0.7 mm. Cephalon hexagonal, separated from the thorax (fig. 7b). Eyes present. Antennules and antennae consisting of three and five segments, respectively. Maxillipeds not distinguishable.

Pereion with almost parallel borders. Pereiopods (fig. 8f) subequal, ending in a pointed dactylus in all pairs. Each thoracomere bears a medioventral tubercle.

Six pleonites, the last one bifurcated. Pleopods ovoid and rather indistinct. No uropods.

Remarks. — The present parasite belongs to the group of Ceponiids in which the female possesses mediodorsal bosses combined with well-developed pleopodal endopodites, whereas the male is devoid of uropods. This group comprises four genera, *Ergyne*, *Cardiocepon*, *Portunicepon* and *Megacepon*. Since *Cardiocepon* possesses biramous lateral plates in the female sex, and *Ergyne* is devoid of pleopods in the male sex, only two genera are similar to the present material: *Portunicepon* and *Megacepon* (the male of the latter being unknown). Not a single valid character has been brought forward to separate these two genera.

If one refers to the table of the salient generic differences presented by George (1947) upon the creation of his genus *Megacepon*, one must conclude that (1) the table is based only on a single species of *Portunicepon*, viz. *P. cervicornis* (Risso), which is nowadays placed in *Ergyne*; and (2) the characters used are only of secondary importance for diagnostic purposes (relative length of pleopods and uropods), or even completely erroneous (mediodorsal bosses said to be absent, lateral plates so-called poorly developed, whereas the reverse situation is true). The validity of the genus *Megacepon* is implicitly acknowledged by Shiino (1958), who re-described the type-species, *M. choprai*, after a second specimen (unfortunately likewise without male), however without entering upon the question of the separation from *Portunicepon*.

As a matter of fact, the two genera might nevertheless be distinct, since the females are dissimilar in one morphological particularity that seems to be an excellent generic character, viz. the shape of the first pair of oostegites. In the two *Portunicepon* species in which this appendage is illustrated (*P. hendersoni* Giard & Bonnier and *P. monodi* Bourdon), the plates are of the "normal" type, i.e. consisting of two markedly equal parts. In contrast to this, the posterior part of the plate in *Megacepon* is considerably elongated, a situation known only from *Leidya* and *Cardiocepon*. The present Siboga material likewise shows this elongation, and presents still another similarity to *Megacepon*: the tallest mediodorsal boss is situated in the front of the pleon. Admittedly, both George (1947) and Shiino (1958) situate the homologous boss on the seventh pereionite, more in particular on the posterior half of this somite that is divided into two parts by a deep furrow,

which is (in the words of Shiino) “produced into a huge triangular process”. However, fig. 21A of Shiino leaves room for some doubt, as the boss appears to arise from the abdomen, just as in the present Siboga female. The perfect agreement in the contour of the dorsum of the two parasites (fig. 8c) lets one suspect an error in the interpretation of place of the boss. Such an error would be enhanced by the fact that the boss is almost in contact with the last thoracic boss (due to the upturning of the pleon), while it must be admitted that it is located in a quite unusual place for a Bopyrid.

Only three other Ceponiids are provided with a similar boss: *Leidya distorta* (Leidy) and *Cardiocepon pteroides* Nobili (both representing doubtless different genera, the first with long male uropods, the second with double epimeral plates in female), and *Portunicepon goetici* (see Shiino, 1934, 1939b, 1958). With the latter the present Bopyrid from the Siboga agrees also, in the female sex, both in the aspect and in the proportions of the pleural laminae. Unfortunately, Shiino’s descriptive notes reveal nothing on the first pair of marsupial plates, the value of which we just stressed (see also Bourdon & Bowman, 1970).

Summarizing, the parasite of *Metopograpsus oceanicus* appears to differ too strongly from *Megacepon choprai* to be considered the same species (Table II); it is, however, very likely that it is identical with *Portunicepon goetici*, but that the latter has to be transferred to the genus *Megacepon*. We cannot solve this problem right now, since the shape of the first oöstegite of the female of *P. goetici* is unknown, whereas the male sex of *M. choprai* is not known either. If upon discovery this male should show that *Megacepon* and *Leidya* are synonymous, a new genus must be created for the conception of the present material. For the moment, it suffices to designate it as ? *Megacepon* sp. (aff. *Portunicepon goetici* Shiino), just to attract the attention to the systematic problem posed by this Ceponiid.

Table II. Distinctive characters of the females of *Megacepon choprai* George and *M. goetici* (Shiino).

Character	<i>choprai</i>	<i>goetici</i>
Cephalon	divided (cephalo-gaster)	entire
Frontal lamina	restricted to the anterior border of the head	extending to the sides of the head
Internal crest of the 1st oostegite	feebly tuberculated	strongly digitated
Posteroventral cephalic lamellae	inner one the longest	inner one the shortest
Lateral plates	of equal size	decreasing in size caudally

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