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BRACHYURA COLLECTED DURING THE  
THAI-DANISH EXPEDITION (1966)

by

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# BRACHYURA COLLECTED DURING THE THAI-DANISH EXPEDITION (1966)

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## ABSTRACT

The paper studies a collection of benthic brachyura collected off the west coast of Thailand on the Andaman Sea, by the Thai-Danish Expedition in January-February 1966. The collection was made by sorting animals among bottom samples obtained with a grab using a standard procedure, as part of a benthic biomass survey covering a limited area. Among the 67 identified species 4 genera and 7 species are new. The largest specimen (Raninidae) measures 20mm., but the size of the great majority does not exceed 10mm. The main families represented are: Leucosiidae (14 species), Portunidae (13 species), Gonioplacidae (26 species), Pinnotheridae (6 species). The fauna on the soft bottom of the continental shelf is, on the whole, similar to that mentioned by Rathbun (1910) in the Gulf of Thailand and by Stephensen (1945) in the Gulf of Persia and which have been sampled by similar methods.

## INTRODUCTION

The collection was made by sorting the benthic organisms in the bottom samples obtained during the Thai-Danish Expedition. During the expedition itself a preliminary identification of the brachyuran specimens was undertaken by the senior author during a five days stay on board ship in February 1966.

The material having remained only a few days in formalin was still in an almost fresh condition. The senior author was assisted in his work by Dr. Gallardo who was the original sorter. The importance of this close collaboration on the spot between the taxonomist and the sorter should be stressed. Without Dr. Gallardo's great experience in handling very small specimens the present collection would have been much poorer and its final study more difficult.

Six months later, the specimens, after treatment for the calculation of the biomass, were sent to us for study at the National Museum of Singapore. The manuscript of our report was given to the editor in November 1966. Since then, several taxonomical changes having been published, the original draft was accordingly amended in November 1974. The following four genera and five species are new:

*Drachiella* Guinot gen. n.

*Nuciops* gen. n.

*Paranursia* gen. n.

*Singhaplax* gen. n.

*Cryptocnemus siamensis* sp. n.

*Thalamita muusi* sp. n.

*Hexapus stephensi* sp. n.

*Hexapus edwardsi* sp. n.

*Asthenognathus gallardo* sp. n.

No comments or only brief ones are given for the well-known species. Some of our identifications are made with a certain reserve, the study of several species (particularly those of *Typhlocarcinops*) having been entirely discarded. Such material would require further study. Above all, a comparison with specimens previously identified and existing in European or American museums would be necessary.

With more than 60 species, the collection gives an accurate figure for the region of the benthic brachyuran fauna, obtainable by the same sampling method (Petersen's grab). A more extensive survey would probably provide around 100 species of brachyura, which would correspond to the brachyuran fauna of the soft bottom (sand and mud) of the continental shelf in the region. The main families represented are Raninidae, Leucosiidae, Portunidae, Gonioplacidae, Pinnotheridae.

Regarding the investigated biota, the brachyuran fauna of the present collection from the west coast of Thailand (Andaman Sea) is rather similar to that of Rathbun (1910) from the Gulf of

Thailand. The present collection (67 species) with regard to our knowledge of the entire brachyuran fauna of Thailand corresponds to approximately one third. Rathbun (1910) quoted 205 species in her report on the "Danish Expedition to Siam 1899-1900" led by Dr. Mortensen. Her list of species is given in the "Fauna of Thailand" by Chote Suvatti. Serène (1966) corrected this list in accordance with recent nomenclature, adding five species. Recently Mr. Lundoer made

a reference collection of 182 species at the Phuket Marine Biological Center, adding 28 species not previously recorded. The present collection includes 30 unrecorded species; this brings the total of species recorded in Thai waters to 269. Our collection is deposited at the Phuket Marine Biological Center, Phuket, Thailand. All measurements are in millimeters, the first figure indicating the length, the second the breadth of the carapace.

## LIST OF SPECIES

### GYMNOPLEURA Bourne, 1922

#### RANINIDAE Dana, 1852

##### NOTOPINAE Serène and Umali, 1972

1. *Cosmonotus grayi* Adams and White, 1848
2. *Notopus dorsipes* (F., 1798)

##### RANININAE Serène and Umali, 1972

3. *Raninoides personatus* Henderson, 1888
4. *Notosceles serratifrons* (Henderson, 1893)

### OXYSTOMATA H. Milne Edwards, 1834

#### DORIPPIDAE Dana, 1852

5. *Ethusa* sp.

#### LEUCOSIIDAE Dana, 1852

##### EBALIINAE Stimpson, 1858

6. *Drachiella morum* (Alcock, 1896) gen.n. comb.n.
7. *Nuciops modesta* (Ihle, 1918) gen.n. comb.n.

##### CRYPTOCNEMINAE Stimpson, 1858

8. *Nursia Lar* (F., 1798)
9. *Nursia* sp.
10. *Paranursia abbreviata* (Bell, 1855) gen.n. comb. n.
11. *Cryptocnemus siamensis* sp.n.
12. *Onychomorpha lamelligera* Stimpson, 1858
13. *Nursilia tonsor* Alcock, 1898

ILIINAE Stimpson, 1871

14. *Myra elegans* Bell, 1855
15. ? *Myra fugax coalita* Hilgendorf, 1878
16. *Randallia eburnea* Alcock, 1896
17. *Randallia glans* Alcock, 1896
18. *Iphiculus spongiosus* Adams and White, 1848

LEUCOSIINAE Dana, 1852

19. *Leucosia* sp.

BRACHYGNATHA Borradaile, 1907

OXYRHYNCHA Latreille, 1803

MAJIDAE Samouelle, 1819

20. *Acanthophrys longispinosus* (De Haan, 1839)

PARTHENOPIDAE Miers, 1879

21. *Aulacolambrus* ? *whitei* H. Milne Edwards, 1872
22. *Rhinolambrus* sp.

BRACHYRHYNCHA Borradaile, 1907

PORTUNIDAE Rafinesque, 1815

PORTUNINAE Stephenson and Campbell, 1959

23. *Hellenus pulchricristatus* Gordon, 1931
24. *Hellenus* aff. *hastatoides* (F., 1798)
25. *Cycloachelous orbicularis* (Richters, 1880)
26. *Portunus* sp.
27. ? *Carupella* sp.
28. *Thalamita muusi* sp. n.
29. *Thalamita parvidens* Rathbun, 1907
30. *Thalamita* ? *spinifera* Borradaile, 1903
31. *Thalamita* ? *sexlobata* Miers, 1886
32. *Thalamita* sp.
33. *Goniohellenus vadorum* Alcock, 1899

CATOPTRINAE Borradaile, 1903

34. *Libystes edwardsi* Alcock, 1900
35. *Libystes alphonsi* Alcock, 1900

GONEPLACIDAE Dana, 1852

GONEPLACINAE Miers, 1886

36. *Singhaplax ockelmanni* (Serène, 1971) gen.n. comb.n.

37. *Notonyx vitreus* Alcock, 1900  
38. *Typhlocarcinodes hirsutus* Borradaile, 1903

CARCINOPLACINAE H. Milne Edwards, 1852

39. *Carcinoplax longimanus* (De Haan, 1835)  
40. ? *Homoioiplax haswelli* (Miers, 1884)

GONEPLACIDAE PILUMNIAN s. str. Guinot, 1971

41. *Typhlocarcinus rubidus* Alcock, 1900  
42. *Typhlocarcinus* sp. 1  
43. *Typhlocarcinus* sp. 2.  
44. *Typhlocarcinops* sp. (5 or 6 different species)  
45. *Xenophthalmodes dolichophallus* Tesch, 1918  
46. *Ceratoplax ? fulgida* Rathbun, 1914  
47. *Lophoplax takakurai* Sakai, 1935  
48. *Mertonia lanka* Laurie, 1906  
49. *Scalopidia spinosipes* Stimpson, 1858

CHASMOCARCININAE Serène, 1964

50. *Helphthopelta mortenseni* Serène, 1964  
51. *Chasmocarcinops gelasimoides* Alcock, 1900  
52. *Camatopsis rubida* Alcock and Anderson, 1899

EURYPLACINAE Stimpson, 1858

53. *Eucrate* sp.  
54. *Heteroplax nitidus* Miers, 1879

HEXAPODINAE Alcock, 1900

55. *Thaumastoplax orientalis* Rathbun, 1909  
56. *Hexapus sexpes* De Haan, 1835  
57. *Hexapus stephensi* sp.n.  
58. *Hexapus granuliferus* Campbell and Stephenson, 1970  
59. *Hexapus edwardsi* sp.n.

PINNOTHERIDAE H. Milne Edwards, 1852

XENOPHTHALMINAE Alcock, 1900

60. *Xenophthalmus pinnotheroides* White, 1846  
61. *Neoxenophthalmus obscurus* (Henderson, 1893)

ASTHENOGNATHINAE Stimpson, 1858

62. *Asthenognathus gallardoi* sp.n.  
63. *Asthenognathus hexagonum* Rathbun, 1909

PINNOTHERELINAE Alcock, 1900

64. *Pinnixa ? hematostica* Sakai, 1934  
65. *Tetrias fischeri* (A. Milne Edwards, 1867)

OCYPODIDAE Ortmann, 1894

66. *Macrophthalmus* sp. 1  
67. *Macrophthalmus* sp. 2

GYMNOPLEURA Bourne, 1922

RANINIDAE Dana, 1852

NOTOPINAE Serène and Umali, 1972

1. *Cosmonotus grayi* White, 1847

(fig. 1)

*Cosmonotus grayi* White, 1847: 129.—1847a: 227, 2 figs.—1848: 287, 2 figs.—Adams and White, 1848: 60, pl. 13, fig. 3.—Stimpson, 1858: 241.—1907: 181.—Henderson, 1888: 33.—Cano, 1889: 256.—Alcock, 1896: 291.—Doflein, 1904: 51, pl. 18, fig. 5-8.—Borradaile, 1907: 474.—Balss, 1915: 16.—Ihle, 1918: 294.—Stebbing, 1920: 250.—Sakai, 1936: 66, pl. 13, fig. 3.—1937: 173, pl. 14, fig. 2.—1965: 4, pl. 1, fig. 5.—Stephensen, 1945: 96.—Barnard, 1950: 400, fig. 75, h, i.—Tyndale, Bischoe and George, 1962: 90, fig. 8.—Takeda and Miyake, 1970: 197, fig. 1A, G-6 and 3C, D.—Takeda, 1973.

Not *Cosmonotus grayi* Yokoya, 1933: 113—*Cosmonotus genkaiiae* Takeda and Miyake, 1970.

TYPE LOCALITY: Borneo

TYPE SPECIMEN: British Museum (N.H.), London.

MATERIAL: Sta. 1011-4, 1A, male of 8 × 10, largest.—Sta. 1012, 1 specimen smaller.—Sta. 1012-7, 1—Sta. 1012-8, 1.—Sta. 1012-4, 1. Ph. 201/1\*

OBSERVATIONS: The species is widely distributed in the Indo-Pacific region and from 20 to 200m. deep. The second species of the genus, *genkaiiae* Takeda and Miyake, 1970 is known only by 3 specimens from the waters around Japan.

2. *Notopus dorsipes* (L., 1758)

*Cancer dorsipes* L., 1758: 630

*Albunea dorsipes*, F., 1798: 397

*Ranina dorsipes*, Latreille, 1825: 133.—Henschel, 1833: 204.—H. Milne Edwards, 1837: 195.

*Notopus dorsipes*, De Haan 1841: 139, pl. 35, fig. 5.—Alcock, 1896: 290.—De Man, 1902: 103.—Nobili, 1905: 7.—Laurie, 1915: 429.—Ihle, 1918: 284.—Balss, 1922: 122.—Yokoya, 1933: 112.—Sakai, 1934: 284.—1936: 66, pl. 13, fig. 1.—1937: 175, pl. 16, fig. 1.—1965: 1, pl. 1, fig. 1.—Monod, 1938: 101.—Holthuis, 1959: 108.—1962: 55.—Utinomi, 1960: 73, pl. 37, fig. 2.—Tyndale, Bischoe and George, 1962: 92.—Holthuis and Levinsohn, 1964: 56.

TYPE LOCALITY: Ambon, Indonesia.

TYPE SPECIMEN: Iconotype in Rumphius, 1705: 29, pl. 10, fig. 3 as *Pediculus Marinus*.

MATERIAL: Sta. 1015-1, size: 6 × 8

OBSERVATIONS: The species is widely distributed in the Indo-Pacific region. Serène and Umali (1972: 32) suggested that the genus *Notopus* should be restricted to the single species *dorsipes* and that the other two species *ovalis* and *misa-kiensis* be removed to a different genus aff. *Ranilia*.

RANININAE Serène and Umali, 1972

3. *Raninoides personatus* Henderson, 1888

*Raninoides personatus* White, manuscript.—Henderson, 1888: 27, pl. 2, fig. 5.—Alcock, 1896: 293.—Ihle, 1918: 317 (no specimen).—Bourne, 1922: 73, pl. 4, fig. 5, 6; pl. 6, figs. 36, 37; pl. 7, figs. 48-50.—Yokoya, 1933: 113.—Chopra, 1933: 52, text fig. 1a, pl. 3, figs. 2-2a.—Sakai, 1937: 167.—1940: 46.—Tyndale, Bischoe and George, 1962: 92.—Serène and Umali, 1972: 37, text figs. 7-14, 31; pl. 2, figs. 6-8.

TYPE LOCALITY: Ambon, Indonesia.

TYPE SPECIMEN: British Museum (N.H.), London.

MATERIAL: Sta. 1004-10, male of 20 × 10

\* Phuket Marine Biological Center reference collection numbers.

4. *Notosceles serratifrons* (Henderson, 1893)

*Raninoides serratifrons* Henderson, 1893 : 408, pl. 38, fig. 10-12.—Alcock, 1896 : 293.—Laurie, 1906 : 367.—Stebbing, 1920 : 250.—Chopra, 1933 : 86, pl. 3, text-fig. 1e.—Sakai, 1936 : 67, pl. 14, fig. 2—1937 : 116, pl. 16, fig. 3, text-fig. 37.—1965 : 2, pl. 1, fig. 4.—Barnard, 1950 : 399, fig. 75e-g.

*Notosceles serratifrons*, Ward, 1942 : 48.—Serène and Umali, 1972 : 44, text-fig. 34.

TYPE LOCALITY : Ceylon (Cheval Par)

TYPE SPECIMEN : British Museum (N.H.), London.

MATERIAL : Sta. 1032-1; size : 20 × 11.—Sta. 1011-4; smaller specimen. Ph. 202/1

OBSERVATIONS : The large specimen is a female and has been studied by Serène and Umali (1972).

OXYSTOMATA H. Milne Edwards, 1834

DORIPPIDAE Dana, 1852

5. *Ethusa* sp.

(Pl. I, fig. A)

MATERIAL : Sta. 1020-3, male of 5 × 4

OBSERVATIONS : Our specimen differs from all the described species of *Ethusa* by : 1) the spout formed by the efferent branchial channel, which extends not only far beyond the level of the antennular basal segment, but far beyond the front, being well visible from dorsal view. 2) the frontal teeth which are remarkably short. In spite of its small size, the pleopods of the specimen are developed. Taking into consideration our personal lack of experience for the identification of the *Ethusa* species, we prefer to discard any further comment on the specimen, which still need to be studied.

LEUCOSIIDAE Dana, 1852

EBALIINAE STIMPSON, 1858

6. *Drachiella morum* (Alcock, 2896) comb. n.

Guinot

(fig. 2)

*Actaeomorpha morum* Alcock, 1896 : 172, pl. 8, fig. 3.—*Illus. Invest.*, pl. 28, fig. 4.—Ihle, 1918 : 308 (no specimen).—Chopra, 1936 : 480.—Edmonson, 1935 : 20.—Sakai, 1937 : 116, text-fig. 13; 1965 : 35, pl. 15, fig. 3.—Serène, 1954 : 458, pl. 7 and text-fig. 1,2.—Zarenkov, 1969 : 16, fig. 1(1).—Takeda and Miyake, 1970 : 218.

“Aff. *Oreophorus*” *morum*, Guinot 1966 : 757.—Serène, 1968 : 42.

*Oreophorus rugosus* Yokoya, 1933, not *O. rugosus* Stimpson 1858; vide Takeda and Miyake (1970).

TYPE LOCALITY : Ganjam Coast, India

TYPE SPECIMEN : Zoological Survey of India, Calcutta

MATERIAL : Sta. 1016-6, 1 male of 5 × 6

OBSERVATIONS : Since Guinot (1966) removed the species from *Actaeomorpha* Miers, 1878 and classified it as aff. *Oreophorus*, the generic position of the species was uncertain. We have been informed that Mme. Guinot in a manuscript under preparation has already included it in *Drachiella* gen.n. She has communicated to us the diagnosis of the new taxon, which, with her kind permission is given below in order to give priority of the generic name to Mme. Guinot. The present specimen is well characterized by the presence of mushroom like tubercles ornamenting the carapace and is identical with the specimens from the Nhatrang Bay, identified by Serène (1954). Zarenkov (1969, fig. 1.1, 1.2) figured the male pleopods of *Drachiella morum* and *D. lapillus*. *Drachiella* is easily separated from *Oreophorus*, *Tlos* and *Oreotlos*, by the shape of the chelipeds and particularly of their fingers. Ihle (1918) had already indicated this character for the separation of *Oreophorus s.l.* from *Actaeomorpha*. On *Drachiella* the fingers of the chelipeds are straight, triangular and short; their length does not exceed the length of the palm. On all species of *Oreophorus*, *Tlos*, *Oreotlos* the fingers of the chelipeds are curved, concave inside, approximately twice as long as the palm and mainly the fixed fingers are flattened like a blade. These differences in the fingers are obvious when comparing the chelipeds of *Actaeomorpha morum* illustrated by Serène (1954, pl. 7, fig. 9, 10) with, for example, those of

*Oreophorus reticulatus* figured by Adams and White (1848, pl. 6, fig. 1) or *O. rugosus* figured by Serène (1954, pl. 8, figs. 4, 7).

### *Drachiella* Guinot gen. n.

*Actaeomorpha* auct., pro parte (notamment Alcock, 1896, *J. Asiat. Soc. Beng.* 65(2) No. 2: 172.—Ihle, 1918, Siboga-Exped., Monogr. XXXIXb2: 208.—Serène, 1954 *Treubia*, 22(3): 455. nec *Actaeomorpha* Miers, 1878, *J. Linn. Soc. (Zool.)*, 13: 184. *Lithadia*, Haswell, 1880, (nec Beil, 1855), *Proc. Linn. Soc. N.S.W.*, 4 (1): 57.

"Aff. *Oreophorus*" Guinot, 1966, *Bull. Mus. natn. Hist. nat.*, Paris, 38(5): 759-761.—*Idem*, 1966(1967), *Ibid.* 38(6): 828-845.

ESPÈCE TYPE : *Lithadia sculpta* Haswell, 1880 = *Actaeomorpha sculpta* (Haswell) (cf. Griffin, 1972, *Steenstrupia*, 2,(5):62, fig. 2 : photographie de l'holotype).

DIAGNOSE : Carapace convexe, largement subovale, sans élargissement postérieur. Test couvert d'ornements simples ou en forme de champignon. Face dorsale parcourue de sillons plus ou moins profonds, au tracé caractéristique. Front épais et large. Orbites relativement bien développées, visibles en vue frontale, complètement closes. Cornée non rudimentaire et bien distincte. Antennules repliées obliquement. Article basal antennaire présent, très apparent, même en vue dorsale. Cadre buccal oxystomien, avec contact sterno-ptérygostomien. Mxp 3 avec exopodite et endopodite très développés, en avant desquels débouchent les canaux respiratoires, respectivement afférent et efférent. Chélipèdes pas plus longs que la carapace; main courte et large; doigts acérés. Abdomen mâle étroit, couvrant en longueur la presque totalité du sternum. Abdomen femelle discoïde.

REMARQUES : Nous renvoyons à nos notes préliminaires (1966-1967), où nous expliquons que, sous le nom d'*Actaeomorpha* Miers, deux groupes de Crabes extrêmement différents ont été confondus. Le premier groupe, qui contient l'espèce type d'*Actaeomorpha*, *A. erosa* Miers, 1878, ct, à notre connaissance seulement deux autres espèces, *A. punctata* Edmondson, 1935, et *A. alvae* Boone, 1934, n'appartient pas aux Leucosiidae et n'a pas les caractères des Oxysto-

mata typiques. C'est à ces seuls Crabes que peut s'appliquer la dénomination générique d'*Actaeomorpha*. Le genre *Actaeomorpha* Miers, emend., s'apparente aux genres *Aethra* Leach, *Osachila* Stimpson, *Hepatus* Latreille et *Hepatella* Smith. Ainsi, des formes jusqu'à présent rattachées, d'une part, aux Oxyrhyncha Parthenopidae (*Aethra*) et, d'autre part, aux Oxystomata, soit Calappidae Matutinae (*Hepatus*, *Osachila*, *Hepatella*), soit Leucosiidae Eballinae (*Actaeomorpha* emend.), sont réunies par des liens de filiation incontestables et entrent dans une division appelée pour l'instant Aethrinae (= Hepatinae).

Le deuxième groupe renferme des Crabes Oxystomiens typiques, de vrais Leucosiidae Eballinae: c'est pour lui, provisoirement baptisé "aff. *Oreophorus*" dans nos notes préliminaires que nous créons l'appellation de *Drachiella* gen. nov. (genre dédié au Prof. P. Drach). Les affinités du genre nouveau avec les genres les plus proches, tels que *Oreophorus* Rüppell (espèce type : *O. horridus* Rüppell) et ses alliés, seront précisées ultérieurement. Nous choisissons comme espèce type, la *Lithadia sculpta* Haswell, 1880, rapportée par la suite au genre *Actaeomorpha*. Le genre *Drachiella* gen. nov. accueille d'autres ex-*Actaeomorpha*. Ce sont sous toutes réserves : *Actaeomorpha morum* Alcock, 1896; *A. lapillus* Alcock, 1896; *A. aglypha aglypha* Laurie, 1906; *A. aglypha angulata* Ihle, 1916.

*Actaeomorpha* Miers, emend., et *Drachiella* gen. nov. ont un habitus similaire (forme de la carapace et des péréiopodes, ornementation du test) ainsi qu'un système respiratoire de type analogue, mais il s'agit seulement d'un phénomène de convergence.

### *Nuciops* gen. n.

TYPE SPECIES: *Nucia modesta* Ihle, 1918.

DIAGNOSIS : Carapace subglobular, faintly hexagonal, slightly flattened dorsally without marked region, excepting cardiac region on adult male. Surface of carapace and chelipeds entirely



covered with small granules; ambulatory legs, slim and smooth, with long straight dactylus. Male abdomen with formula  $1 + 2 + R + 6 + T$  and a swelling on each side of segment 3. Male pleopod 2 as long as pleopod 1, both with an acuminate apex crossing one over the other (see Zarenkov, 1969, fig. 1.5 for *modesta*).

**OBSERVATIONS :** Ihle (1918), describing *modesta*, remarked that it differs from the other typical *Nucia* species by its carapace and particularly by its longer chelipeds and smooth pereopods with straight dactylus. Serène (1957), studying *Nucia bouvieri*, which is the species closest to it, again stressed that *modesta* was markedly different from all the other species of *Nucia*. Our comparison of its male pleopods with those of the typical *Nucia* species shows clearly that *modesta* does not belong to *Nucia*. The male pleopods of any species of *Nucia* having not yet been published, we illustrate the male pleopods of the lectotype of *Nucia rosea* Nobili, 1906 (fig. 4). The lectotype, selected by us among the series of paratype specimens which are deposited in the collection of the Paris Museum, is a male of  $9.5 \times 11.5$ . The pleopods of *Nucia* with the second pleopod much shorter than the first, belong to a type entirely different from that of *Nuciops*.

*Nuciops* is separated from *Nucia* by : 1) a smaller size, maximum 5 instead of 8-11 for *Nucia*. 2) the male chelipeds longer with palm much less swollen. 3) the ambulatory legs long, slim, smooth with straight setose dactylus instead of being short, stout, granular with dactylus like a chitinous hook on *Nucia*. 4) the second male pleopod as long as the first instead of being much shorter. *Nuciops* is a monotype Indo-Pacific genus. The position of *Nuciops* in the Ebalinae needs to be reconsidered. If only by the type of its male pleopods, the genus is closer to *Praebebalia* than to any other genera of the Leucosiidae.

7. *Nuciops modesta* (Ihle, 1918) comb. n.  
(fig. 3 and Pl. I, fig. B)

*Nucia modesta* Ihle, 1918:223, fig. 125.—Serène, 1954:485, fig. 5, 8a, pl. 10, fig. 1-2.—1957:164 and pl. 7c.—Zarenkov, 1969:18, fig. 1.5, 3.1-5.

**TYPE LOCALITY :** Sala Besi (Celebes)

**TYPE SPECIMEN :** ? Amsterdam Museum

**MATERIAL :** Sta. 1046-8, 1 male of  $3 \times 4$ .—Sta. 1046-4, Sta. 1023-3, Sta. 1047-1, juveniles. Coll. Serène, male of  $3 \times 3.75$ ; loc. Manila Bay, Philippines. Coll. May 1964. Ph. 203/1

**OBSERVATIONS :** Zarenkov (1969) illustrated the two male pleopods of the species; their particularities confirm that *modesta* does not belong to *Nucia*. The material of the present collection no longer being in our hands, a male of  $3 \times 3.75$  from the Philippines is illustrated. Its carapace differs from the figures of the authors by its cardiac region being more clearly delimited and more swollen; this is characteristic of the adult male.

Zarenkov (1969) gave a fine drawing of the pleopods 1 and 2 in their natural position, with the greatest part of the pleopod 2 invaginated into the pleopod 1, but made no comment. It is relatively hard to separate one pleopod from the other and perhaps in doing so some slight damage had occurred in the subdistal part of our pleopod 1; however our figures are rather similar to the figures of Zarenkov. Probably also some slight differences are related to a different position on the slide prepared for the microscopical drawing. The subproximal part of pleopod 1 presents 3 long and slim spines (setae-like) on one side and 4 short and strong spines on the other side; the former are situated a little in front of the entrance of the pleopod 2 into the pipe of the pleopod 1. The pleopod 2 at the same level presents a slight narrowing and strengthening, as it is usual in that type of pleopod 2. The preapical structures of the pleopod 1 are complicated, probably in connection with the working of the pleopod 2.

The species is little recorded : 1 male and 2 females by Ihle (1913), one female by Serène (1954), 1 male of  $4 \times 4.3$  by Serène (1957), 2 males and 2 females by Zarenkov (1969). The largest recorded specimen is a male of  $4.25 \times 4.25$  (Ihle).

CRYPTOCNEMINAE Stimpson, 1858

8. *Nursia lar* (F., 1798)

(Pl. I, fig. C)

*Parthenope lar* F., 1798:354.

*Nursia hardwicki*, Leach, 1817:20.—H. Milne Edwards, 1837:137.—Alcock, 1896:181.—Laurie, 1906:359.

*Nursia lar*, Rathbun, 1910:306.—Ihle, 1918:236.

?*Nursia plicata*, Bell, 1855:127, pl. 34, fig. 4.—Stimpson, 1858:161.—1907:160.—Miers, 1877:240, pl. 38, fig. 28.—Haswell, 1882:127.—De Man, 1881:129.—Walker, 1881:111.—Henderson, 1893:404.

Not *Cancer plicata* Herbst, 1803:10, pl. 59, fig. 2.

Not *Nursia plicata*, Alcock, 1896:180.—Tesch, 1918:235.—Sakai, 1955:107.—1965:39.—Stephensen, 1945:70, fig. 6c.

MATERIAL : Sta. 1022-3, immature female of 7×6.

OBSERVATIONS : The adult male and female are 13-14 in size and the specific character concerning the length of the merus of the cheliped cannot serve to identify our immature female. However the quadridentate frontal border and the sharp teeth of the lateral and posterior border of the carapace are characteristic of *lar*. Taking into consideration the uncertain specific value of these characteristics, the separation of *lar* from the closely related species *plicata* and *sinuata* needs clarifying. The male pleopods of *plicata* have been illustrated by Stephensen (1945, fig. 6c) and that of *sinuata* by Campbell and Stephenson (1970, fig. 9b); that of *lar* is still unknown. Sakai (1937) considered in his key that *Nursia* was an intermediate genus between the Ebalinae and the Iliinae; we classify it among the Cryptocneminae, a subfamily discarded by Sakai (1937) as well as by other authors.

9. *Nursia* sp.

MATERIAL: Sta. 1011-2, damaged specimen.

*Paranursia* gen. n.

TYPE SPECIES : *Nursia abbreviata* Bell, 1855.

DIAGNOSIS : Carapace strongly flattened (almost laminar) of suborbicular outline with laminar sinuous granular border. A granular longitudinal ridge from front to cardiac region; a granu-

lar gastric rise from which an oblique slight epibranchial ridge runs on each side; no trace of hepatic ridge. On chelipeds a granular line along borders of trigonal merus and slightly swollen palm. Ambulatory legs with borders finely granular and carinate. Male abdomen with segments 3-6 united into one piece with subdistal median denticle. Male pleopod straight of same breadth all along, short subdistal setae, apex multilobate with chitinous pieces. (See Stephensen, 1945, fig. 6a).

OBSERVATIONS : The male pleopod 1 of *abbreviata* presents a type similar to that of *Leucosia* and is mainly characterized by its apical region. The length of the pleopod 2 is approximately one third of the length of pleopod 1.

The apical region of the pleopod 1 has a brown (chitinous) coloration contrasting with its white stem, from which it is separated by an oblique transverse line. Its length is nearly half (0.43) of the total length of the pleopod and several lobes with spinules or chitinous processes can be distinguished on its distal part. On the figure of Stephensen (1945) three special processes are designated by *a*, *b*, *c*. A fourth one is designated by *d* on our drawing. Further observations are still necessary before being able to precisely position those structures in regard to the opening of the spermal canal and to suggest an interpretation of their role. It is, however, already obvious that *abbreviata* cannot be maintained in *Nursia*, nor included in *Leucosia*.

The genus *Nursia* Leach, 1817 is still heterogeneous; it probably will have to be limited *s. str.* to the species of groups "A" of Ihle (1918), the other species being distributed into other genera, some existing, some new ones to be established. The genus *Ebalia*, particularly with regard to its Indo-Pacific species, is in a similar situation; we believe that *Ebalia* is probably not represented in the Indo-Pacific region. It is possible that *Ebalia orientalis* Kossmann, 1877 belongs to *Paranursia* which we are establishing as a monotypic Indo-Pacific genus. In spite of its similar aspect, *Nursia rubifera* Muller, 1886 has relation to

*Paranursia abbreviata*; Peyrot-Clausade and Serène (manuscript) have established the species of Muller as synonymous with *Leucisca squalina*. *Paranursia* gen.n. belongs to the Cryptocneminae.

10. *Paranursia abbreviata* (Bell, 1855)  
comb. n.

(fig. 5 and Pl. I, fig. D)

*Nursia abbreviata* Bell, 1855:308, pl. 34, fig. 5.—Miers, 1884:253.—Henderson, 1893:404.—Alcock, 1896:185.—Ihle, 1918:235.—Hale, 1928:103, fig. 26 and 27.—Stephensen, 1945:69, fig. 6A.—Pillai, 1951:10.—Campbell and Stephenson, 1970:249, fig. 10.

TYPE LOCALITY : Indian Ocean

TYPE SPECIMEN : British Museum (N.H.) London.

MATERIAL : Sta. 1024-7, male of 3×3.—Copenhagen Mus., male of 6×6: Loc. Gulf of Iran, coll. Tharson; det. Stephensen, 1945. Ph. 204/1

OBSERVATIONS : The largest specimens recorded are a male of 9 and a female of 10 by Alcock (1896); Stephensen (1945) illustrated the male pleopod 1 of a specimen of 7; our specimen is much smaller. The male pleopods figured by us are those of a larger specimen, belonging to the series identified by Stephensen (1945) and which has been kindly lent to us by the Zoological Museum of Copenhagen. The particularities of the male pleopods, as well as several other characteristics justify the removal of *abbreviata* to a different genus, which is described above as *Paranursia* gen.n.

11. *Cryptocnemus siamensis* sp. n.

(Fig. 6 and Pl. II, fig. C)

TYPE SPECIMEN: Phuket Marine Biological Center, Phuket, Thailand.

MATERIAL : Sta. 1011-2, holotype, male of 4.2×7.8

DIAGNOSIS : Carapace nearly twice broader than long, strongly flattened with laminar borders; a median dorsal weak gastric elevation; outline of carapace transversally oval with lateral wings convex, devoid of any salient lateral or postero-lateral angle. Front obtusely triangular. Che-

lipeds relatively weak with trigonous merus, propodus elongated, twice as long as high; pereopods strongly carinated. Male abdomen triangular with strong median tooth on proximal border of segment 6. Male pleopod 1 with a subdistal bunch of 5 long setae.

OBSERVATIONS : The species differs from all species of *Cryptocnemus* by the weakness of its chelipeds; the propodus of the chelipeds of all other species as long or just a little longer than high. The species most closely related to *siamensis* are *aberrans* Balss, 1938 and *planus* Ward, 1933. The species of Ward, only known by the holotype (a male of 6) from an island off Queensland and deposited at the Australian Museum, was not quoted by Balss (1938) when he described *aberrans*. Comparison between specimens of the two species which are perhaps identical and particularly of their male pleopods will be of particular interest. The species of Balss was described for a single female of 4.7×7.7 from the Solomon Islands. Zarenkov (1968) and Takeda (1972) provided an accurate illustration of male specimens, including their pleopods; their specimens are respectively 5.5 and 4×6.3 in size.

Our specimen of *siamensis* originally was identified by us as *aberrans* from which it differs by: 1) the median dorsal post frontal ridge. 2) the pterygostomian region less salient. 3) the chelipeds weaker and pereopods 2-5 slimmer. 4) the male pleopod; for *aberrans*, the figure of Zarenkov (1968) seems to be more accurate than that of Takeda (1972).

The examination of the known male pleopods of several species of *Cryptocnemus* clearly demonstrates that they are not congeneric. The necessary revision of the genus might give full consideration to the type of the still unknown male pleopod of *pentagonus*, which is the type species. Until such a revision is made, *siamensis* is described as *Cryptocnemus* with some reserve.

We had the opportunity to examine the type specimen of *C. mortenseni* Rathbun 1909. It is

a small male of 3×3.8 with its pleopods not yet developed and in our opinion, it is only a juvenile of *pentagonus*.

12. *Onychomorpha lamelligera* Stimpson, 1858

(fig. 7 and Pl. III, figs. A,B.)

*Onychomorpha lamelligera* Stimpson, 1858: 162.—1907: 164, pl. 19, fig. 9, 9a.—Walker, 1887: 111, pl. 8, fig. 3.—Alcock, 1896: 236.—Rathbun, 1910: 311.—Ihle, 1918: 317 (no specimen).

TYPE LOCALITY : Hong Kong

TYPE SPECIMEN : ? Lost

MATERIAL : Sta. 1022-2, female of 5×5.—Copenhagen Mus., male of 6.5×6. Loc : Gulf of Thailand; Coll : Mortensen; det : Rathbun, 1910.

OBSERVATION : The specimen perfectly agrees with the observations and illustrations of Stimpson (1858, 1907) for a single male of 6.10×5.6 from Hong Kong. Alcock (1896) recorded a single female of 7×6.5 from Palk Straits. Rathbun (1910) 1 male and 1 ovigerous female from the Gulf of Thailand. We illustrate (fig. 5, C, D) the pleopod of the male specimen of Rathbun which have been kindly lent to us by the Zoological Museum of Copenhagen.

13. *Nursilia tonsor* Alcock, 1896

(fig. 8 and Pl. II, figs. A, B)

*Nursilia tonsor* Alcock, 1896: 261.—Ihle, 1916: 245, 303, 312.—Zarenkov, 1969: 24, fig. 5(4).—Takeda, 1973: 30.

TYPE LOCALITY : Andaman Sea.

TYPE SPECIMEN : Zoological Survey of India, Calcutta.

MATERIAL : Sta. 1016-2, male of 5×5.5.—Sta. 1011-10, 1 juvenile.—Sta. 1011-3, 1 juvenile.

OBSERVATIONS : Some years ago (1964), the senior author had the opportunity to reexamine and photograph the type specimen of *tonsor* at the Zoological Survey of India, Calcutta. The photograph in our hands leaves no doubt that

our specimen is identical to Alcock's species, but the validity of the species as distinct from *dentata* must be considered. *N. dentata* is relatively well illustrated by various authors. On the contrary, with the exception of its male pleopod (Zarenkov, 1969), no figure of *tonsor* has yet been published. Alcock (1896) separated *tonsor* from *dentata* with regard to: 1) smaller size. 2) a different surface pattern of the dorsum of carapace, the teeth of lateral margin and ridges and spines of dorsum being also much more sharply curved. 3) The palm of cheliped less swollen, with fingers crestiform on their outer edges. Zarenkov (1969) illustrated the male pleopod of *tonsor* (fig. 5.4) with a specimen of 5.4 and the of *dentata* (fig. 5.5) with a specimen of 6.5. The pleopod of *tonsor* differs from that of *dentata* by the two distal branches being closer to each other, the outer branch being straight and ornamented with spinules, more numerous and differently arranged. Considering that *tonsor* is always recorded with specimen smaller in size than those of *dentata*, it may be thought that *tonsor* is only a junior form of *dentata*, their differences being merely of intraspecific value. Our specimen of *tonsor* was compared with several specimens of *dentata* of various origins, particularly with a male of 6.5×8.0, which has been used for our illustrations and is recorded below. Our comparison confirms that between *tonsor* and *dentata*, the discrepancies described by Alcock (1896) and illustrated by Zarenkov (1969) exist. However a detailed study of a large series of specimens of various sizes is still necessary to confirm the validity of *tonsor* as a distinct species from *dentata*; the species *s.l.* has a wide Indo-Pacific geographical distribution from the Red Sea (Monod) to South Africa (Kensley), from Australia (Haswell) to Japan (Takeda and Miyake).

*Nursilia dentata* Bell, 1855

(Pl. II, fig. C)

*Nursilia dentata* Bell, 1855: 309, pl. 34, fig. 6.—Stimpson, 1858: 161.—1907: 160.—Haswell, 1879: 404.—1882: 128.—Miers, 1884: 158, 253, 518, 548.—Pocock, 1890: 73.—Alcock, 1896: 260.—Borradaile, 1903: 439.—Rathbun, 1911: 203, pl. 15, fig. 6.—Ihle, 1918: 244.—Sakai, 1937: 122.—Monod, 1938: 98, fig. 3.—Sankarankutty, 1962b: 156, fig. 6, 7.—Zarenkov, 1969: 24, fig. 5(5).—Kensley, 1969: 162, fig. 5 a-e.—Takeda and Miyake, 1970: 222, fig. 6.

TYPE LOCALITY : Indian Ocean.

TYPE SPECIMEN : British Museum (N.H.), London

MATERIAL : Male of 6.5×8.0, Manihine Cruise 336, Station 39, D-5, dredge 15 fm., 21/2/72, Coetivy Island, Coll: A.J. Bruce.

ILIIINAE STIMPSON, 1871

#### 14. *Myra elegans* Bell, 1855

(fig. 9 and Pl. III, fig. D)

*Myra elegans* Bell, 1855a: 297, pl. 32, fig. 4a-b.—1855b: 13.—Alcock, 1896: 208.—Ihle, 1918: 261.

*Persephona elegans* Rathbun, 1910: 309, pl. 1, fig. 12.

TYPE LOCALITY : Oriental seas.

TYPE SPECIMEN : British Museum (N.H.), London.

MATERIAL : Sta. 1035-8, male of 11×6.—Specimen 377, male of 16×8, from Indonesia.

OBSERVATIONS : As our specimen is immature the male pleopod of a larger specimen from Indonesia is illustrated. A species described from one single incomplete specimen is rarely recorded. Alcock (1896) quoted 4 males and 1 female off the Madras and the Arakan coast, at a depth of 12-13 fathoms; the largest male was 12×8 and the largest female 15.5×10.5. Rathbun (1910) mentioned numerous specimens from various localities in the Gulf of Thailand, the largest male being 19.5×10.5, the largest female 18.5×10.4; Ihle (1918), only a juvenile male of 7.75×5.75 from Madura Straits; Chopra (1933), 2 females and 1 male from the mouth of the River Hooghly, the male being (excluding terminal spine) 15×10.5. The senior author identified numerous specimens from Indonesian waters, deposited in the collection of the Marine Research Institute in Jakarta. The specimen (377) illustrated here is one of them.

#### 15. *Myra coalita* Hilgendorf, 1878

*Myra coalita* Hilgendorf, 1878: 812, pl. 1, fig. 6.—Cano, 1889: 253.

*Myra fugax* var. *coalita* Miers, 1886: 314.—Ortmann, 1892: 582: 1894: 36.—Sakai, 1937: 136, text-fig. 23.

*Myra affinis* Stimpson, 1858, ?; 1907: 153 Not *affinis* Bell, 1855 and other authors (vide Sakai 1937: 134).

*Myra dubia* Miers, 1879: 42.

TYPE LOCALITY : Zanzibar

TYPE SPECIMEN : ?

MATERIAL: Sta. 1010-6, male of 9×7.—Sta. 1020-4, 1 smaller male.—Sta. 1000-5, 1 juvenile.—Sta. 1020-6, 1 juvenile. Ph. 205/1

OBSERVATIONS : The type specimen is a male of 15 and Sakai (1937) recorded a female of 21×10.5. Our largest specimen is an immature and the male pleopod of the species is still unknown. The species is recorded from Zanzibar (Hilgendorf), Japan (Miers, Ortmann, Sakai) and Amboina (Ortmann). The identity of *dubia* with *coalita* was established by Miers (1886).

#### 16. *Randallia eburnea* Alcock, 1896

(Pl. III, fig. C)

*Randallia eburnea* Alcock, 1896: 197; Illus. Invest., 1897: pl. 30, fig. 4.—Ihle, 1918: 246.—Sakai, 1934: 289, pl. 18, fig. 4.—1936: 54, pl. 9, fig. 3.—1937: 132, text-fig. 22.—1965: 42, pl. 17, fig. 1.—Utinomi, 1960: 72, pl. 36, fig. 8.—Tyndale and Biscoe, 1962: 87, fig. 7(7).—Chang, 1963: 101, text-fig. 1.—Zarenkov, 1969: 24, fig. 7.3.—Takeda and Miyake, 1970: 225.—Campbell, 1971: 41.—Takeda, 1973: 32, fig. 3E, F.

*Randallia japonica* Yokoya, 1933: 130, fig. 46.

Not *Randallia eburnea* Zarenkov, 1969: 24, fig. 7.3.

TYPE LOCALITY : Andaman Sea

TYPE SPECIMEN : Zoological survey of India, Calcutta.

MATERIAL : Sta. 1004-2, male of 9×9.

OBSERVATIONS : Our specimen is immature. The species can reach the size of 20; the male pleopod of a specimen of 12.7 has been illustrated by Tyndale, Biscoe and George (1962) and that of a specimen of 13.5 more accurately by Takeda (1973). The pleopod published by Zarenkov (1969) does not belong to *eburnea*. The species

is widely distributed from India to Japan and Australia.

REMARKS : *Randallia* was established by Stimpson (1875) for *Ilia ornata* Randall, an American species. As far as its Indo-Pacific species is concerned, it appears to be heterogeneous. Obviously *Randallia mirabilis* Zarenkov, 1969 belongs to another genus. Moreover *Randallia glans* which will be recorded below, seems hardly to be congeneric with *R. eburnea*. The genus needs revising.

### 17. ? *Randallia glans* Alcock, 1896

*Randallia glans* Alcock, 1896 : 195.—Ihle, 1918 : 248.—Serène, 1954 : 493, text-fig. 6, 7b, pl. 10, fig. 3-4.—Zarenkov, 1969 : 24, fig. 7.

TYPE LOCALITY : Andaman Sea

TYPE SPECIMEN : Zoological Survey of India, Calcutta.

MATERIAL : Sta. 1012-7, 2 males of 4×4.—Sta. 1014-8, 2 juveniles.—Sta. 1004-5, 1 juvenile. Ph. 206/1

OBSERVATIONS : All our specimens are immature. Zarenkov (1969) who recorded 5 males of 5 to 7.5 and 6 ovigerous females of 7.2 to 8.8 illustrated the male pleopod. It seems highly probable that *glans* is not congeneric with *eburnea*. The remark made by Ihle (1918) that the species presents some aspect of *Nucia* was already indicative of its erroneous position in *Randallia*. Serène (1954) stressed its separation from *Nucia modesta* (now placed in *Nuciops*) which presents the most closely related aspect. The male pleopod provides sufficient characteristics to establish a new genus; however it would be premature to do so before having revised the whole genus *Randallia*. Besides, it could be possible that *glans* belong to *Nuciops*.

### 18. *Iphiculuss pongiosus* Adams & White, 1848

*Iphiculuss pongiosus* Adams and White, 1848 : 57, pl. 13, fig. 5.—Bell, 1855 : 15.—Stimpson, 1858 : 161.—1907 : 159, pl. 18, fig. 8.—Miers, 1884 : 253.—Alcock, 1896 : 256.—Lanchester, 1900 : 24.—Nobili, 1903 : 170.—Rathbun, 1910 : 314.—Ihle, 1918 : 252.—Chopra, 1933 : 42.—Stephenson, 1945 : 72, fig. 6, D, E.—Buitendijk, 1939 : 228.—Serène, 1955 : 209, fig. 10, 11; pl. 11, figs. 1-4.—Sakai, 1963 : 43.—Zarenkov, 1969 : 23, fig. 5.2.

TYPE LOCALITY : Philippine Islands

TYPE SPECIMEN : British Museum (N.H.), London.

MATERIAL : Sta. 1040-6, male of 13×8.—Sta. 1046-5, damaged. Ph. 207/1

OBSERVATIONS : The species is very common in Southeast Asia and recorded from Indonesia to India and Japan. Its male pleopod have been illustrated by Stephenson (1945) and Zarenkov (1969).

LEUCOSIINAE MIERS, 1886

### 19. *Leucosia* sp., junior

MATERIAL : Sta. 1020-8.—Sta. 1025-2.—Sta. 1010-7.—Sta. 1000-8, damaged.

OBSERVATIONS : All specimens are immature and no attempt was made to identify them.

## BRACHYGNATHA Borradaile, 1907

### *Oxyrhyncha* Latreille, 1803

## MAJIDAE Samouelle, 1819

### 20. *Chlorinoides longispinus* (De Haan, 1839)

*Maja (Chlorinus) longispinus* De Haan, 1839 : 94.

*Maja (Chlorinus) aculeatus* De Haan, 1839, pl. 23, fig. 2; not *aculeatus* H. Milne Edwards, 1834.

*Chorinus longispina* Adams and White, 1848 : 12.

*Chorinus longispinus*, Bouvier, 1899 : 176.

*Paramithrax (Chlorinoides) longispinus*, Miers, 1884 : 192.—Alcock, 1895 : 242.—Illus. Invest, 1897 : 34, fig. 4.—Laurie, 1906 : 383.

*Chlorinoides longispinus*, Miers, 1886 : 53.—Ortmann, 1893 : 53.—Rathbun, 1894 : 83.—1911 : 254.—Urita, 1926 : 34.—Griffin, 1966 : 286 (in key).—Serène, 1969 : 288, pl. 3, fig. A, B.—Campbell and Stephenson, 1970 : 262.

*Acanthophrys longispinus*, Bouvier, 1906 : 488.—Balss, 1924 : 29.—Sakai, 1934 : 295.—1936 : 101, pl. 26, fig. 1.—1938 : pl. 31, fig. 2.—1965 : 87, pl. 40, fig. 1.—Barnard, 1950 : 62.

*Paramithrax coppingeri* Haswell, 1881 : 750.—1882 : 15.—Grant and Mac Culloch, 1906 : 29, pl. 2, fig. 3, text fig. 1, 2, 3; not *Chlorinoides coppingeri*, Miers, 1886 : 53, pl. 7, fig. 3 = *spatulifer*.

*Chlorinoides coppingeri*, Henderson, 1893 : 345.

*Acanthophrys aculeatus* A. Milne Edwards, 1865 : 140, pl. 4, fig. 4. Not *aculeatus* H. Milne Edwards, 1834.

*Paramithrax (Chlorinoides) coppingeri*, Calmann, 1900 : 38.

?*Paramithrax longispinis*, Grant and Mac Culloch, 1906 : 29.

TYPE LOCALITY : Japan

TYPE SPECIMEN : Leiden Museum

MATERIAL : Sta. 1020-6, male juvenile of 12×7

OBSERVATIONS : The species is widely distributed throughout the Indo-Pacific region.

#### PARTHENOPIDAE Miers, 1879

##### 21. *Aulacolambrus* ? *whitei* (A. Milne Edwards, 1872)

*Lambrus whitei* A. Milne Edwards, 1872: 260.—Miers, 1886: 96.—Alcock, 1895: 274.

*Aulacolambrus whitei*, Rathbun, 1906 : 885, pl. 5, fig. 3.—Flipse, 1930: 45.

*Lambrus carinatus* Adams and White, 1848 : 27, pl. 5, fig. 3.—Not Milne Edwards.

MATERIAL : Sta. 1000-6, junior male of 3×3.5.

##### 22. *Rhinolambrus* sp.

MATERIAL : Sta. 1000-6, junior male of 4×3

#### *Brachyrhyncha* Borradaile, 1907

#### PORTUNIDAE Rafinesque, 1815

##### PORTUNINAE Stephenson and Campbell, 1959

##### 23. *Hellenus pulchricristatus* Gordon, 1931 (fig. 11 and Pl. IV fig. A)

*Neptunus (Hellenus) spinipes* Alcock, 1899: 39. — Not *Neptunus (Amphitrite) spinipes*, Miers 1888.

*Portunus (Hellenus) pulchricristatus* Gordon, 1931: 534, text-fig. 8-10.—Guinot, 1957: 479.

*Neptunus (Hellenus) pulchricristatus* Chopra, 1935: 479.

*Portunus pulchricristatus*, Stephenson and Campbell, 1959: 90.—Stephenson and Rees, 1967: 35, fig. 7.—Stephenson, 1967: 18.—1972: 15, 42.—Zarenkov, 1969: 15.

?*Amphitrite gracillima* Stimpson, 1858: 38.—1907: 78, fig...

?*Portunus (Hellenus) gracillimus* Shen, 1940: 220.

TYPE LOCALITY : Hong Kong

TYPE SPECIMEN : British Museum (N.H.), London.

MATERIAL : Sta. 1010-1, male of 10×19.—Sta. 1010-8, female with eggs. —Sta. 1035-5, female with eggs.—Sta. 1035-8, male. Ph. 26/2

OBSERVATIONS: Shen (1940) was probably right

in considering the Gordon species (1934) as synonymous with *gracillimus* Stimpson, 1858, described from the Bonin Islands. Unfortunately he gave no comment to support his position. The Stimpsons species was never illustrated and his type specimen is probably lost. So it would be risky to use Stimpson's name. Stephenson (1972) does not mention *gracillimus* at all in his check list. The species is very common in South-east Asia.

##### 24. *Hellenus* aff. *hastatoides* (F., 1798)

(Pl. IV, fig. C)

*Portunus hastatoides* F., 1798: 368.—Stephenson and Campbell, 1959: 101, fig. 2D, 3D; pl. 1, fig. 4; pl. 4D, 5D.—Crosnier, 1962: 68; fig. 98, 109, 117, 122-123.—Sakai, 1965: 119; pl. 58, fig. 2.—Stephenson and Rees, 1967: 27.—Macneill, 1968, p. 55.—Takeda and Miyake, 1969: 454.—Campbell and Stephenson, 1970: 271.—Stephenson, 1972: 14, 40.

*Neptunus (Amphitrite) hastatoides*, De Haan, 1835: 39, pl. 1, fig. 3.

*Neptunus (Hellenus) hastatoides*, Alcock, 1899: 38.

*Hellenus hastatoides*, Barnard, 1950: 158.

MATERIAL : Sta. 1027-2, male of 6×15

OBSERVATIONS : The male pleopods are not yet developed on the specimen. It is a juvenile and our identification is only indicative. It differs from *hastatoides* by its larger carapace, due to the greater length of the last antero-lateral teeth. Its largest breadth is 2.5 times the length of the carapace instead of 2.

Apart from the *longispinosus* group of species (belonging to *Xiphonectes*) none of the *Hellenus* species considered by us has a similar ratio (length to breadth) of carapace, excepting *mariei*, which has a trilobed front instead of the quadrilobed front of our specimen. Similarly, *mariei* is the only species to have, like our specimen, a long and acute spine at the postero-lateral angle of the carapace. When considering the possibility of our specimen being identical with *acerbiterminalis* Stephenson and Rees, 1967, we have noticed that *acerbiterminalis* could be synonymous with *arabicus* Nobili, 1906, a species which has been overlooked by Stephenson (1972).

25. *Cycloachelous orbicularis*  
(Richters, 1880)

*Achelous orbicularis* Richters, 1880: 158, pl. 16, fig. 14-15.—Henderson, 1893: 371.—Alcock, 1899: 47.—Rathbun, 1906: 871, pl. 12, fig. 4.—1911: 205.—Stebbing, 1920: 236.—Barnard, 1950: 159, fig. 31a.

*Portunus (Achelous) orbicularis*, Edmonson, 1946: 280.—1954: 239, fig. 16c-e, 17b.

*Portunus orbicularis*, Stephenson and Campbell, 1959: 59 (no specimen).—Crosnier, 1962: 58, fig. 95-102.—Stephenson, 1972: 15, 41.

MATERIAL : Sta. 1025-2, immature male of 5×6

OBSERVATIONS : Ward (1942) established *Cycloachelous* for the Indo-Pacific species previously included in *Achelous*, which is an Atlantic genus. The adult of this species is 8×10, can reach 18×24 and has a wide distribution in the Indo-Pacific region.

26. *Portunus* sp.

MATERIAL : Sta. 1004-5, 1 immature male of 5×10.—Sta. 1017-7, juvenile.—Sta. 1006-7, juvenile.—Sta. 1037-3, juvenile.—Sta. 1012-4, juvenile.

OBSERVATIONS : No attempt was made to identify those immature specimens.

27. ? *Carupella* sp.

MATERIAL : Sta. 1015-8, juvenile of 3×4

OBSERVATIONS : Our specimen is perhaps a juvenile of a species of *Portunus*.

28. *Thalamita muusi* sp. n.  
(Fig. 10 and Pl. IV, fig. D)

MATERIAL : Sta. 1032-6, holotype, 1 male of 6×8, 1 ovigerous female of 6.2×9.—Sta. 1040-8, juvenile male.—Sta. 1025-5, juvenile.—Sta. 1010-9, male. Ph. 213/1

OBSERVATIONS : The species belongs to the group of species with the front divided into four lobes (inner orbital lobes excluded). It belongs to the section of the group including the species with submedian frontal lobes narrower than lateral. It is mainly characterized by : 1) five antero-lateral teeth (external, orbital angle included);

the three posterior smaller than the two anterior; the teeth 3 and 4 smaller than the fifth. 2) the submedian frontal lobes are little salient. 3) the chelipeds with a strong, long, acute tooth at the inner angle of the carpus and only one strong spine on the superior border of the palm. 4) the pereopod 5 with a spine on the posterior border of the merus and no denticles on the posterior border of the propodus. 5) the male abdomen very wide; the segment 6 is wider than long, subquadrate with the lateral sides not gradually convergent distally but forming a round angle. 6) the male pleopod 1 differs from those of all other species of *Thalamita*. With its submedian frontal lobes salient, *muusi* is close to *intermedia* and *annulipes* in Stephenson's key (1972), but it differs from them by the antero-lateral teeth of the carapace, by the male abdomen and by the pleopod. *Muusi* is also close to *hanseni*, *kagosimensis* and *sexlobata*. It differs above all from *hanseni* by having 5 antero-lateral teeth instead of 4 in *hanseni*; the frontal submedian lobes are also comparatively broader and less salient on *muusi*. Alcock (1899) described the abdomen of *hanseni* with the "6th abdominal tergum of male much broader than long, with gradually convergent sides"; the segment is also much broader than long on *muusi* but the sides form distally a round angle after which they abruptly converge. The male pleopod of *hanseni* is unfortunately unknown. If only by its male pleopod, *muusi* is clearly distinct from *kagosimensis* and *sexlobata*.

The new species also have some close relation with *malaccensis*, a species insufficiently known, particularly its male pleopod is unknown.

29. *Thalamita parvidens* (Rathbun, 1907)  
(fig. 12 and Pl. V, fig. A)

*Thalamonix parvidens* Rathbun, 1907: 62, pl. 5, fig. 2.

*Thalamita parvidens*, Sakai, 1939: 425, text-fig. 19a, b.—Stephenson and Hudson, 1957: 318 (no specimen).—Stephenson, 1961: 122, fig. 2F, 4B; pl. 4, fig. 1; pl. 4K, pl. 5H.—Crosnier, 1962: 113, figs. 182, 185-7, 190; pl. 9, fig. 2.—Stephenson and Rees, 1967: 82, fig. 30a, b, c.—1968: 296, Sankarankutty, 1968: 355, text-figs 5, 18-19, 30.—Turkay.—1971: 137.



TYPE LOCALITY : Caroline Islands

TYPE SPECIMEN : U.S.N.M., Washington D.C.

MATERIAL : Sta. 1006-3, male of 4 × 6

OBSERVATIONS : The very small present specimen has a male abdomen and pleopod similar to the figures of Crosnier (1962). The normal size of the species is 20-30; the type being 15.2×18.7. Noticeable variations, particularly of the curvature and armature of the distal part of the pleopod, indicate the possible existence of several subspecies. It is doubtful however that, as suggested by Stephenson and Rees (1968), the variations of the male pleopod could correspond to the size of the specimens. Sakai's specimens (1939) were 15×29, those of Stephenson (1961) 19-31, those of Crosnier (1962) 21.5×34.

### 30. *Thalamita* ? *spinifera* Borradaile, 1902

*Thalamita exetastica* var. *spinifera*, Borradaile, 1902: 203.

*Thalamita spinifera*, Rathbun, 1906: 874.—Edmonson, 1951: 221, fig. 24.—1954: 269, fig. 41a-d, 42a.—Stephenson and Hudson, 1957: 317, (no specimen).—Crosnier, 1962: 215, fig. 210-211, 214-5, pl. 11, fig. 1.—Stephenson and Rees, 1967: 93, fig. 34.—Stephenson 1972: 17, 51.—1972b: 151.

TYPE LOCALITY : Maldive Archipelago

TYPE SPECIMEN : Cambridge Univ. Zool. Mus.

MATERIAL : Sta. 1032-9, immature male of 7.5×10.  
Ph. 214/1

OBSERVATIONS : The pleopods are not yet developed on the specimen and its identification is made with reserve. Its main specific character is the presence of 6 antero-lateral teeth, the anterior one being subdivided into two; the subsidiary basal tooth at the base of the anterior tooth is strongly developed in the present specimen. The species reaches a size of 27, and Crosnier (1962) figured the pleopod of a male of 10×14. The species inhabits sandy bottom to 100 m. depth and does not occur in the intertidal zone.

### 31. *Thalamita* ? *sexlobata* Miers, 1886

*Thalamita sexlobata* Miers, 1886: 196, pl. 16, fig. 2.—Henderson, 1893: 373.—Alcock, 1899: 87.—Laurie, 1906: 420.—Stephenson, 1945: 136, fig. 32C, D.—Stephenson and Hudson, 1957: 350, fig. 2B, 3B, pl. 5, fig. 1; pl. 8N, pl. 10K.—Crosnier, 1962: 117, fig. 195-8.—Mac Neili, 1968: 52.—Stephenson, 1972 a: 17, 51.—1972b: 151.

*Thalamita sexlobata* var. *plicatifrons* Deman, 1902: 651, pl. 21, fig. 29.

TYPE LOCALITY : ?

TYPE SPECIMEN : British Museum (N.H.), London.

MATERIAL : Sta. 1000-10, immature male of 3.5×5.  
Ph. 215/1

OBSERVATIONS : The pleopods are not yet developed on the specimen and its identification is made with reserve. The species reaches the size of 17 and Crosnier (1962) figured the pleopod of a male of 9×13.5. The species inhabits the sandy bottom up to 50 m. depth and is not found in the intertidal zone.

### 32. *Thalamita* sp.

MATERIAL : Sta. 1012-4, juvenile.

No attempt was made to identify it.

### 33. *Goniohellenus vadorum* Alcock, 1899 (Fig. 13 and Pl. IV, fig. B)

*Charybdis (Goniohellenus) hoplites* var. *vadorum* Alcock, 1899: 67.

*Charybdis (Goniohellenus) vadorum*, Chopra, 1935: 493, text-fig. 13, pl. 9, fig. 2.—Leene, 1938: 114, fig. 63-5.—Stephenson and Rees, 1967: 12. Stephenson, 1967: 13.—1972a: 35.—1972b: . . . . .

*Charybdis vadorum*, Zarenkov, 1968: 37

*Charybdis sinensis* Gordon, 1930: 522.—1931: 534, fig. 11, 12c, d, d'.—Shen, 1934: 44, fig. 9, 10.

? *Charybdis philippinensis* Ward, 1942: 5, fig. 7-8 (Vide Stephenson, 1972).

*Archias sexdentatus* Paulson, 1875: 56, pl. 8, fig. 3.—Nobili, 1906: 198 (vide Leene, 1938).

TYPE LOCALITY : Indian Sea

TYPE SPECIMEN : Zool. Survey of India, Calcutta.

MATERIAL : Sta. 1012-3, male of 7×13

OBSERVATIONS : Our specimen is well characterized by the great length of the last antero-

lateral spine-like tooth of the carapace and of the spine at the inner angle of the carpus of the cheliped; these spines are slightly less developed on Chopra's figure (1935, pl. 9, fig. 2) and much less so on the figures of Leene (1938, fig. 63), Gordon (1931) and Shen (1934). The species is generally around 20 in size and the present specimen is much smaller; the length of the spines could be a juvenile characteristic. The species is relatively little recorded; the examination of a large series could lead to a reconsideration of the validity of *sinensis*.

#### CATROPTINAE Borradaile, 1903

#### 34. *Libystes edwardsi* Alcock, 1900 (Fig. 14 and Pl. V, figs. B, C, D)

*Libystes edwardsi* Alcock, 1900: 306.—Illus. Invest., 1903: pl. 61, fig. 1.—Stephensen, 1945: 168.—Stephenson and Campbell, 1960: 86 (no specimen).—Sakai, 1963: 44, pl. 3, fig. 7.—Serène, 1966: 993, 996 (no specimen).—Zarenkov, 1970: 44, fig. 1.—Stephenson, 1972a: 5, 29.—1972b: 130.

*Libystes inaequalis* Tesch, 1918: 180, pl. 9, fig. 5.—not *Libystes inaequalis* Rathbun 1906 (vide Serène, 1966)

? *Libystes vietnamensis* Tien, 1969: 505, fig. 1.

TYPE LOCALITY : Andaman Sea

TYPE SPECIMEN : Zoological Survey of India, Calcutta.

MATERIAL : Sta. 1031-4, male of 6 × 10.—Sta. 1022-2, male of 3 × 4. Ph. 218/1

OBSERVATIONS : The species is well characterized; the male pleopod of our larger male is identical with the figure given by Zarenkov (1970, fig. 1) for a male of 5.3. The pleopod 2 is bifurcate at the tip, as it is usual in *Libystes* and generally among the Portunidae. Our smaller male has a much narrower carapace.

At least according to the figures of the carapace, chelipeds and pereopod 5 given by Tien (1969, fig. 1), *vietnamensis* seems to be a synonym of *edwardsi*; the male pleopod is not illustrated.

The species is widely distributed in the Indo-Pacific region from the Hormuz Straits, Iran (Stephensen) to Tosa Bay, Japan (Sakai); it has

been recorded in the Andaman Sea (Alcock), the China Sea (Zarenkov) and Celebes Island (Tesch).

#### 35. *Libystes alphonsi* Alcock, 1900

*Libystes alphonsi* Alcock, 1900: 306: Illus. Invest., 1903: pl. 61, fig. 2.—Stephenson, 1972: 5, 29.

*Libystes nitidus* Stephensen, 1945: 168, fig. 45E, D

*Libystes nitidus*, (part) Serène, 1966: 994, fig. 1-4; not fig. 5,6. (= *nitidus* A. Milne Edwards 1867)

TYPE LOCALITY : Andamans Sea.

TYPE SPECIMEN : Zoological Survey of India, Calcutta.

MATERIAL : Sta. 1036-9 (1), male of 3.5 × 6.

OBSERVATIONS : The present specimen has a pleopod 1 identical with the figures given by Stephensen (1945, fig. 45E, D) for *nitidus* and by Serène (1966, fig. 1-4) for juveniles of *nitidus*. It is the pleopod of *alphonsi* and Serène (1966) made a wrong interpretation when considering his specimens as juveniles of *nitidus*. At present four species of *Libystes* are clearly separated by their male pleopod; they are *nitidus*, *edwardsi*, *alphonsi*, *paucidentatus*. The male pleopod of *lepidus* is similar to that of *nitidus*; that of *villosus* is unknown. The senior author, during the past ten years has had the opportunity of examining large series of *Libystes* aff. *nitidus* and has noticed the variations of the antero-lateral border of the carapace, sometimes smooth, sometimes densely granular or crenulated by a rim of acute granules. Similarly the covering with setae along the antero-lateral region and on the chelipeds and pereopods is noticeably different. The validity of *lepidus* and *villosus* needs to be more clearly demonstrated.

#### GONEPLACIDAE Dana, 1852

#### GONEPLACINAE Miers, 1886

#### *Singhaplax* gen. n.

TYPE SPECIES: *Goneplax ockelmanni* Serène, 1971.

DIAGNOSIS : Carapace dorsally convex, smooth, without trace of region and nearly twice as broad as it is long. Front straight occupying a

quarter of extraorbital breadth. Lateral sides of front diverging and continued by supraorbital border, which is sinuous and runs obliquely backwards. The virtual line traced between tips of external orbital angle hardly scazcely beyond middle of carapace length. Lateral border of carapace nearly straight (slightly concave), strongly converging backward without trace of any teeth. Posterior border nearly twice frontal breadth and little less than half largest breadth of carapace. Length of eye peduncles 1.75 frontal breadth, relatively stout with slightly swollen cornea and extending clearly beyond external orbital angle. Antennulae large and transversal, folded into fossae below frontal margin. Third maxillipeds with a small gap between them. Chelipeds with merus overrunning carapace border; carpus with rounded inner angle; pereopods 2-4 with dactylus filiform; pereopod 5 with carpus, propodus slightly flattened and lanceolated. Male abdomen broad with seven free segments; segment 2 scarcely narrower than segment 3. Male pleopod 1 stout, slightly sinuous with bifurcated apex; strong spines all along outer border; 5 strong preapical spines on inner border; pleopod 2 filiform, much longer than pleopod 1.

**OBSERVATIONS :** The genus belongs to the *Goneplacinae s. str.*, with a male pleopod 2 filiform and clearly longer than the pleopod 1, and includes at least *G. nipponensis*, which differs by: chelipeds shorter, eye peduncles shorter and slender and male pleopod with smaller spines. *Nipponensis* was described for 6 females from Japanese waters. It was recorded by Takeda and Miyake (1968) who studied one male of 3.3 × 5.4 and one ovigerous female of 4 × 6.6.

36. *Singhaplax ockelmanni* (Serène, 1971)  
comb. n.

(Fig. 15 and Pl. VI, fig. A)

*Goneplax ockelmanni* Serène, 1971: 915, pl. 4D.—Serène and Umali, 1972: 82, fig. 82-89.

**TYPE LOCALITY :** Andaman Sea

**TYPE SPECIMEN :** Phuket Marine Biological Center, Thailand.

**MATERIAL :** Holotype : Sta. 1000-5, male of 3 × 5.2. Paratypes : Sta. 1004-3, female of 35 × 3.—Sta. 1004-9, mâle of 3 × 5.1 and female of 3 × 5.—Sta. 1004-5, ovigerous female of 3 × 6.—Four others pecimens at Stas. 1.001-4., 1.001-7, 1.004-7, 1012-3.

**OBSERVATIONS :** The species briefly described by Serène (1971), was illustrated with more details by Serène and Umali (1972), in order to compare it with *Goneplax sinuatifrons*. They demonstrated that the two species were not congeneric and suggested that probably further studies would lead to the establishment of two different new genera, as neither of these two species can be maintained in *Goneplax* Leach, 1814. *Singhaplax* gen.n. is established with *Goneplax ockelmanni* as type species.

37. *Notonyx vitreus* Alcock, 1900

(Fig. 16 and Pl. VI, fig. B)

*Notonyx vitreus* Alcock, 1900: 319; Illus Invest., 1903: pl. 61, fig. 3.—Tesch, 1918: 221.

**TYPE LOCALITY :** Andaman Sea

**TYPE SPECIMEN :** Zool. Surv. India. Calcutta

**MATERIAL :** Sta. 1000-1, male of 3.2 × 4.—Sta. 1020-5, female of 3 × 3.5.—Sta. 1022-3, female of 2.5 × 3.—Sta. 1010-8, female of 4 × 4.5. Ph.220/1

**OBSERVATIONS :** Our identification refers back to the brief observations of Alcock (1900) and Tesch (1918) and in particular to the comparison between the present specimen and the specimen of *Notonyx nitidus* studied by Serène and Umali (1972). *N. vitreus* differs from *nitidus* by the narrower carapace, chelipeds without acute inner angle on the carpus and the male pleopods. The male abdomen is similar to that of *nitidus*. The observations of Tesch (1918) on a male specimen of 2.4 × 2.9 seem to be related to a juvenile stage and perhaps female.

The species is only known by the single type specimen of  $5 \times 6$  and the two specimens of Tesch (1918), a male of  $2.4 \times 2.9$  and an ovigerous female of  $6.7 \times 7.8$ . In order to facilitate the separation of *vitreus* from *nitidus*, we are illustrating the carapace's outline (fig. 16E) of the specimen of *nitidus* recorded by Serène and Umali (1972), a male of  $5 \times 7.5$ .

38. *Typhlocarcinodes hirsutus*  
Borradaile, 1903

(Fig. 17)

*Caecopilumnus hirsutus* Borradaile, 1903: 269, text-fig. 59.  
*Typhlocarcinodes hirsutus*, Tesch, 1918: 228, pl. 15, fig. 3.  
—Yokoya, 1933: 200.—Sakai, 1936: 192, pl. 55, fig. 1;  
1939: 574, pl. 68, fig. 1; 1965: 170, pl. 84, fig. 4.

TYPE LOCALITY : Maldive Islands

TYPE SPECIMEN : Cambridge University Museum

MATERIAL : Sta. 1001-5, 1 male of  $6.5 \times 7.5$ , 1 male of  $3 \times 6.5$ , 1 female of  $4.8 \times 5.1$ .—Sta. 1000-10, 1 male of  $5.8 \times 6.5$ .

OBSERVATIONS : The male pleopods of the species, illustrated for a male of  $5.8 \times 6.5$ , differ from those of *piroculatus* figured by Serène (1964, fig. 15) but confirm the appurtenance of the genus to the Goneplacidae with pleopod 2 as long or longer than pleopod 1. Among those genera. *Typhlocarcinodes* is close to *Notonyx* and together belong to a group of genera distinct from the Goneplacinae *s. str.* as well as from the Carcinoplacinae *s. str.* A new taxonomic section will have to be established perhaps for these genera. At first it must be seen whether the Indo-Pacific species of *Typhlocarcinodes* are or not congeneric with the type species, e.g. *integrifrons* Miers 1881. Monod expressed some doubt and the male pleopod of *integrifrons* needs to be known. In case the Indo-Pacific species does not belong to *Typhlocarcinodes*, the name *Coecopilumnus* Borradaile, 1903 will be used and *hirsutus* will become the type species of the genus.

39. *Carcinoplax longimanus* (De Haan 1835)

*Cancer (Curtonotus) longimanus* De Haan, 1835: 50, pl. 6 fig. 1.

*Carcinoplax longimanus*, H. Milne Edwards, 1852:164.—Ortmann, 1894: 688.—Alcock, 1900: 303.—Doflein, 1904: 114, pl. 36.—Stebbing, 1910: 313.—1915: 37. 1923: 3.—Parisi, 1918: 90.—Balss, 1922: 135.—Urita, 1926: 17.—De Man, 1929: 109.—Yokoya, 1933: 190.—Sakai, 1934: 311.—1936: 181, pl. 53, fig. 3.—1939: 555, pl. 101, fig. 1-4.—1965: 166, pl. 81. = Monod, 1938: 143.—Barnard, 1950: 287, fig. 53g-h. = Takeda and Miyake, 1968: 562, figs. 5a-e.—Guinot, 1969: fig. 61.—Serène and Lohavanijaya, 1973: 65, fig. 143-147, pl. 14A, 15A.

*Pilumnoplax glaberrima* Ortmann, 1894: 687, pl. 23, fig. 2.—Yokoya, 1933: 192.

*Pilumnoplax inaequalis* Sakai, 1936: 183, pl. 54, fig. 1.

*Carcinoplax longimanus indicus* Doflein, 1904: 115, pl. 35, fig. 1-2.

*Carcinoplax longimanus japonicus* Doflein, 1904: 115, pl. 36.

TYPE LOCALITY : Japan

TYPE SPECIMEN : Leyden Museum

MATERIAL : Sta. 1034-3, juvenile male of  $6 \times 8$ . Ph.217/1

OBSERVATIONS : The species reaches a size of  $50 \times 65$ .

40. *Homoiplax haswelli* (Miers, 1884)

*Pseudorhombila vestila var. sexdentata* Miers, 1884: 204, pl. 24, fig. 13.

*Pilumnoplax vestila sexdentata* Miers, 1886: 229.

*Homoiplax haswelli*, Rathbun, 1914: 146.—Tesch, 1918: 190, pl. 10, fig. 2.—Balss, 1922: 138.—Sakai, 1939: 566, pl. 102, fig. 2.

*Pilumnoplax inaequalis* Yokoya, 1933: 194, fig. 63.

TYPE LOCALITY : Arafura Sea

TYPE SPECIMEN : British Museum (N.H.), London

MATERIAL : Sta. 1031-3, immature of  $6 \times 9$

OBSERVATIONS : The specimen agrees with the descriptions and illustrations of the authors We make some reservation in our identification to indicate that the specimen needs to be reexamined.

GONEPLACIDAE PILUMNIAN s. str.  
Guinot, 1971

41. *Typhlocarcinus rubidus* Alcock, 1900

*Typhlocarcinus rubidus* Alcock, 1900: 323.—Tesch, 1918: 207.—Balss, 1924: 14.—1929: 26, 27. Monod, 1938: 145.—Serène, 1964: 212, fig. 5A-F.

Not *Typhlocarcinus rubidus* Barnard, 1926: 120.—1946: 366 = *Xenophthalmodes moebii*.

TYPE LOCALITY : Indian Ocean

TYPE SPECIMEN : Zool. Survey India, Calcutta

MATERIAL : Sta. 1007-7, 2 males of 4×5 and 3×4.  
—Sta. 1007-5, 2 females of 3.2×4.5 and 3×4.  
—Sta. 1022-5, 1 male of 3×4.—Sta. 1011-3, 1 female of 2×3.—Sta. 1011-6, 1 male of 3×4.—Sta. 1026-5, 1 male of 3×4.—Sta. 1026-6, 1 male of 3×4.—Sta. 1046-11, 1 female of 4×5.—Sta. 1031-9, 1 male of 3×4.—Sta. 1047-1, 3 females of 3×4, 2×3, 2×2.3. Ph.221/1

42. *Typhlocarcinus* sp. 1

MATERIAL : Sta. 1020-1, female of 3×4.

OBSERVATIONS : The specimen is characterized by a carapace strongly granulate and cannot be identified with any of the six species of the genus described at present. However the material is insufficient to allow a description of a new species.

43. *Typhlocarcinus* sp. 2

MATERIAL : Sta. 1022-6, female of 4.5×5.5.—Sta. 1024-7, male of 3×4.

OBSERVATIONS : As for *Typhlocarcinus* sp. 1, from which the present specimen differs, we prefer to wait for more available material.

44. *Typhlocarcinops* sp.

The collection contains around 50 specimens, which probably belong to 5 or 6 different species. A study of them requires comparison with already identified material, not at present available and has been abandoned for this report.

45. ? *Ceratoplax fulgida* Rathbun, 1914

(Fig. 18 and Pl. VI, fig. C)

*Ceratoplax fulgida* Rathbun, 1914: 146.—Tesch, 1918: 203 (no specimen).

TYPE LOCALITY : off Philippine Islands at a depth of 150 m.

TYPE SPECIMEN : U.S.N.M., Washington D.C.

MATERIAL : Sta. 1035-9, male of 3×5.—Sta. 1042-7, female of 3.9×4.2.—Sta. 1028-9, female of 3×5. Ph.219/1

OBSERVATIONS : *C. fulgida* was described for one male of 4.5×7.4 and one female. It has never been illustrated and, since Rathbun (1914), never been recorded. The provisional identification of our specimens needs to be confirmed by re-examination of the type material. In general, it concurs with Rathbun's description (1914), but the specimens have one characteristic not mentioned by Rathbun and which may show their appurtenance to a different and probably new species. This is the existence along the antero-lateral border of the carapace of a very fine longitudinal sulcus. Situated slightly ventrally on the margin itself, the sulcus appears in dorsal view only as a straight cutting of the rounded antero-lateral angle of the carapace; it is more easily observed in lateral view and appears as a line of short dense tomentum running parallel to the margin. The genus *Ceratoplax* with *C. ciliata* Stimpson, 1858 as type species is heterogeneous. Our specimen of ? *C. fulgida*, at least with regard to the very wide and filiform first abdominal segment and the male pleopods, is closely related to *Typhlocarcinops*. However the clearly expanded antero-lateral angle of the merus of the third maxilliped is that of *Ceratoplax*.

46. *Xenophthalmodes dolichophallus*  
Tesch, 1918

(Fig. 19)

*Xenophthalmodes dolichophallus* Tesch, 1918: 216, pl. 24, fig. 1.—Stephensen, 1945: 178, fig. 47, C-E.—Campbell and Griffin, 1969: 145, fig. 2D, 6C.

*Xenophthalmodes moebii* Barnard, 1950: 297, fig. 56 a-c.  
Not *moebii* Richters. 1880.

TYPE LOCALITY : Java Sea, 1880

TYPE SPECIMEN : Amsterdam Museum

MATERIAL : Sta. 1027-6, male of 5×6.—Sta.  
1037-7, female of 6×7. Ph.222/1

OBSERVATIONS : The length of the male pleopod 1  
of our specimen is characteristic of *dolichophal-*  
*lus*. As indicated by Campbell and Griffin

(1969) on *moebii*, the “first pleopod is short and  
sinuous, curving inwards halfway along and  
outwards apically”. It has not yet been figured.  
The male pleopod 1 of our specimen entirely  
agrees with the description by Stephensen (1945).  
It will be interesting to compare with *dolicho-*  
*phallus* a specimen of *moersi*, an endemic species  
from Japan, which is very closely related and  
probably indetical with *dolichophallus*. The  
following tentative key is given as an indicative  
guide-line:

- 1 Male abdomen with segment 1 much wider than segment 3; male pleopod 1 not projected  
beyond distal border of telson; male abdomen and pleopod in Barnard (1955: fig.15 a, b, c).  
Size : 12×16. .... *brachyphallus* Barnard, 1955  
Male abdomen with segment 1 only a little wider than segment 3 ..... 2
- 2 Male pleopod 1 short and sinuous, curving inwards half way along and outwards apically (no  
figure) Size: 10×12 ..... *moebii* Richters, 1880  
Male pleopod 1 long, straight, reaching base of third maxillipeds, far beyond telson ..... 3
- 3 Male abdomen and pleopod in Tesch (1918, pl. 14, fig. 16, c); male pleopod in Campbell and  
Griffin (1969, fig. 6c) Size: 6.5×7.2 ..... *dolichophallus* Tesch, 1918.  
Male abdomen and pleopod not figured. Size : 5.3×6.8 ..... *moersi* Rathbun, 1923.

The genus *Xenophthalmodes* is closely related to  
*Typhlocarcinus* and belongs to the Goneplacidae  
with pilumnian characteristics of the male  
pleopods.

#### 47. ?*Lophoplax takakurai* Sakai, 1935

*Lophoplax takakurai* Sakai, 1935 : 82, text-fig. 15, pl. 7,  
fig. 2.—1936 : 188, fig. 2.—1939 : 567, pl. 67, fig. 1.

TYPE LOCALITY : Sagami Bay, Japan, 50 m. depth

TYPE SPECIMEN : ? Sakai collection, Kamakura,  
Japan

MATERIAL : St. 1045-6, male 4. 2×5 with sacouli-  
na.

OBSERVATIONS : The specimen is closer to *taka-*  
*kurai* Sakai, 1935 than to any of the three other  
species of *Lophoplax*, which are : *sculpta*  
(Stimpson, 1858), *bicristata* Tesch, 1918, *teschi*  
Serène, 1971, and are well characterized by  
salient elevations on the dorsal surface of the

carapace. Like *takakurai* the present specimen  
has no elevation, but it differs by its antero-  
lateral teeth much less clearly separated one  
from the other. A doubt remains as to its  
appurtenance to *Lophoplax*. The four species  
of *Lophoplax* having been described for female  
specimens, no information are available on the  
male pleopods. However Guinot (1971) correct-  
ly guessed that *Lophoplax* was a Goneplaci-  
dae with pleopod of pilumnian type. Serène  
and Lohavanijaya (1972) briefly mentioned  
their observations on a male of *teschi*; we take  
this opportunity to illustrate the male pleopods  
of this specimen of *teschi* (fig. 20). Serène  
and Lohavanijaya (1972, fig. 186) illustrated  
the female abdomen of *teschi*. The pleopod shown  
here demonstrates that *Lophoplax* is a genus  
with the abdominal segment 1 covering all the  
space between the coxae of the last pair of  
pereopods and a male pleopod of pilumnian  
type. These observations will help to situate  
*Lophoplax* more accurately in the Goneplacidae.

48. *Mertonia lanka* Laurie, 1906

*Mertonia lanka* Laurie, 1906: 424, pl. 11, fig. 11.—Rathbun, 1910: 342, pl. 2, fig. 4.—Tesch, 1918: 217, pl. 16, fig. 2a.—Sakai, 1936: 191, pl. 5, fig. 3.—1939: 573, pl. 68, fig. 3.—1965: 172, pl. 85, fig. 2.—Yokoya, 1936: 144, text-fig. 10.—Stephensen, 1945: 180, fig. 51.—Serène, 1964: 234, fig. 18, pl. 21B.

TYPE LOCALITY : Gulf of Mannar, Ceylon

TYPE SPECIMEN : ? British Museum (N.H.), London.

MATERIAL : Sta. 1008-2, male of  $5 \times 7$ .—Sta. 1018-1, female of  $3 \times 4$ .—Sta. 1018-2, male of  $2 \times 3$ .—Sta. 1018-3, male of  $3 \times 3.8$ .—Sta. 1018-4, male of  $3 \times 4$ .—Sta. 1018-9, 2 females of  $3.8 \times 5$  and  $2.5 \times 4$ .—Sta. 1008-3, female of  $5.5 \times 6$ .—Sta. 1008-7, female of  $4 \times 5$ .—Sta. 1008-9, female of  $5 \times 6$ .—Sta. 1010-10, male of  $4 \times 5.5$  and female of  $4 \times 5.5$ .—Sta. 1020-2, 2 males of  $3 \times 4$ .—Sta. 1024-1, male of  $4 \times 5$ . Ph. 224/1

OBSERVATIONS : The species, recorded from Ceylon, Gulf of Thailand, Aru Island, Japan and Gulf of Iran, has a wide geographical distribution in the tropical Indo-Pacific region. The largest known specimen is a male of  $6.2 \times 8.4$  (in Serène, 1964).

CHASMOCARCININAE Serène, 1964

49. *Scalopidia spinosipes* Stimpson, 1858

*Scalopidia spinosipes* Stimpson, 1858: 93.—Henderson, 1893: 379.—Alcock, 1900: 325.—Laurie, 1906: 424.—Rathbun, 1910: 344, pl. 2, fig. 1.—Tesch, 1918: 225, pl. 14, fig. 3.—Gordon, 1931: 528.—Chopra, 1935: 513.—Serène, 1964: 235, fig. 14, pl. 21C.

*Hypophthalmus Leucochirus* Richters, 1880: 429.

TYPE LOCALITY : Hong Kong

TYPE SPECIMEN : Probably lost.

MATERIAL : Sta. 1039-5, female of  $8.5 \times 12$ .—Sta. 1039-4, male of  $7.5 \times 10$ .—Sta. 1046-2, male of  $3 \times 3.2$ .—Sta. 1046-3, male of  $4 \times 5.5$ . Ph. 226/1

OBSERVATIONS : The specimens are small, the species reaching a size of  $14 \times 20$ . The heavy and nearly straight male pleopod of *spinosipes* confirms the position of *Scalopidia* in the

Chasmocarcininae, as indicated by Serène (1964 b).

50. *Hephthopelta mortenseni* Serène, 1964

*Hephthopelta mortenseni* Serène, 1964, p. 243, fig. 16, pl. 22A.

TYPE LOCALITY : Java Sea

TYPE SPECIMEN : Copenhagen Zoological Museum.

MATERIAL : Sta. 1035-5, male of  $3.2 \times 4$ .—Sta. 1035-7, male of  $2 \times 3$ .—Sta. 1042-10, male of  $3.9 \times 4.5$ . Ph. 223/1

OBSERVATIONS : The specimens are smaller than the type which is  $5 \times 7.5$  in size; the long spinous process marking the internal border of the ischium of the greatest cheliped of the male is less developed, but very clear in the two largest males of the present collection. The species was only known in the Java Sea and Sunda Straits.

51. *Chasmocarcinops gelasimoides*  
Alcock, 1900

*Chasmocarcinops gelasimoides* Alcock, 1900: 334.—Illus. Invest, 1903: pl. 62, Fig. 2, 3.—Rathbun, 1910: 340, pl. 1, fig. 10; pl. 2, fig. 12.—Tesch, 1918: 280.—Serène, 1964: 266, fig. 20, pl. 230.

TYPE LOCALITY : Madras, India

TYPE SPECIMEN : Zoological Survey of India, Calcutta

MATERIAL : Sta. 1046-2, male of  $9.5 \times 11$ .—Sta. 1025-6, male of  $9 \times 10.5$ . Ph. 225

OBSERVATIONS : In spite of its few records, the species is common in Southeast Asia from India to Australia. As has already been suggested by Serène (1964: 186), we classify *Chasmocarcinops* in the Chasmocarcininae, removing the genus from the Pinnotheridae, where it is maintained in the Catalogus Crustaceorum of the Pinnotheridae (1973).

*C. gelasimoides* is commonly collected as a free living crab on the muddy, sandy bottoms, at 10 to 50 m. deep in the Southeast Asian regions. Rath-

bun (1910), recording 50 specimens from the Gulf of Thailand, mentioned only one of them as having been "in shell of living *Amussium pleuronectes*". The crab *gelasimoides* and the mollusk *pleuronectes* inhabit the same grounds and are frequently mixed together in the trawl catches of the fishermen. The senior author has observed during the years several hundred specimens, but has never come across a *gelasimoides* in a shell of living *A. pleuronectes* and considers that Rathbun's observation must be attributed to chance circumstances. Rathbun did not make her observation in the field, but on preserved material collected by Mortensen several years previously. We believe that the crab and mollusk observed by Rathbun were put alive in the same basket, after being caught; the mollusk having relaxed its muscle, as is usual, the crab penetrated the shell to eat the flesh. At the fixation time, the mollusk closed its shell and kept the crab inside. Our remark on the ethology of the species provides a new reason for removing *Chasmocarcinops* from the Pinnotheoridae.

52. *Camatopsis rubida* Alcock and Anderson, 1899  
(Fig. 21)

*Camatopsis rubida* Alcock and Anderson, 1899 : 13.—Alcock, 1899 : pl. 4 fig. 3.—1900 : 329.—Doflein, 1904 : 121.—Rathbun 1910 : 344.—Tesch, 1918 : 235, pl. 16, fig. 3a-i.—Yokoya, 1933 : 202.—Sakai, 1936 : 193, pl. 55, fig. 4.—1939 : 576, pl. 88, fig. 4.—1965 : 173, pl. 85, fig. 4.—Serène, 1964 : 268.

TYPE LOCALITY : Andaman Sea

TYPE SPECIMEN : Zoological Survey of India, Calcutta

MATERIAL : Sta. 1043-3, female of 5.5×6.8.—Sta. 1052-2, male of 6×7.—Sta. 1045-5, male of 4.5×5.—Sta. 1031-2, juvenile.—St. 1040-4, Juvenile. Ph. 227/1

OBSERVATIONS : The male pleopods of the species being insufficiently illustrated by Tesch (1918 : pl. 16, fig. 31), we are giving the figure of the pleopods 1 and 2 of a specimen of 6×7. The type of these pleopods confirms the appurtenance of *Camatopsis* to the Chasmocarcininae.

EURYPLACINAE Stimpson, 1871

53. *Eucrate* sp.

MATERIAL : Sta. 1019-3, juvenile male of 4×5

OBSERVATIONS : The specimen is immature and in very bad condition.

54. *Heteroplax nitidas* Miers, 1879

(Fig. 22 and Pl. VI, fig. D)

*Heteroplax ? nitidas* Miers, 1879 : 39, pl. 2, fig. 2.

*Heteroplax nitidas* Henderson, 1893 : 397.—Sakai, 1936 : 184, pl. 54, fig. 2.—1939 : 360, pl. 67, fig. 8.—1965 : 169, pl. 84, fig. 1.—Serène and Lohavanijaya, 1973 : 74, pl. 18 B-D.—Kim, 1973 : 410, 637, fig-164 a-c.

TYPE LOCALITY : Korean Straits

TYPE SPECIMEN : British Museum (N.H.), London

MATERIAL : Sta. 1001-9, male of 5×7.5.—Sta. 1018-2, female of 4×6.—Sta. 1019-1, male of 4×6.—Sta. 1019-7, male of 4×6.—Sta. 1019-4, 1 male, 2 females; the largest female 4×6.—Sta. 1020-9, ovigerous female of 3.8×5.5.—Sta. 1018-6, 1 male, 2 females; the largest female of 4×6.—Sta. 1047-8, 2 females.—Sta. 1010-7, 1 male.—Sta. 1008-5, 1 male.—Sta. 1019-2, 2 males.—Sta. 1019-9, 1 male. Ph. 216/1

OBSERVATIONS : The largest male of the collection has already been recorded and illustrated by Serène and Lohavanijaya (1973), who have used it for comparison with *H. dentatus* and *H. transversus*. However the outline of the carapace, the third maxilliped and the male pleopod 1 are figured here for the first time.

HEXAPODINAE Alcock, 1900

55. *Thaumastoplax orientalis* Rathbun, 1909

(Fig. 23 and Pl. VIII, fig. D)

*Thaumastoplax orientalis* Rathbun, 1909 : 113.—1910 : 346, pl. 2, fig. 1 and text-fig. 33.—Tesch, 1918 : 239 (no specimen).—Sakai, 1934 : 316, text-fig 24.—1936 : 193, text-fig. 100.—1939 : 579, pl. 102, fig. 3 and text-fig 69.

TYPE LOCALITY : Gulf of Thailand

TYPE SPECIMEN : Copenhagen Zoological Museum.



MATERIAL : Sta. 1020-8, juvenile.—Sta. 1022-2, male of  $6 \times 8$ .—Sta. 1023-7, female of  $5 \times 7$ .—Sta. 1024-6, 9, 10, small males.—Sta. 1025-5, male of  $5 \times 7$ .—Sta. 1036-2, male of  $3.5 \times 5$ .—Sta. 1036-7, male of  $3.5 \times 5.5$ .—Sta. 1036-10, male of  $5 \times 6$ .—Sta. 1044-8, male of  $6 \times 5$ . Ph. 231/1

OBSERVATIONS : The species is only known from the Gulf of Thailand (Rathbun) and Japan (Sakai); the type is a male of  $9 \times 12$ ; the largest specimen recorded is a female of  $12 \times 17.1$  (Sakai). Our material was compared with specimen of *T. anomalipes*, the differences do not justify, at least for the time being, the establishment of a distinct genus for the Indo-Pacific species. *Anomalipes* also has a filiform pleopod 1, but not longer than the abdomen as in *orientalis*. However *spiralis* Barnard, 1950 does not belong to *Thaumastoplax* but to a different and new genus, which will have to be described.

56. *Hexapus? sexpes* De Haan, 1835

(Fig. 24 and Pl. VII, fig. A)

*Hewapus sexpes* De Haan, 1835 : 63, pl. 11, fig. 6.—De Man, 1888 : 322, pl. 13, fig. 3.—Zehntner, 1894 : 159.—Nobili, 1905 : 146.—Tesch, 1918 : 240, pl. 17, fig. 1.—Sakai, 1939 : 571, fig. 69.—Griffin, 1972 : 85.—Kim, 1973 : 413, 637, fig. 165, pl. 86, fig. 127

Not *Hexapus sexpes* Stephensen, 1945 = *stephenseni*

TYPE LOCALITY : Japan

TYPE SPECIMEN : Leiden Museum

MATERIAL : Sta. 1010-9, male of  $6 \times 9$ .—Sta. 1022-2, male of  $6 \times 9$ . Ph. 229/1

OBSERVATIONS : Our specimens have the carapace pitted and generally agree with the characters of the species given in the key of Campbell and Stephenson (1970). In spite of the observations of Tesch (1918), who examined the type specimens, and taking into consideration the remarks of Stephensen (1945), Monod (1956), Campbell and Stephenson (1970), some uncertainty remains as to the specific characters of *sexpes* De Haan, 1835. We consider in particular that *anfractus* (Rathbun, 1910), is not a synonym of *sexpes* De Haan, 1835. The male abdomen

and pleopod 1 of our specimen differ from those of *anfractus* as illustrated by Rathbun (1910) and Stephensen (1945). Moreover, according to Rathbun (1910), the merus of the ambulatory legs of *anfractus* are "longitudinally furrowed". On the present specimens as well as on other specimens of *sexpes* it is not the case. In the Paris Museum, we have examined the specimen of *sexpes* from the Persian Gulf identified by Nobili (1906).

The male pleopod of *sexpes* having never been figured and the male abdomen of our specimens being different from that of *sexpes* illustrated by Tesch (1918) a reserve must be maintained regarding our identification. The type specimen of *sexpes* is a male of  $6 \times 10$  and the largest specimens recorded are a male of  $12.75 \times 18$  (De Man, 1888) and a female of  $15 \times 23.5$  (Zehntner, 1894); the two were collected at Amboina in the tube of an annelid. Perhaps these large specimens could belong to a different species.

57. *Hexapus stephenseni* sp. n.

(Fig. 25 and Pl. VII, fig. B)

*Hexapus sexpes* Stephensen, 1945 : 182, fig. 53A-D.  
Not *Hexapus sexpes* De Haan, 1835.

TYPE LOCALITY : Andaman Sea

TYPE SPECIMEN : Phuket Marine biological Center, Thailand.

MATERIAL : Sta. 1039-1, Holotype, male of  $3 \times 4.8$ ; Paratype: female of  $3 \times 4.8$  - Other paratypes : Sta. 1039-2, male of  $3 \times 4.8$  - 1047-6, male of  $3 \times 4.8$ —Sta. 1031-2, ovigerous female of  $3 \times 4.8$ . Ph. 228/1

DIAGNOSIS : Carapace wider than long; dorsal surface almost flat from side to side, slightly granular; antero-lateral margins rounded, convex, whole. Third maxilliped with ischium longer than merus, parallel sides along most of its length; merus broader than long; palp articulated at antero-internal angle of merus, with all segments subcylindrical; dactylus > propodus > carpus. Ambulatory legs compressed with

merus granulate and longitudinally furrowed. Male abdomen with telson trilobate and broader than long (1.2 times); segment 6 broader than long (1.3 times), broadest in middle of length; segments 3 - 4 - 5 fused. Male pleopod 1 with a line of a few (9) simple spines at preapical level.

**OBSERVATIONS :** Stephensen (1945) emphasized that his Iranian specimens differ from "*L. anfractus* by the 7th segment of the male abdomen and in having simple spines, not bottle-brush setae, near the apex of pleopod 1 male. They differ from *H. sexpes* by the 7th segment of abdomen". He concluded: "nevertheless I prefer to determine the Iranian specimens as *H. sexpes*". Besides, Stephensen (1945) noticed that the third maxillipeds of his specimens were close to those of *sexpes* illustrated by Stebbing (1910) (now described as *stebbingi*) but different from those of *sexpes*, illustrated by Tesch (1918) and *anfractus* illustrated by Rathbun (1910). Our specimens agree with all the characters given by Stephensen (1945) for his Iranian specimens. Monod (1956) already indicated that *sexpes* of Stephensen (1945) was not conspecific with *sexpes* Tesch, 1918, nor *anfractus* (Rathbun, 1910). Our specimens are all small and it is noticeable that the Iranian specimens of Stephensen (1945) were also all small; the largest had a carapace of 4 × 6.5.

### 58. *Hexapus ? granuliferus*

Campbell and Stephenson, 1970

(Fig. 26 and Pl. VII, fig. C)

*Hexapus sexpes* Haswell, 1882:71

Not *sexpes* De Haan, 1835.

*Hexapus granuliferus* Campbell and Stephenson, 1970:286, fig. 49A-H.

**TYPE LOCALITY :** Queensland, Australia

**TYPE SPECIMEN :** Queensland Museum, Brisbane.

**MATERIAL :** Sta. 1025-9, female of 3.5 × 5.8.

**OBSERVATIONS :** The specimen generally agrees with *granuliferus* but our identification is given

with some reserve. The species is only known by 3 specimens; the largest is a male of 15.5; the holotype is a female of 6.5. Ph. 230/1

### 59. *Hexapus edwardsi* sp. n.

(Fig. 27 and Pl. VII, fig. D)

**TYPE LOCALITY :** Andaman Sea

**TYPE SPECIMEN :** Phuket Marine Biological Center, Thailand.

**MATERIAL :** Sta. 1047-9, Holotype male of 3 × 4.8

**OBSERVATIONS :** The outline of the carapace is more or less hemispherical; the antero-lateral border being like an open continuous arch; the lateral borders converge regularly forward and are not subparallel. There are 4 - 6 oblique ridges across the pterygostomial region, as is usual with this genus. The third maxilliped is operculiform with merus broader than long and shorter than ischium, but the inner border of ischium is convex. The antero-lateral region and the external surface of the palm of chelipeds are ornamented with a covering of acute granules, disappearing under a short tomentum. The pleopod 1 being as yet undeveloped, the specimen is immature. It cannot be identified with any of the species of *Hexapus* described at present. The outline of its carapace is close to *sexpes* A. Milne-Edwards, 1873, who wrote: "La carapace est très large, surtout en arrière; ses bords antérieurs et latéraux forment un arc dont le bord postérieur serait la corde". Campbell and Stephenson (1970) enumerated seven discrepancies between *sexpes* A. Milne-Edwards, 1873 and *sexpes* De Haan, 1835 and suggested that the A. Milne-Edwards specimen belonged to a distinct species. According to information received from Mme. Guinot, the specimen of A. Milne-Edwards no longer exists in the collection of the National Museum of Natural History in Paris. Our specimen generally agrees with the seven discrepancy characters given by Campbell and Stephenson (1970), although it differs by its narrower carapace (the specimen of A. Milne-

Edwards was a female of 3 × 6 from New Caledonia).

The following tentative key could serve as guideline for the separation of the species:

- 1 Male abdomen with telson trilobate much broader than long and segment 6 longitudinally divided, in Barnard (1950, fig. 56F). Size 10 × 15 ..... *stebbingi* Barnard, 1947  
Male abdomen with segment 6 entire without longitudinal sulcus. .... 2
- 2 Carapace with lateral borders regularly arched from orbit to postero-lateral angle; front broad; one half of carapace length. Size 3 × 4.8 ..... *edwardsi* sp. n.  
Carapace with lateral border subparallel at its middle course; front narrow, much less (nearly one third) than half carapace length. .... 3
- 3 Third maxilliped truly operculiform; ischium and merus with lateral side subparallel; merus much shorter than ischium, broader than long; inner border of ischium straight; palp articulated at antero-lateral angle. Carapace granulate ..... 4  
Third maxilliped loosely closing buccal cavity; merus nearly as long as ischiums; merus piriform; ischium with inner border convex. Carapace punctate ..... 5
- 4 Male abdomen with telson trilobate; male pleopod 1 in Stephensen (1945, fig. 53 B, C, D). Size 3 × 4 ..... *stephenseni* sp. n.  
Male abdomen with telson distally rounded; male pleopod 1 in Campbell and Stephenson (1970, fig. 49 G, H). Size 15.5 ..... *granuliferus* Campbell and Stephenson, 1970.
- 5 Male abdomen with telson distally rounded, in Rathbun (1910, fig. 36a). male pleopod in Stephensen (1945, fig. 53 G) Size 4.7 × 7.3 ..... *rnfractus* (Rathbun, 1909)  
Male abdomen with telson and pleopod in the present paper (fig. 24 B, C, C') Size 6 × 10 ..... *sexpes* De Haan, 1835.

PINNOTHERIDAE H. Milne-Edwards, 1852

XENOPHTHALMINAE Alcock, 1900

60. *Xenophthalmus pinnotheroides*  
White, 1846

*Xenophthalmus pinnotheroides* White, 1846: 127, pl. 2, fig. 2.  
—Adams and White, 1848: 63, pl. 12, fig. 3.—H. Milne-Edwards, 1853: 221.—Stimpson, 1858: 107.—Sluiter, 1881: 162.—Henderson, 1893: 394.—Alcock, 1900: 332.—Rathbun, 1910: 338, fig. 2 2.—Tesch, 1918: 272.—Shen, 1937: 301, text-fig. 11.—1937: 170.—1948: 113, text-fig. 4.—Miyake, 1961: 175.—Takeda and Miyake 1968: 514, fig. 10.—Campbell, 1969: 156, figs. 5, 6E.—Serène and Umali, 1972: 86, text-figs. 96, 99, 102-109, pl. 9, fig. 1-2.

Not *Xenophthalmus pinnotheroides* Stephensen, 1945: 186, fig. 54 = *Xenophthalmus wolffi* Takeda and Miyake 1970.

TYPE LOCALITY : Philippines

TYPE SPECIMEN : British Museum (N.H.), London

MATERIAL : Sta. 1037-1, 2 females 6 × 8, one with sacculina.—Sta. 1025-7, 1 male of 3 × 4.5.  
Ph. 232/1

61. *Neoxenophthalmus obscurus*  
(Henderson, 1893)

*Xenophthalmus obscurus* (Henderson), 1893: 394, pl. 36, fig. 18, 19.—Alcock, 1900: 333.—Rathbun, 1910: 338, text-fig. 23, pl. 2, fig. 13.—Tesch, 1918: 272 (no specimen).

*Neoxenophthalmus obscurus*, Serène and Umali, 1972: 89, figs. 97, 110-116, pl. 9, fig. 3.

TYPE LOCALITY : Gulf of Martaban

TYPE SPECIMEN : British Museum (N.H.), London

MATERIAL : Sta. 1027-5, juvenile male.—Sta. 1039-1, male of 8 × 9.—Sta. 1039-2, 2 females of 7 × 8, 1 male of 7 × 8, 1 juvenile.—Sta. 1039-4, female of 7 × 8.—Sta. 1039-6, male of 6 × 8, female of 5.5 × 7.—Sta. 1039-8, female of 2 × 7, juveniles.—Sta. 1039-9, female of 7 × 8, 1 juvenile.—Sta. 1039-10, male of 5 × 8, 2 females of 7 × 9, 1 female of 7 × 6.—Sta. 1046-4, juvenile male.—Sta. 1046-6, juvenile male.—Sta. 1046-7, juvenile male.—Sta. 1047-1, 2 males, 1 female.

—Sta. 1047-2, 3 males, 1 female.—Sta. 1047-4, 2 females of 7 × 8, 1 juvenile.

ASTHENOGNATHINAE Stimpson, 1858

*Asthenognathus* Stimpson, 1858

*Asthenognathus* Stimpson, 1858 : 107.—1907 : 139.—Rathbun, 1910 : 339.—Tesch, 1918 : 276.—Sakai, 1939 : 601.—Monod, 1956 : 383.

- 1 Carapace twice as broad as long; two slight transverse rim on dorsal surface. Size 3 × 6. . . . .  
..... *gallardoii* sp. n.  
Carapace less than one and a half times as broad as long; no transversal rim on dorsal surface  
..... 2
- 2 Posterior border of carapace one a half times as long as front-orbital width. Size 6.7 × 9.8. . . . .  
..... *inaequipes* Stimpson, 1858  
Posterior border of carapace subequal to front-orbital width. Size 5.6 × 7.8. . . . .  
..... *hexagonum* Rathbun, 1909

The aberrant situation of *Asthenognathus* in the Pinnotheridae suggests their transfer with the Asthenognathinae to the Goneplacidae *s.l.* Monod (1956) indicated a possible relation of *Asthenognathus* with genera of Goneplacidae such as *Chasmocarcinus*. We do not believe in a possible identity of the Asthenognathidae Stimpson, 1858 with the Chasmocarcininae Serène, 1964; but the situation of *Asthenognathus* must be taken into consideration for a revision of the Goneplacidae *s.l.*

62. *Asthenognathus gallardoii* sp. n.

(Fig. 28A, B and Pl. VIII, figs. A, B)

TYPE LOCALITY : Andaman Sea

TYPE SPECIMEN : Phuket Marine Biological Center, Thailand

MATERIAL : Sta. 1029-1. Holotype : ovigerous female of 3 × 6.

DIAGNOSIS : Carapace smooth and shining, with two glossy and light transversal rims on dorsal surface; anterior rim at the level of chelipeds, posterior at the level of contact between pereopods 2 and 3; the lateral extremities of rims correspond to a marked angular inflexion of antero-lateral border of carapace. Carapace

OBSERVATIONS : The genus, described for *Asthenognathus inaequipes* Stimpson, 1858 from Japan, includes *A. hexagonum* Rathbun, 1909 from the Gulf of Thailand and *atlanticus* Monod, 1933 from the African and European coast of the Atlantic Ocean. The present collection contains *gallardoii* sp.n. The three Indo-Pacific species can be distinguished by :

twice as broad as long; posterior margin subequal to front-orbital width. Front about 1/5 as wide as carapace. Antero-lateral margin finely granulated; posterior margin strongly rimmed. Third maxilliped with ischium and merus subequal. Chelipeds smooth and twice as long as length of carapace; fingers shorter than palm; two subproximal teeth well differentiated on dactylus; pereopods 3 > 4 > 5; pereopod 3 more than four times length of carapace with merus 3.5 times longer than broad. Male unknown.

OBSERVATIONS : The species differs from *inaequipes* and *hexagonum* by its much broader carapace ornamented with two transversal rims. We have indentified it with *gallardoii*, a female of the same size belonging to the collection of the Institute of Oceanography at Nhatrang and collected in Nhatrang Bay, Vietnam, ten years ago by Dr. Gallardo.

63. *Asthenognathus hexagonum* Rathbun, 1909

(Fig. 28C)

*Asthenognathus hexagonum* Rathbun, 1909 : 11.—1910 : 339, fig. 24a, b, c; pl. 2, fig. 14.

TYPE LOCALITY : Koh Kong, Gulf of Thailand

TYPE SPECIMEN : Copenhagen Zoological Museum

MATERIAL : Coll. Serène, female of 6 × 8, Manilla Bay, Philippines, May 1964.

OBSERVATIONS : The specimen has been used for comparison with material of *gallardoi*; the species *hexagonum* is much closer to *inaequipes*, from which it differs mainly by the carapace being much broader behind. *Hexagonum* was known only by two females, the largest being ovigerous of 5.6 × 7.8, collected in a muddy bottom 12 m. deep. The present record extends its geographical distribution to the Philippines. *A. inaequipes* is only recorded in Japanese waters.

64. *Pinnixa? hematostica* Sakai, 1934

(Fig. 28D and Pl. VIII, fig. C)

*Pinnixa hematostica* Sakai, 1934: 42, text-fig. 3.—1936: 203, text-fig. 107, pl. 57, fig. 4.—1939: 600, text-fig. 85, pl. 70, fig. 4.

TYPE LOCALITY : Simoda, Japan

TYPE SPECIMEN : ? Sakai collection, Kamakura.

MATERIAL : Sta. 1026-6, ovigerous female of 2 × 5

OBSERVATIONS : By its carapace more than twice broader than long, our specimen is particularly close to *balanoglossana* a species only known in Japan, and host of *Balanoglossus misakiensis*; Sakai (1939) cited a female of 5.5 × 13. However the propodus of the third maxilliped is, on our specimen, much shorter than on that of *balanoglossana* as figured by Sakai (1936, fig. 2). Considering the length of the propodus and the width of the ischiomerus, the condition of our specimen is closer to that of *penultipedalis* and *hematostica*. On these two species the carapace, according to the measurements given by the authors, is only twice broader than long; but the measurements taken on the figures of *hematostica* given by Sakai (1936, fig. 3) and of *penultipedalis* given by Shen (1932, fig. 10a) show that the carapace is more than twice broader than long on the two species, as it is on our specimen. On *penultipedalis*, at least as it is illustrated by Shen (1932), the merus of the pereopod 4 is much broader (less than 1½

longer than broad) than on *hematostica*. It is above all in consideration of this character that our specimen is identified, with reserve, as *hematostica*.

65. *Tetrias fischeri* (A. Milne-Edwards, 1867)

*Pinnotheres fischeri* A. Milne-Edwards, 1867: 287.

*Pinnixa fischeri*, A. Milne-Edwards, 1873: 319, pl. 18, fig. 3.  
—De Man, 1888: 385, pl. 17, fig. 2.

*Pinnixa (Tetrias) fischeri*, Alcock, 1900: 336.

*Tetrias fischeri*, Tesch, 1918: 268, pl. 18, fig. 1.—Balss, 1938: 75.—Serène, 1964: 278, pl. 24C.—Sakai, 1965: 181, pl. 87, fig. 5, 6.

TYPE LOCALITY : New Caledonia

TYPE SPECIMEN : Paris Museum

MATERIAL : Sta. 1010-9, male of 5 × 6, 1 juvenile.  
—Sta. 1020-3, male of 4 × 5.—Sta. 1020-2, male of 3.9 × 5. Ph. 233/1

OCYPODIDAE Ortmann, 1894

66. *Macrophthalmus* sp. 1

MATERIAL : Sta. 1006-6, male of 3.5 × 6.5.—  
Sta. 1006-4, female of 2.5 × 4.5 and 1 juvenile.—  
Sta. 1006-7, female of 3 × 5.5, male of 2.8 × 4.—  
Sta. 1010-2, male of 4 × 7, ovigerous female of 4 × 6.

OBSERVATIONS : The specimens belong to the group of species with very long eye peduncles extending far over the tips of the external orbital angles. Originally the study of our specimens was abandoned because of their small size. Papers recently published on similar small species of *Macrophthalmus*, such as *philippinensis* and *latipes*, seem to indicate that it would be interesting to resume study of them.

67. *Macrophthalmus* sp. 2

MATERIAL : Sta. 1039-5, female of 13 × 17

OBSERVATIONS : The specimen is close to *M. crinitus* and *M. pacificus*, but provides insufficient information to identify it in the present state of our knowledge.

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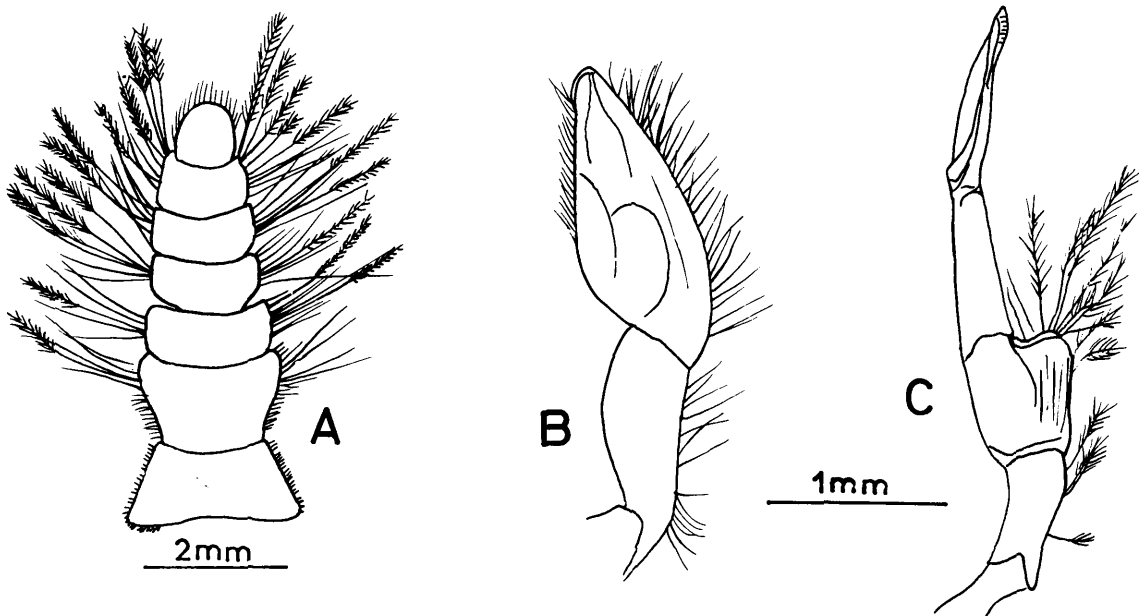


Fig. 1—*Cosmonotus grayi*, male of 10 × 8. (A) abdomen. (B) pleopod 1. (C) pleopod 2.

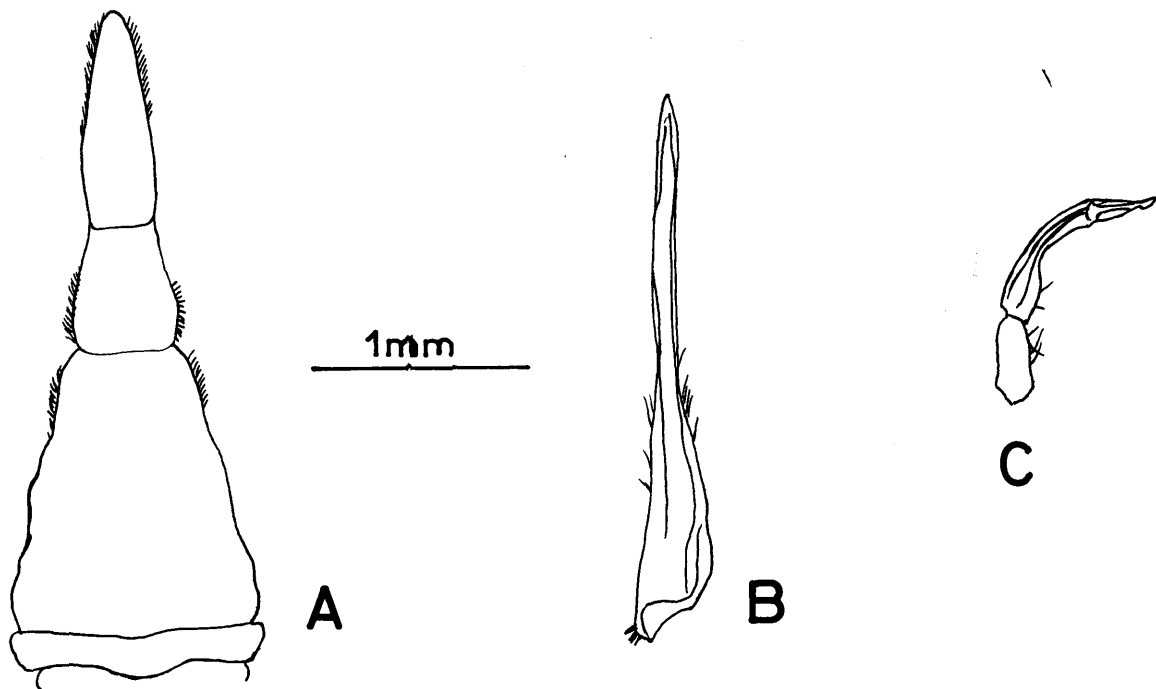


Fig. 2—*Drachiella morum*, male of 5 × 6. (A) abdomen. (B) pleopod 1. (C) pleopod 2.

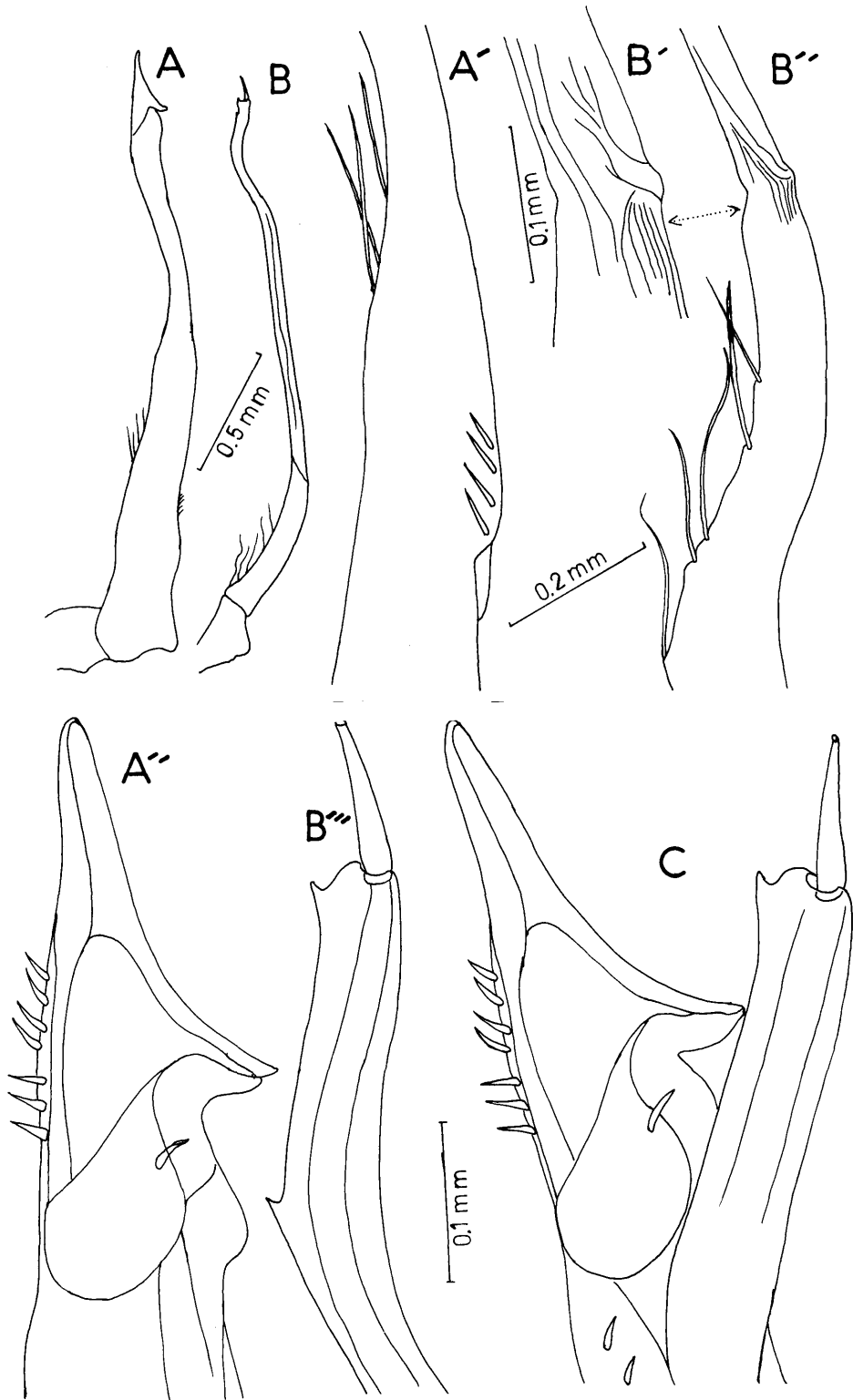


Fig. 3—*Nuciops modesta*, male of 3.8 × 4. (A) pleopod 1. (A') subproximal part. (A'') distal part. (B) pleopod 2. (B', B'') subproximal part. (B''') distal part. (C) distal part of pleopods 1 and 2 in natural position.



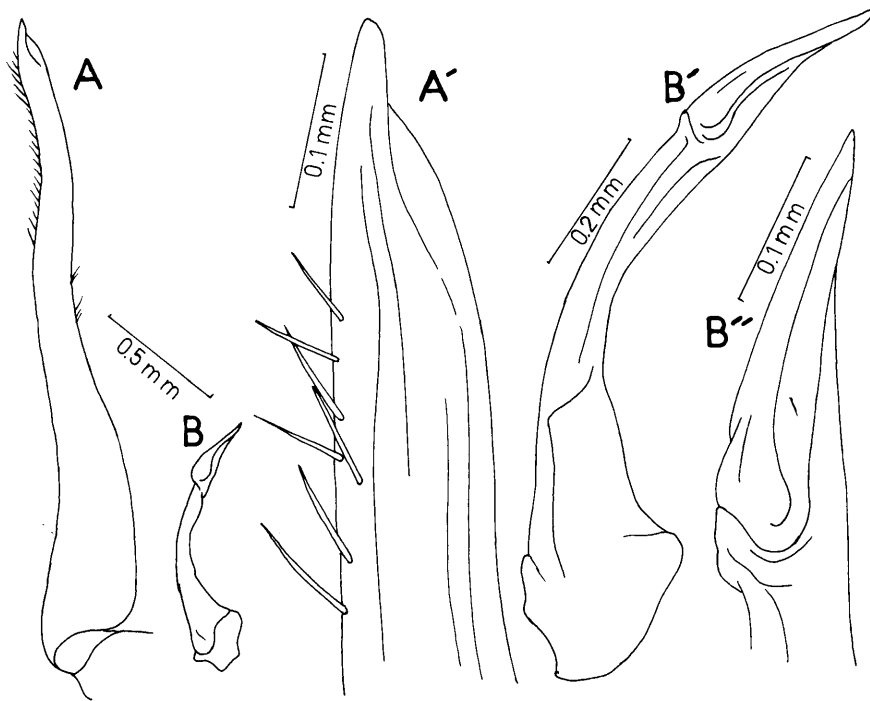


Fig. 4—*Nucia rosea*, male of 9.5 × 11.5 (A, A') pleopod 1. (B, B', B'') pleopod 2.

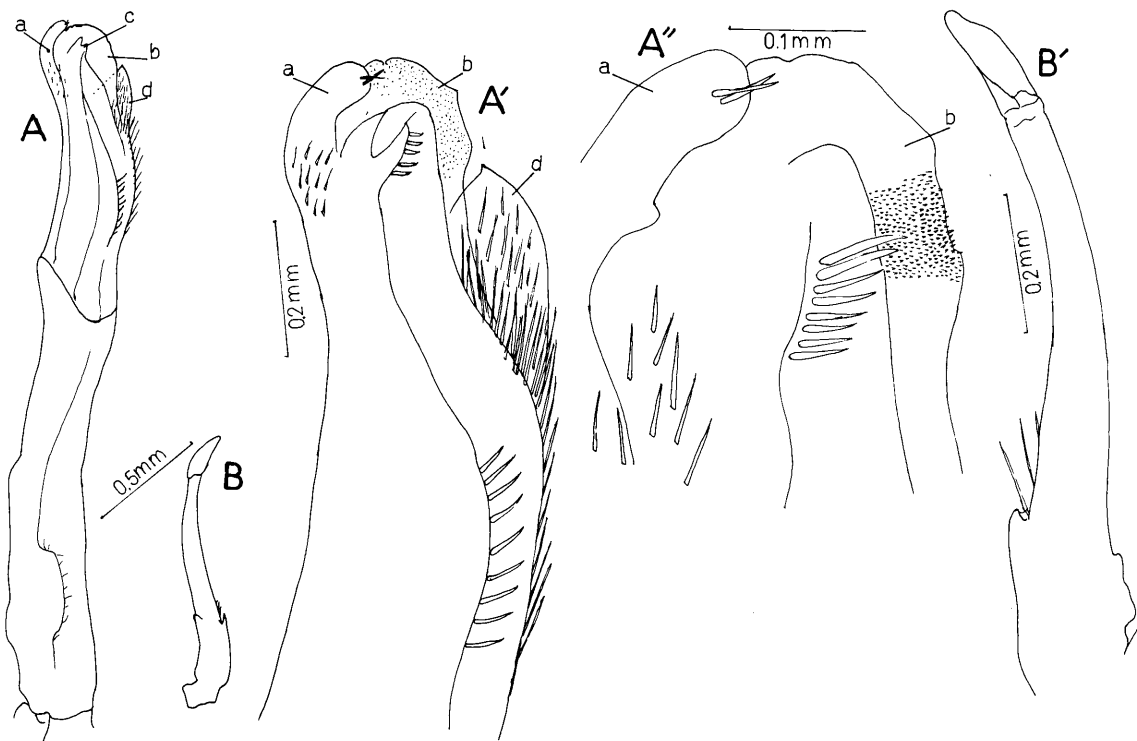


Fig. 5—*Paranursia abbreviata*, male of 6 × 6. (A, A', A'') pleopod 1. (B, B') pleopod 2.

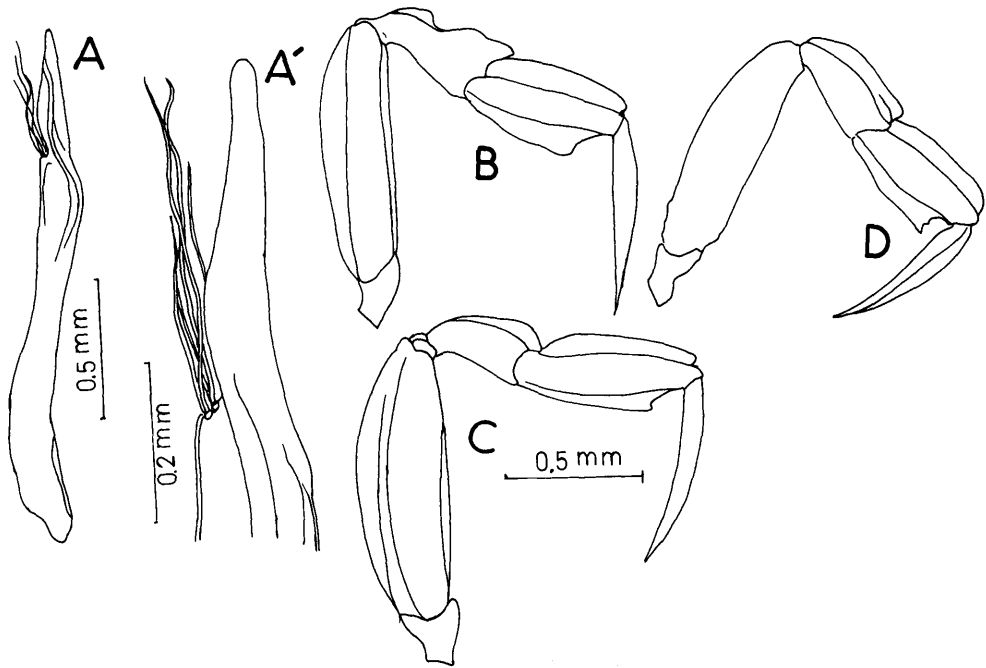


Fig. 6—*Cryptocnemus siamensis*, holotype, male of 5 × 8. (A,A') pleopod 1. (B,C,D) pereopods 3-5.

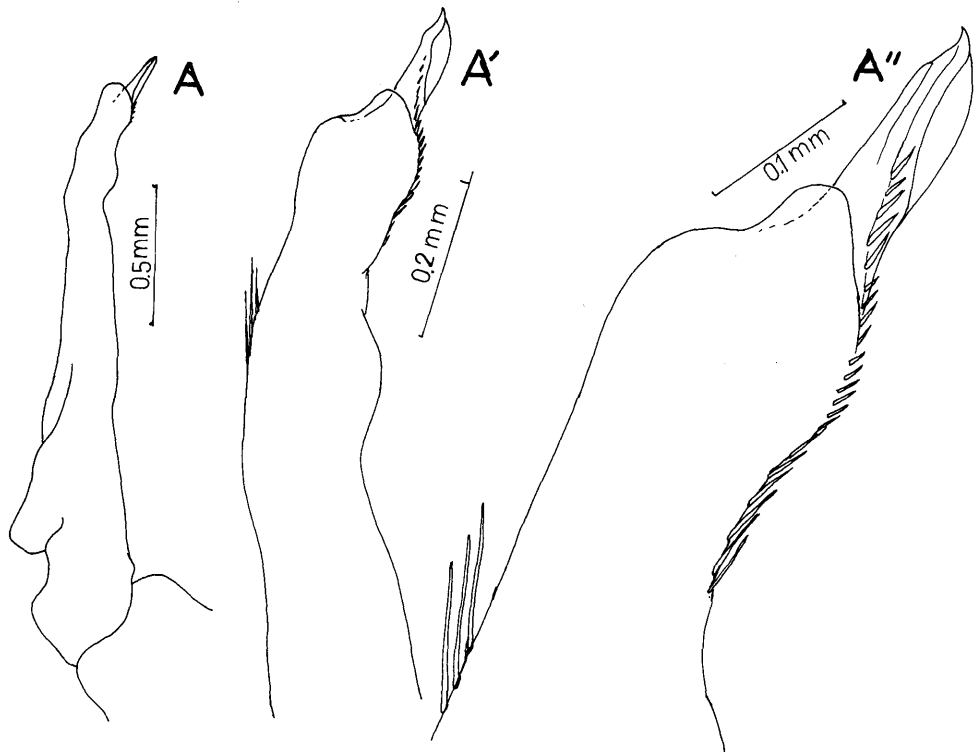


Fig. 7—*Onychomorpha lamelligera*, male of 6.5 × 6. (A,A',A'') pleopod 1.

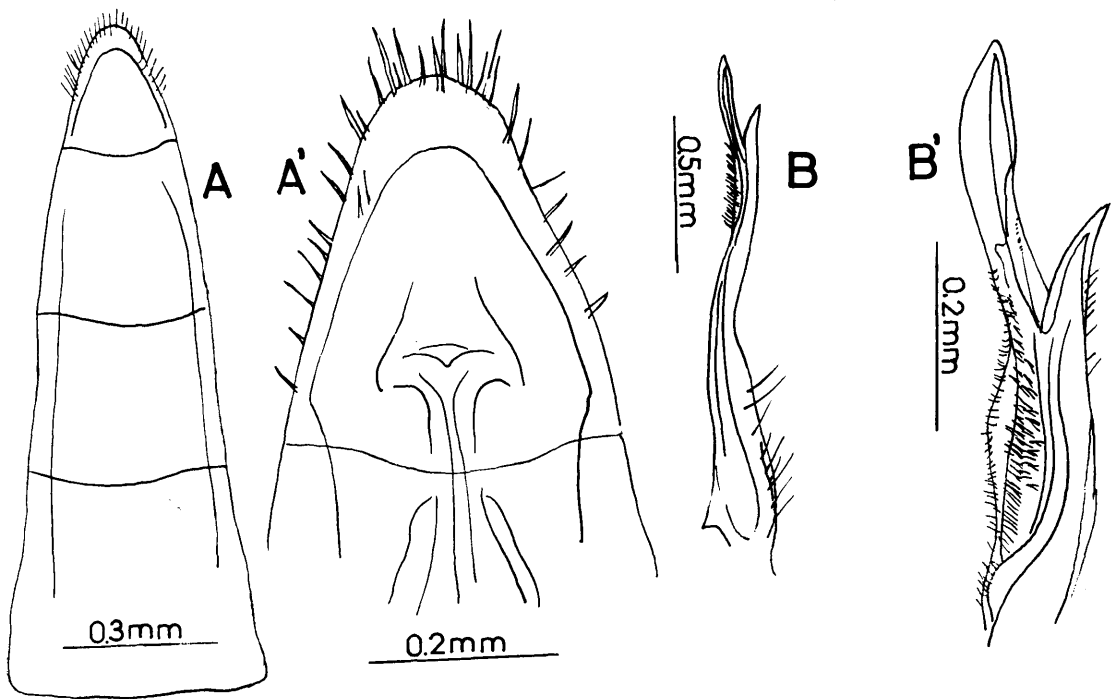


Fig. 8—*Nursia tonsor*, male of 5 × 6 (A,A') abdomen. (B,B') pleopod 1.

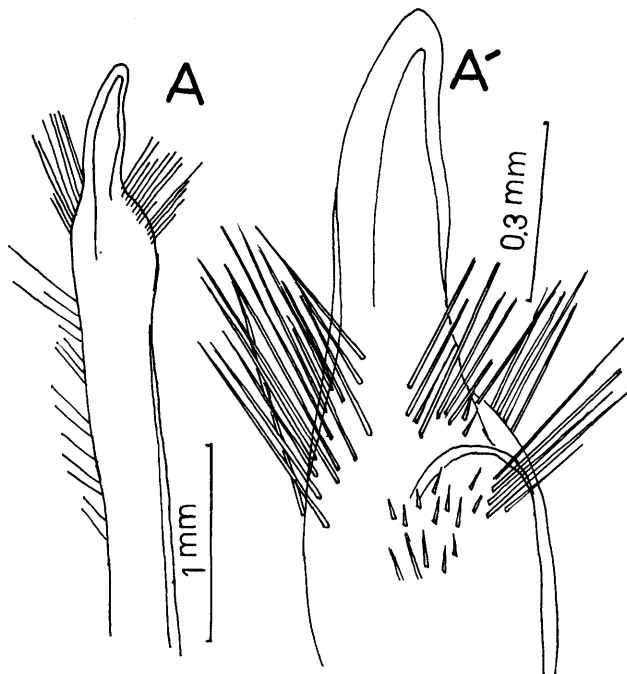


Fig. 9—*Myra elegans*, male of 8 × 16 (A,A') pleopod 1.

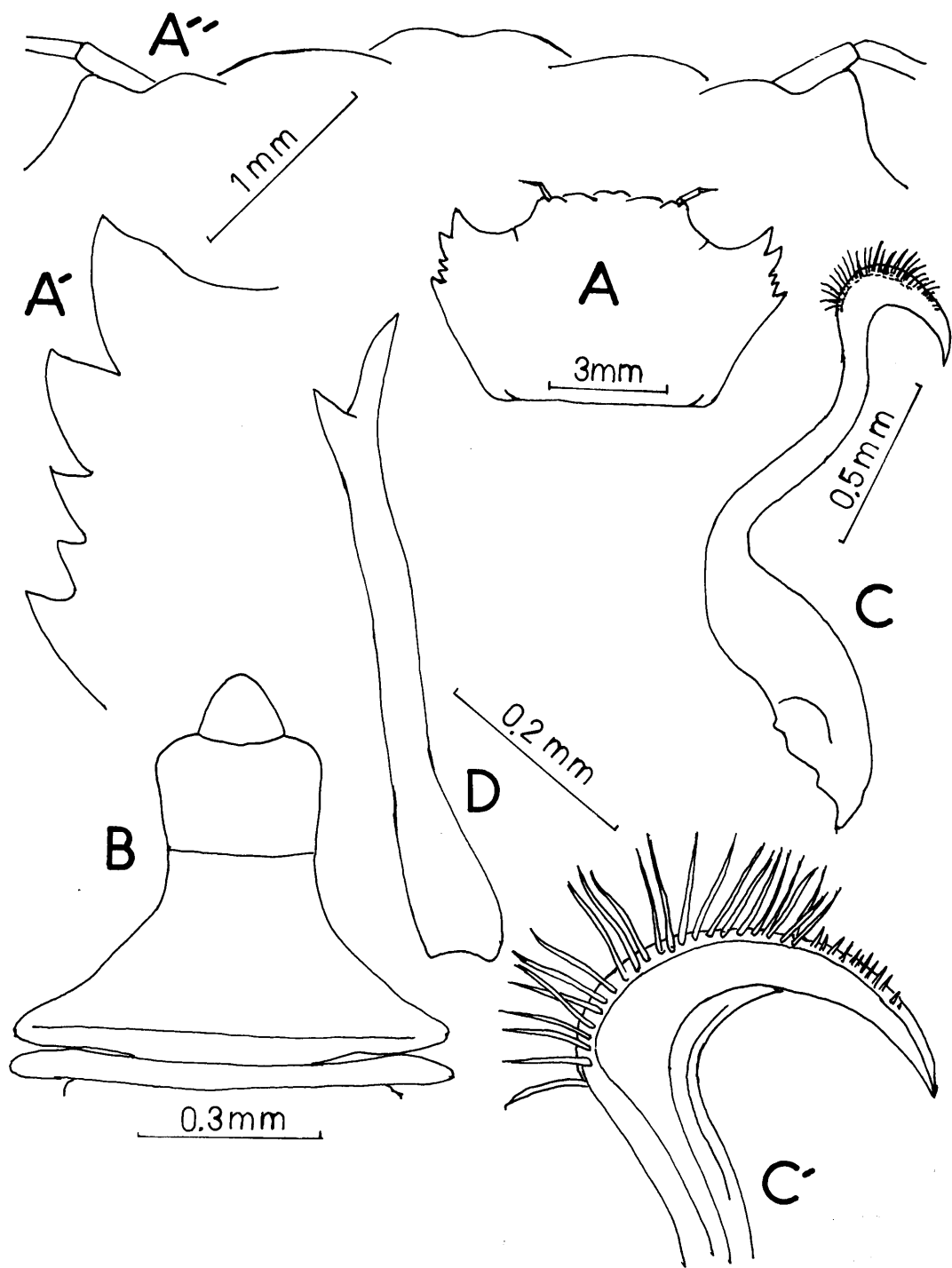


Fig. 10—*Thalamita muusi*, holotype, male of 6×8 (A) carapace. (A') antero-lateral teeth. (A'') frontal border. (B) abdomen. (C, C') pleopod 1. (D) pleopod 2.

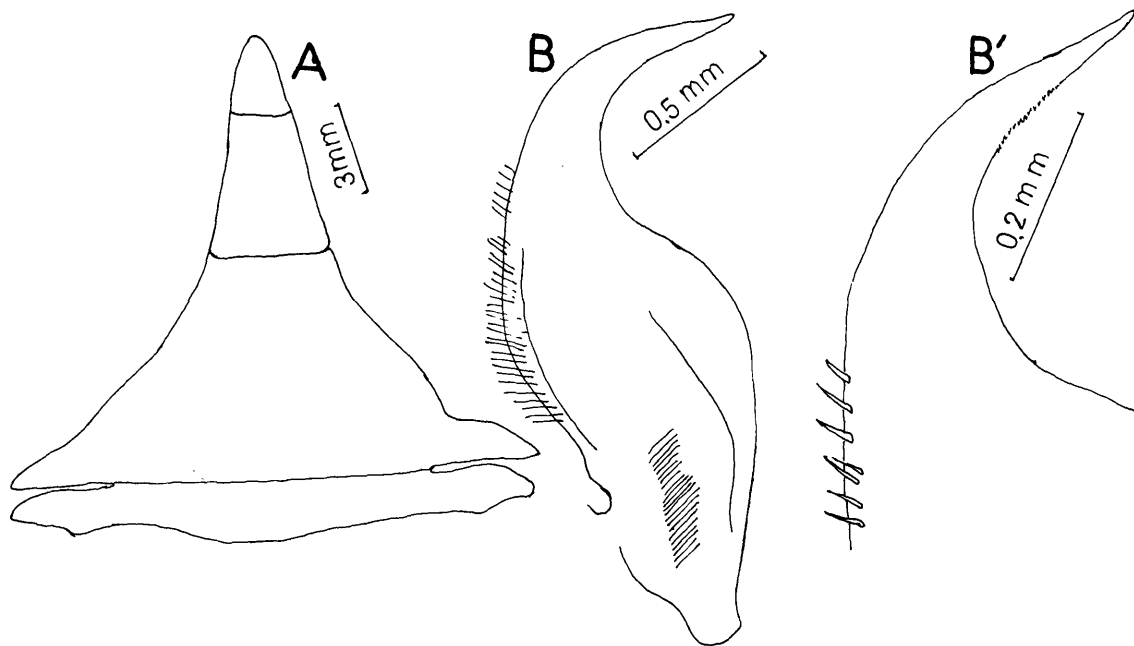


Fig. 11—*Hellenus pulchricristatus* male of 10 × 19. (A) abdomen. (B, B') pleopod 1.

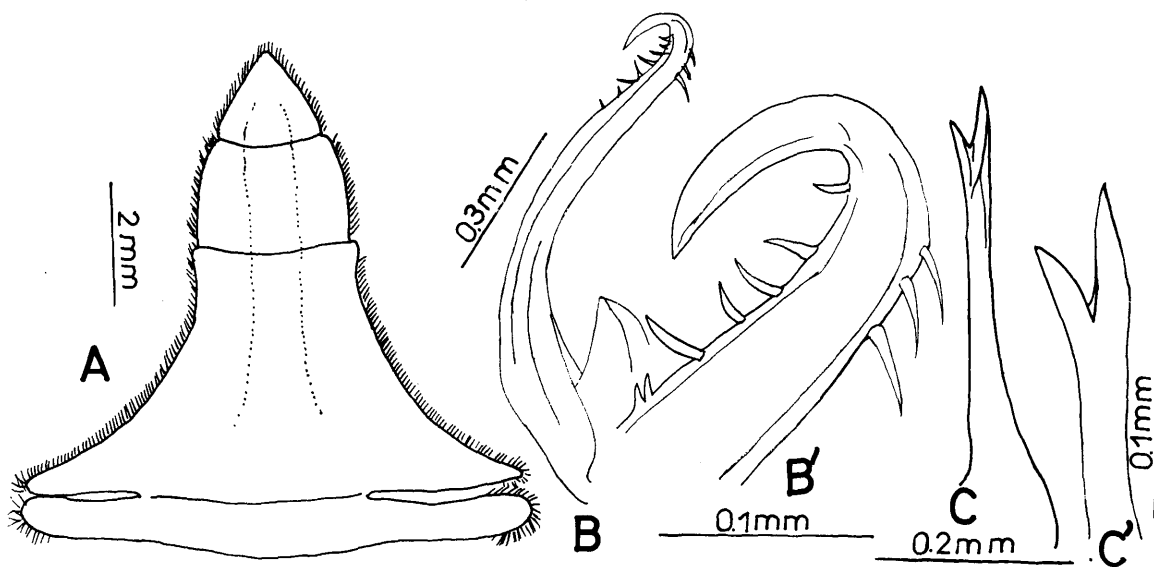


Fig. 12—*Thalamita paryidens*, male of 4 × 6 (A) abdomen. (B, B') pleopod 1. (C, C') pleopod 2

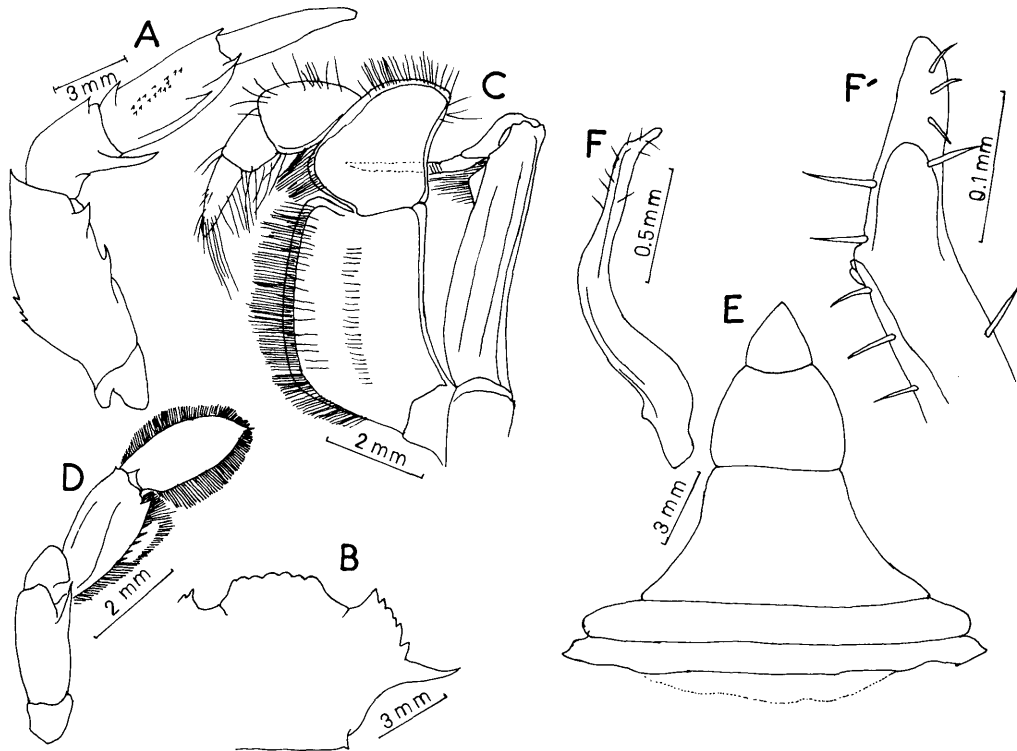


Fig. 13—*Goniohellenus vadorum*, male of 7 × 13 (A) outline of cheliped. (B) outline of carapace. (C) third maxilliped. (D) outline of pereopod 5; (E) abdomen. (F, F') pleopod 1.

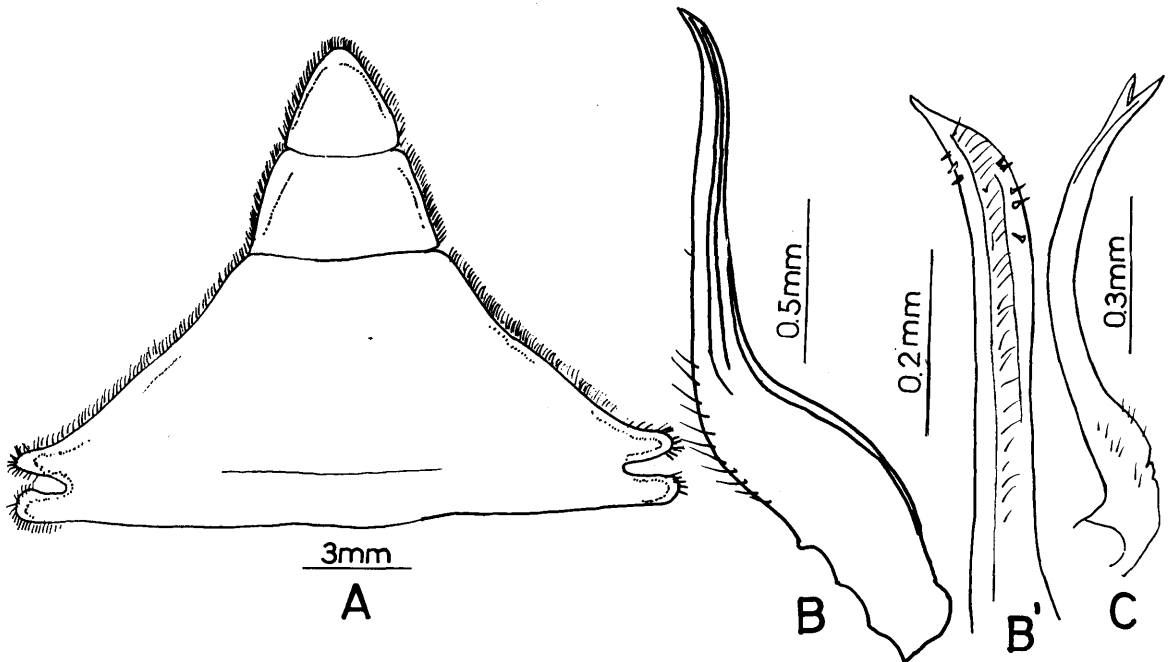


Fig. 14—*Libystes edwardsi*, male of 10 × 6. (A) abdomen, (B, B') pleopod 1. (C) pleopod 2.

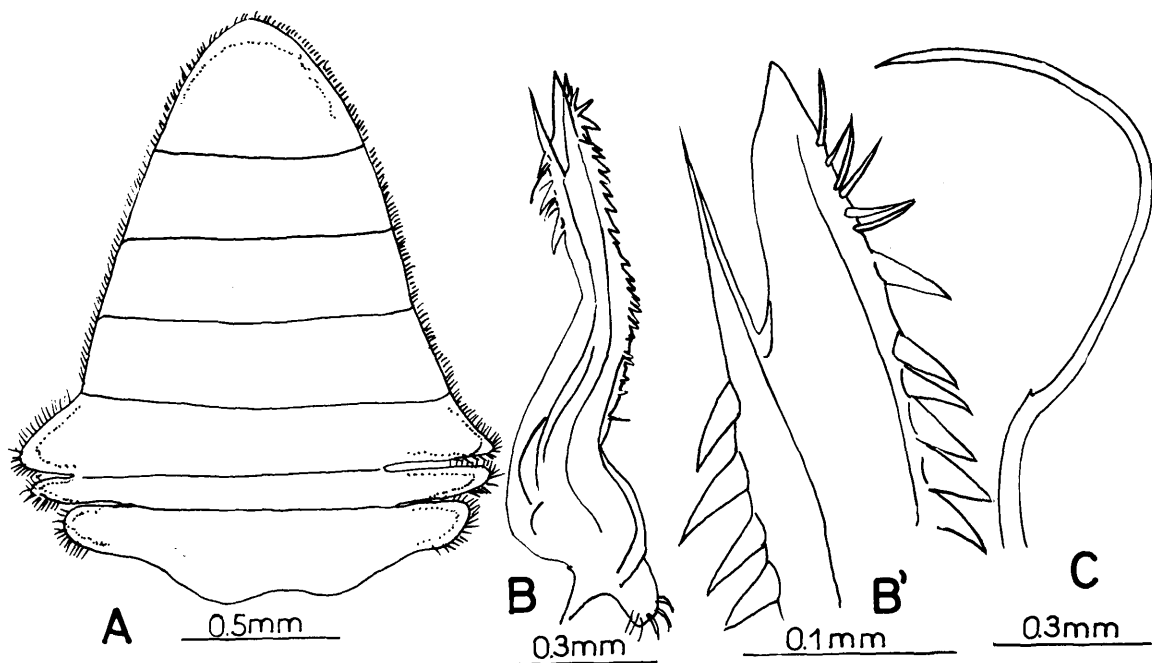


Fig. 15—*Singhaplax ockelmanni*, holotype, male of 3 × 5. (A) abdomen (B,B') pleopod 1. (C) pleopod 2

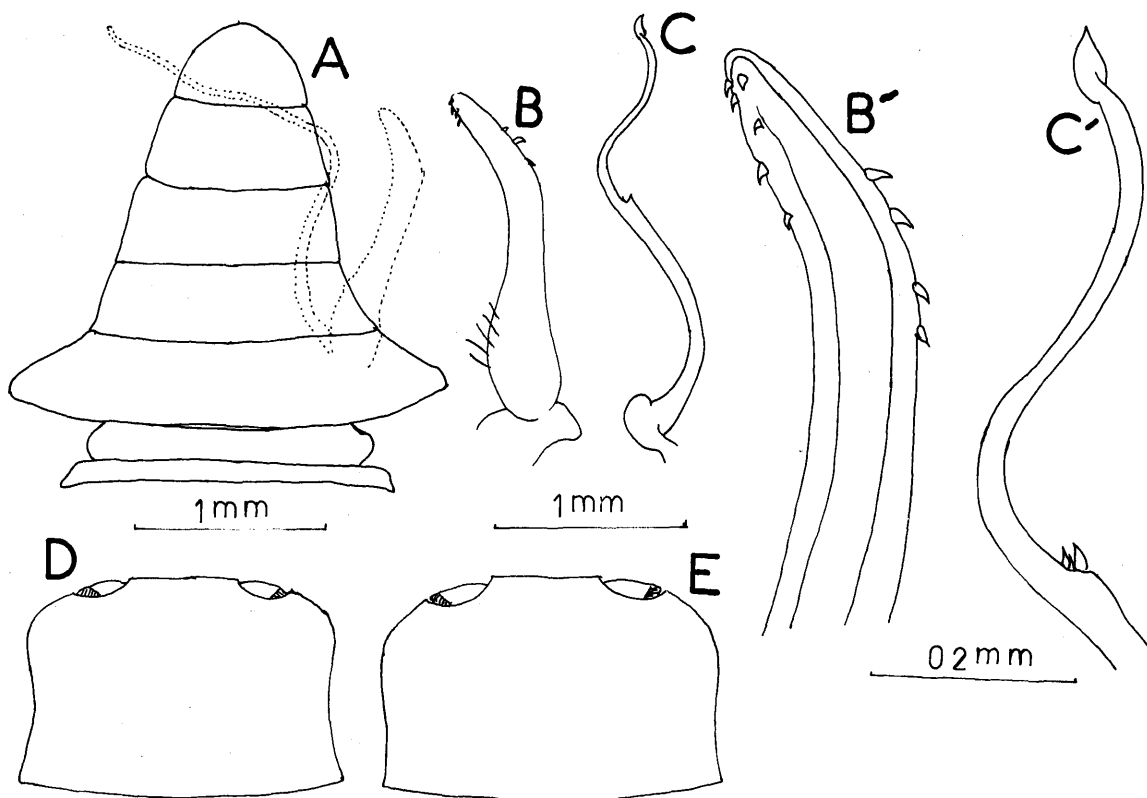


Fig. 16—*Notonyx vitreus*, male of 3.9 × 4.3. (A) abdomen. (B,B') pleopod 1. (C,C') pleopod 2. (D) outline of the carapace (E) outline of the carapace of *Notonyx nitidus*, male of 5 × 7.5

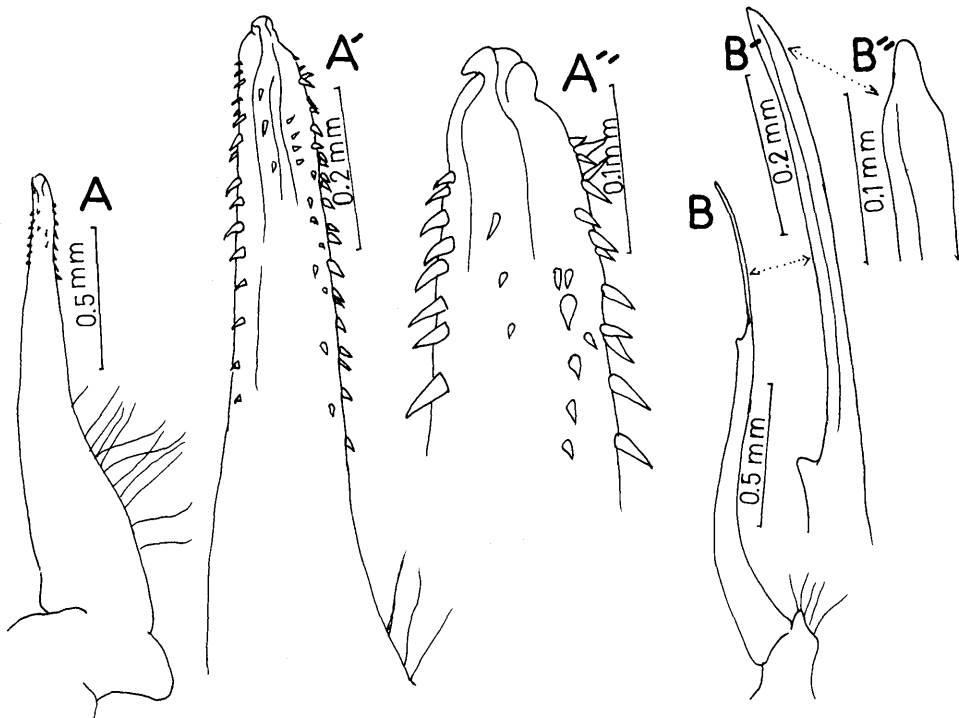


Fig. 17—*Typhlocarcinodes hirsutus*, male of 5.8 × 6.7. (A, A', A'') pleopod 1. (B, B', B'') pleopod 2.

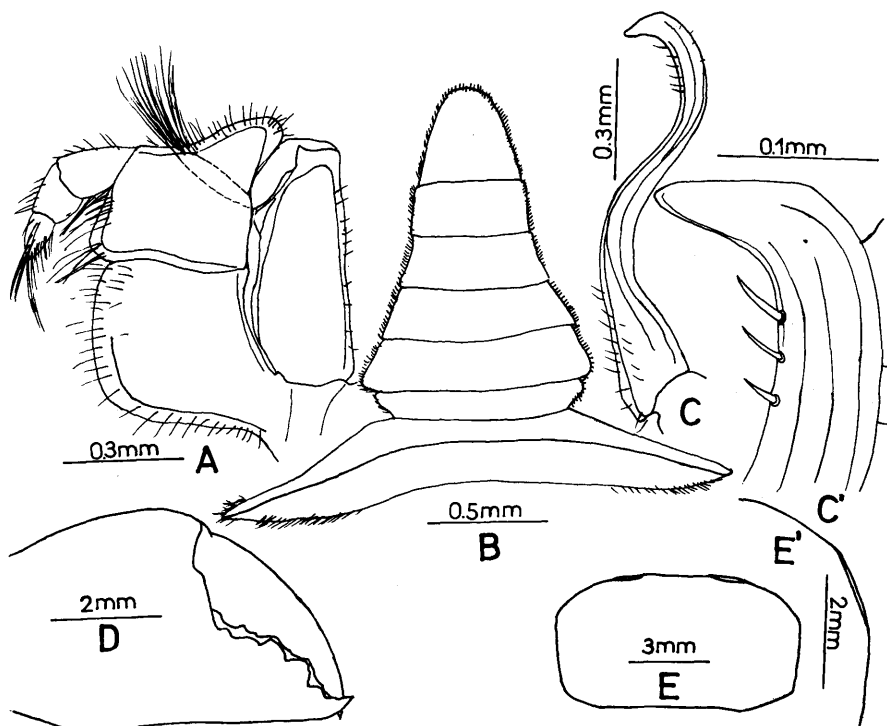


Fig. 18—*Ceratoplax fulgida*, male of 3 × 5. (A) third maxilliped. (B) abdomen. (C, C') pleopod 1. (D) cheliped. (E, E') outline of the carapace.



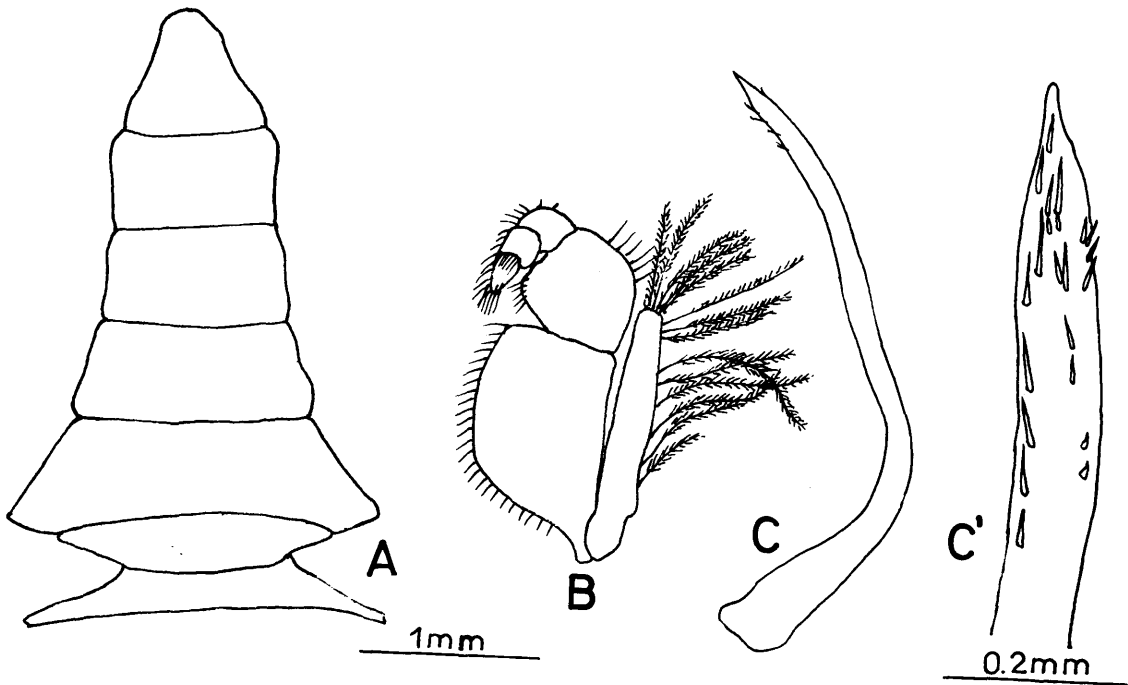


Fig. 19—*Xenophthalmodes dolichophallus*, male of 5 × 6. (A) abdomen. (B) third maxilliped. (C,C') pleopod 1.

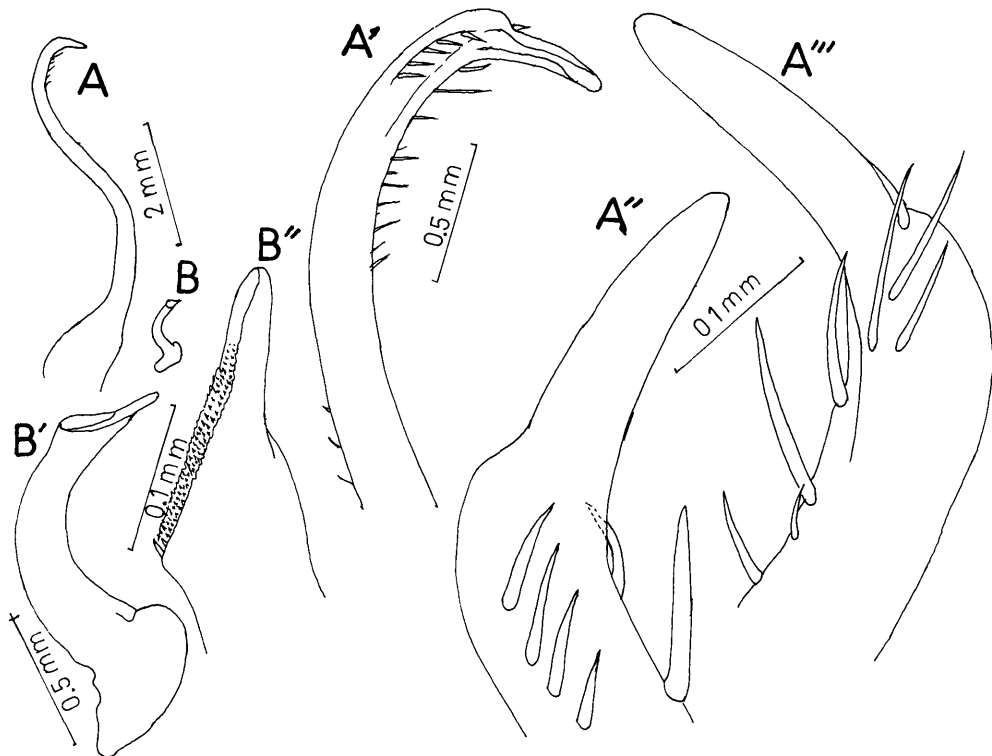


Fig. 20—*Lophoplax teschi*, male. (A,A',A'',A''') pleopod 1. (B,B',B'') pleopod 2.

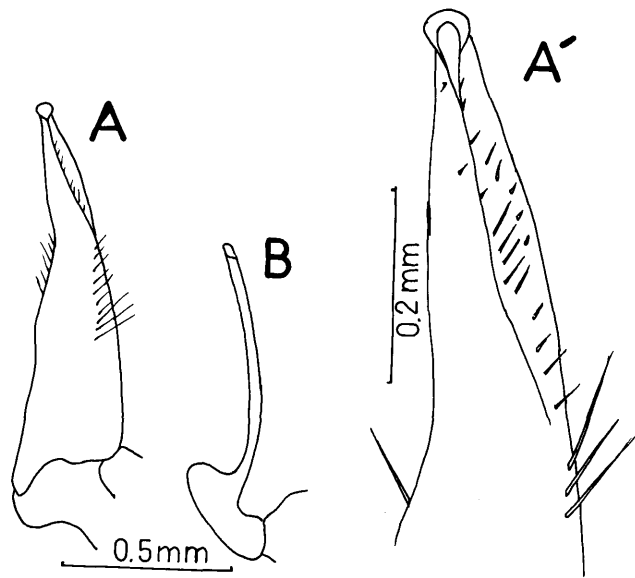


Fig. 21—*Camatopsis rubidus*, male of 4.5 × 5. (A,A') pleopod 1. (B) pleopod 2.

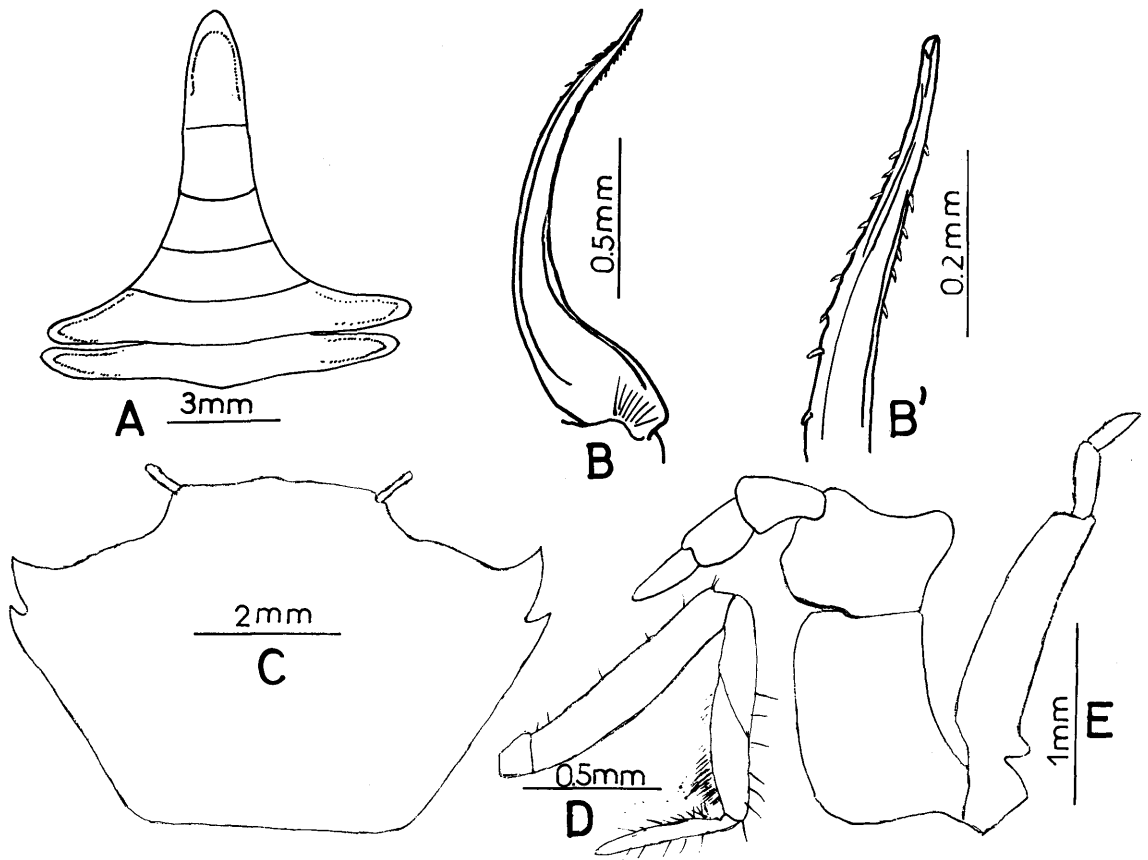


Fig. 22—*Heteroplax nitidus*, male of 5 × 7.5. (A) abdomen. (B,B') pleopod 1. (C) carapace. (D) pereiopod 5. (E) third maxilliped.

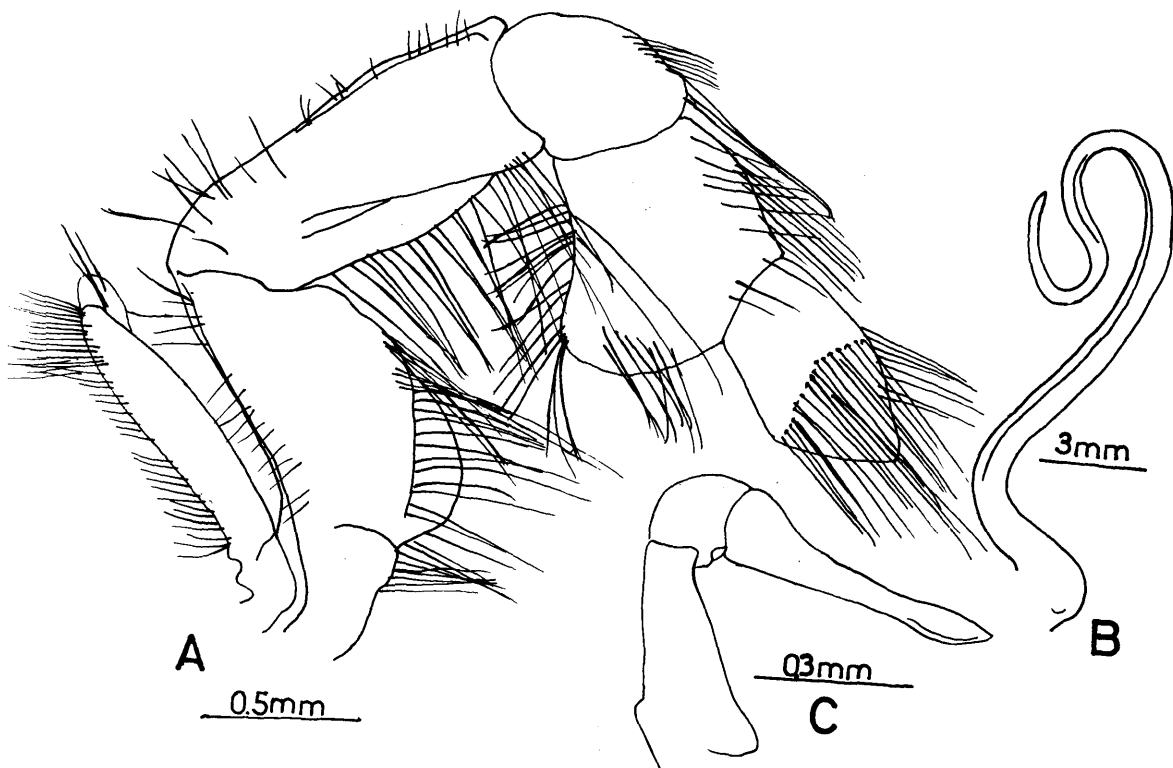


Fig. 23—*Thaumastoplax orientalis*, male of 6 × 8. (A) third maxilliped. (B) pleopod 1. (C) pleopod 2.

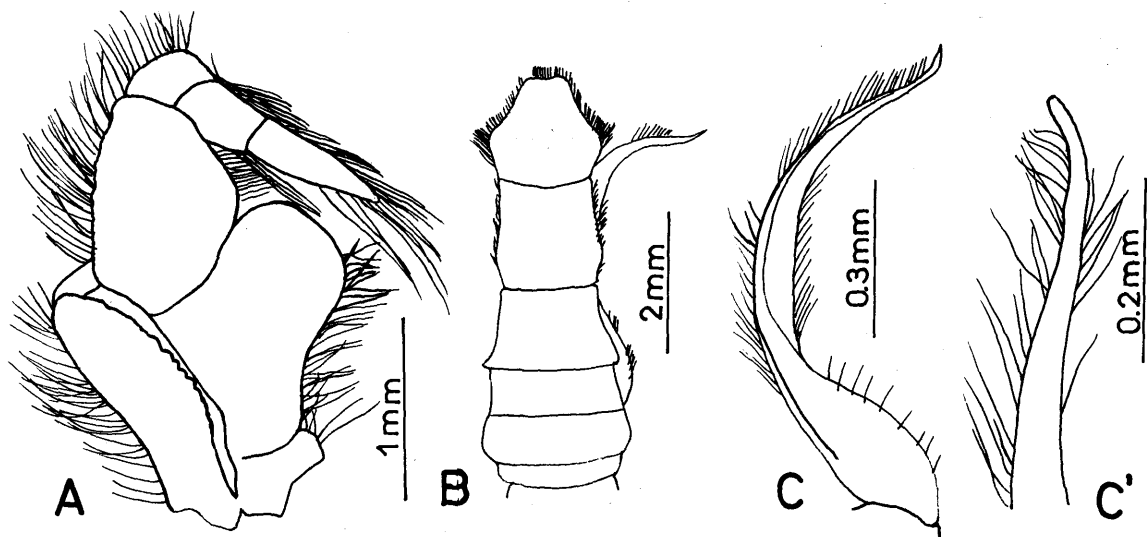


Fig. 24—*Hexapus sexpes*, male of 6 × 9. (A) third maxilliped. (B) abdomen. (C, C') pleopod 1.

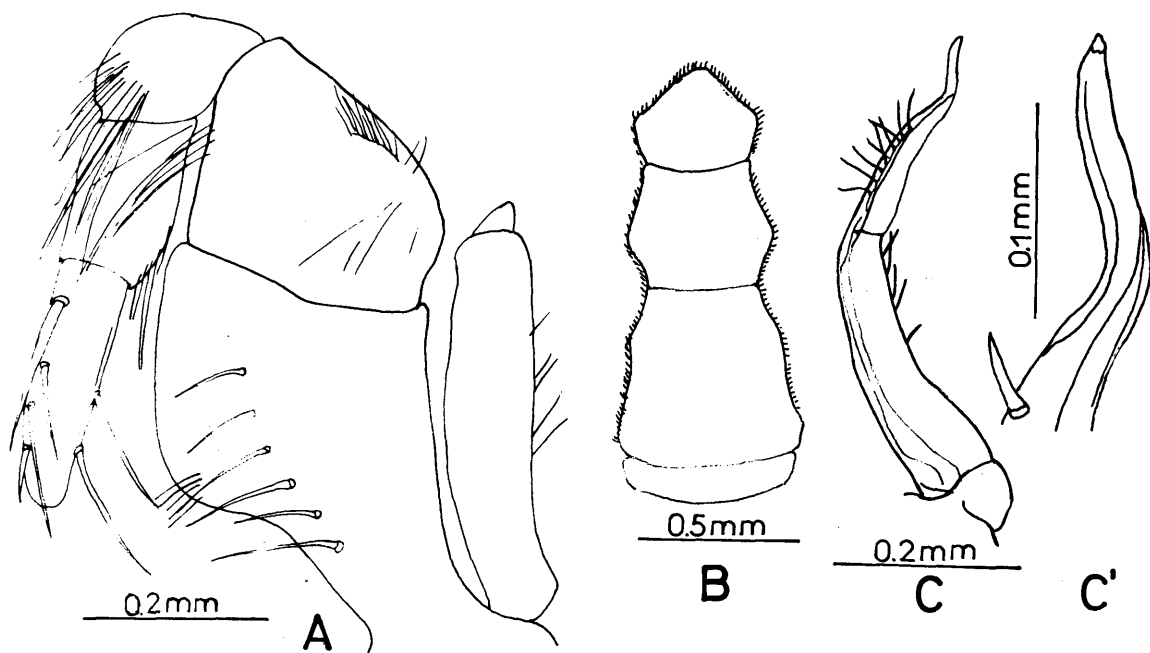


Fig. 25—*Hexapus stephensi*, holotype, male of 3 × 4. (A) third maxilliped. (B) abdomen. (C,C') pleopod 1

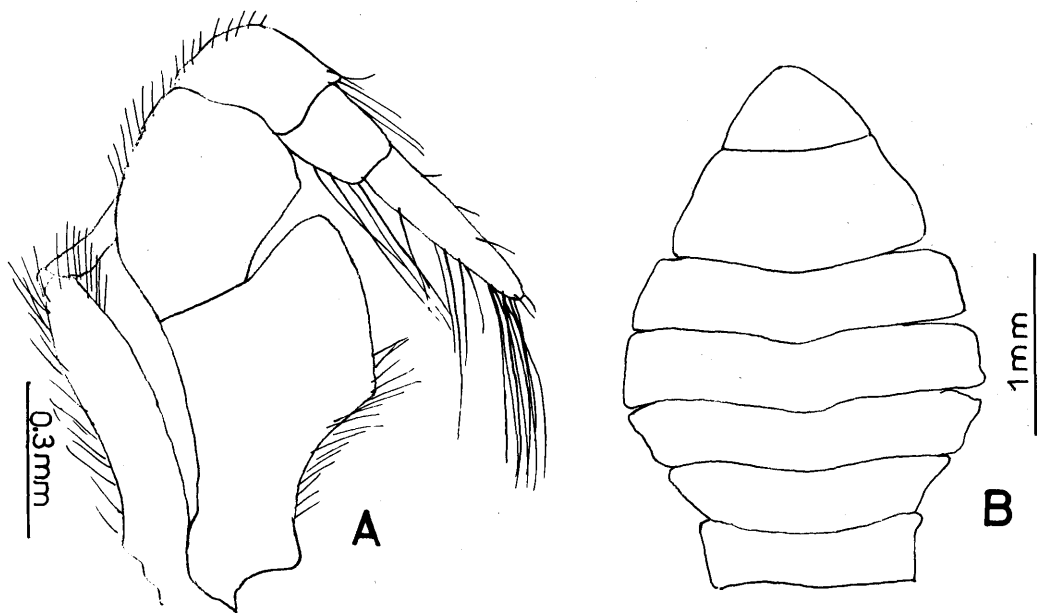


Fig. 26—*Hexapus granuliferus*, female of 4 × 5. (A) third maxilliped. (B) abdomen.

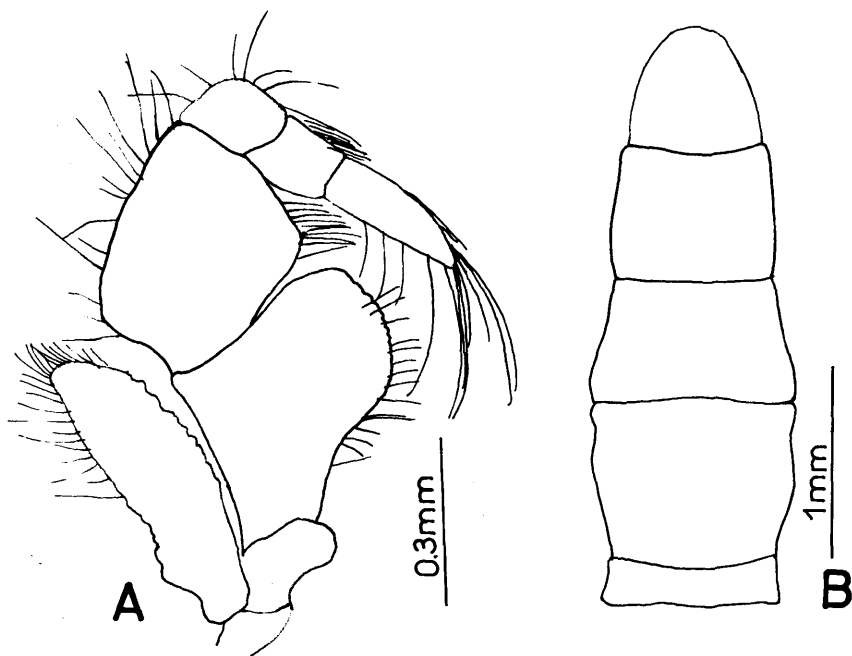


Fig. 27—*Hexapus edwardsi*, male of 4 × 5. (A) third maxilliped. (B) abdomen.

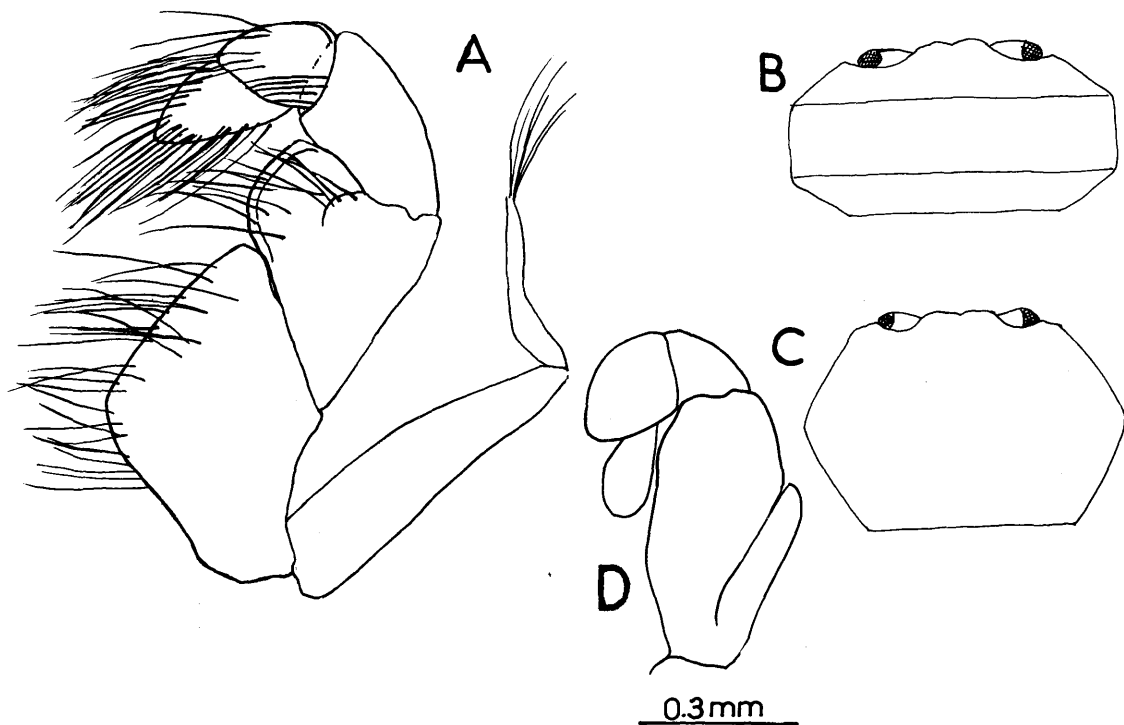


Fig. 28—*Asthenognathus gallardoi*, holotype, female of 3 × 6. (A) third maxilliped. (B) outline of the carapace. (C) outline of the carapace of *Asthenognathus hexagonum*, female of 6 × 8. (D) third maxilliped. of *Pinnixa hematostica*, female of 2 × 5.

PLATE I

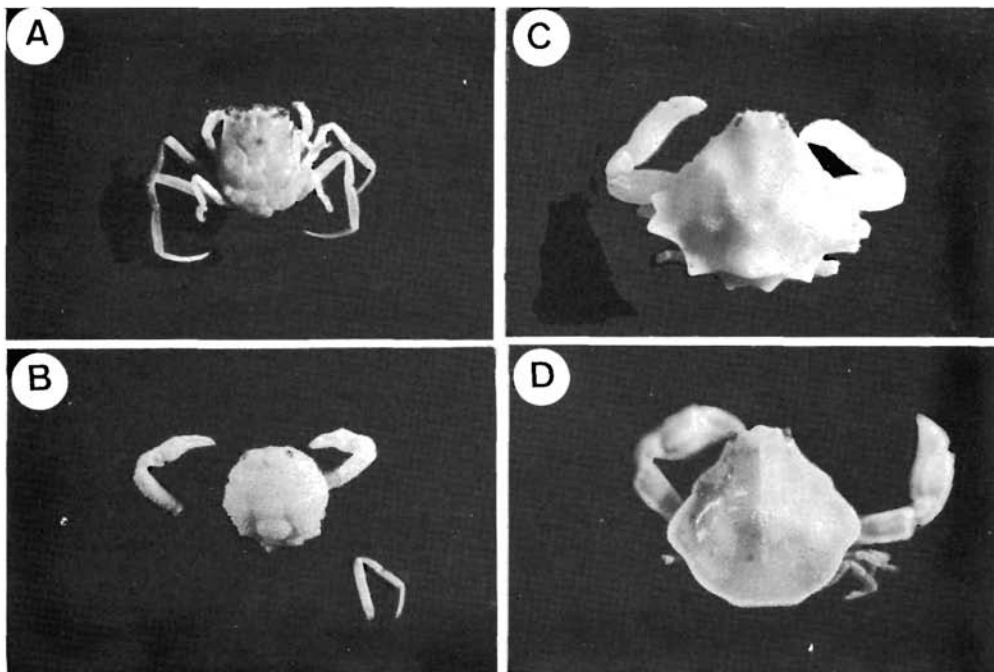


Fig. A—*Ethusa* sp., male of  $5 \times 4$ .  
Fig. B—*Nuciops modesta*, male of  $3 \times 3.75$ .

Fig. C—*Nursia lar*, female of  $5 \times 6$ .  
Fig. D—*Paranursia abbreviata*, female of  $3 \times 3$ .

PLATE II

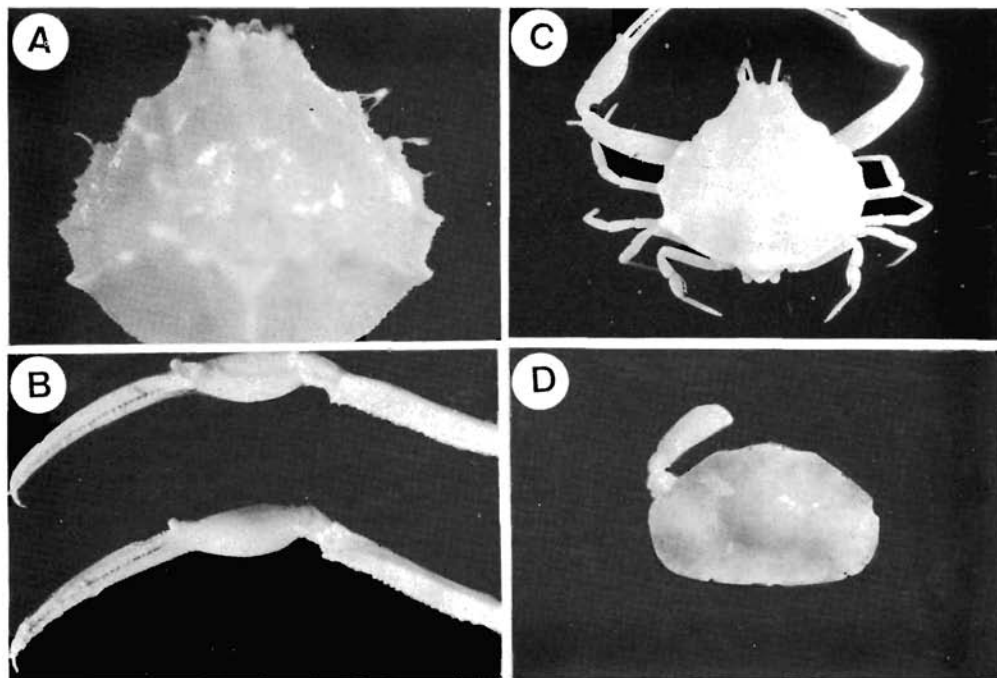


Fig. A—*Nursilia tonsor*, male of  $5 \times 6$ , carapace.  
Fig. B—*Nursilia tonsor*, male of  $5 \times 6$ , chelipeds.

Fig. C—*Nursilia dentata*, male of  $6.5 \times 8$ .  
Fig. D—*Cryptocnemus siamensis*, holotype, male of  $5 \times 8$ .

PLATE III

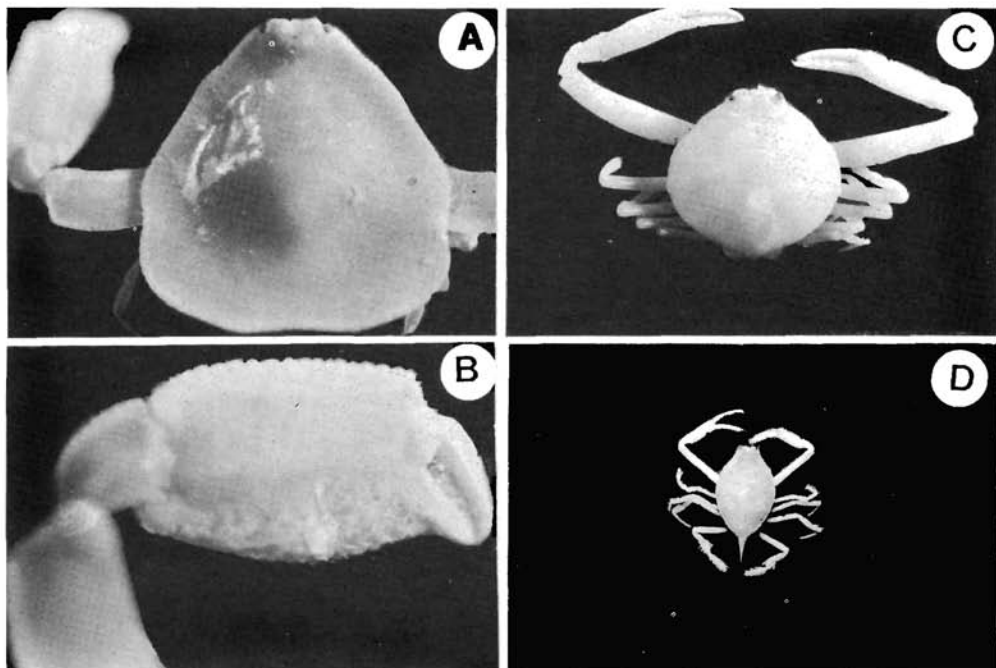


Fig. A—*Onychomorpha lamelligera*, female of 5 × 5, entire.

Fig. B—*Onychomorpha lamelligera*, female of 5 × 5, cheliped.

Fig. C—*Randallia eburnea*, female of 9 × 9.

Fig. D—*Myra elegans*, male of 16 × 8.

PLATE IV

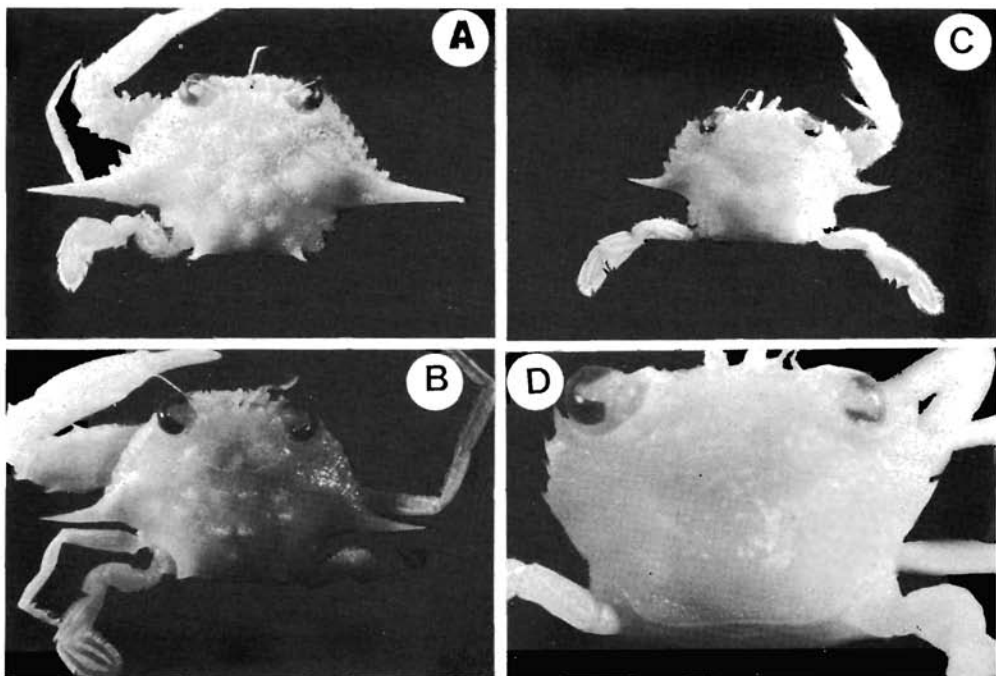


Fig. A—*Hellenus pulchricristatus*, male of 19 × 10.

Fig. B—*Goniohellenus vadornm*, male of 13 × 7.

Fig. C—*Hellenus* aff. *hastatoides*, male of 16 × 5.

Fig. D—*Thalamita muusi*, holotype, male of 6 × 8.

PLATE V

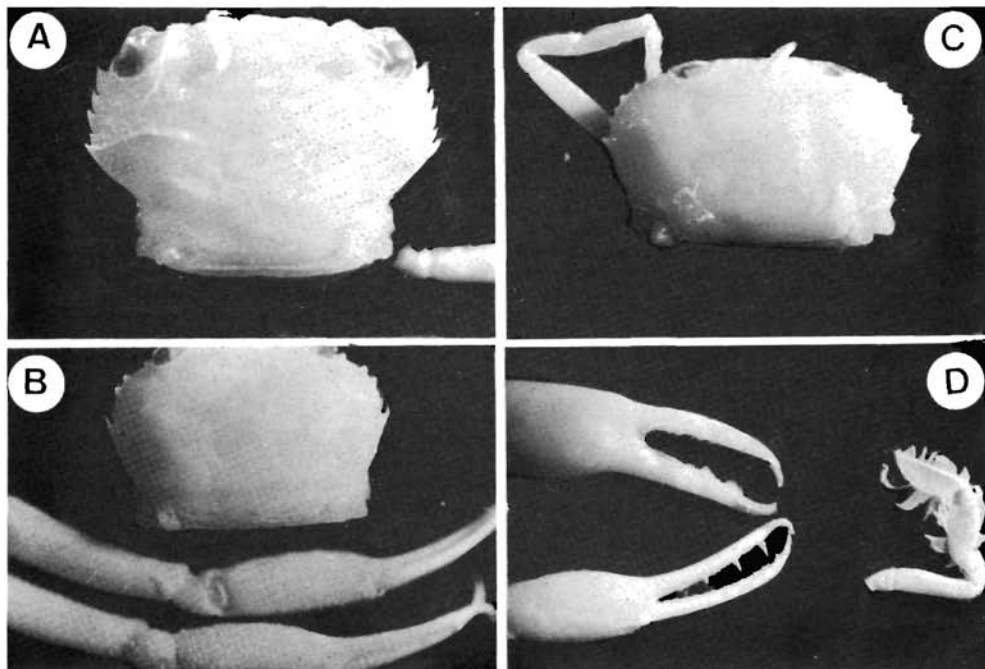


Fig. A—*Thalamita parvidens*, male of  $6 \times 4$ .  
Fig. B—*Libystes edwardsi*, male of  $3 \times 4$ .

Fig. C—*Libystes edwardsi*, male of  $6 \times 10$ , carapace.  
Fig. D—*Libystes edwardsi*, male of  $6 \times 10$ , chelipeds.

PLATE VI

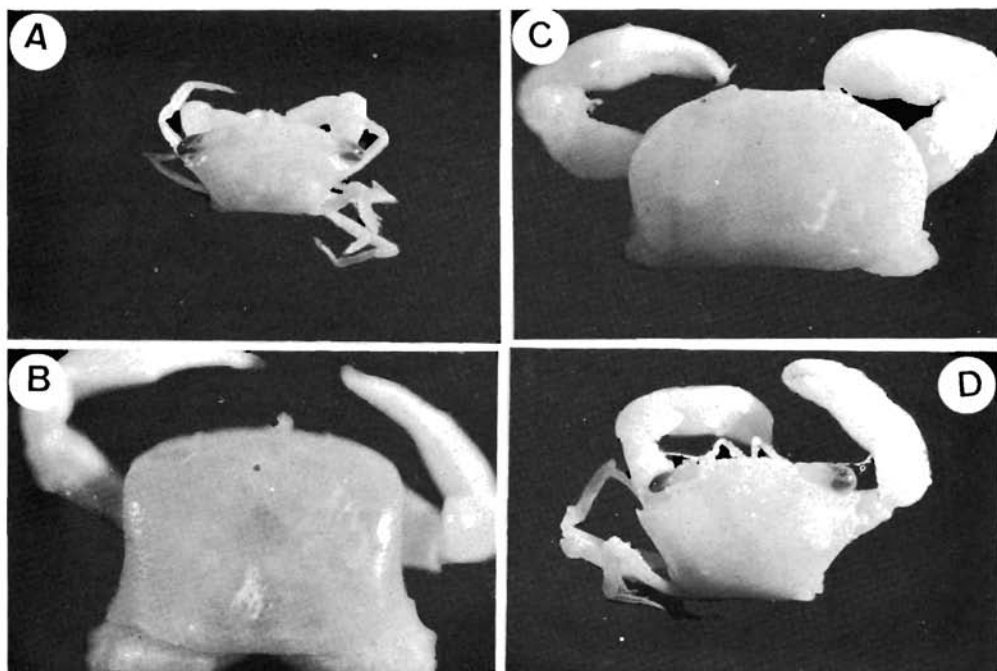


Fig. A—*Singhaplax ockelmanni*, female of  $3 \times 6$ .  
Fig. B—*Notonyx vitreus*, male of  $3.2 \times 4$ .

Fig. C—*Ceratoplax? fulgida*, male of  $3 \times 5$ .  
Fig. D—*Heteroplax nitidus*, male of  $5 \times 7.5$ .



PLATE VII

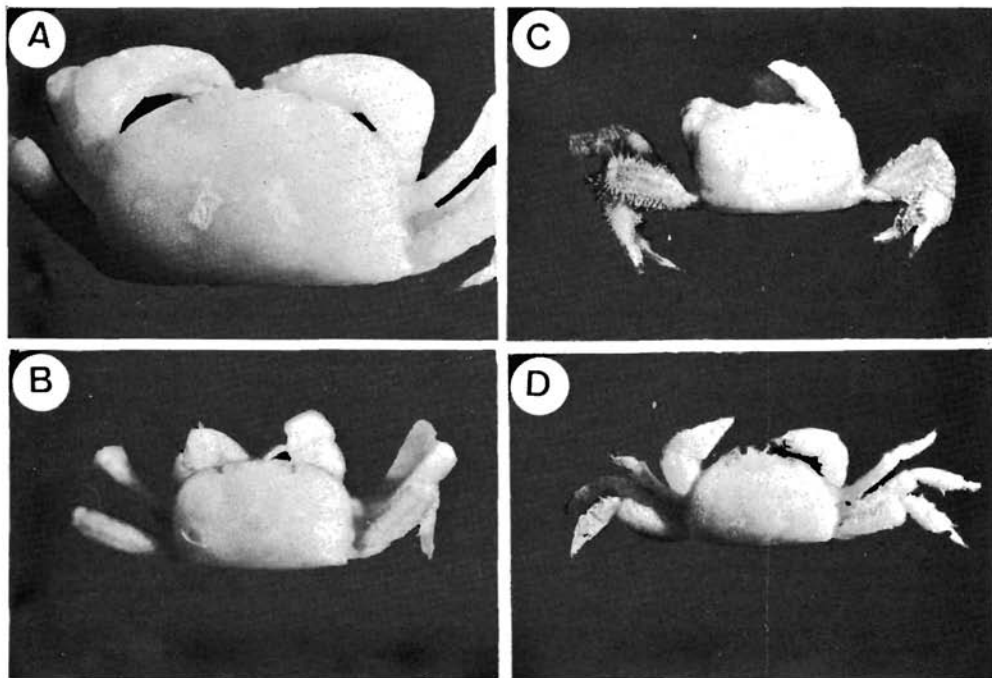


Fig. A—*Hexapus sexpes*, male of 6 × 9.  
Fig. B—*Hexapus stephensi*, male of 3 × 4.

Fig. C—*Hexapus granuliferus*, male of 4 × 5.  
Fig. D—*Hexapus edwardsi*, female of 4 × 6.

PLATE VIII

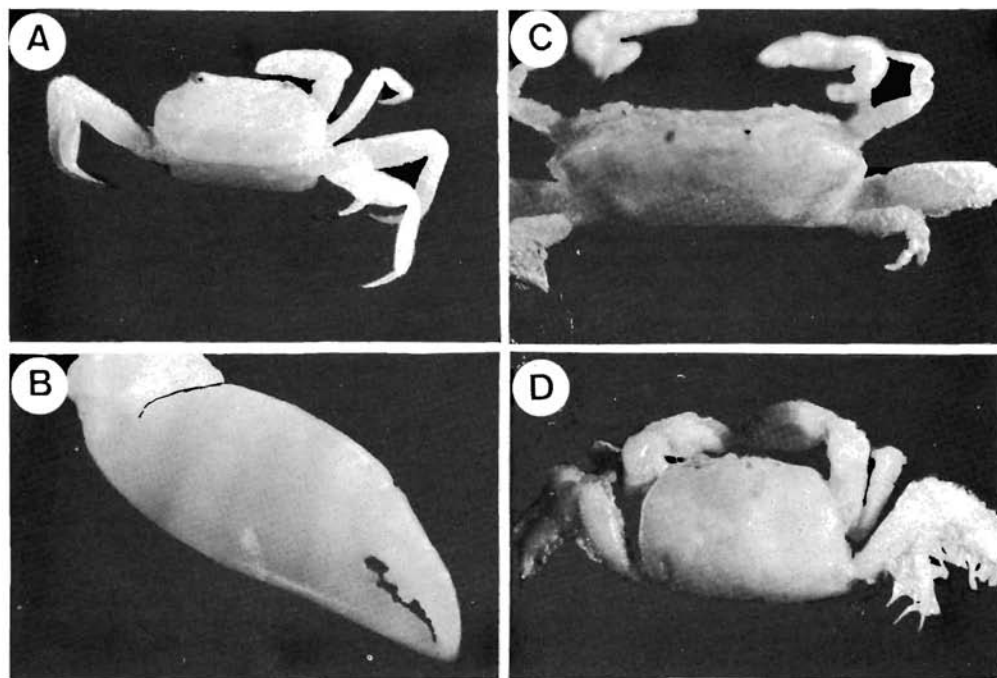


Fig. A—*Asthenognathus gallardoi*, holotype, female of 3 × 6, entire.  
Fig. B—*Asthenognathus gallardoi*, holotype, female of 3 × 6, cheliped.

Fig. C—*Pinnixa? hematostica*, female of 2 × 5.  
Fig. D—*Thaumastoplax orientalis*, male of 6 × 8.

