

# ANNALS

OF THE

# SOUTH AFRICAN MUSEUM

VOLUME XLIII

1. *Additions to the Fauna-list of South African Crustacea and Pycnogonida.* By K. H. BARNARD. (With fifty-three text-figures.)

This paper forms an appendix to previous papers on South African Crustacea and Pycnogonida. The additions are mainly the results of intensive collecting by the University of Cape Town Ecological Survey (U.C.T.) carried out by the Zoology Department under the direction of Professor J. H. Day; and by the Zoology Department of the University of the Witwatersrand (U.W.). The former has extended the survey of the estuaries of the Union of South Africa to that of Inhambane, Portuguese East Africa; and the latter has operated from the Marine Biological Station on Inhaca Island, Delagoa Bay.

As might be expected several interesting new records have been collected, but it is quite certain that many more will be added in the future. The marine fauna of Portuguese East Africa has not yet been thoroughly investigated; nor in fact has that of the Union of South Africa.

I wish to express my thanks to Professor Day and his team of enthusiasts (U.C.T.), and to Mrs. M. Kalk (U.W.) for submitting these collections for identification; and for presenting to the South African Museum duplicates of the species not represented in its collections.

A full list of the species collected is not given, only notable additions to the localities which extend the already known distribution of the respective species, new records, and new species.

The employment of new methods of collecting usually produces abundant, and often surprising, results. The University of Cape Town has recently adopted 'Operation Frogman' for investigating the shallow-water fauna of False Bay. Mr. J. F. C. Morgans, a member of Professor Day's staff, has pioneered this method in South Africa, and has demonstrated its advantages over the old-fashioned 'naturalist's dredge'. Many of the following records and discoveries are due to his enthusiasm for submarine collecting.

In some cases species, hitherto considered rare, have been found to be plentiful when their particular habitat has been discovered. For example, in the course of an investigation into the species of *Patella* living on the Cape coast (Koch, H. J., 1949, *Ann. Natal Mus.*, xi, 3, p. 491), the Isopod *Dyna-*

*menella australis* Rich. and the Amphipod *Calliopiella michaelsoni* Schell. were found in abundance under the shells of these molluscs.

The following papers containing references to the South African Crustacean fauna have appeared in recent years.

- Barnard, K. H. 1951. *Ann. Mag. Nat. Hist.* (12), iv, pp. 698-709, figs. (Isopoda and Amphipoda).  
 —. 1952. *Trans. Roy. Soc. S. Afr.*, xxxiii, pp. 279-82, figs. (*Grandidierella* species).  
 —. 1954. *Ann. Mus. Congo. Tervuren*, 4to, zool. 1, pp. 120-131, figs. (Decapoda, Isopoda, Amphipoda).  
 —. 1954b. *Mem. Inst. Sci. Madagascar*. A. ix, pp. 95-104, figs. (Decapoda).  
 —. 1955a. *Ann. Natal Mus.*, xiii, 2, p. 247 (record of a Cirripede).  
 —. 1955b. *Ann. Natal Mus.*, xiii, 2, p. 249 (a new freshwater Isopod).  
 Capart, A. 1951. *Exp. océanogr. Belge*, III, 1, pp. 1-205, figs. (Brachyura).  
 Forest, J. 1951. *Bull. Soc. zool. Fr.*, lxxvi, p. 83 (*Calcinus*).  
 —. 1954. *Ann. S. Afr. Mus.*, xli, 4, pp. 159-213, figs. (*Paguristes*).  
 Holthuis, L. B. 1950. *Siboga Exp. monogr.*, xxxix, a, 9, pp. 1-126, figs. (*Palaemoninae*).  
 —. 1951. *Atlantide Rep. No. 2*, pp. 7-187, figs. (Caridea).  
 —. 1952. *Siboga Exp. monogr.*, xxxix, a, 10, pp. 1-254, figs. (*Pontoniinae*).  
 —. 1952. *Exp. océanogr. Belge*, III, 2, pp. 1-88, figs. (Macrura).  
 Reid, D. M. 1951. *Atlantide Rep. No. 2*, pp. 189-291, figs. (Amphipoda).  
 Ruffo, S. 1947. *Mem. Mus. Civ. Verona*. I. pp. 113-30. figs. (Amphipoda).  
 —. 1953. *Rev. Zool. Bot. Afr.* xlvii. pp. 120-36. figs. (Amphipoda).

The following new genera and new species are described in the present paper.

DECAPODA. *Menaethiops natalensis* and *delagoae*, *Paracleistostoma fossula*, *Ilyograpsus* (n.g. Grapsidae), *I. rhizophorae*, *Xenophthalmodes brachyphallus*, *Ebalia pondoensis* (*tuberculata* Brnrd. 1950 non Miers 1881) and *agglomus*, *Porcellana delagoae*, *Acetes natalensis*, *Alpheus bullatus*.

ISOPODA. *Paranthura latipes*, *Cirolana imposita*, *pilula*, and *capitella*, *Conilorphus blandus*, *Corallana furcilla*, *Isocladus otion* and *mimetus*, *Sphaeramene microtylotos*, *Cymodoce lis* and *alis*, *Paracilicæa teretron* and *clavus*, *Artopoles capensis*, *Ianiropsis bisbidens*, *Athelges caudalis*, *Miophrixus* (n.g. Bopyridae), *M. latreutidis*.

AMPHIPODA. *Euonyx conicurus*, *Tryphosa normalis* and *africana*, *Urothoe serrulidactylus*, *pinnata* and *pinnata* var. *femoralis*, *Cypsiphimedia* (n.g. Acanthonotomatidae), *C. gibba*, *Melita machaera*, *Afrochiltonia* (n.g. Talitridae) for *Chiltonia capensis* Brnrd. 1916, *Lembos teleporus*, *Unciollera foveolata*.

COPEPODA. *Chondracanthus colligens*, *Brachiella supplicans*.

PYCNOGONIDA. *Propallene similis*, *Pallenoides proboscideum*.

## RECORDS OF ADDITIONAL SPECIES AND NEW LOCALITIES

## DECAPODA

- Macropodia rostrata* (Linn.). Zwartkops estuary, Port Elizabeth; Bushmans River mouth (Alexandria-Bathurst Division) (U.C.T.). Barnard 1954.
- Achaeus lacertosus* Stmps. Inhambane, Portuguese East Africa (U.C.T.).
- Inachus angolensis* Capart 1951.  $0^{\circ}$ – $16^{\circ}$   $30'$  S.
- Inachus dorsettensis* (Penn.). False Bay, 40 fms. (U.C.T.).
- Menaethius monoceros* (Latr.). Durban Bay (U.C.T.).
- Naxioides hirta* M. Edw. Inhambane (U.C.T.).
- Platylambrus quemvis* Stebb. Inhambane (U.C.T.).
- Eumedonius granulatus* MacGilch. Delagoa Bay (U.W.). Barnard 1954b.
- Hymenosoma orbiculare* Desm. Delagoa Bay (U.W.); Inhambane (U.C.T.).
- Dotilla fenestrata* Hilg. Keiskama River mouth, and Breede River mouth (U.C.T.). Barnard 1954.
- Clelostoma edwardsii* McLeay. West coast: Saldanha Bay. South coast: mouths of Sundays River, Bushmans River, Keiskama River, Bashee River (U.C.T.). Barnard 1954.
- Clelostoma algoense* Brnrd. 1954. West coast: Saldanha Bay. South coast: mouths of Breede River, Great Brak River, Knysna, Zwartkops River, Bushmans River (U.C.T.).
- Tylodioplax blephariskios* (Stebb.). Durban Bay and St. Lucia Bay (U.C.T.). Barnard 1954. Inhambane (U.C.T.). See *infra* fig. 7f.
- Cardisoma carnifex* (Herbst). Richards Bay (U.C.T.). Barnard 1954.
- Pachygrapsus plicatus* (M. Edw.). Delagoa Bay (U.W.).
- Varuna litterata* (Fabr.). Port St. Johns (U.C.T.). Barnard 1954.
- Varuna tomentosa* Pfeff. Port Edward, Umtamvuna River, 300 yards from mouth (U.C.T.). Barnard 1954.
- Pseudograpsus erythraeus* Kossm. Delagoa Bay (U.W.).
- Sesarma longipes* Krauss. Inhambane (U.C.T.).
- Sesarma meinerti* de Man. Beira (Chace, 1953); Delagoa Bay (U.W.).
- Sesarma catenata* Ortm. Mouths of Bushmans River, Sundays River, Zwartkops River, and Breede River. The last is the most westerly locality hitherto recorded. Barnard, 1954.
- Sesarma elongata* M. Edw. Inhambane (U.C.T.).
- Portumnus mcleayi* Brnrd. Angola,  $9^{\circ}$  S. (Capart, 1951). Barnard, 1954.
- Ovalipes punctulatus* de Haan. Walfish Bay (Capart, 1951). Tristan d'Acunha ( $\text{♂ } 60 \times 77 \text{ mm. S. Afr. Mus.}$ ).
- Portunus tuberculatus* Roux. Barnard 1950 as *Elliptodactylus rugosus* Doflein. Atlantic, southwards to  $26^{\circ}$  S. (Capart, 1951). Barnard, 1954.
- Monomia gladiator* (Fabr.). Inhambane (U.C.T.).
- Cycloachelous granulatus* (M. Edw.). Durban Bay (U.C.T.). Barnard, 1954.
- Thalamita integra* Dana. Durban Bay and Inhambane (U.C.T.).
- Thalamita investigatoris* Alcock. Durban Bay (U.C.T.). Barnard, 1954.
- Panopeus africanus* M. Edw. Durban Bay (U.C.T.). Barnard, 1954.
- Zozymodes xanthoides* (Krauss). Delagoa Bay (U.W.).
- Chlorodopsis pilumnoides* (White). Delagoa Bay (U.W.).
- Phymodius unguatus* (M. Edw.). Delagoa Bay (U.W.).
- Phymodius monticulosus* (Dana). Durban Bay (U.C.T.).
- Xantho hydrophilus* = *exaratus* (M. Edw.).
- (?) *Halimede delagoae* Brnrd. 1954. Portuguese East Africa (Lourenço Marques Museum).



- Lybia plumosa* Brnrd. Durban Bay (U.C.T.); Delagoa Bay (U.W.). Barnard, 1954. See *infra* fig. 13d.
- EuriüPELLIA annulipes* (M. Edw.). Kosi Bay and St. Lucia Bay (U.C.T.). Barnard, 1954. Delagoa Bay (U.W.).
- Pseudozius caystrus* (Ad. & White). St. Lucia Bay (U.C.T.).
- Pilumnoides perlatus* (Poëppig). Walfish Bay (Capart, 1951). Barnard, 1954.
- Epixanthus frontalis* (M. Edw.). Kosi Bay and Inhambane (U.C.T.).
- Pilumnus hirsutus* Stmpsn. var. (Barnard, 1950, p. 265). Saldanha Bay (U.C.T.). Barnard, 1954.
- Parapilumnus pisifer* (McLeay). Delagoa Bay (U.W.).
- Goneplax angulata* (Pennant). See Barnard, 1954.
- Eucrate sulcatifrons* (Stmpsn). Delagoa Bay (U.W.).
- Typhlocarcinus* sp. ♀♀ only. Inhambane (U.C.T.).
- Thaumastoplax spiralis* Brnrd. Estuaries of Great Brak River (Mossel Bay) and Zwartkops River (Algoa Bay), in Echiuroid burrows; Durban Bay (U.C.T.). Barnard, 1954.
- Nautilocorystes ocellata* (Gray). Walfish Bay (Capart, 1951). Barnard, 1954.
- Conchoecetes artificiosus* (Fabr.). Inhambane (U.C.T.).
- Dromidia dissothrix* Brnrd. False Bay, 11–12 metres (U.C.T.). Barnard, 1954.
- Calappa japonica* Ortmann. Kentani coast (S. Afr. Mus.). Barnard, 1954.
- Calappa gallus* (Herbst). Inhambane (U.C.T.).
- Ebalia tuberculata* Miers. See Capart, 1951 and Barnard, 1954. Capart considers that the specimens assigned by me in 1950 to Miers's species represent a different, perhaps new, species. Since then Dr. Monod has sent me West African specimens undoubtedly referable to *tuberculata*, which prove that *barnardi* is a synonym of Miers's species. For the former, therefore, I propose the name *pondoensis* n. sp. (Pondoland coast).
- Leucosia marmorea* Bell. Inhambane (U.C.T.).
- Dorippe lanata* (Linn.). Delagoa Bay (U.W.).
- Emerita austroafricana* Schmitt. Occurs as far south as the Kentani coast. Barnard, 1954. I have recently seen specimens from the west coast of Madagascar (Madagascar Institute).
- Paguristes* spp. See Forest, 1954.
- Aniculus aniculus* (Fabr.). Delagoa Bay (U.W.).
- Troglopagurus jousseaumii* Bouvier. Delagoa Bay (U.W.).
- Clibanarius clibanarius* (Herbst). Inhambane (U.C.T.).
- Clibanarius padavensis* de Man. Durban Bay and Inhambane (U.C.T.).
- Clibanarius longitarsus* (de Haan). Richards Bay and Inhambane (U.C.T.); Delagoa Bay (U.W.).
- Diogenes custos* (Fabr.). Delagoa Bay (U.W.); Inhambane (U.C.T.).
- Diogenes avarus* Heller. Delagoa Bay (U.W.); Inhambane (U.C.T.).
- Diogenes costatus* Hend. Inhambane (U.C.T.).
- Diogenes senex* Heller. Delagoa Bay (U.W.); Inhambane (U.C.T.).
- Spiropagurus spirifer* (de Haan). Inhambane (U.C.T.).
- Pachycheles natalensis* Krauss. Delagoa Bay (U.W.).
- Polyonyx* sp. In *Chaetopterus* tubes, Durban Bay (U.C.T.).
- Callianassa rotundicauda* Stebb. Saldanha Bay, and Durban Bay (U.C.T.).
- Upogebia africana* (Ortm.). West coast: Saldanha Bay (U.C.T.); South coast: mouth of Keiskama River and Sundays River (U.C.T.). Barnard, 1954.
- Upogebia africana* var. (Barnard, 1950, p. 520). Inhambane (U.C.T.).



- Upogebia assisi* Brnrd. False Bay, 10 fms. (U.C.T.).  
*Upogebia savignyi* Strahl. False Bay, 8 metres (U.C.T.); Delagoa Bay (U.W.).  
*Scyllarides elisabethae* (Ortm.). Off Inhambane (Lourenço Marques Museum).  
*Penaeopsis hilarulus* de Man. Delagoa Bay (U.W.); Inhambane (U.C.T.).  
*Acetes erythraeus* Nobili. Durban Bay (U.C.T.).  
*Leucifer penicillifer* Hansen. Durban Bay (U.C.T.).  
*Caridina africana* Kingsley. Inhambane (U.C.T.).  
*Latreutes mucronatus* (Stmpsn.). Barnard, 1950, p. 706: for '135 mm.' read 13.5 mm. Durban Bay (U.C.T.).  
*Latreutes pygmaeus* Nobili. Inhambane (U.C.T.).  
*Angasia armata* (Paulson). Inhambane (U.C.T.).  
*Hippolysmata vittata* Stmpsn. Inhambane (U.C.T.); Delagoa Bay (U.W.).  
*Ogyrides saldanhae* Brnrd. Walfish Bay, up to 32 mm. in length (Holthuis, 1952). Table Bay (R. W. Rand, Guano Islands Administration, 1955).  
*Betaeus jucunda* Brnrd. Mouths of Bashee River, Bushmans River, Zwartkops River, and Breede River (U.C.T.). Barnard, 1954.  
*Athanas* cf. *minikoensis* Cout. Delagoa Bay (U.W.).  
*Palaemon* in Barnard, 1950 = *Macrobrachium*; and *Leander* *ibid.* = *Palaemon*, subgen. *Paleander* and *Palaemon*.  
 'Palaemon' *sundaicus* and *delagoae* = *M. equidens* (Dana).  
 'Palaemon' *dolichodactylus* = *M. scabriculum* (Heller). See Holthuis, 1950.  
 'Leander' *Palaemon concinnus* Dana. Umkomaas and Durban Bay (U.C.T.). Barnard, 1954. Delagoa Bay (U.W.).  
*Anchistus inermis* (Miers) = *custos* (Forsk.). Holthuis, 1952.  
 'Palaemonetes' *natalensis* Stebb. is considered to belong to the genus *Periclymenaeus* by Holthuis, 1952.  
*Paranchistus ornatus* Holthuis 1952. Mozambique.  
*Harpilius* a subgen. of *Periclymenes*. *H. depressus* and *beaupresii* placed in gen. *Harpiliopsis*. Holthuis, 1952.  
*Jocaste* n.g. for *Coralliocaris lucina*. Holthuis, 1952.

## TANAIDACEA

- Leptochelia savignyi* (Kröyer). Inhambane (U.C.T.).

## ISOPODA

- Cyathura estuaria* Brnrd. St. Lucia Bay (U.C.T.).  
*Paranthura serricauda* Brnrd. Saldanha Bay (U.C.T.).  
*Exanthura macrura* Brnrd. Lamberts Bay (U.C.T.).  
*Apanthura dubia* Brnrd. East London (U.C.T.).  
*Mesanthura catenula* (Stmpsn.). East London (U.C.T.).  
*Haliophasma pseudocarinata* Brnrd. False Bay and Algoa Bay (U.C.T.).  
*Eurydice longicornis* (Studer). Olifants River mouth and Saldanha (U.C.T.); Zwartkops estuary, Algoa Bay (Macnae, Rhodes Univ.).  
*Pontogeloides latipes* Brnrd. Saldanha Bay, Durban Bay, Kosi Bay, and Inhambane (U.C.T.).  
*Cirolana undulata* Brnrd. Various localities from Port Nolloth to East London (U.C.T.).  
*Cirolana bovina* Brnrd. East London (U.C.T.).  
*Cirolana saldanhae* Brnrd. 1951. Saldanha Bay (U.C.T.).  
*Cirolana cingulata* Brnrd. Off Umkomaas (Natal), 40 fms. (S. Afr. Mus.); Arniston and Algoa Bay (U.C.T.). See also *infra* p. 53.  
*Aega monilis* Brnrd. Saldanha Bay area (Fisheries Survey).  
*Nerocila trichiura* (Miers). Durban, on *Exocoetus* (S. Afr. Mus.).

- Livoneca raynaudi* M. Edw. Durban, on a wrasse (S. Afr. Mus.).
- Irona melanosticta* Sch. & M. Durban, on *Tylosurus* (S. Afr. Mus.); Delagoa Bay, on *Tylosurus* (U.W.).
- Sphaeroma serratum* (Fabr.). Durban Bay (U.C.T.). Barnard, 1951. Delagoa Bay (U.W.).
- Sphaeroma walkeri* Stebb. Durban and Inhambane (U.C.T.).
- Exosphaeroma planum* Brnrd. Various localities from Port Nolloth to Jeffreys Bay (U.C.T.).
- Exosphaeroma porrectum* Brnrd. Lamberts Bay, Saldanha Bay, and Port Elizabeth (U.C.T.).
- Exosphaeroma pallidum* Brnrd. Saldanha Bay (U.C.T.).
- Exosphaeroma estuarium* Brnrd. 1951. Umkomaas, Natal (U.C.T.).
- Pseudosphaeroma barnardi* Monod. Hermanus, Wilderness (George Division) and Knysna (U.C.T.). Barnard, 1951.
- Sphaeromene polytylotos* Brnrd. Lüderitzbucht (S. Afr. Mus.); Port Nolloth (U.C.T.).
- Dies monodi* Brnrd. 1951. Bashee River, Port St. Johns, Umkomaas, and Kosi Bay (U.C.T.). See also *infra* p. 72.
- Dynamenella australis* Rich. Paternoster Bay and Danger Point (U.C.T.). Occurs under the shells of *Patella*.
- Cymodocella sublevis* Brnrd. Saldanha Bay, Plettenberg Bay, and East London (U.C.T.).
- Cymodocella pustulata* Brnrd. Saldanha Bay, Still Bay, and East London (U.C.T.).
- Cymodocella magna* Brnrd. 1954. Groen River (south of Port Nolloth) (U.C.T.).
- Cymodocella eutylos* Brnrd. 1954. Mossel Bay, Jeffreys Bay, and Kleinmond (Bathurst Division) (U.C.T.).
- Idotea ziczac* Brnrd. 1951. Saldanha Bay, and False Bay, 8 fms. (U.C.T.).
- Paridotea reticulata* Brnrd. Port Nolloth and Lamberts Bay (U.C.T.).
- Paridotea rubra* Brnrd. Port Nolloth, Lamberts Bay, and East London (U.C.T.).
- Paridotea fucicola* Brnrd. Port Nolloth, Still Bay, and Cape Infanta (U.C.T.).
- Idarcturus platysoma* Brnrd. Paternoster Bay (U.C.T.).
- Arcturella corniger* (Stebb.). One ♀, Morumbane, Inhambane (U.C.T.).
- Antias uncinatus* Vanh. Saldanha Bay (U.C.T.). Originally described from Simonstown.
- Stenetrium crassimanus* Brnrd. Plettenberg Bay and Quolora (U.C.T.).
- Stenetrium diazi* Brnrd. Plettenberg Bay (U.C.T.).
- Janira capensis* Brnrd. Lamberts Bay, Saldanha Bay, False Bay, and Knysna (U.C.T.).
- Janira exstans* Brnrd. Saldanha Bay, and East London (U.C.T.).
- Ianiroopsis palpalis* Brnrd. Various localities from False Bay to East London (U.C.T.).
- Iais pubescens* (Dana). Durban, on *Sphaeroma walkeri*; and Inhambane, on *Sphaeromids* (U.C.T.).
- Protojanira perbrincki* Brnrd. 1955b. Natal and Zululand, freshwater. Peraeopod 1 of ♀ resembles that of ♂.
- Alloniscus pigmentatus* B-L. Inhambane (U.C.T.).

#### AMPHIPODA

- Microlysias xenokeras* Stebb. False Bay (U.C.T.).
- Ampelisca diadema* (Costa). Saldanha Bay (U.C.T.).
- Leucothoe spinicarpa* (Abildg.). Portuguese East Africa (S. Afr. Mus.).

- Leucothoe richiardi* Less. Saldanha Bay and False Bay (U.C.T.).  
*Stenothoe gallensis* Wlkr. Knysna (U.C.T.).  
*Stenothoe assimilis* Chevr. = *valida* Dana.  
*Temnophlias capensis* Brnrd. Buffels River mouth (south of Port Nolloth) to Still Bay (U.C.T.). Barnard, 1954.  
*Temnophlias hystrix* Brnrd. 1954. Hondeklip Bay (west coast), Cape Hangklip (south coast) (U.C.T.).  
*Palinnotus natalensis* Brnrd. Port Shepstone and Richmond (Natal) (U.C.T.).  
*Colomastix pusilla* Grube. Saldanha Bay (U.C.T.).  
*Periculodes longimanus* (B. & W.). Saldanha Bay (U.C.T.).  
*Synchelidium haplocheles* (Grube). Inhambane (U.C.T.). Recorded by Walker 1904 from Ceylon as *brevicarpa* B. & W.  
*Calliopiella michaelsoni* Schell. Saldanha Bay and False Bay (U.C.T.). Occurs under the shells of *Patella* harmonizing in colour (mauve) with the animal's foot.  
*Nototropis guttatus* (Costa). Olifants River mouth (U.C.T.). Recorded from the Mediterranean, Canaries, and Senegal.  
*Paramoera capensis* (Dana). Various localities from Port Nolloth to Natal (U.C.T.).  
*Eriopisa chilensis* (Chilton). Knysna, and St. Lucia Bay (U.C.T.). Barnard, 1951.  
*Megaluropus agilis* Hoek. Saldanha Bay (U.C.T.).  
*Melita zeylanica* Stebb. Various localities from Olifants River mouth (west coast) to Inhambane (U.C.T.).  
*Melita fresnelii* (Aud.). Inhambane (U.C.T.).  
*Maera subcarinata* (Hasw.). Algoa Bay (U.C.T.).  
*Dexamine spiniventris* (Costa). Saldanha Bay (U.C.T.).  
*Paradexamine pacifica* (Thomson). False Bay (U.C.T.). See Barnard, 1930, 'Terra Nova' Rep., viii, 4, p. 389, figs.  
*Polycheria atoll* Wlkr. Lamberts Bay, and Algoa Bay (U.C.T.).  
*Talorchestia ancheidos* Brnrd. Inhambane (U.C.T.).  
*Talorchestia inaequalipes* Brnrd. 1951. Saldanha Bay (U.C.T.).  
*Parorchestia notabilis* Brnrd. 1935. Inhambane (U.C.T.). Originally described from Cochin State, India.  
*Hyale maroubrae* Stebb. Knysna (U.C.T.).  
*Hyale saldanha* Chilton. Port Elizabeth (U.C.T.).  
*Hyale grandicornis* (Kröyer). Various localities from Lamberts Bay to Natal (U.C.T.). See also *infra* p. 93, fig. 46.  
*Grandidierella bonnier* Stebb. Durban, and Inhambane (U.C.T.).  
*Grandidierella chelata* Brnrd. 1951. Port St. Johns and Bashee River mouth (U.C.T.).  
*Grandidierella lutos* Brnrd. 1952. Hermanus (U.C.T.); Kleinmond (Bathurst Division) (Rhodes Univ. Zool. Dept.).  
*Lembos jassopsis* Brnrd. 1951. Saldanha Bay (U.C.T.).  
*Lembos podoceroide* Wlkr. Inhambane (U.C.T.). Recorded from Ceylon, Maldives, Red Sea, Paumotu Archipelago.  
*Eurytheus semidentatus* Brnrd. Algoa Bay (U.C.T.).  
*Cheiriphotis megacheles* (Giles). Saldanha Bay, False Bay and Algoa Bay (U.C.T.).  
*Chevalia aviculae* Wlkr. Inhambane (U.C.T.).  
*Amphithoe ramondi* Aud. Inhambane (U.C.T.).  
*Cymadusa australis* (Brnrd.). Paternoster Bay and False Bay (U.C.T.). Delagoa Bay (U.W.).



- Erichthonius brasiliensis* (Dana). Delagoa Bay (U.W.).  
*Cerapus abditus* Templ. False Bay, Algoa Bay, and Inhambane (U.C.T.).  
*Siphonocetes orientalis* Wlkr. Inhambane (U.C.T.). Delagoa Bay (U.W.).  
*Siphonocetes dellavallei* Stebb. St. Helena Bay and False Bay (U.C.T.).  
*Pseudoprotella phasma* (Montagu). 29° 16' S., 14° 48' E. s.s. 'Africana' (per U.C.T.).  
*Metaprotella haswelliana* (Mayer)  
 var. *taprobanica* Mayer. Inhambane (U.C.T.).

## STOMATOPODA

- Conchoderma hunteri* (Owen). Natal, on jellyfish. Barnard, 1955a.  
*Poecilasma* (*Temnaspis*) *amygdalum* Auriv. Delagoa Bay, on Palinurid (U.W.).

## COPEPODA PARASITICA

- Caligus pelamydis* Kröyer. False Bay, on snoek, *Thyrsites atun*; Table Bay, on *Trigla capensis* (U.C.T.).  
*Caligus lunatus* Wilson, 1928. False Bay, on *Seriola lalandei* (U.C.T.). Previously recorded from Red Sea, on *Seriola aurovittata* (Wilson).  
*Caligus coryphaenae* St. & L. Table Bay, on a shark (U.C.T.).  
*Caligus rapax* M. Edw. Table Bay, on *Merluccius capensis* and *Trachurus trachurus* (U.C.T.).  
*Caligus mauritanicus* Brian 1924. False Bay, on *Pomatomus saltator* (U.C.T.).  
*Caligus* (?) *bonito* Wilson 1905. False Bay, on *Sarda sarda*. ♂ only; record should be checked on ♀ material (U.C.T.).  
*Caligus zei* Norm. & Scott 1906. False Bay, on *Thyrsites atun*. Agrees with the description, but a check on further material is desirable (U.C.T.).  
*Caligus brevicaudatus* A. Scott 1901. Table Bay, on *Trigla capensis* (U.C.T.).  
*Caligus labracis* T. Scott 1902. Table Bay, on *Clinus superciliosus* (U.C.T.).  
*Pennella exocoeti* (Holten). Length 40 mm. On *Exocoetus*. (Fish. Research Ship 'Africana II', 1951.)  
*Charopinus ramosus* Kröyer. Table Bay, on a skate (U.C.T.).  
*Clavellisa scombri* (Kurz). Table Bay, on gills of *Scomber colias* (*japonicus*) (U.C.T.).  
*Parabrachiella insidiosa* (Heller). Table Bay, on *Merluccius capensis* (U.C.T.).  
*P. australis* Wilson (see: Barnard, *Ann. S. Afr. Mus.*, xli, p. 298, 1955) should probably be made a synonym.

## DECAPODA

## Fam. INACHIDAE

Gen. *Paratymolus* Miers

1879. Miers, *Proc. Zool. Soc. Lond.*, p. 45.  
 1880. Haswell, *Ann. Mag. Nat. Hist* (5), v. p. 302.  
 1882. id., *Cat. Austral. Crust.*, p. 142.  
 1884. Miers, *Zool. H.M.S. 'Alert', Crust.*, p. 261.  
 1893. Ortmann, *Zool. Jahrb. Syst.*, vii, p. 34.  
 1895. Alcock, *J. Asiat. Soc. Bengal*, lxiv, p. 173.  
 1929. Balss, *Denkschr. Ak. Wiss. Wien.*, cii, p. 3 (placed in group *Camposcioidea*).

Carapace ovoid or subpentagonal, convex, anterior third declivous. Rostrum prominent but short, apically bifid, dorsally grooved. Eye-stalks fairly long,

straight, movable but not retractile, cornea subglobular, scarcely oblique; orbits incomplete ventrally. Ant. 1 folding longitudinally, sockets separated by a septum. Ant. 2 peduncle slender, basal joint short. Mxp. 3 suboperculiform, flagellum well developed. Chelipeds (♀) short, wrist with strong upstanding spine. Legs not elongate, dactyls slender, nearly straight. Genital openings of ♀ sternal. Abdomen ♂ 5-segmented, ♀ 7-segmented.

Differs from *Achaeus* in the short basal joint of ant. 2, less oblique and more globular cornea, and short legs.

*Paratymolus pubescens* Miers

Figs. 1, 2.

1879. Miers, loc. cit., p. 45, pl. 2, fig. 6.  
 1880. Haswell, loc. cit., p. 303, pl. 16, figs. 1, 2 (*bituberculatus*).  
 1882. id., loc. cit., p. 142 (*bituberculatus*).  
 1893. Ortmann, loc. cit., p. 35, pl. 3, fig. 2 (ventral view rostrum and mxp. 3).  
 1910. Rathbun, *Vid. Selskr. Skr. Copenhagen* (7), v. p. 317.

All exposed surfaces of carapace and appendages covered with a close velvety 'pubescence' (see Remarks). Carapace pentagonal; posterior two-thirds nearly flat, anterior third declivous. Rostrum short, broadly triangular, dorsally grooved, apically bifid, lobes rounded. A supraorbital tooth. Antero-lateral margin sharply bidentate, hinder tooth the larger, forming the angle between antero- and postero-lateral margins; postero-lateral margin fading out posteriorly on the dorsal surface, with 2 inconspicuous tubercles; lateral margin (as seen in dorsal view) with a conical tooth on the branchial region. Dorsal surface with 2 conical projections in front of the gastric region, and a median rounded inconspicuous hump on the cardiac-intestinal regions. Lower margin of carapace with feebly plumose setae in front, followed by closely set straight, tubular setae.

Basal joint of ant. 2 short, 2nd joint longer, 3rd longer than 2nd, clavate setae on lower margin of 2nd joint, and on lower and upper margins of 3rd joint, those on lower margin of 3rd joint especially long; flagellum about equal to last 2 peduncular joints, with a few long setae. Eye-stalks short, cornea subglobular, a short clavate seta on anterior apex of stalk at base of cornea. Mxp. 3 external surface of 3rd and 4th joints and exopod with 'pubescence'.

Cheliped with 'pubescence', anterior margin of arm with 4 clavate setae, the strong acute process of the wrist with large clavate setae on posterior margin, smaller ones on anterior margin, hand and fingers also with clavate setae, cutting edges of finger and thumb with several small denticles, stronger on thumb than on finger, and numerous short simple and longer clavate setae.

All legs of all specimens detached; the longer ones being presumably the anterior ones. Dactylus longer than preceding joint, with 3 or 4 retrorse denticles, the middle one the largest; a series (5-6) of long clavate setae on both anterior and posterior surfaces.

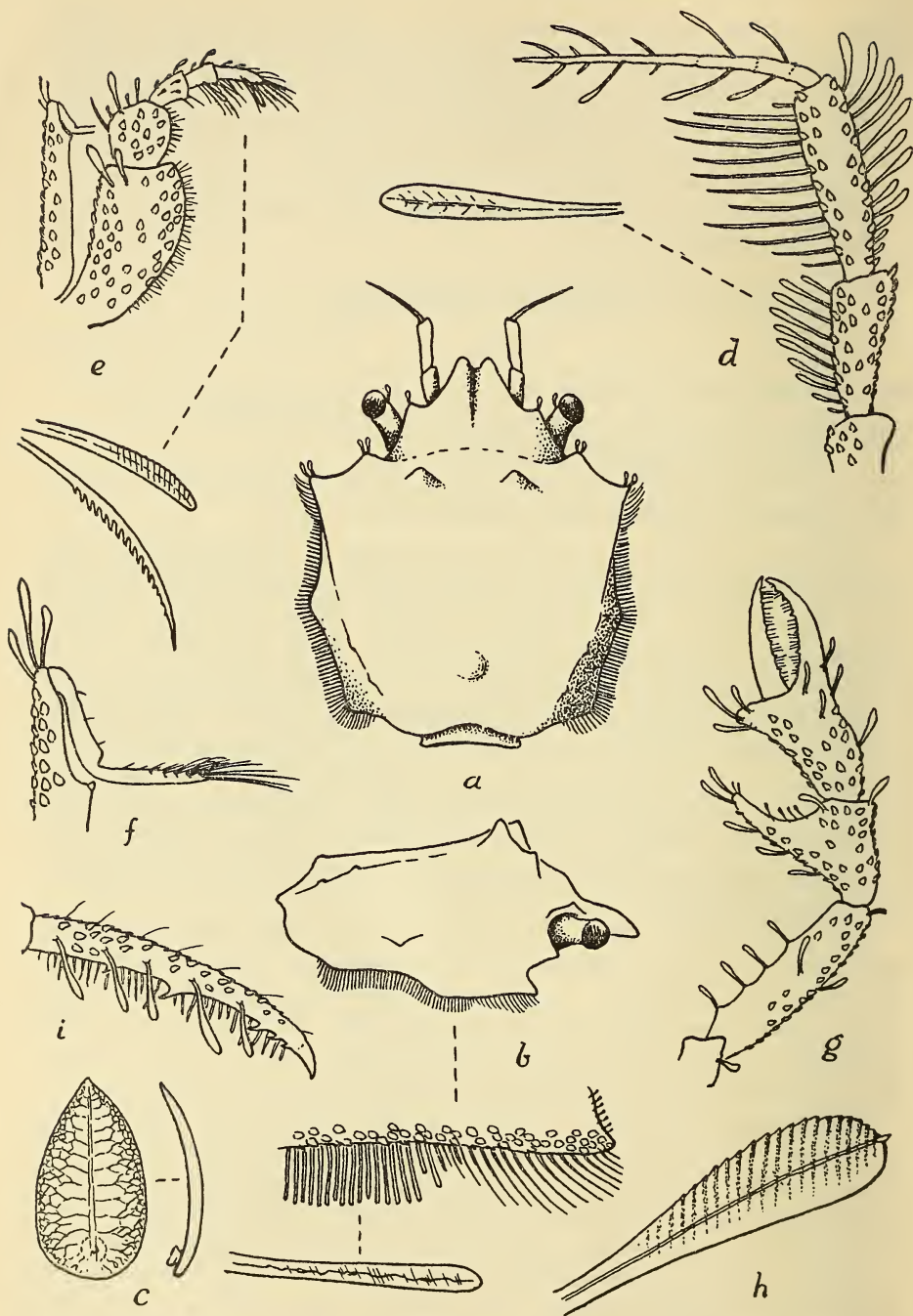


FIG. 1.

*Paratymolus pubescens* Miers. a. dorsal view of carapace. b. lateral view, with portion of lower margin further enlarged, and one seta further enlarged. c. surface view and section of one of the scale-like setae forming the pubescence on carapace. d. antenna 2, with seta further enlarged. e. maxilliped 3, with two kinds of setae further enlarged. f. exopod of maxilliped 3. g. right cheliped. h. clavate seta from cheliped further enlarged. i. dactylus of leg.



Pleopod 1 ♂: the basal joints of the two appendages are fused to form a transverse plate, to which the separate distal joints are articulated. The latter very stout, especially the posterior flange of the seminal channel proximally; apex curved outwards, thickly setose. Pleopod 2: the two appendages are separate and normal in shape.

Length ovig. ♀ 6.5, breadth 5.5 mm. As preserved, pinky-brown, eyes maroon.

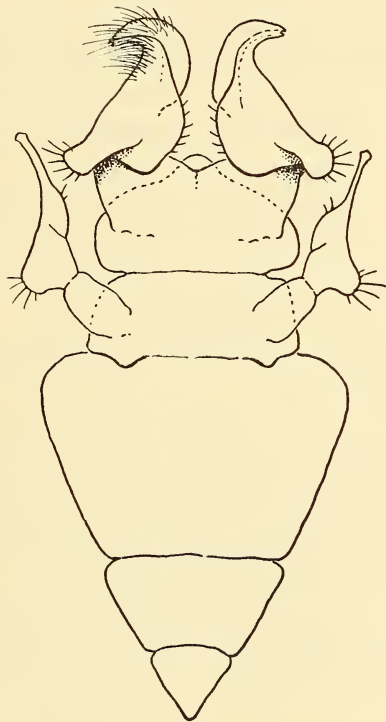


FIG. 2.

*Paratymolus pubescens* Miers. Sternal view of ♂ abdomen with 1st (fused) and 2nd pleopods (apical setae omitted on left pleopod 1).

*Locality.* Inhambane, Portuguese East Africa. 1 ♂, 2 ovig. ♀♀, 2 immature, in *Zostera* beds (U.C.T. Jan. and July 1954).

*Distribution.* Japanese Seas, Siam (*pubescens*); Queensland (*bituberculatus*).

*Remarks.* The 'pubescence' would be better described as a 'lepidosis', the setae being flattened and broadly ovate, and more or less imbricate.

These specimens correspond so closely with the descriptions and figures of Miers's *pubescens* and Haswell's *bituberculatus*, and Alcock's *hastatus*, that there seems no justification for a n. sp. They have broader shoulders than in Miers's and Alcock's figures, thus corresponding better with Haswell's figure. The upper distal apex of the hand is more prominent than in Miers's figure, but

less prominent than in Haswell's, approximately as in Alcock's figure. The 4 small teeth on posterior border of the arm, mentioned by Haswell, are not present; whereas the 4 conspicuous clavate setae on the anterior margin apparently were not present in Haswell's specimen, but are shown in Alcock's figure.

Alcock's *hastatus* apparently is more tuberculate than either Miers's or Haswell's or the present specimens, but I think it should be regarded as synonymous.

The size of the plate formed by the fusion of the coxopodites (Cochran 1935) or 'bridge' joining the protopodites (Flipse, 1930) of the 1st pleopods is remarkable.

Fam. ACANTHONYCHIDAE

Gen. *Antilibinia* McLeay

1950. Barnard, loc. cit., p. 36, fig. 7c, d.

Through the kindness of Dr. H. B. S. Cooke (Geology Dept. Witwatersrand University) the Museum has received a fine ovigerous ♀ of *A. smithii* McLeay from the coast of Pondoland, measuring 62 × 57 mm.

This specimen confirms Krauss's statement and figures that there are seven abdominal segments in both sexes.

Gen. *Menaethiops* Alcock

1950. Barnard, loc. cit., p. 38.

Two dozen specimens of this genus have been examined. They appear to belong to three species. One is *fascicularis*, but the other two cannot easily be assigned to any species recorded from the western Indian Ocean, viz. *brevicornis* M. Edw. 1868, *acutifrons* M. Edw. 1868, *bicornis* Alcock 1895, and Lenz 1905, *nodulosa* Nobili 1905, *corniculata* Klunz. 1906, and *contiguicornis* Klunz. 1906. The descriptions of these species make no mention of some characters which appear to be of specific value. Two n. spp. are therefore instituted, with local names.

The validity of these three species may appear doubtful because of the overlap in distribution. Twenty-four is a very small number of specimens; gradations may later be collected; but on the available evidence they cannot be referred to only one species. The sternal sculpture in the ♂ may not prove to distinguish all the species of this genus, but it is very distinctive in two of the present species.

*Menaethiops fascicularis* (Krauss)

Fig. 3a-c.

1929. Balss, *Denkschr. Ak. Wiss. Wien.*, cii, p. 9, fig. 3.

1950. Barnard, loc. cit., p. 39, fig. 8.

This species is well characterized by the absence of a projecting anterior corner on the supraorbital margin, which passes in a sinuous curve into the

rostral prong. Suborbital margin denticulate. Outer apex of basal joint of ant. 2 strongly produced. The distal margin of the basal joint, adjoining the insertion of the following joint, is nodulose or crenulate, and these crenulations continue on a short longitudinal ridge in the middle of the basal joint. The rim of the antennular socket is also crenulate. These crenulations are particularly distinct in the Delagoa Bay 6 mm. ♀. The postocular tooth (hind corner of the supraorbital margin) is nearly linear or narrowly triangular, serrulate (at least on hind margin). A slight swelling on ocular peduncle, but no definite spine.

The sternite between the chelipeds is smooth, polished, and concave in front of a transverse series of inconspicuous granules, behind which the surface is covered with impressed punctae. The other sternites are also punctate, without any granules.

The above characters are constant in 3 ♂♂ (6–7 mm.) and (except the sternite) in two non-ovigerous ♀♀ (4.5 and 6 mm.).

*Additional locality.* Delagoa Bay. 1 non-ovig. ♀ (6 mm.). (U.W.)

*Menaethiops natalensis* n. sp.

Fig. 3d-f.

In general similar to *fascicularis*, but rostral prongs a little longer. Supra-orbital margin with well-marked acute anterior projection; postocular tooth serrulate as in *fascicularis*, but larger and more triangular, though not always as broadly triangular as here figured. Suborbital margin very feebly (if at all) denticulate, usually nearly straight, but sometimes convex in the middle. Outer apex of basal joint of ant. 2 not strongly produced (but somewhat variable). Rim of the antennular socket feebly crenulate, but no ridge on the basal joint of ant. 2. A well-marked spine on ocular peduncle.

Sternite between chelipeds polished in front and punctate behind with a scarcely perceptible ridge between the two areas. Other sternites punctate, without granules.

Pleopod 1 ♂ as in *fascicularis*.

Length 10 mm.

*Localities.* Umpangazi (Impengazi), Natal. 1 ♂ (U.C.T); Delagoa Bay. 2 ♂♂ (7 mm.) 5 ovig. ♀♀ (7–10 mm.) 9 immature (4–7 mm.) (U.W.)

*Remarks.* In one specimen the right anterior corner of the supraorbital margin is rather strong and curved outwards, approximating to *delagoae*. In two other specimens the anterior corner on one side (right or left) is bevelled off as in *fascicularis*.

M. Edwards's figure of *brevicornis* shows a transverse line of granules not only on the sternite between the chelipeds, but on the three following sternites.

*Menaethiops delagoae* n. sp.

Fig. 3g-i.

In general similar to *fascicularis*, but rostral prongs longer, distally divergent. Supraorbital margin sinuous, the acute anterior corner larger than the acute



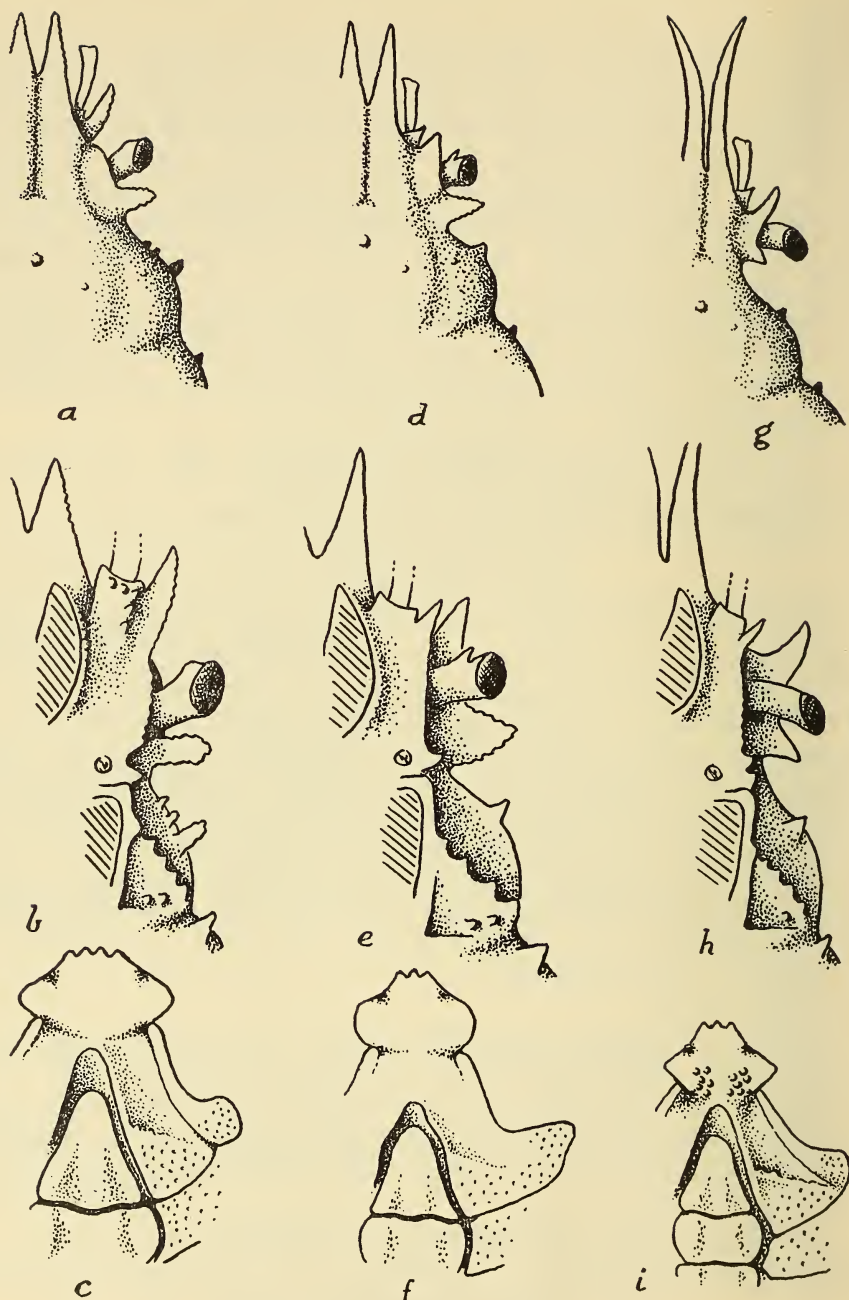


FIG. 3.

*Menaethiops fascicularis* (Krauss). a. dorsal view of rostral prongs and antero-lateral portion of carapace. b. ventral view of same. c. sternite between chelipeds, and apex of abdomen.

*Menaethiops natalensis* n. sp. d, e, f. as in a, b, c respectively.

*Menaethiops delagoae* n. sp. g, h, i. as in a, b, c respectively.

posterior corner (postocular tooth), both non-serrulate. Suborbital margin straight, denticulate posteriorly. Outer apex of basal joint of ant. 2 acutely, but not strongly, produced. Rim of antennular socket not crenulate, and no ridge on basal joint of ant. 2. No spine on ocular peduncle.

Sternite between chelipeds with 2 groups of 6-7 granules in front of the abdominal groove, polished and concave in front of a transverse series of granules, punctate behind. Other sternites punctate, without granules. The suture between 1st and 2nd sternites opposite the middle of the 6th abdominal segment, not as in the other species opposite the suture between 6th and 7th segments.

Pleopod 1 ♂ as in *fascicularis*.

Length 10.5 mm.

*Locality.* Delagoa Bay. 1 ♂ (U.W.)

*Remarks.* M. Edwards does not figure the sternites of *acutifrons*.

#### Fam. MAMAIIDAE

##### Gen. *Cyphocarcinus* M. Edw.

- 1868. M. Edwards, *Nouv. Arch. Mus. Paris*, IV, p. 73 (♀).
- 1875. Paulson, *Red Sea Crust.*, p. 3 (♂) (*Ixion*).
- 1889. Cano, *Bol. Soc. Napoli* (1), 3, pp. 86, 180 (*Podohuenia*).
- 1923. Gravier, *Bull. Mus. N. H. Paris*, 1923, 3, p. 214 (♂) (*Stenocarabus*).
- 1929. Balss, *Denkschr. Ak. Wiss. Wien.*, cii, p. 22.
- 1945. Stephensen, *Dan. Sci. Invest. Iran*, 4, p. 108, fig. 21 A, B (plp. 1, 2. ♂).

##### *Cyphocarcinus capreolus* (Paulson)

##### Fig. 4.

- 1875. Paulson, loc. cit., p. 3, pl. 2, figs. 1a-f (♂) (*Ixion c.*).
- 1923. Gravier, loc. cit., p. 214, figs. 1-8 (♂) (*Stenocarabus suspensus*).

Carapace of both sexes resembling the figures given by Paulson and Gravier, i.e. without conspicuous knobs, only a rostral knob followed by 2 small granules in the median line; some tiny granules along the costate lateral margin, discernible more by their white colour than by their relief; a rather conspicuous white granule just in front of the faint cervical groove. A transverse section through the hinder third of the carapace would show an almost evenly curved semicircular profile in the ♂, but in the ♀ a somewhat squarish profile owing to the presence of an obscure blunt longitudinal ridge, on which are 2-3 little granules; below this the lateral wall of the branchial region is nearly vertical. All these granules are better developed in ♀ than in ♂; in addition ♀ has 4 granules *en carré* in the middle of the carapace and a medio-dorsal series (3-5) towards the hind end.

Orbit circular, with a slit on anterior, posterior, and inferior margins; upper margin anteriorly with a small setiferous tubercle. Surface closely pitted (as in Paulson's and Gravier's figures), and covered with short fine pile; longer setae on supraorbital ridge and on rostral knob and prongs.

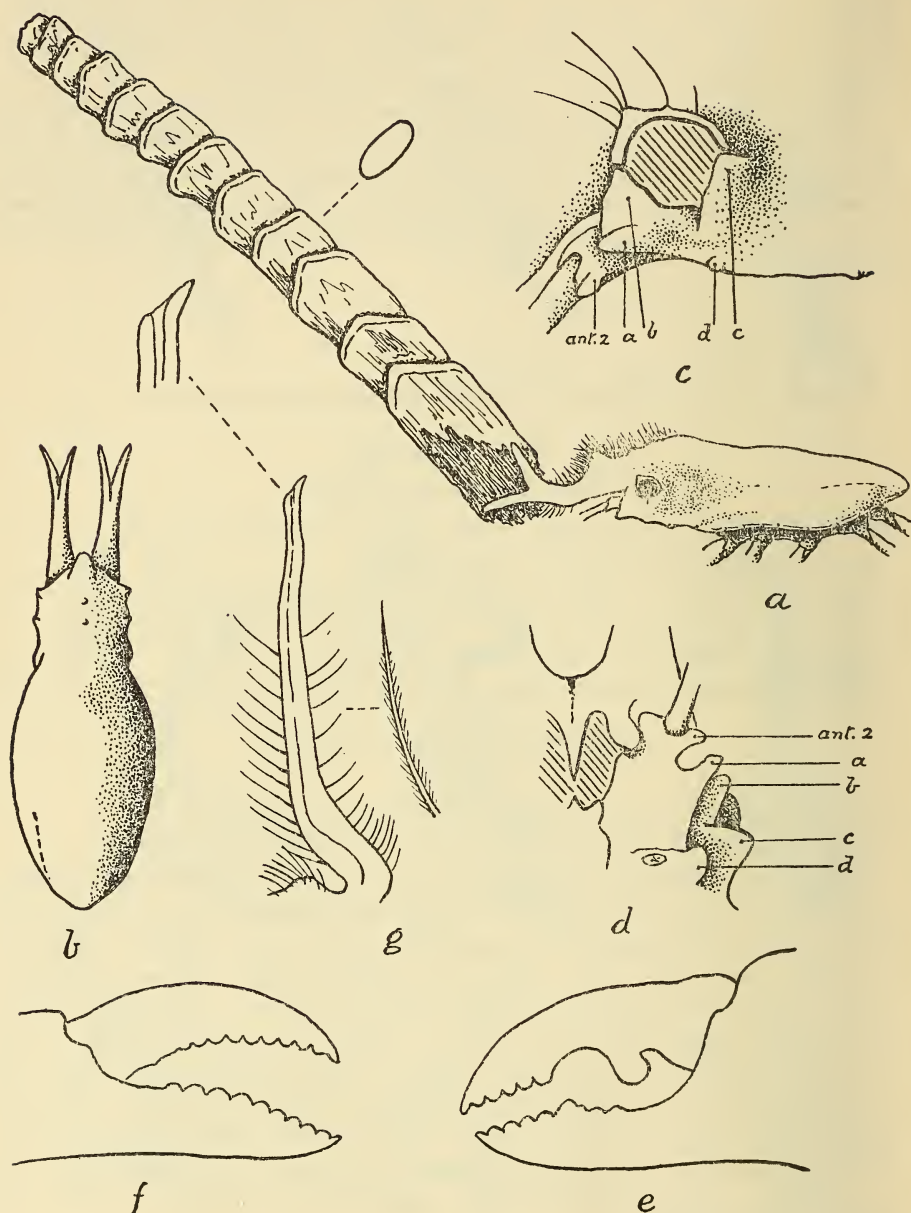


FIG. 4.

*Cyphocarcinus capreolus* (Paulson). *a.* side view of ♂ carrying a piece of *Cymodocea*. *b.* dorsal view of carapace (the tips of the upper branches of the rostral prongs have been drawn too far apart). *c.* view of the left orbital region. *d.* ventral view of left antennular and antennal region: ant. 1 removed from socket; lettering corresponding with that in fig. *c.* *e.* chela of ♂. *f.* chela of ♀. *g.* pleopod 1 ♂, with apex further enlarged.



Abdomen in both sexes of 7 segments; in ♂ 1st short, 2nd and 3rd much wider, remainder gradually decreasing, but 6th slightly widened across distal margin, 7th longer than its basal width; in ♀ (nonovigerous) widest across suture between 3rd and 4th segments, 7th shorter than its basal width; 2nd segment in both sexes with a small blunt median knob.

Chelipeds subequal, larger and more robust in ♂ than ♀, arm with 4 granules on upper margin, and 5-6 on lower margin (not shown in Paulson's figure). In ♂ finger with strong tooth near base, followed by a semicircular gap, and a distal cutting-edge with 5 rounded denticles, thumb with 8-9 denticles, one larger than the others, distal to which the cutting-edge resembles that of the finger. In ♀ finger with no tooth (or only a very small one) at base, cutting-edge with 9 rounded denticles, thumb with 9 similar denticles. Paulson's figure of the cheliped of his ♂ almost corresponds with that of the present ♀♀, from which one may assume that the toothed and gaping finger seen in the present ♂♂ is developed only when the animal is fully grown. The curve of the cutting-edge of the thumb in Paulson's figure is not exactly like that of the present ♀♀, but seems to indicate that at a future, perhaps the next, moult it would assume that of the present ♂♂. Gravier's specimen was in the same stage as Paulson's.

Dactylus of all legs with 7-8 strong spiniform teeth, increasing in size distally, in addition to the unguis.

Pleopod 1 ♂ as in Stephensen's figure; the process on the basal transverse joint not so strong as in Gravier's figure 8.

Length ♂ ♀ 11.5 from rostral knob, 13-14 mm. including the rostral prongs. As preserved, madder-brown, pinkish or pale salmon, abdomen of ♀ speckled, chelipeds and legs paler, finger and thumb of chelipeds white, eyes maroon.

*Locality.* Inhaca Island, Delagoa Bay. 4 ♂♂, 9 ovigerous and 1 non-ovigerous ♀♀, 2 juv. (U.W.)

*Distribution.* Red Sea (*capreolus*); Madagascar (*suspensus*).

*Remarks.* Laurie (1915. *J. Linn. Soc. Lond.*, xxxi, p. 433), Nobili (1906 and 1907), and Balss (1929) regard *capreolus* as a synonym of *minutus* M. Edw. 1868. Balss accepted two species: the knobbly *minutus* and the smooth *suspensus*, but nevertheless made the smooth *capreolus* a synonym of the former.

I am inclined to concur with Dr. Gordon (in litt. July 1954) that in all probability there is only one somewhat variable species whose distribution extends from the Red Sea, Persian Gulf, Andaman Is., to the Seychelles, Madagascar, and Delagoa Bay (Stephensen misquoted M. Edwards and included Zanzibar). For the present, however, I prefer to record these specimens, smooth (except for the granules) in both sexes, as *capreolus*.

Laurie and Gravier both refer to M. Edwards's fig. 8 which shows in the ♀ the rostral prongs united for a distance about equal to the length of the antennular sockets, and then divergent, with a V-shaped sinus; very different from Paulson's fig. 1b and the present specimens. Rathbun (1911. *Trans. Linn. Soc. Lond.*, zool., xiv, p. 255), however, suggests that M. Edwards over-

looked a narrow slit separating the bases of the prongs. But that does not obviate the difference in the shape of the sinuses.

Nobili and Rathbun record the ♂ as carrying a long cylindrical sponge 'projecting' from its rostral prongs; but it is not stated (I have not seen Nobili) whether the sponge was growing on the crab or had been picked up by the crab.

One of the present ♂ specimens has a length (22 mm.) of the stem of the marine flowering plant *Cymodocea ciliata* firmly wedged between the prongs. The stem is oval in section and will only fit one way between the prongs. Another ♂ (total length 11 mm.) carries edgewise a piece of the leaf of *Cymodocea*, approximately 11 × 8 mm. A ♀ (total length 13 mm.) carries, edgewise, a piece of leaf 10 × 3 mm. In these cases there is no possibility of a natural settlement as there might be in the case of a sponge; the crabs must have 'purposely' picked up their burdens and fitted them between the prongs. The other specimens have nothing wedged between the prongs. But all are so densely covered with the filaments of a calcareous alga and hydroids as to be scarcely recognizable as animals until cleaned. One ♀ is overgrown with a sponge (with calcareous calthrop spicules) and another ♀ is almost completely covered by a gelatinous Tunicate; both are covered in addition with other 'rubbish'.

For a figure of *Cymodocea* see: Cohen. *S. Afr. J. Sci.*, xxxvi, p. 246, fig. 1, 1939. Delagoa Bay is the southernmost recorded limit of this Red Sea genus: Kalk. *S. Afr. J. Sci.*, li, 4, p. 108, 1954.

#### Fam. PARTHENOPIDAE

##### Gen. *Eumedonus* M. Edw.

- 1834. M. Edwards, *Hist. Nat. Crust.*, i, p. 349.
- 1894. Rathbun, *Proc. U.S. Nat. Mus.*, xvii, p. 66 (*Echinoecia*).
- 1906. id., *Bull. U.S. Fish. Comm. for 1903*, pt. 3, p. 880.
- 1918. id., *Biol. Res. 'Endeavour'*, v, pt. 1, pp. 27, 28.
- 1922. Gravier, *Bull. Mus. Hist. Nat. Paris*, 1922, no. 7, p. 484.
- 1930. Flipse, *Siboga Exp. monogr.*, xxxix, c. 2, pp. 80, 90 (the genotype *niger* M. Edw. is, by some mischance, omitted).
- 1934. Gordon, *Res. Sci. Ind. orient. Neerl.*, iii, 15, p. 62.
- 1938. Monod, *Mem. Inst. Egypte*, xxxvii, pp. 110-12.

##### *Eumedonus granulosus* MacGilch.

- 1905. MacGilchrist, *Ann. Mag. Nat. Hist.* (7), xv, p. 253.
- 1907. *Illustr. Zool. 'Investigator'*, pt. 12, pl. 77, figs. 2, 2a.
- 1911. Rathbun, *Trans. Linn. Soc. Lond.* (2), zool., xiv, p. 259.
- 1942. Ward, *Mauritius Inst. Bull.*, ii, p. 78.
- 1954. Barnard. *Mem. Inst. Sci. Madagascar*, A. ix. p. 96. fig. 1.
- ?1905. Lenz, *Abh. Senckenb. Ges.*, xxvii, 4, p. 344 (*zebra*, non Alcock).

Length 14, breadth 15 mm. Dull salmon with longitudinal, paler, dark-bordered stripes; chelipeds and legs speckled with red, finger and thumb of chelipeds white.

*Locality.* Delagoa Bay. 1 ♀ (U.W.).

*Distribution.* Persian Gulf, 47-9 fms.; Amirante Is., 28 fms. ? Zanzibar (Lenz).

Fam. HYMENOSOMATIDAE

*Hymenosoma orbiculare* Desm.

Fig. 5.

1950. Barnard, loc. cit., p. 68, fig. 15a, b.  
 1951. Capart, *Exp. ocean. Belge*, p. 61, fig. 18.  
 1955. Broekhuysen, *Ann. S. Afr. Mus.*, xli, pp. 313-43, text-figs. 1-13 (breeding and growth).

*Additional localities.* Tiger Bay, Angola (Capart); Inhambane, Portuguese East Africa (U.C.T. 1954).

A figure is given here of the specimens referred to on pages 70, 71 of my monograph. I am still of opinion that a specific name is not really necessary. The full life-history and ecology of the normal shallow-water form and the ornate form from deeper water should be fully investigated.

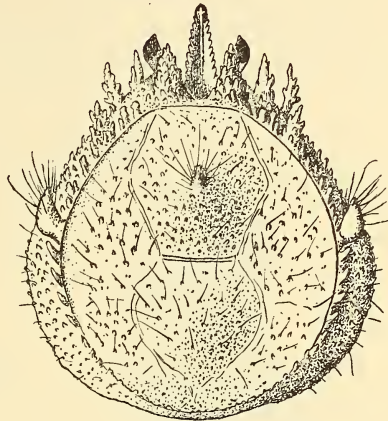


FIG. 5.

*Hymenosoma orbiculare* Desm. Carapace of ovigerous ♀ of the ornate form from deep water in False Bay. See: Barnard, 1950, loc. cit., pp. 70-1.

FAM. PINNOTHERIDAE

Gen. *Pinnixa* White.

1846. White, *Ann. Mag. Nat. Hist.*, xviii, p. 177.  
 1876. Lockington, *Proc. Calif. Ac.*, vii, p. 55 (*Tubicola*).  
 1918. Tesch, *Siboga Exp. monogr.*, xxxix, c. 1, p. 266 (list of species).

Commensal in tubes and burrows of Polychaets and Holothurians. Hitherto recorded mostly from the coasts of America.

*Pinnixa penultipedalis* Stmpsn.

Fig. 6.

1858. Stimpson, *Proc. Ac. Nat. Sc. Philad.*, x, p. 108 (♀).  
 1894. Ortmann, *Zool. Jahrb. Abt. Syst.*, vii, p. 695, pl. 23, fig. 7.  
 1907. Stimpson ed. Rathbun, *Smiths. Misc. Coll.*, xlix, p. 143 (♀).

Carapace smooth, punctate laterally on the branchial region; very fine tomentum occupying very shallow grooves: one transverse to anterior margin (hepatic), one parallel to antero-lateral margin, and one parallel to postero-



lateral margin; a faint transverse ridge across posterior half of carapace; pterygostomial region and bases of legs furry.

Abdomen reaching to buccal cavity; ♂ with segments 4-6 fused, basal segments not nearly occupying sternal width; in ♀ sutures between segments 1 and 2, and between 2 and 3 (cf. Stimpson) furry.

Mxp. 3, 6th joint articulated within the apical margin of 5th which projects as a rounded flange on the internal (anterior) surface. A transverse subapical row of long close-set setae on 5th joint, a submarginal one on the median edge

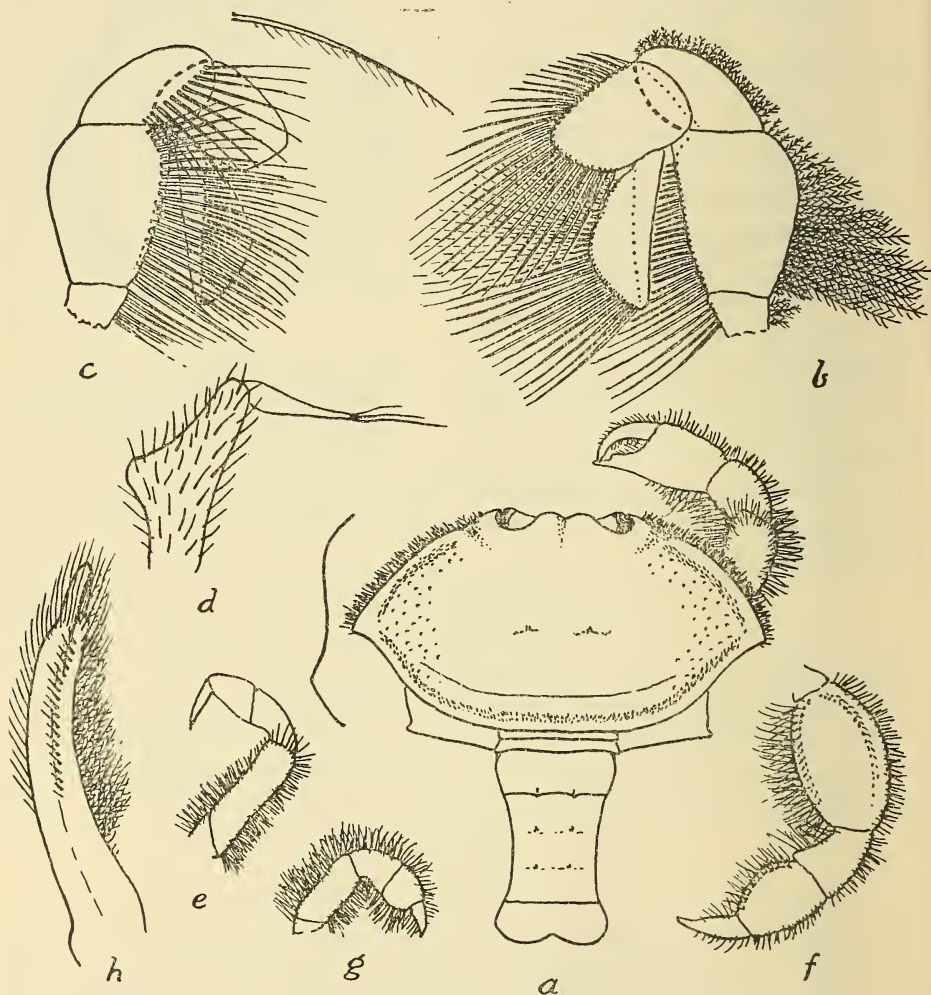


FIG. 6.

*Pinnixa penultipedalis* Stmps. a. carapace, cheliped, and extended abdomen, longitudinal profile of carapace on left. b. external view of left maxilliped 3. c. internal view of same. d. external view of exopod of right mxp. 3. e. 1st walking leg. f. 3rd leg. g. 4th leg. h. posterior view of left pleopod 1 ♂.

of 4th joint, and a longitudinal one on 7th joint, all three series of setae on the inner (anterior) surface of the appendage.

Finger and thumb of chelipeds gaping, furry, finger crossing apex of thumb which has a subapical ridge.

Third leg much larger and stronger than any of the others (incl. chelipeds); outer (upper) margin of 4th–6th and inner (lower) margin of 4th and 6th joints minutely crenulate, concealed by thick marginal fur on posterior surface but visible on the anterior surface; 4th joint with 2 rows of fur-covered granules on posterior surface, subparallel with upper and lower margins; and a similar row very near the lower margin of 6th joint. (The lower margin of this latter joint might be described as flat between 2 granular ridges.) Fourth leg shortest, thickly setose; upper margin of 4th joint crenulate, lower margin flat between 2 granular ridges.

Length 3.5 mm., breadth 6.5 mm. Pinkish.

*Locality.* Inhambane. ♂♂ and ♀♀ associated with Sipunculid worms: ovig. ♀♀ in Jan. (U.C.T. Jan. and July 1954).

*Distribution.* Hong Kong and Japan.

*Remarks.* These specimens seem to agree with Stimpson's description as regards the characters mentioned by him. The identification, however, is by no means certain. The transverse ridge across the carapace, and the large penultimate pair of legs are characters shared with other species.

Ortmann's small figure shows an ovoid carapace, without any lateral angularities such as are present in other species (see e.g. Rathbun. 1898. *Proc. U.S. Nat. Mus.*, xxi, pl. 43, figs. 6 and 7).

*P. penultipedalis* and *tumida* seem to be the only two species recorded from the Indo-Pacific region. The Madagascan *P. brevipes* M. Edw. 1853 is considered by Tesch to belong to another genus.

#### Fam. OXYPODIDAE

##### Gen. *Macrophthalmus* Latr.

1950. Barnard, loc. cit., p. 101.

A revised key is given to include the new South African records of *convexus*, *latreillei*, and *depressus*.

A. Carapace about twice as broad as long. Outer surface hand ♂ with a ridge near lower margin.

1. Inner surface hand ♂ with a spine. External orbital tooth smaller than 1st antero-lateral tooth.

a. External orbital tooth and 1st antero-lateral tooth crossed, or nearly at right angles.

(i) Eye-stalks extending slightly beyond sides of carapace. . . . [*sulcatus*  
Mauritius]

(ii) Eye-stalks scarcely reaching inner margin of 1st lateral tooth. . . . *grandidieri*

b. External orbital tooth and 1st antero-lateral tooth pointing approximately in same direction.

(i) Length of hand ♂ chela (without thumb) 4 times as long as high.

Carapace with verrucose tubercles laterally. . . . [*brevis*  
Mauritius]

- (ii) Length of hand (without thumb) about twice as long as high.  
 Carapace without verrucose tubercles. . . . *hilgendorfi*
2. Inner surface of palm without spine. External orbital tooth larger than 1st antero-lateral tooth, and forming the anterior angle of carapace. . . . *convexus*
- B. Carapace less than twice as broad as long, conspicuously granulate. Inner surface palm of ♂ chela without spine.
1. Four lateral teeth, including the external orbital tooth. . . . *latreillei*
2. Two lateral teeth (3rd tooth indicated by a minute notch).
- a. Length of carapace about  $\frac{2}{3}$  width. On each branchial region 2 longitudinal parallel lines of granules. . . . *depressus*
- b. Length of carapace about  $\frac{3}{4}$  width. No parallel lines of granules. . . . *boscii*

*Macrophthalmus hilgendorfi* Tesch

1950. Barnard, loc. cit., p. 103, fig. 20j

Two immature specimens, ♂ 5.5 × 11 mm. and ♀ 5 × 10 mm., seem to be referable to this species. The one discrepancy is the absence of the tooth on the inner surface of palm of cheliped. Apparently this tooth should be regarded as an adult feature.

*Locality.* Inhambane. (U.C.T.)

*Macrophthalmus convexus* Stmps. n.

1900. Alcock, *J. Asiat. Soc. Bengal.*, lxix, p. 378.

1915. Tesch, *Zool. Med. Mus. Leiden*, i, p. 175, pl. 7, fig. 8.

1919. Kemp, *Rec. Ind. Mus.*, xvi, p. 389, pl. 24, fig. 2 (abnormal ♂ chela).

*Locality.* Durban Bay. (U.C.T.)

*Distribution.* Mauritius, Madagascar, Indo-Pacific.

*Macrophthalmus latreillei* (Desm.)

1881. Lenz and Richters, *Abh. Senckenb. Ges.*, xii, p. 4, figs. 24-7 (*polleni*).

1886. Miers, '*Challenger*' *Rep.*, xvii, p. 250, pl. 20, fig. 1 (*serratus*).

1906. Laurie, *Herdman Ceylon Pearl Fish.*, v. Suppl., Rep. 40, p. 427, text-fig. 12 and pl. 2, fig. 3.

1915. Tesch, loc. cit., p. 181 (synonymy).

*Locality.* Inhaca Island, Delagoa Bay. 1 ♀ (U.W.).

*Distribution.* Madagascar, Indo-Pacific.

*Macrophthalmus depressus* Rüppell

1915. Tesch, loc. cit., p. 196, pl. 9, fig. 13.

1919. Kemp, loc. cit., p. 392.

1945. Stephensen, *Dan. Sci. Invest., Iran*, pt. 4, p. 191, fig. 58A (plp. 1 ♂).

*Locality.* Inhambane. (U.C.T.)

*Distribution.* Red Sea, Persian Gulf, Aden, Ceylon.

Gen. *Paracleistostoma* de Man

1895. de Man, *Zool. Jahrb. Syst.*, viii, p. 580.

1918. Tesch, *Siboga Exp. monogr.*, xxxix, c. pp. 58 (in key), 62.

1932. Shen, *Zool. Sinica.*, A, ix, 1, p. 231 (*P. cristatum* de Man figured).

1937. Tweedie, *Bull. Raffles Mus.*, 13, p. 157 (2 n. spp.).



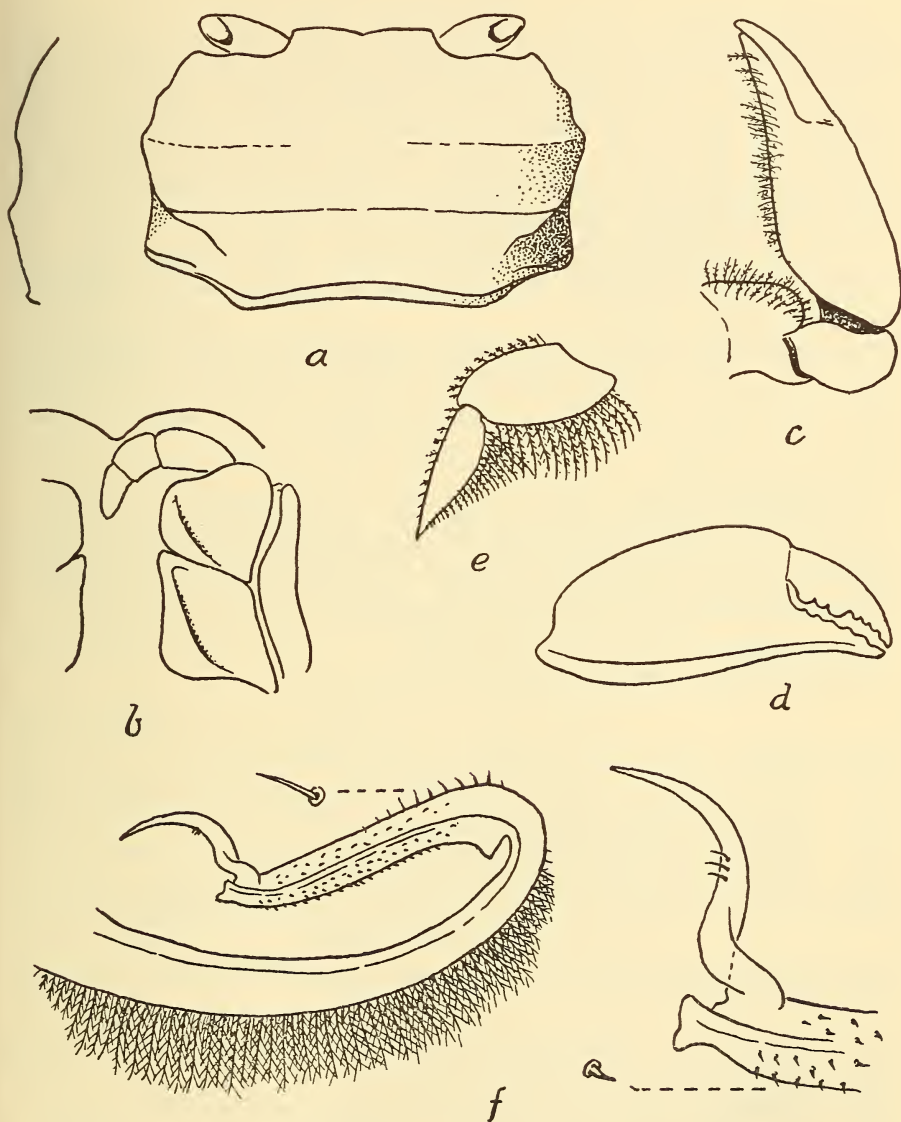


FIG. 7.

*Paracleistostoma fossula* n. sp. a. carapace, with longitudinal profile. b. left mxp. 3 in situ. c. dorsal view of cheliped. d. outer view of chela. e. distal joints of leg.

*Tylodioplax blephariskios* (Stebb.). f. pleopod 1 ♂, with apex further enlarged. See p. 3.

*Paracleistostoma fossula* n. sp.

Fig. 7a-e.

Carapace smooth, glabrous; a very feeble ridge across the cardiac and branchial regions forming the hind border of a shallow transverse furrow, very faint medianly but more distinct laterally, the front border of which is even less conspicuous than the hind border, and obsolete medianly but better indicated laterally; lateral corners of front angular, but appearing rounded in a general dorsal view; antero-lateral angles squarish, antero-lateral margins with 2 feeble indentations; post-frontal crests obsolete.

Third maxillipeds separated by a gap almost as wide as width of 3rd joint, 4th joint shorter but slightly broader than 3rd joint, both joints obliquely furrowed; exopod visible.

Chelipeds equal, smooth; arm with rounded lobe at inner upper apex, inner margin with plumose setae, inner surface of palm also with plumose setae, outer surface with costa near lower margin from base almost to apex of thumb, cutting-edges with rounded teeth, the 3 nearest the base of finger larger than the others.

Legs smooth, without ridges on 4th joints, not specially setose; anterior margin of 4th joints of all legs, and front and hind margins (especially the hind margin) of 5th leg (presumably the 5th, but all legs detached) with plumose setae; coxal joints with plumose setae dorsally.

3.3 × 5 mm. As preserved, pale brown.

*Locality.* Delagoa Bay. 1 ovig. ♀. (U.W.)

## Fam. HAPALOCARCINIDAE

- 1900. Calman, *Trans. Linn. Soc. Lond.* (2), zool., viii, p. 47.
- 1915. Potts, *Carnegie Inst. publ.*, 212, Papers Dept. Mar. Biol., viii, pp. 33 sqq.
- 1936. Shen, *Hong Kong Nat. Suppl.*, No. 5, p. 21.
- 1937. Rathbun, *Bull. U.S. Nat. Mus.*, No. 166, p. 258.
- 1944. Utinomi, *Palao Trop. Biol. Sta. Studies*, II, 4, pp. 687 sqq.

Gen. *Hapalocarcinus* Stimpsn.

- 1859. Stimpson, *Proc. Boston Soc. N.H.*, vi, p. 412.

*Hapalocarcinus marsupialis* Stimpsn.

- 1859. Stimpson, loc. cit., p. 412.
- 1900. Calman, loc. cit., p. 43, pl. 3, figs. 29-40.
- 1902. Borradaile, *Fauna Geogr. Mald. Lacc. Arch.*, I, p. 271.
- 1906. Rathbun, *Bull. U.S. Fish. Comm. for 1903*, pt. 3, p. 892.
- 1907. Stimpson (ed. Rathbun), *Smiths Misc. Coll.*, xlix, p. 170 footnote, pl. 14, fig. 8.
- 1911. Rathbun, *Trans. Linn. Soc. Lond.* (2), zool., xiv, p. 242.
- 1915. Potts, loc. cit., pp. 35 sqq. figs. 1-4, 5C, 6B, 7B, D, 8B, 9-15, pls. 1, 2 (♀, ♂, zoea) (formation of galls and biology).

1924. Balss, *Denkschr. Ak. Wiss. Wien.*, xcix, p. 16.  
 1925. Edmondson, *P. B. Bishop Mus. Bull.*, 27, p. 32.  
 1933. id., *B. P. Bishop Mus. Occas. Papers*, X, 5, p. 17, fig. 6b, d (zoea).  
 1937. Hiro, *Palao Trop. Biol. Sta. Studies*, No. 1, pp. 137 sqq., pl. 4, fig. 1, pl. 5.  
 1937. Rathbun, loc. cit., p. 259, fig. 46, pl. 79, figs. 3-9.  
 1944. Utinomi (= Hiro), loc. cit., p. 700 *et passim*, figs. 5A, 8, 13B, pl. 3, figs. 1-4.

A juvenile ♀, 2 mm. in length, corresponds with Potts's figure of Stage 2 (pl. 1, fig. 2). The chelipeds are robust, with a prominent spine distally on the inner margin of the arm. Three pairs of incipient pleopods.

*Locality.* Delagoa Bay. 2 ovig. and 1 juv. ♀♀ from the coral *Stylophora (Sideropora) digitata*. (U.W.)

*Distribution.* Red Sea, Maldives, Chagos Archipelago, Réunion, Ceylon, Indo-Pacific. In various corals (see Utinomi, 1944).

#### Gen. *Cryptochirus* Heller

1861. Heller, *Verh. zool. bot. Ges. Wien.*, xi, p. 19.  
 1862. M. Edwards, *Ann. Sci. nat. Paris* (4), xvii, p. 362 (*Lithoscaptus*).  
 1937. Richardson, *Bull U.S. Nat. Mus.*, No. 166, p. 262.  
 1944. Utinomi (=Hiro), *Palao Trop. Biol. Sta. Studies*, II, 4, pp. 687 sqq.

Distinguished by the granulate carapace and dentate peduncle of antenna 1 from *Hapalocarcinus* with smooth carapace.

#### *Cryptochirus coralliodytes* Heller

1861. Heller, loc. cit., p. 19.  
 1861. id., *SB. Ak. Wiss. Wien.*, xliii, p. 366, pl. 2, figs. 33-9. (Paulson quotes 'pl. iv'.)  
 1875. Paulson, *Red Sea Crust.*, p. 72. (*Lithoscaptus paradoxus* M. Edw.)  
 1880. Richters, *Beitr. Meeresf. Mauritius Seych.*, p. 159.  
 1902. Borradaile, *Fauna Geogr. Mald. Lacc. Arch.*, I, p. 271.  
 1933. Edmondson, *Occ. Pap. B. P. Bishop Mus.*, X, 5, p. 14, fig. 5, and pl. 4, A, B.  
 1937. Hiro, *Palao Trop. Biol. Sta. Studies*, No. 1, p. 140 *et passim*, pl. 4, figs. 2, 3, pl. 6.  
 1944. Utinomi, loc. cit., p. 697 *et passim*, figs. 5 B, 6 A, 7 A,D, 9, 11 A,B, 12 A, 13 A, 15 A,E, 16 A,B, and pl. 3, figs. 5, 6, pl. 4, figs. 1, 2.

*Locality.* Durban, 4 ovig. ♀♀ from circular holes in the coral *Favia*. (U.W.).

*Distribution.* Red Sea, Maldives, Mauritius, Indo-Pacific. In *Favia* and other massive corals (see Utinomi, 1944).

#### Fam. GRAPSIDAE

##### *Ilyograpsus* n.g.

Carapace subquadrangular, antero-lateral margins slightly oblique, dentate; fronto-orbital width three-quarters or more, front less than half, the greatest



width of carapace. Orbits large, lower border complete, no infra-orbital crest. Antennules oblique, septum rather narrow. Antennae in the orbital hiatus. Epistome short. Maxillipeds widely gaping, no hairy oblique ridge, 4th joint broader than long, flagellum inserted in the middle of anterior margin, exopod narrow, without tooth on inner margin. Chelipeds ♂ weak, shorter than legs; tips of finger and thumb spooned. Legs slender, dactyls slender, terete. Abdomen ♂ extending nearly to margin of buccal cavity, all segments distinct, evenly tapering, not constricted in middle, 1st segment occupying not quite all the space between the 5th coxae, 2nd segment very short, and narrower than 1st and 3rd, 3rd widest. Female unknown.

Genotype. *I. rhizophorae* n. sp.

*Remarks.* There is a most disconcerting resemblance, even to the faint cross-bands on the legs, between the species described below and *Camptandrium paludicola* Rathbun (1910. *D. Vidensk. Selsk. Skr.* (7), vol. V, no. 4, p. 326, fig. 9). Tesch (1918. *Siboga Exp. monogr.*, xxxix, c. p. 68) maintains that Rathbun's species does not belong to *Camptandrium*, and is certainly a Grapsid; he suggests it should be referred to *Cyrtograpsus* Dana.

*Cyrtograpsus* belongs to the subfam. *Varuninae* (Rathbun. 1918. *U.S. Nat. Mus. Bull.*, 97, p. 225) in which the incomplete lower orbital border is supplemented by a suborbital crest (as it is also in *Camptandrium*; see: Rathbun, 1907, *Smiths. Misc. Coll.*, xlix, p. 137, and 1910, loc. cit., p. 325; also Kemp, 1915, *Mem. Ind. Mus.*, v, p. 236). The new species has a complete lower orbital border and therefore belongs to the *Grapsinae*, in which subfamily, however, there seems to be no existing suitable genus for it.

*Ilyograpsus rhizophorae* n. sp.

Fig. 8.

♂—Carapace subquadrangular, front prominent; antero-lateral margin with 3 teeth behind the outer orbital tooth, the 1st blunt and less prominent than either the orbital tooth or the 2nd lateral, the 3rd lateral the smallest; lateral margins subparallel. Post-frontal crests prominent; regions obscure, but groove between gastric and cardiac regions distinct; 3 short setulose crests near the lateral and postero-lateral margins. Surface with short sparse pubescence, when denuded feebly granulose, chiefly around the lateral margins. Infra-orbital border with 2 low denticles. A feeble setose ridge from angle of buccal cavity across the sparsely setose pterygostomial region. Sternum and abdomen minutely and obscurely granulose.

Chelipeds subequal, anterior margin of 4th joint finely crenulate-dentate; inner surface of hand distally and inner surface of finger and thumb pubescent; finger and thumb apically spooned, cutting-edges crenulate-dentate, that of the finger proximally with broad low tooth.

Legs (only 5 are present, all detached) longer than chelipeds, 4th joint about  $2\frac{1}{2}$  times as long as broad, anterior margin with plumose setae, and a

conspicuous subterminal tooth; in four of the legs the 6th joint is about 4 times as long as broad, smooth, dactyls slender, terete, slightly curved, a little more than half length of 6th joint, finely setulose; in the remaining leg (probably the hindmost leg) 6th joint is only twice as long as broad, and furry on both margins, 5th joint with plumose setae on anterior margin as in 4th joint, dactyl nearly as long as 6th joint, thickly setulose.

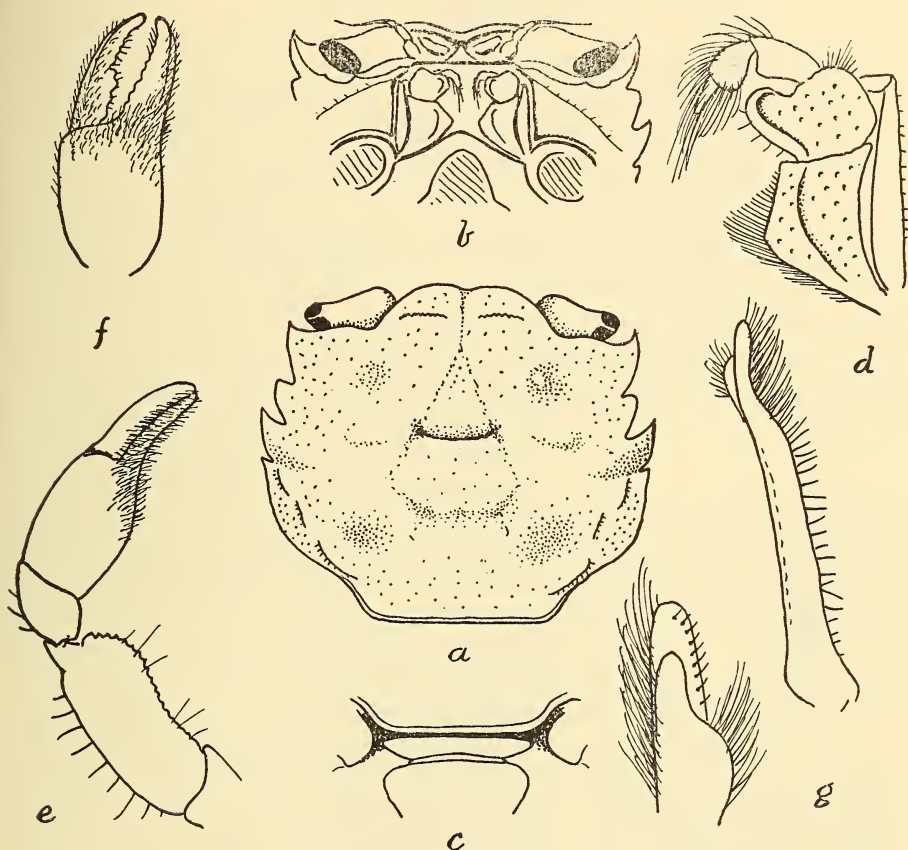


FIG. 8.

*Ilyograpsus rhizophorae* n.g., n. sp. a. carapace. b. ventral view of anterior portion of carapace showing mxp. 3 *in situ*. c. abdominal segments 1-3. d. mxp. 3. e. left cheliped. f. inner view of chela. g. posterior view of left pleopod 1 ♂, with anterior view of apex.

Abdomen, 1st segment not quite extending to the sockets of 5th coxae, 2nd very short and narrower than 1st, 3rd widest at base but also not reaching the 5th coxae, lateral margins of 3rd-6th segments tapering evenly, but rather abruptly in distal half of 6th, 7th almost as long as its basal width, apically rounded.

Pleopod 1 rather slender, distally slightly curved outwards, outer margin setose, apex rounded, the 'lip' of the seminal channel on the anterior side not as long as the posterior 'lip'.

Length 6.5, breadth 7.5 mm. As preserved, yellowish-brown with very faint indications of cross-bands on 6th joints of the legs.

*Locality.* Inhambane, in mangrove swamps. 1 ♂. (U.C.T.) (July, 1954.)

*Sarmatium crassum* Dana

Fig. 9.

1851. Dana, *Pr. Ac. Nat. Sc. Philad.*, p. 251.

1852. id., *U.S. Expl. Exp. Crust.*, p. 358, pl. 23, fig. 1.

1869. M. Edwards, *Nouv. Arch. Mus. Paris*, v, p. 28 (*germani*).

1900. Alcock, *J. Asiat. Soc. Bengal*, lxi, p. 426.

1917. Tesch, *Zool. Med*, iii, p. 215 and p. 258 (in key).

Carapace glabrous, regions indistinct, as long as broad (greatest width at 2nd epibranchial tooth, but distance between hind angles of carapace slightly greater); lateral margins very slightly sinuous, subparallel, with a small indent behind the blunt external orbital angle, and a feeble inconspicuous indent about midway between latter and hind angle. Some short oblique lines of small granules on hinder branchial region, with some tiny tufts of setules.

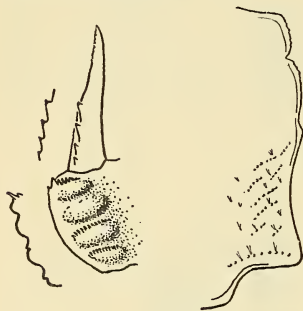


FIG. 9.

*Sarmatium crassum* Dana.  
Lateral margin of carapace;  
upper surface of hand and  
finger of ♂ cheliped, with  
profiles.

Postfrontal lobes not conspicuous, median pair occupying nearly all the space between orbits.

Chelipeds ♂ subequal, 4th joint with inner lower margin serrulate, outer lower margin only finely serrulate, upper margin with a small acute spiniform tooth subterminal (projecting over the transverse groove on outer surface), wrist with short tooth on inner margin, palm glabrous, coarsely punctate on outer surface becoming granulate on lower margin, inner surface smooth, sparsely punctate, with a few very inconspicuous granules in a transverse series, upper surface with 4 smooth transverse ridges with subsidiary milled ridges (Alcock quotes: 4-5 ridges; Tesch says 6-7), a series of small dark denticles above insertion of finger; finger with 4 short black-tipped spines in proximal half, and a series of minute dark denticles distally; finger and thumb not gaping, slightly furry at base. A sharp subterminal tooth on upper margin of 4th joint of legs; 4th joint of 5th leg slightly longer than twice its width.

Seventh abdominal segment longer than basal width ( $2\frac{1}{2}$ - $1\frac{3}{4}$  mm.).

Length 12 mm., breadth 12.5 mm. Fawn-brown, chelipeds and legs biscuit-coloured with orange tinge.

*Locality.* Durban Bay. 1 ♂. (U.C.T. 1950.)

*Distribution.* Samoa, S. China, Sumatra, Nicobars.



## Fam. XANTHIDAE

*Chlorodiella niger* (Forskal)

Fig. 10.

1950. Barnard, loc. cit., p. 213 (references).

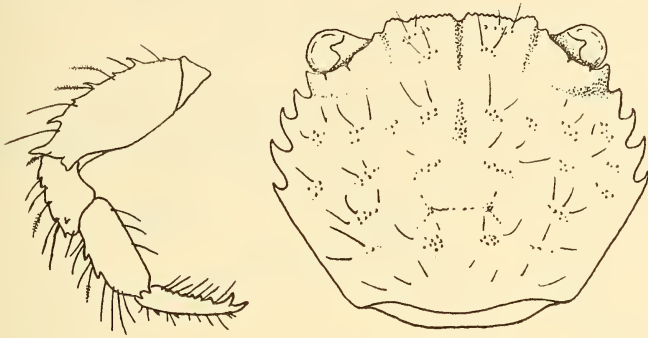


FIG. 10.

*Chlorodiella niger* (Forskal). Carapace and leg of juv. ♂.

As this species was not figured in the above-cited work, the opportunity is here taken to give a figure of a juvenile, with remarks on the differences between the latter and the adult.

Juv. ♂, 5 × 6 mm. Front as well as infraorbital margin very clearly denticulate. Second, third and fourth antero-lateral teeth distinctly spiniform; in adult the teeth become progressively blunter (cf. Laurie, 1915). Upper surface of carapace with fairly well-marked regions, small groups of minute granules, and scattered setae; in adult regions scarcely traceable, surface smooth to the naked eye but minutely shagreened, glabrous.

Legs less setose than in adult, consequently the spines on 4th-6th joints more clearly visible, and especially the denticles on inner margin of dactylus.

All abdominal segments distinct; pleopods 1 and 2 not fully developed.

*Locality.* Delagoa Bay. 1 adult ♂, 1 juv. ♂. (U.W.)

Gen. *Cymo* de Haan

1833. de Haan in Siebold. *Fauna Japon. Crust.*, p. 22.

*Cymo andreossyi* (Audouin)

Fig. 11.

1826. Audouin in Savigny, *Descr. Egypte*, p. 86, pl. 5, fig. 5 (*Pilumnus a*).

1875. Paulson, *Red Sea Crust.*, p. 38, pl. 6, fig. 5.

1884. Miers, *Crust. H.M.S. 'Alert'*, p. 532 (*andreossii*).

1887. de Man, *J. Linn. Soc. Lond.*, xxii, p. 35.

1898. Alcock, *J. Asiat. Soc. Bengal*, lxxvii, p. 173 (references).

1915. Bouvier, *Bull. Sci. Fr. Belg.*, xlviii, p. 280.

The left half of the front of the juvenile agrees exactly with de Man's description. The fingers and thumbs of both chelae of both specimens are pure white.

*Locality.* Delagoa Bay. 1 immature  $5.5 \times 6$  mm., 1 non-ovig. ♀  $11 \times 11.5$  mm. (U.W.)

*Distribution.* Red Sea, Seychelles, Mauritius, Rodriguez, Indo-Pacific.

Gen. *Pilumnopeus* M. Edw.

1863. Milne Edwards, *Ann. Sci. Nat.* (4), xx, p. 289.

1887. De Man, *J. Linn. Soc. Lond.*, xxii, p. 52 (*Heteropanope* part).

1893. Alcock, *J. Asiat. Soc. Bengal*, lxvii, p. 207 (*Heteropanope* part).

1933. Balss, *Capita Zool.*, iv, p. 33.

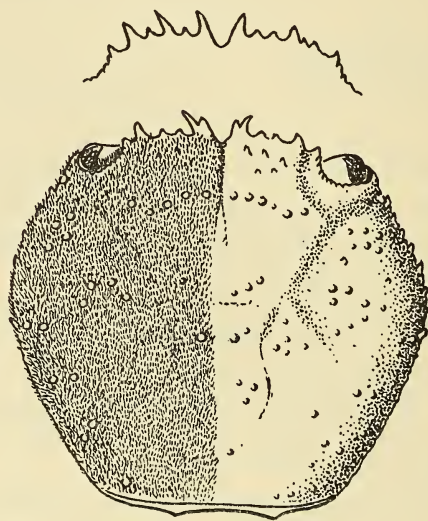


FIG. 11.

*Cymo andreossyi* (Aud.). Carapace of ♀, right half denuded; with frontal margin of juvenile.

De Man and Alcock regarded *Pilumnopeus* as synonymous with *Heteropanope* Stimpson 1858. Balss, however, keeps them separate, defining *Pilumnopeus* as having the middle frontal lobes convex, the carapace more convex, and with transverse setose lines of granules.

*Pilumnopeus indica* (de Man)

Fig. 12.

1887. de Man, loc. cit., p. 53, pl. 3, figs. 1, 2 (*Heteropanope i*).

1898. Alcock, loc. cit., p. 208 (*Heteropanope i*)

1933. Balss, loc. cit., p. 33.

One ♂,  $8 \times 12$  mm., and ovig. ♀♀ up to  $8.5 \times 12.5$  mm., agree so well with de Man's detailed description that there can scarcely be any doubt as to their identity. The only difference in these specimens is: the hand of the larger (right) chela is granular on the upper surface and on the outer surface near the articulation with the wrist; and the lower surface and distal half of outer surface of the smaller (left) chela are not granular.

Smallest ovig. ♀  $4.5 \times 6$  mm. Brownish, speckled and mottled with reddish-brown, hand of cheliped with small orange spots, finger and thumb blackish, colour not extending on to palm.

*Locality.* Durban Bay. 1 ♂ and ovig. ♀♀. (U.C.T.)

*Distribution.* Mergui Archipelago.

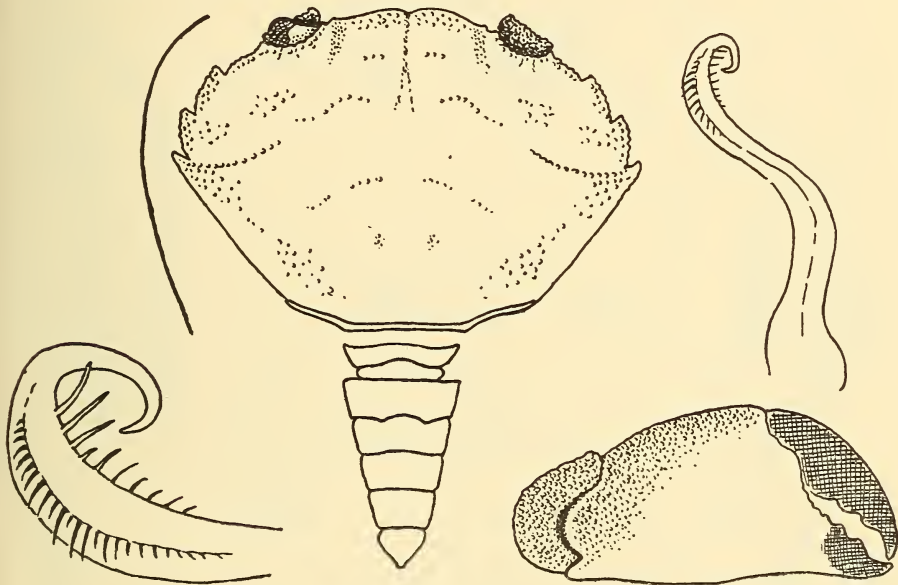


FIG. 12.

*Pilumnopus indica* (de Man). Carapace of ♂, right eye removed; abdomen; right chela; pleopod 1 ♂, with apex further enlarged.

#### Gen. *Actumnus* Dana

1851. Dana, *Amer. J. Sci.* (2), xii, p. 128.

? *Actumnus laevigatus* Rathbun

Fig. 13.

1911. Rathbun, *Trans. Linn. Soc. Lond.*, xiv, p. 233, pl. 19, figs. 3, 4.

1933. Balss, *Capita Zool.*, iv, p. 36 (*Pilumnus l.*).

♀—Carapace strongly declivous anteriorly, with very short pile, with scattered long plumose setae. Front  $\frac{1}{3}$  width of carapace, 2 broad lobes without (or with a scarcely noticeable notch next to the orbit. Supraorbital



margin with very inconspicuous trace of one slit, feebly beaded; infraorbital margin beaded. No infraorbital or subhepatic teeth. Antero-lateral margin with 3 small teeth, each tipped with a white spinule. Distance between outer orbital angle and 1st tooth slightly greater than that between 1st and 3rd teeth.

Only the left cheliped present. Wrist with a conical knob on inner surface, upper surface inconspicuously corrugated, minutely granulate on outer surface. Palm finely granulate, some of the granules slightly larger and forming 3 moderately definite longitudinal rows on outer surface. A few granules on base of upper surface of finger. Tips of finger and thumb pointed. Finely

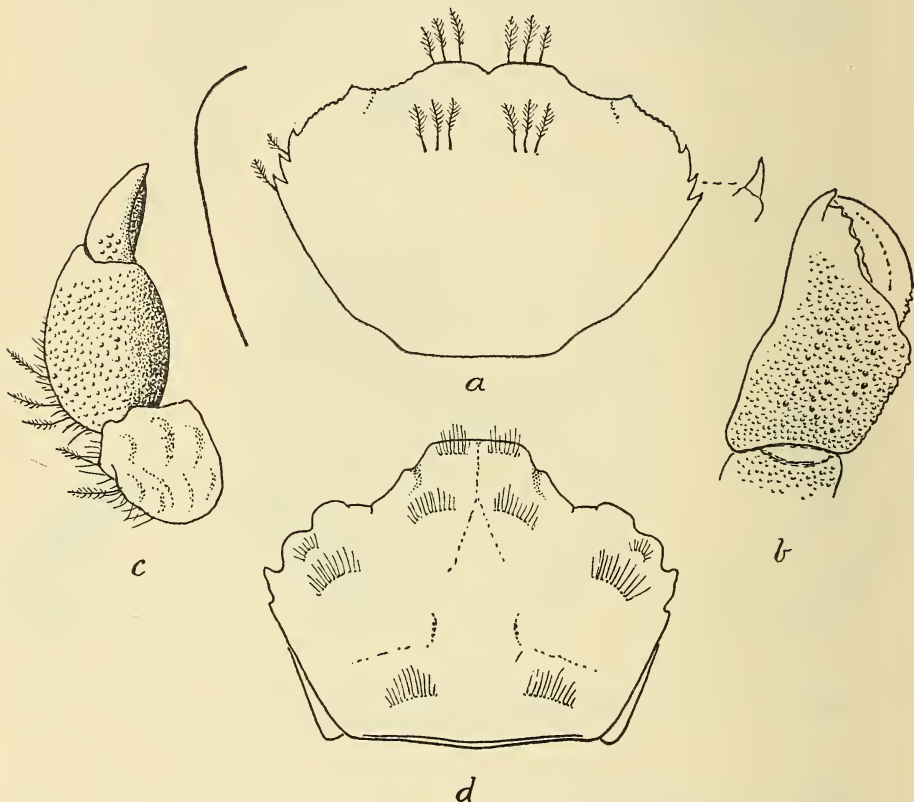


FIG. 13.

? *Actumnus laevigatus* Rathbun. a. carapace of ♀, the short pile removed, with longitudinal profile. b, c. outer and upper surfaces of chela.

*Lybia plumosa* Brnrd. d. carapace more correctly drawn than in fig. 46f in Barnard, 1950, loc. cit.

pilose, with a few long plumose setae. Legs without spinules on margins; pilose and setose, especially the dactyls, with longer plumose setae.

Length 5 mm., breadth 7.5 mm.

*Locality.* Inhambane. 1 ovig. ♀. (U.C.T.).

*Distribution.* Seychelles.

*Remarks.* This specimen seems to be near, if not identical with, *A. laevigatus* Rathbun, described from a single ovig. ♀ 6.8 × 9.3 mm. Balss regards this species as a *Pilumnus* on account of the broad sternum.

Gen. *Sphaerozius* Stimpson

1950. Barnard, loc. cit., p. 253.

The two species recorded from the South African region may be distinguished as follows:

- |  |                   |
|--|-------------------|
| 1. Frontal lobes oblique, entire. Outer surface of hand of chela granular. . . .             | <i>nitidus</i>    |
| 2. Frontal lobes transverse, each 3-lobulate. Outer surface of hand of chela smooth. . . . . | <i>fornasinii</i> |

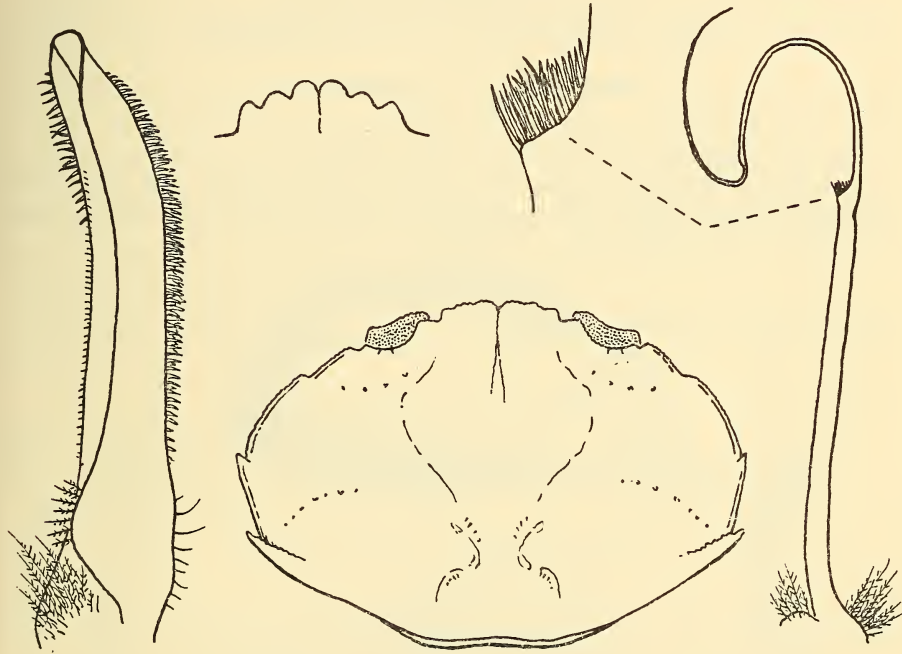


FIG. 14.

*Sphaerozius fornasinii* (Bianconi). Carapace of specimen 12.5 × 18.5 mm., from Inhambane. Frontal lobes of adult ♂. Pleopods 1 and 2 ♂, the latter with group of spines further enlarged.

*Sphaerozius fornasinii* (Bianconi)

Fig. 14.

1851. Bianconi, *Spec. Zool. Mosambic.*, fasc. 5, p. 84, *Crust.*, pl. 2, figs. 1, 1a-c. (*Mem. Ac. Sci. Bologna*, III.) (*Galene* f.)
1878. Hilgendorf, *MB. Ak. Wiss. Berlin*, p. 795 (*Menippe* subg. *Myomenippe* f.).
1899. de Man, *Notes Leyden Mus.*, xxi, p. 57, pl. 7, fig. 1 (*Myomenippe* f.).
1950. Barnard, loc. cit., p. 256.

The lobules on the frontal lobes are not so conspicuous in the young as in the adult.

Length, ♂ 52 mm., breadth, 75 mm. (Hilgendorf,  $54 \times 79$  mm.). Reddish-brown, more or less mottled, chelae with small pale spots, finger and thumb black, the colour not extending on to palm.

*Locality.* Inhambane. 3 specimens. (U.C.T. 1954.)

*Distribution.* Mozambique; Ibo.

*Remarks.* There is a curious resemblance between the 2nd pleopod ♂ of this species and that of *Notonyx nitidus* (Goneplacidae, Rhizopinae) (Stephensen, 1945, *Dan. Sci. Invest. Iran*, pt. 4, fig. 47B): both have a spiniferous step midway along the appendage.

Fam. GONEPLACIDAE

Gen. *Xenophthalmodes* Richters

1950. Barnard, loc. cit., p. 296 (references).

*Xenophthalmodes brachyphallus* n. sp.

Fig. 15a-d.

Two ♂♂ agree with *moebii* except in two characters.

The first abdominal segment is proportionately wider, extending well beyond the lateral angle of the 3rd segment (fig. 15a) whereas in *moebii* the two

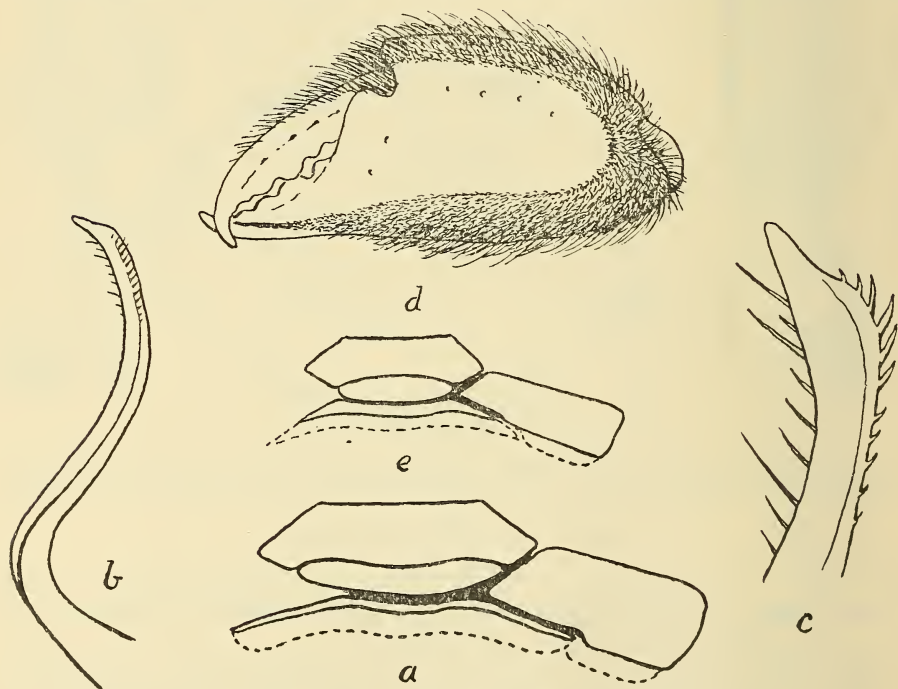


FIG. 15.

*Xenophthalmodes brachyphallus* n. sp. a. abdominal segments 1-3, and left sternal plate ♂, articular surface of segment 1 dotted. b. posterior view of right pleopod 1 ♂. c. apex of same further enlarged. d. outer surface of chela of large ♀  $12 \times 18$  mm.

*Xenophthalmodes moebii* Richters. e. abdominal segments 1-3, and sternal plate ♂, for comparison with a.



segments are subequal in width (fig. 15e), consequently it reaches midway along the sternal plate, instead of scarcely one quarter.

The 1st pleopods extend almost to the tip of the abdomen, but do not project beyond it as in *moebii* and *dolichophallus*. The appendage is strongly sinuous, with a slight beak-like apex curving outwards, with 2 series of strong spines distally; in the other two species the appendage is straight, slender, tapering to a fine unarmed point.

Length ♂♂ 5.5 and 12 mm., ♀ 12 mm. (measured by calipers, not over the curve of the carapace); breadth ♂♂ 8 and 16 mm. resp., ♀ (nonovig.) 18 mm.

*Locality.* Inhambane. 2 ♂♂, 1 ♀, and immat. (U.C.T. Jan. and July 1954.)

*Remarks.* The size of the ♀ and the larger ♂ specimen is noteworthy, the breadth being considerably greater than the largest of Alcock's specimens (12 mm.).

The specific identity, or otherwise, of Richters', de Man's, Alcock's, the Delagoa Bay specimen (Barnard, loc. cit., 1950), and *dolichophallus* Tesch remains somewhat uncertain. The shape of the 4th joint of mxp. 3 may vary to some extent, but the 1st plp. ♂ is a very definite character. Tesch presumably examined de Man's ♂ specimen, but he does not describe this appendage, merely stating that an elongated, externally visible appendage is 'not to be observed in de Man's specimen' (p. 217).

Stephensen (1945, *Dan. Sci. Invest. Iran*, pt. 4, p. 178, figs. 47 C-E) has further remarks on *dolichophallus* Tesch 1918.

#### Gen. *Typhlocarcinodes* Alcock

1900. Alcock, *J. Asiat. Soc. Bengal*, lxix, p. 326.

1902. Borradaile, *F. Geogr. Mald. Lacc. Arch.*, I, p. 267 (*Caecopilumnus*).

1918. Tesch, *Siboga Exp. monogr.*, xxxix, c. 1, pp. 202 (in key), 226.

#### *Typhlocarcinodes piroculatus* (Rathbun)

##### Fig. 16.

1911. Rathbun, *Trans. Linn. Soc. London* (2), zool., xiv, p. 239, pl. 20, figs. 1, 2 (♀). (*Typhlocarcinops p.*)

1918. Tesch, loc. cit., p. 231, pl. 15, fig. 2 (♂).

Fronto-orbital width one half width of carapace. Front wider than orbit, just over 3 times in carapace width. Antero-lateral margin entire, costate, beaded, passing into postero-lateral margin without any appreciable notch. Abdomen 1st segment in ♂ and ♀ occupying whole distance between the 5th coxae; in ♂ 2nd segment narrower than the adjoining sternal plate, 3rd-5th segments fused but indicated by faint median impressions.

Ocular peduncle immovable, piriform, cornea small but distinct on ventral surface of apex. Antenna 1 folding completely into fossa, stout, flagellum with broad, short joints tapering into 4 or 5 slender distal joints, with long smooth (non-setose) sensory filaments. Antenna 2 flagellum longer than last joint of peduncle, 12-jointed in ♂, 8-jointed in ♀.

Epistome sunken, not prominent. Buccal cavity slightly narrowing in front. External maxillipeds nearly meeting in centre line, 4th joint sub-circular, the antero-lateral corner rounded.

Cheliped, internal angle of wrist not prominent; in ♂ palm about as long as broad, finger and thumb about as long as palm, gaping, each with a furry groove on outer surface, upper surface of wrist and palm with small granules concealed by the fur, outer and inner surfaces glabrous, finger with 2-3 small teeth on cutting-edge, thumb with a more prominent one; in ♀ less robust, more setose, finger and thumb not gaping.

Legs setose, margins of 4th-6th joints especially thickly clothed with long fringes.

Pleopod 1 ♂ distally tapering and laterally compressed, the dorsal edge with 5-6 denticles. Pleopod 2 very slender, as long as pleopod 1.

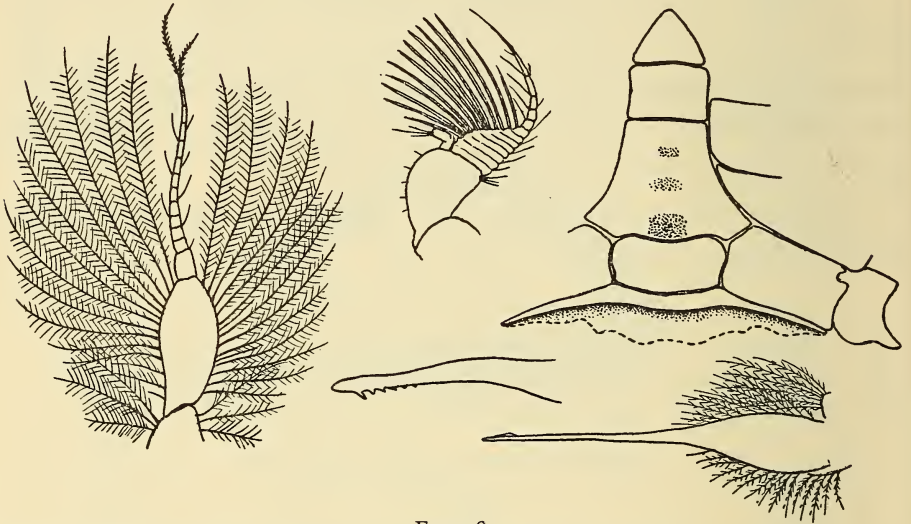


FIG. 16.

*Typhlocarcinodes piroculatus* (Rathbun). Antennae 1 and 2. Abdomen of ♂. Pleopod 1 ♂, posterior view of right appendage, with lateral view of apex (to same scale).

Length ♂ 8.5 mm. (by calipers, not over the curve), ♀ 7 mm.; breadth ♂ 11 mm., ♀ 9 mm. As preserved, dirty white, the fringes on the legs brown with a reddish tinge.

*Locality.* Delagoa Bay. 1 ♂, 1 non-ovig. ♀. (U.W.)

*Distribution.* Amirante Is., Seychelles, 34 fms.; Philippine Is., 36 metres.

*Remarks.* In spite of a few minor differences from the descriptions of Rathbun and Tesch (e.g. the flagellum of antenna 2 is longer, especially in the ♂) these specimens appear to belong to this species. Both are larger than the other known specimens.

Tesch did not describe the pleopods of the ♂. Nor have they been previously described in any species of this genus. Stephensen (1945, *Dan. Sci.*

*Invest. Iran*, pt. 4, p. 227) notes that, as far as recorded, pleopod 2 in the *Rhizopinae* is short except in *Notonyx*. The present species forms another exception.

Fam. DROMIIDAE

*Pseudodromia integrifrons* Hend.

Fig. 17.

1888. Henderson, '*Challenger*' Rep., xxvii, p. 16 footnote (sine descr.).

1893. id., *Trans. Linn. Soc. Lond.* (2), v, p. 406, pl. 38, figs. 7-9.

1950. Barnard, loc. cit., p. 316 (in key only).

Pubescence on surface of carapace chiefly in the shallow grooves marking the regions; the lateral and anterior margin of carapace, however, with thick fringe of plumose setae, especially noticeable on the rostrum.

The 6th joint of 5th leg has 2 strong spines on outer surface of apex (not 3 as in Henderson's description).

Length of carapace ♂ 7.5 mm., ovig. ♀ 6.5 mm. 36 ova, about 1 mm. in diameter.

*Locality.* Inhambane. ♂♂ and ovig. ♀♀. (U.C.T.)

*Distribution.* Ceylon; Obock.

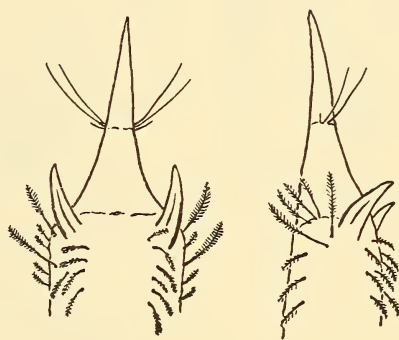


FIG 17.

*Pseudodromia integrifrons* Hend. Left 5th leg, outer surface (on left) and anterior (upper) lateral view (on right).

*Cryptodromia tomentosa* (Heller)

1861. Heller, *SB. Ak. Wiss. Wien.*, xlv, p. 214.

1875. Paulson, *Red Sea Crust.*, p. 83.

1878. Hilgendorf, *MB. Ak. Wiss. Berlin*, p. 813, pl. 2, figs. 3-5.

1880. Kossmann, *Reise. Roth. Meeres.*, pt. 2, p. 68.

1888. de Man, *J. Linn. Soc. Lond.*, xxii, p. 212.

?1903. Borradaile, *Fauna Geogr. Mald. Lacc. Arch.*, II, p. 577, pl. 33, fig. 3 (*hirsuta*).

1942. Ward, *Mauritius Inst. Bull.*, II, 2, p. 70.

A non-ovigerous ♀, 14 × 14 mm., is more like Hilgendorf's figure of *pentagonalis* in general outline, but the large antero-lateral tooth is truly marginal, and the median rostral tooth is only just visible in dorsal view as in his figure of *tomentosa*. The tooth behind the branchial groove is slightly less prominent than in the figure of the former species, and the supraorbital margin is less concave than in that of the latter species. Dorsal surface of carapace completely covered with tomentum.

*Localities.* Ibo (Hilgendorf); Inhambane. 1 ♀. (U.C.T.)

*Distribution.* Red Sea, Chagos Archipelago.



*Remarks.* *C. pentagonalis* Hilg. (loc. cit, p. 814, pl. 2, figs. 1, 2) should, I think, be united with *tomentosa*. According to Hilgendorf the antero-lateral tooth is truly marginal in *tomentosa*, but inframarginal in *pentagonalis*. Both species were found together at Ibo; *pentagonalis* has been recorded also from Mauritius and India (Henderson, 1893). Alcock (1899) and Henderson also thought the two species were not distinct.

*C. hirsuta* Borrard. is also very similar.

Regarded as synonymous with *canaliculata* Stimpson 1858 by de Man (1887, *Arch. Naturg.*, liii) and by Ortmann (1892). Rathbun (1911) records both *canaliculata* and *pentagonalis* from the Seychelles.

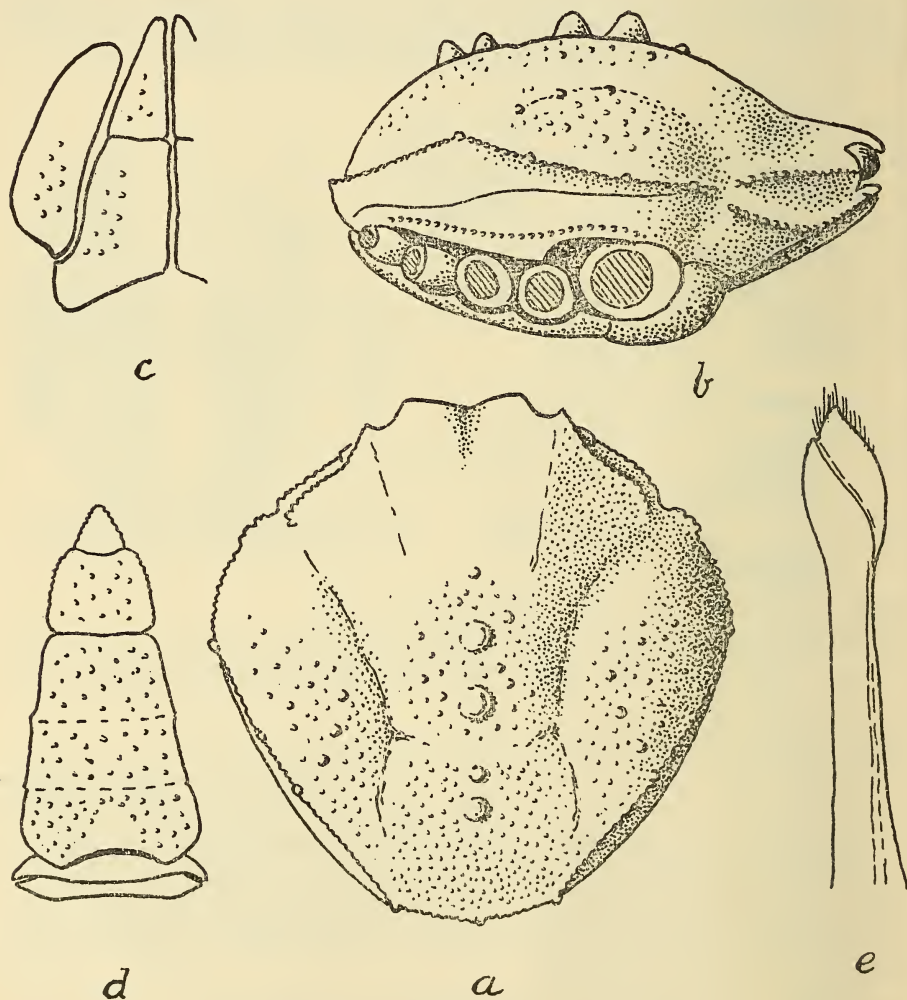


FIG. 18.

*Ebalia agglomus* n. sp. a, b. dorsal and lateral views. c. mxp. 3. d. abdomen ♂. e. pleopod 1 ♂.

Fam. LEUCOSIIDAE

*Ebalia agglomus* n. sp.

Fig. 18.

♂—Carapace as broad as long, but postero-lateral margins slightly converging behind; branchial regions separated from the median gastro-cardiac-intestinal regions by a well-marked furrow (not as deep as in *glomus*), 2 large medio-dorsal cardiac tubercles, 2 smaller intestinal ones, smaller tubercles and granules on the cardiac and branchial regions, and minute granules on intestinal region; gastric region and front quite smooth (with sparse impressed punctae); front with shallow median groove; supraorbital and antero-lateral margins beaded; pterygostomial ridge prominent, beaded, separated by the shallow hepatic-branchial gap from the beaded postero-lateral margin; hind margin with slightly enlarged median and lateral granules.

Cheliped about  $1\frac{1}{2}$  times length of carapace; arm shorter than carapace, granulate on upper, lower, and outer surfaces especially basally; wrist, palm and fingers minutely granulate (appearing smooth even under  $\times 8$  lens).

Abdomen with 3rd–5th segments fused, lateral margins of 6th and 7th segments crenulate. Pleopod 1 straight, distally enlarged, with pointed apex.

Length and breadth 7.5 mm.

*Locality.* Inhambane. 1 ♂ (U.C.T.). Delagoa Bay. 1 ♂ (U.W.).

*Remarks.* At first glance resembling a less highly sculptured form of *glomus* or *diadumena*, but distinguished by the 1st pleopod ♂.

Gen. *Cryptocnemus* Stimpson

1858. Stimpson, *Proc. Ac. Nat. Sci. Philad.*, x, p. 161.

1918. Ihle, *Siboga Exp. monogr.*, xxxix, b2, p. 285 (with key to species) and p. 317 (references).

*Cryptocnemus holdsworthi* Miers

Fig. 19.

1877. Miers, *Trans. Linn. Soc. Lond.* (2), zool., I, p. 241, pl. 38, figs, 30–2.

1906. Laurie, *Herdman's Ceylon Pearl Oyster Rep.*, Suppl. Rep. V, p. 356.

1910. Lenz, *Voeltzkow Reise Ostaf.*, II, p. 544.

1918. Ihle, loc. cit., p. 286 (in key) and p. 317 (in list of species).

Laurie remarks that the shape of the carapace is somewhat variable; and that Miers's ♀ specimen and his two ♀♀ were the only three specimens recorded to that date. Lenz had one ♀, whose abdomen agreed with Miers's figure. In the present specimen the abdomen is for the most part parallel-sided, and all 7 segments are distinct, but the 1st and 2nd are immovably fused; the hind margin of the 1st segment (probably, but may be the front margin of the 2nd) with a transverse ridge.

A strong ridge on the pterygostomial region, anteriorly forming the border of the inhalent channel.

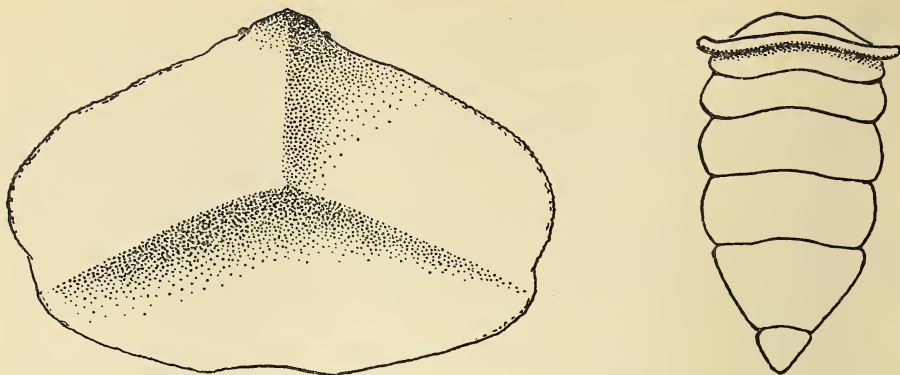


FIG. 19.

*Cryptocnemus holdsworthi* Miers. Carapace and abdomen of immature (? ♀).

Length 6.25 mm., breadth 10 mm. As preserved, white.

*Locality.* Inhambane. 1 immat. ? ♀, dredged in 4-1.5 metres, bottom sand, with patches of *Cymodocea* weed. (U.C.T. July 1954).

*Distribution.* Ceylon.

Fam. PORCELLANIDAE

*Porcellana delagoae* n. sp.

FIG. 20.

Median frontal tooth rather narrow, length subequal to basal width; margins of frontal teeth thickly fringed with short plumose setae. Carapace with scattered plumose setae, chiefly anteriorly and on the lateral branchial regions; the 2 semicircular postfrontal lobes rather prominent, with rather deep depression in front of them. Lateral margin with 3-4 spines above insertion of



FIG. 20.

*Porcellana delagoae* n. sp. a. carapace. b. ventral view of basal joint of left ant. 1. c. ventral view of peduncle of left ant. 2. d. right cheliped, the vertical flange on 4th joint seen foreshortened. e. external view of 3rd and 4th joints of cheliped. f. dactylus of leg.



peduncle of ant. 2 in front of lateral indent, 5 behind it, increasing in size posteriorly. First peduncular joint of ant. 1 thick, dentate, the ventral apical transverse margin with a couple of small denticles and some long setae, dorsal apical margin with 1 spiniform tooth and some small denticles, outer apical angle with 3-4 strong teeth. Basal peduncular joint of ant. 2 with margin entire except at apex which is serrulate; following two joints each with apical tooth on front margin. Inner margin of 3rd joint of cheliped rather prominent, with tuft of plumose setae; 4th joint with strong spine on lower inner margin, upper inner margin produced as a rounded, denticulate flange projecting vertically, perpendicular to the plane of upper surface of 5th joint, the median keel spinulose; both margins of hand, and outer margins of finger and thumb spinulose, and with plumose setae, the latter especially numerous on outer margin of hand; median keel of hand spinulose, 2-3 denticles on base of finger; cutting-edges of finger and thumb furry on inner (lower) side. (Only the right cheliped present, which seems to be the smaller.) Legs with moderately numerous plumose setae on 2nd-4th joints; dactyls with 4-5 spines, the distal-most one the largest, followed by a tuft of setae.

Length and breadth 4 mm. Pinkish-orange, somewhat faintly mottled, 2 red dots on the cardiac region.

*Locality.* Delagoa Bay. 1 ovig. ♀. (U.W.)

*Remarks.* At first glance deceptively like *dehaanii*, but distinguished by the spinulose and setose cheliped. The upstanding flange on the 4th joint of cheliped, if normal, is curious. Among a large number of both sexes of *dehaanii* I have found no tendency of this flange to become vertical and perpendicular to the plane of the upper surface of the 5th joint.

*Petrolisthes virgatus* Paulson

Fig. 21.

1875. Paulson, *Red Sea Crust.*, p. 87, pl. xi, fig. 4 (Paulson gives a reference to to a figure 'pl. 1, fig. 9' in another paper by himself).

1894. Ortmann in Semon, *Austral. Reise*, v, p. 28, pl. 2, fig. 5 (*trivirgatus*).

1905. Lenz, *Abh. Senckenb. Ges.*, xxvii, p. 375 (*trivirgatus*).

Integument not strongly calcified. Carapace, chelipeds and legs completely covered with short spinate spine-setae. No supraorbital or epibranchial spines. First peduncular joint of ant. 1 distally tridentate, inner and outer teeth acute, the broad median lobe with serrulate margin and 2-3 larger denticles. Second (1st free) peduncular joint of ant. 2 squarely lobed on front margin. Inner apex of 4th joint of cheliped sharply dentate, 5th joint with 3 sharp teeth on inner (front) margin; outer margin of hand proximally with sharp spiniform denticles, hidden by the thick marginal fringe of rather long spinate setae, which is continued along outer margin of thumb. Fourth joints of 2nd-4th legs without spines on front margin, lower (hind) margin of 4th joint of 2nd leg with acute apical tooth, 4th joint of 4th leg  $1\frac{1}{2}$  times as long as broad; both margins of legs strongly fringed with spinate setae.

Length 8.5 mm., breadth 8 mm. (As preserved in formalin) dark crimson-maroon dorsally, more crimson ventrally, sternum pale but speckled; carapace with 3 broad longitudinal pale, dark-bordered stripes, a pair of dark rings between the gastric-cardiac regions ending posteriorly in a pair of small shallow glabrous pits; abdomen with transverse crimson and pale bands; legs with pale stripes; chelipeds with pale stripe on hinder margin of 4th and 5th joints, hand with faint pale stripe along inner (upper) margin continued along finger, a more conspicuous pale stripe along middle of upper surface, continued along cutting-edge of finger. Ortmann gave the ground-colour as dark violet, paler below, with pattern as in the present specimens, but without mentioning the dark rings which are shown in Paulson's figure.

*Locality.* Delagoa Bay. 2 specimens. (U.W.)

*Distribution.* Red Sea, Dar-es-Salaam, Zanzibar.

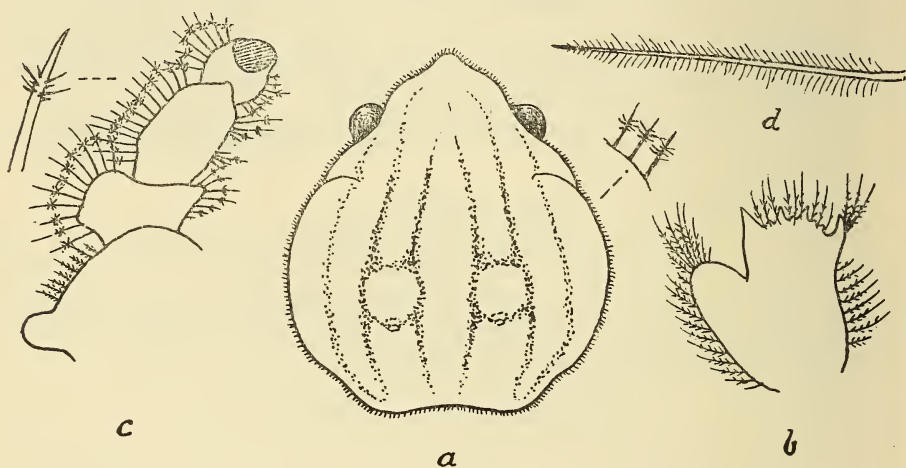


FIG. 21.

*Petrolisthes virgatus* Paulson. *a.* carapace, denuded, the spinate setae shown only around the margin. *b.* ventral view of basal joint of left ant. 1. *c.* ventral view of peduncle of left ant. 2, with spinate seta further enlarged. *d.* spine-seta from front margin of hand of cheliped.

*Remarks.* There can be little doubt that Ortmann's species is the same as Paulson's. From the figure ( $\times 2$ ) Ortmann's specimens measured  $10 \times 7.5$  mm. but the length has almost certainly been exaggerated in relation to the width. Paulson's much better figure ( $\times 3$ ) gives the size as (approx.)  $6.17 \times 5.7$  mm.

Fam. SERGESTIDAE

Gen. *Acetes* M. Edw.

1950. Barnard, loc. cit., p. 822

*Key to the South African species*

- |  |                   |
|--|-------------------|
| 1. Telson extending beyond middle of inner ramus of uropod, apically pointed.      | <i>erythraeus</i> |
| 2. Telson not extending beyond middle of inner ramus of uropod, apically truncate. | <i>natalensis</i> |

*Acetes natalensis* n. sp.

Very close to *insularis* Kemp (1917 *Rec. Ind. Mus.*, xiii, p. 54, figs.) (= *serrulatus* (Kröyer)) from the East Indies, differing only in the ♂ petasma.

Outer flagellum of ant. 1 ♂ as in Kemp's fig. 2c of *insularis*; 2 spinules proximal to a retrorse process on the side of the flagellum remote from the 2 large clasping spines.

Petasma: proximal and distal extensions of the inner lobe more like those of *indicus* (Kemp, loc. cit., fig. 4g), but between the two portions an angular lobe or tooth on inner margin, distal portion with a pointed process beyond which extends the apical cylindrical portion, the latter with several granules or 'pits' (Kemp).

Telson not reaching beyond middle of inner ramus of uropod, apex truncate but slightly convex, with a denticle at each corner.

Length ♂ ca. 20 mm., ♀ 22-3 mm.

*Locality*: Durban Bay, 4 ♂♂, 5 ♀♀ (U.C.T., 1951); also a single specimen from the same locality submitted in 1955 by Mr. W. D. Oliff of the Natal River Survey.

*Remarks*. Examination of the latter specimen showed that I had not heeded Kemp's warning (loc. cit., p. 44): '... two species are often found together. In such cases . . . identification is a tedious process, for each individual must be separately and carefully examined.' U.C.T. collected many juveniles of the large *erythraeus* and I assumed that *all* the small examples were the same species.

The character of the telson will at once distinguish the two species, reinforced in the case of ♂♂ by the flagellum of antenna 1 and the petasma.

## Fam. PROCESSIDAE

*Key to the South African genera*

- |                                    |         |                 |
|------------------------------------|---------|-----------------|
| 1. First peraeopod without exopod. | . . . . | <i>Processa</i> |
| 2. First peraeopod with exopod.    | . . . . | <i>Nikoides</i> |

Gen. *PROCESSA* Leach

1950. Barnard, loc. cit., p. 715

1951. Holthuis, *Atlantide Rep.*, 2, p. 37

*Key to the South African species*

- |   |         |                       |
|---|---------|-----------------------|
| 1. Rostrum narrow, slender.   |         |                       |
| a. 2nd legs unequal.  |         |                       |
| i. Body and 3rd-5th legs slender. 5th abdominal segment with hind corner rounded. | . . . . | <i>austroafricana</i> |
| ii. Body and 3rd-5th legs robust. 5th abdominal segment with hind corner dentate. | . . . . | cf. <i>edulis</i>     |
| b. 2nd legs equal (or subequal).  | . . . . | <i>aequimana</i>      |
| 2. Rostrum broad at base, triangular in dorsal view.                              | . . . . | <i>japonica</i>       |



*Processa aequimana* (Paulson)

1875. Paulson, *Red Sea Crust.*, p. 97, pl. 14, figs. 6, 6a (*Nika ae*).  
 1906. Nobili, *Ann. Sci. Nat. zool. Paris* (9), iv, (no specimens, translation of Paulson's description).  
 1922. de Man, *Siboga Exp. monogr.*, xxxix, a4, p. 44, pl. 4, figs. 19-19f.  
 1937. Gurney, *Proc. Zool. Soc. Lond.*, cvii, B, p. 87, pl. 1, figs. 1-10; pp. 91, 92 (in key); and pp. 92, 95, 97; pl. 2, figs. 33-5, pl. 3, fig. 36 (development).

Distinguished by the 2nd legs being equal, or nearly so, in length.

Length 17 mm.

*Locality.* Inhambane. 1 ovig. ♀, in *Zostera* bed. (U.C.T. Jan. 1954).

*Distribution.* Red Sea; East Indies.

*Remarks.* Gurney records ovigerous ♀♀ in late February.

At Ghardaqa, Red Sea, the shrimps inhabit 'the shallow reef-flat, which is largely laid bare at the lowest tides'. They appear to burrow in the sand during the day, and were only taken at night (loc. cit., p. 86).

*Processa japonica* (de Haan)

1849. De Haan, *Fauna Japonica*, p. 184, pl. 46, fig. 6.  
 1920. De Man, *Siboga Exp. monogr.*, xxxix, a 3, p. 208, pl. 18, figs. 53-53k.  
 1937. Gurney, *Proc. Zool. Soc. Lond.*, B, cvii, p. 88, pl. 1, figs. 16-19.

Three ovig. ♀♀, 30-36 mm., have the broad triangular rostrum and minute telsonic spines which Gurney notes as distinctive of this species.

Recorded as 'yellow (bright golden) shrimps burrowing in sand' (Mrs. M. Kalk, U.W.).

*Locality:* Delagoa Bay (U.W. 1955).

*Distribution.* Japan; East Indies; east coast of Africa (Gurney does not state the exact locality of the specimen he examined from the John Murray Expedition).

Gen. *Nikoides* Paulson

1875. Paulson, *Red Sea Crust.*, p. 98.

*Nikoides danae* Paulson

1875. Paulson, loc. cit., p. 98, pl. 14, figs. 5-5d.  
 1906. Nobili, *Ann. Sci. zool. Paris* (9), iv, p. 79, pl. 5, figs. 1-1f.  
 1937. Gurney, loc. cit., p. 89, pl. 1, figs. 20-5, pl. 2, figs. 26-9.

One specimen, ca 27 mm. (if extended) is provisionally assigned to this species. The basal process of ant. 1 is short and broad, apex obliquely truncate, the internal corner projecting farther forwards than the external corner; thus differing from Paulson's fig. 5d. Gurney does not figure this appendage, and Nobili's paper is not available to me; de Man (1920, loc. cit., p. 193, pl. 16, figs. 50-50j) also gives no figure of it for his *sibogae*, and without a figure his description is not very enlightening.

*Locality:* Delagoa Bay (U.W.).

*Distribution.* Red Sea; Djibouti. Gurney (loc. cit., pp. 89, 91) considers *sibogae* from the East Indies synonymous with *danae*.

Fam. ALPHEIDAE

*Alpheus bullatus* n. sp.

Fig. 22.

1950. Barnard, loc. cit, p. 742 (banded species from St. Lucia Bay).

Rostrum extending to end of 1st peduncular joint of ant. 1, not strongly keeled, similar to that of *crassimanus*. Supraorbital spines present. Basal process of ant. 1 reaching to (or a trifle beyond) apex of 1st peduncular joint. Basal joint of ant. 2 with ventral (external) spine; blade of antennal scale reaching half way along spine, which does not quite reach end of last peduncular joint of ant. 2.

First leg: margins of 4th joint entire, upper apex blunt; large chela ♂ (right) about twice as long as broad, outer half of upper surface with rounded granules, more or less in transverse rows, inner half with smaller granules and punctae; lower surface with scattered large punctae; finger knob-like, apex truncate; small chela ♂, a short denticle at upper apex of 5th joint, a short blunt tooth on upper surface of palm at base of finger, outer half of upper surface with rounded granules, inner half with punctae, lower surface with a few large punctae, finger subequal to palm. Both chelae in ♀ similar to, and almost as robust as in ♂; the large chela on the left side.

Third and fourth legs, 4th joint 3 times as long as broad, lower margin with spaced groups of 2-3 setules, no tooth at lower apex; 6th joint of 3rd leg with 7, of 4th leg with 5 stout spines. Fifth leg more slender than 3rd and 4th. Dactyls of 3rd-5th legs biunguiculate.

Telson not strongly narrowed distally; with median groove between well-marked ridges on which are inserted 2 pairs of strong spines.

Length ♂ 22 mm., ♀ 27 mm. As preserved, two broad transverse bands on carapace and one on each abdominal segment brick-red; no medio-dorsal abdominal pale stripe; spine on outer ramus of uropod dark brown or blackish.

*Localities.* Delagoa Bay. 1 ♂, 1 ♀. (U.W.) St. Lucia Bay (S. Afr. Mus.).

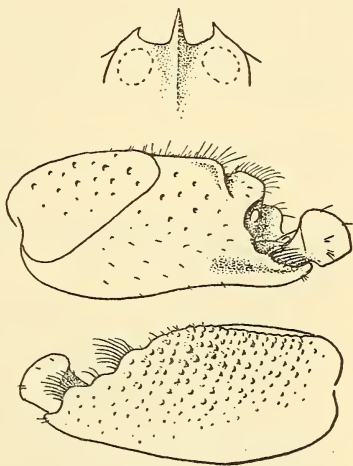


FIG. 22.

*Alpheus bullatus* n. sp. Dorsal view of front. Large chela of ♂, lower and upper surfaces.

*Remarks.* Although the chelae are missing, all three specimens from St. Lucia Bay agree with the Delagoa Bay specimens in all other features, including the colour pattern.

These specimens do not seem to agree with any described species. The large chela, although broader, seems to resemble in general that of *lutini* Cout. and of *phrygianus* Cout.; but both these species have a tapering telson and no supraorbital spines.

The large chela is indeed very similar to that of *malleator* Dana, as figured by Coutière (1899, fig. 262), and in other characters also there is a close resemblance to the specimen described by Balss (1914, *2te. D. Zentr. Afr. Exp.*, I, p. 98, figs. 1-5) as 'tuberculosis' (non Osorio) and later (1916, *Beitr. Meeresf. Westaf.*, II, p. 22) identified as *malleator* Dana var. *edentatus* Zimmer 1913.

*A. malleator* is recorded from the Eastern Pacific, West Indies, Brazil, and West Africa. The finger of the large chela of the present specimens, however, is more knob-like than hammer-shaped: the proximal end only slightly bulbous and the apex abruptly truncate.

The strongly bicarinate telson of the Delagoa Bay specimens seems to be an unusual feature in the genus, but it is scarcely noticeable in the smaller specimens from St. Lucia Bay.

## Fam. PALAEMONIDAE

### Subfam. *Palaemoninae*

#### *Key to South African genera and subgenera* (after Holthuis)

##### I. Branchiostegal spine present.

- A. Branchiostegal groove absent. Lower margin of rostrum with double row of setae, which arise some distance above the bases of the teeth. 6th joint of 5th leg without transverse rows of setae distally. Two median spines on telson very strong. Pleopod 1 ♂ with well developed appendix interna. Mandibular palp 2-jointed.

. . . . *Leander*

*L. tenuicornis* (Say), circumtropical.

- B. Branchiostegal groove present. Lower margin of rostrum with (usually) a single row of setae (if two rows, the setae arise near the margin). 6th joint of 5th leg with transverse rows of setae distally. Two median spines on telson slender. Pleopod 1 ♂ appendix interna rudimentary or absent.

. . . *Palaemon*

1. Mandibular palp 2-jointed.

. . . . subgen. *Palaeander*

*elegans* Rathke, *maculatus* (Thallw.),  
*squilla* (Linn.) (*adspersus* Rathke),  
west coast of southern Africa.

2. Mandibular palp 3-jointed.

. . . . subgen. *Palaemon*

- a. Pleopod 1 ♂ appendix interna rudimentary.

. . . . *concinus*

- b. Pleopod 1 ♂ appendix interna absent.

- i. Rostrum very slender, curving upwards. Free part of antennular flagellum subequal to fused part. Peraeopod 2 slender, 5th joint twice as long as chela.

. . . . *debilis*

- ii. Rostrum curving upwards. Free part of antennular flagellum  $3\frac{1}{2}$  times the fused part. Peraeopod 2 5th joint shorter than chela.

. . . . *pacificus*

- iii. Rostrum straight. Freshwater.

. . . . *capensis*

##### II. Branchiostegal spine absent. Hepatic spine present.

. . . . *Macrobrachium*



*Leander tenuicornis* (Say)

1818. Say, *Proc. Ac. Sc. Philad.*, I, p. 249.  
1875. Paulson, *Red Sea Crust.*, p. 116, pl. 17, figs. 3-5 (*torensis*).  
1925. Kemp, *Rec. Ind. Mus.*, xxvii, p. 302, fig. 11 (append. intern., plp. 1 ♂).  
1950. Holthuis, *Siboga Exp. monogr.*, xxxix, a 9, p. 26, figs. 1, 2.  
1952. id., *Allan Hancock Publ. Occ. Pap.*, No. 12, p. 155, pls. 41, 42 (synonymy and references).

Two specimens with rostral teeth  $\frac{10}{6}$  and  $\frac{11}{7}$ .

*Locality.* Delagoa Bay. (U.W.)

*Distribution.* Red Sea, Réunion. Indo-Pacific and Atlantic. Common in floating Sargassum weed and among seaweeds in shallow water (Holthuis).

*Palaemon (Palaemon) debilis* Dana

1852. Dana, *Proc. Ac. Nat. Sci. Philad.*, vi, p. 26.  
1950. Holthuis, *Siboga Exp. monogr.*, xxxix, a. 9, p. 66, fig. 13 (references).

Holthuis records this species from mangrove swamps at Durban. Also recorded from Chagos, Maldives, and Indo-Pacific.

Subfam. *Pontiinae*

1952. Holthuis, *Siboga Exp. monogr.*, xxxix, a 10, pp. 1-254 (key to genera and subgenera).

Holthuis regards *Ancyllocaris* Schenkel 1902 as a synonym of *Harpilius* Dana 1852. The two species recorded by me (1950) as species of *Harpilius* should be included in *Harpiliopsis* Borradaile 1915.

Gen. *Periclimenes* CostaSubgen. *Periclimenes**Periclimenes rex* Kemp

1922. Kemp, *Rec. Ind. Mus.*, xxiv, p. 158, text-fig. 25, and pl. 5, fig. 5.

An ovig. ♀ 24 mm. in length agrees with Kemp's description except in two features, probably varietal or sexual.

The upper edge of the rostrum has a series of 28 teeth, excluding the apical point, and the two teeth immediately preceding the latter are smaller than the others; the posterior 3 teeth are postorbital, but there is no isolated tooth on the carapace.

The outer margin of the external lobe of the basal joint of ant. 1 ends in an acute point (as in Kemp's fig. 25*b*), but the distal margin projects beyond this point and ends in one (left) or two (right) sharp points (somewhat similar to the right ant. 1 in fig. 39*c* of *Paranchistus ornatus* Holthuis 1952).

Only one (detached) leg of the second pair is present.

Kemp records the gorgeous coloration of this species; as preserved, the present specimen is uniform deep orange, with a hint of a pale dorsal patch on

the carapace, and the chelae of the first pair of legs and of the one remaining leg of the second pair still retain a purple tinge (as described by Kemp).

*Locality:* Delagoa Bay. (U.W.)

*Distribution.* Andaman Islands.

### Subgen. *Harpilius*

#### *Key to the South African species*

1. Supraorbital spine present. 4th joint of 2nd leg with spine-tooth on lower apex.
  - a. Spine of antennal scale extending well beyond apex of scale. 5th joint of 2nd leg shorter than palm (♂♀). . . . . *grandis*
  - b. Spine of antennal scale not, or scarcely, extending beyond apex of scale. 5th joint of 2nd leg subequal to (♀), longer than (♂) palm. . . . . *demani*
2. Supraorbital spine absent. 4th joint of 2nd leg without apical spine-tooth. 5th joint of 2nd leg shorter than palm. . . . . *brevicarpalis*

#### *Periclimenes (Harpilius) grandis* (Stimpson)

1922. Kemp, loc. cit., p. 210, text-figs. 58, 59, and pl. 7, fig. 10.

1952. Holthuis, loc. cit., pp. 11, 79 (references).

*Locality:* Delagoa Bay, 1 ♂, 1 ovig. ♀. (U.W.)

*Distribution.* Japan, East Indies, India, Ceylon, Red Sea, Zanzibar.

#### *Periclimenes (Harpilius) demani* Kemp

1915. Kemp, *Mem. Ind. Mus.*, v, p. 279, pl. 13, fig. 10, and text-figs. 27 a-i.

1922. id., *Rec. Ind. Mus.*, xxiv, pp. 171 (in key), 219, fig. 64 (antennal scale).

1952. Holthuis, loc. cit., pp. 11, 83.

Using Kemp's 1922 key, these specimens are easily identified as this species; and they agree with his 1915 detailed description. The rostral formula varies: 8-9 teeth above, 2-3 below.

Length 20 mm.

*Localities.* Durban Bay. ♂♂, ovig. ♀♀ July 1950. 1 ovig. ♀, Jan. 1951; and Inhambane. ♂♂, ovig. ♀♀, and immature, Jan. 1954. (U.C.T.)

*Distribution.* Chilka Lake; Madras; Mergui Archipelago. Inhabits both sea and brackish water.

### Fam. CRANGONIDAE

#### *Pontophilus pilosus* Kemp

1916. Kemp, *Rec. Ind. Mus.*, xii, p. 367, text-fig. 4, and pl. 8, fig. 4.

Of 6 specimens the smallest (9 mm.) agrees with Kemp's description, but the others (12-13 mm.) have 4 medio-dorsal spines on the carapace instead of 3. The basal process of ant. 1 and other characters agree with the description.

Mottled and banded with brown as described by Kemp.

*Locality*: Delagoa Bay, 6 specimens, incl. ovig. ♀♀, from among *Cymodocea* plants. (U.W.)

*Distribution*. Southern India.

## STOMATOPODA

### Fam. SQUILLIDAE

#### *Squilla harpax* de Haan

1849. de Haan, *Fauna Japon. Crust.*, vii, p. 222, pl. 51, fig. 1.  
1913. Kemp, *Mem. Ind. Mus.*, iv, p. 88, pl. 7, fig. 77 (*raphidea*, part)  
1950. Barnard, *Ann. S. Afr. Mus.*, xxxviii, p. 851, fig. 1c, g (*raphidea*, non Fabr.).  
1952. Tiswari and Biswas, *Rec. Ind. Mus.*, xlix, p. 358, fig. 3b, d, f.

The last-mentioned authors, Holthuis concurring, have separated *harpax* from *raphidea*, and given the differential characters.

*S. harpax* appears to be a smaller species, not exceeding 200 mm. in length. The cornea is even wider proportionately to the length of the whole eye than in *raphidea*; the lateral margin of the carapace is concave from the antero-lateral spines to the angular projection in hinder third (sinuous in *raphidea*). The 5th thoracic segment is laterally obtuse (not armed with a spine); the submedian keels on the thoracic segments and first five abdominal segments are obsolete. The intermediate keels on the thoracic segments do not end in spines. The keels supporting the marginal teeth on the telson are not massive or inflated.

The 5th thoracic segment is the crucial character.

The single specimen from Durban in the South African Museum, measuring 195 mm. in length, shows the above diagnostic characters.

*Distribution*. Japan, Hong Kong, Singapore, Andaman Islands, Bay of Bengal, Bombay.

## TANAIDACEA

### Fam. TANAIDAE

#### *Leptochelia mirabilis* Stebb.

Fig. 23.

These specimens are identified with *mirabilis* solely on geographical reasons, Ceylon being the nearest locality from which these 'dolichochealous' Tanaids have been recorded. The other species to be considered are: *minuta* Dana 1853 (loc. ?), *rapax* Harger 1879 (east coast of N. America and Bermuda) and *foresti* (Stebb.) 1896 (West Indies). Stebbing (1900, Willey's *Zool. Res.*, pt. 5, p. 616) suggests that *Paratanais erythraea* Kossm. 1880 (Red Sea) may be synonymous with *minuta*.

These species have been distinguished by minute differences in the relative lengths of the joints, and the number of flagellar joints in 1st and 2nd antennae.



A one-jointed outer ramus of the uropod is said to distinguish *rapax* (see: Richardson, 1905, *Bull. U.S. Nat. Mus.*, no. 54, p. 23 in key), but Stebbing (1905, loc. cit., p. 6) states that even the same species may have a one- or two-jointed outer ramus.

Stebbing's single specimen of *mirabilis* was a ♂ with the 1st gnathopods not quite symmetrical, and both of them damaged; he was therefore unable to describe the apex of the thumb. In the present specimens the 1st gnathopods are symmetrical in all the ♂♂, and the thumb is similar to those of *rapax* and *foresti* (see: Richardson, loc. cit., figs. 31 and 25).

Length, ♂ 3 mm., 1st gnathopod 5-6 mm.; ♀ 2.5 mm.  
As preserved, white, eyes black.

*Locality.* Inhambane, in *Zostera* beds. ♂♂, ovig. ♀♀.  
(U.C.T.)

*Distribution (mirabilis).* Ceylon.

## ISOPODA

### Fam. ANTHURIDAE

#### Gen. *Haliophasma* Hasw.

1940. Barnard, *Ann. S. Afr. Mus.*, xxxii, pp. 382, 498 (key to species).

The following key seems preferable to that given in the above work on p. 498.

1. Telson clearly distinct from pleon segment 6.
  - a. Telson narrow-ovate, strongly tricarinate. . . . . *tricarinata*
  - b. Telson broadly-ovate.
    - i. Telson widest proximally, with basal lateral flanges, more or less distinctly tricarinate. . . . . *foveolata*
    - ii. Telson widest in middle, not tricarinate. . . . . *coronicauda*
    - iii. Telson obovate, apically upturned. . . . . *hermani*
2. Telson fused with pleon segment 6. . . . . *pseudocarinata*

#### *Haliophasma foveolata* Brnrd.

##### Fig. 24a-c.

1940. Barnard, loc. cit., p. 384, fig. 2.

My suggestion that this species might be the female of *tricarinata* is put entirely out of court by the present fine male specimen.

Foveolae and pits present on dorsal surface of head and pereaeon segments 1-3 (only a few on 3), demarcated lateral areas on segments 2-5 (one or two on segments 6 and 7), and strongly marked on sternites of segments 2-7.

Antenna 1, flagellum 12-jointed (the apical one minute), with dense fascicles of setae. Antenna 2, flagellum 7-jointed, with fascicles of shorter and stiffer setae (not 'furry' as in antenna 1).



FIG. 23.

*Leptochelia mirabilis*  
Stebb. Finger and  
thumb of 1st pereopod ♂.

Peraeopod 1, 5th joint with lower apex blunt, 6th joint cylindrical but curved, lower margin concave from base to a triangular tooth near finger hinge.

Pleopod 2 ♂ stylet inserted slightly beyond middle of inner ramus, extending slightly beyond apex of ramus, slightly expanded distally, apex acute.

Telson as in the original figure: basal half with marginal flanges, distinctly narrowed in distal half; lateral ridges present but no trace of the central ridge; ventral surface as a whole concave, but with a slight median convexity.

Length 26 mm.

Locality. False Bay. 1 ♂. (U.C.T.)

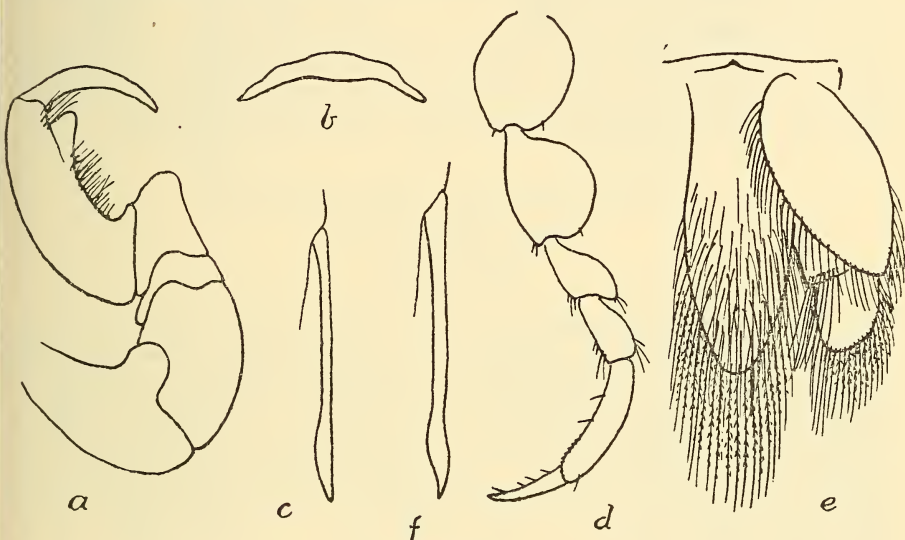


FIG. 24.

*Haliophasma foveolata* Brnrd. a. peraeopod 1 ♂. b. transverse section of telson. c. pleopod 2 ♂ stylet.

*Paranthura latipes* n. sp. d. peraeopod 5. e. telson and uropod. f. pleopod 2 ♂ stylet.

Gen. *Paranthura* B. & W.

1925. Barnard, *J. Linn. Soc. Lond.*, xxxvi, p. 152.

*Paranthura latipes* n. sp.

Fig. 24d-f.

Telson ovate-lanceolate, lateral margin slightly sinuous, greatest width a little before midway, margin and dorsal surface with long, minutely plumose setae. Uropod, peduncle with a transverse series of long setae at distal inner corner, ramus longer than basal width, outer ramus broadly ovate, margins with long, minutely plumose setae. Antenna 1, flagellum 6-jointed, setose.

Peraeopod 1 as in *punctata* (1914, Barnard, *Ann. S. Afr. Mus.*, x, pl. 29 C) but basal tooth on palm not prominent. Peraeopods 4-7 with 2nd and 3rd

joints broadly oval. Pleopod 2 ♂ stylet a little longer than inner ramus, slightly constricted at two-thirds the length, the distal third slightly lanceolate, apex acute.

Length, ♂ 7.5 mm. As preserved, yellowish-grey; head, a medio-dorsal line and the hind margins of peraeon segments, pleon segments laterally, telson, peduncle and outer ramus of uropods darker grey, eyes black, antennae and peraeopods white.

*Locality.* Maxixe (Machiche), Inhambane Bay. Low tide, sand banks and concrete piles. (U.C.T.)

*Remarks.* Distinguished by the broadly oval 2nd and 3rd joints of peraeopods 4-7, and the densely setose telson.

In my references to *punctata* (loc. cit., p. 348a) the inclusion of Hilgendorf's opinion (1878, *MB. Berl. Ak. Wiss.*, p. 847) that *punctata* was a *Paranthura*, might be construed as a record of Stimpson's species from Ibo (Mozambique). Hilgendorf merely recorded an 'Anthurus sp.' without any description.

#### Fam. EURYDICIDAE (CIROLANIDAE)

##### *Cirolana imposita* n. sp.

Fig. 25c, d.

♂—Head, peraeon and pleon smooth, but, when viewed semidried under a  $\times 16$  lens, sparsely sprinkled with minute granules. Frontal lamina pentagonal, separate (but barely) from rostral point. Telson with 2-3 granules at base on either side of a broad median ridge which extends to apex; this ridge with a median groove, the edges of which are approximate basally but divergent in the distal two-thirds, and enclose a subsidiary median ridge; lateral margins distally and apex with plumose setae (spines may have been present but are now broken off).

Pleopod 1, outer ramus twice as broad as inner ramus.

Uropod rami extending slightly beyond apex of telson; outer ramus with 2 groups of a spine and setae near the outer margin in distal two-thirds, inner margin and apex with plumose setae; inner ramus with spines (6 or 7) and plumose setae.

Penial processes on 7th sternite as in *sulcata* (Barnard, 1939, *Ann. S. Afr. Mus.*, xxxii, p. 392, fig. 6f). Stylet on pleopod 2 extending slightly beyond apex of ramus, slender, slightly curved outwards distally, apex acute.

Length 9-10 mm.

*Localities.* 1 ♂ from stomach of cormorant shot off Danger Point, 1954. (R. W. Rand, Biologist to the Guano Islands Administration); 1 ♂, 1 ♀ off Cove Rock (East London), 80 fms. (s.s. *Pieter Faure* coll. in S. Afr. Mus.).

*Remarks.* In regard to the sculpturing of the telson, this species is allied to *sulcata* Hansen 1890, but invites closer comparison with *cingulata* Brnrd., 1920. The telson of *sulcata* has a median groove between two ridges, open from close to the base of the telson, without any indication of a median ridge ('*imposita*') (fig. 25a).



The granules on the pleon segments are usually distinct, but are usually obsolete on the ridges bounding the telsonic furrow. I have seen only one specimen as strongly granulate as in Hansen's figure, which shows in addition a median line of granules in the furrow.

*C. sulcaticauda* Stebb. 1904 has the tuberculate ridges nearly parallel, and also a median row of tubercles in the furrow. In other features *sulcaticauda* and *sulcata* are quite distinct.

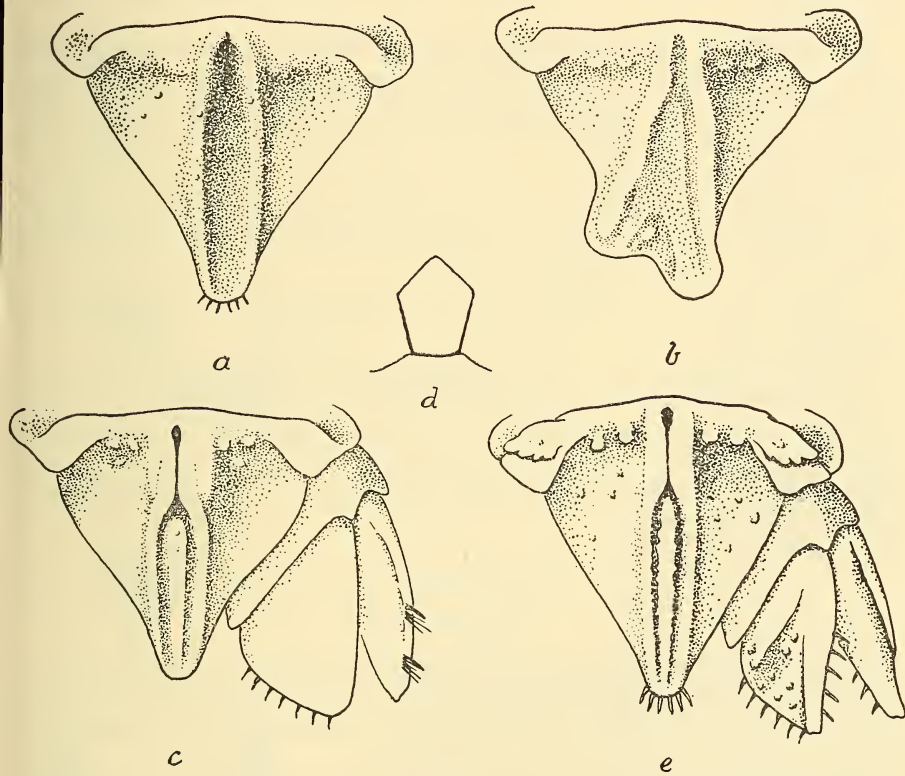


FIG. 25.

*Cirolana sulcata* Hansen. a. telson

*Cirolana palifrons* Brnrd. b. malformed telson of the Type.

*Cirolana imposita* n. sp. c. telson and right uropod. d. frontal lamina.

*Cirolana cingulata* Brnrd. e. telson and right uropod (marginal plumose setae omitted).

My original description of the telson of *cingulata* ('a median ridge with two punctate-striate grooves') is correct; but for comparison with the present species would be better worded: a median ridge with a groove which is slit-like in basal third, but widens in distal two-thirds, where it is nearly completely filled with a median somewhat granular ridge (fig. 25e).

Another species with a similarly sculptured telson is *palifrons* Brnrd. 1920. Although the sculpture had been disrupted by injury in the only known

specimen, the normal sculpture seems to have been very similar to that of *cingulata* (fig. 25*b*). The two species are easily distinguished by other characters.

*Cirolana pilula* n. sp.

Fig. 26*a-c*.

Body smooth, very convex. Frontal lamina and peraeopods as in *hirtipes*. Eyes round. Impressed line on hind margin of eyes continuous across median area of head.

Telson broader than long, length about  $\frac{3}{4}$  basal width, broadly rounded, distal margin minutely crenulate, with a plumose short seta in each notch. Uropods not reaching telsonic apex, inner ramus broad, distal margin with plumose setae and 6-7 spines, outer ramus shorter than inner, ovate, apex with plumose setae and 5-6 spines.

Vasa deferentia opening by pores flush with sternal surface (as in *hirtipes*). Stylet on pleopod 2 ♂ slender, straight but slightly curved distally, apex serrulate, with a minute digitiform process.

Length ca. 11 mm., breadth 4.5 mm. As preserved, pale with pinkish or greyish speckles.

*Locality.* False Bay (34° 17' 6" S. 18° 39' 2" E. and 34° 12' 8" S. 18° 36' 5" E.), 25-34 fathoms, shelly sand. 3 specimens, including ♂ but no ovig. ♀. (U.C.T.)

*Remarks.* This species appears to be able to 'conglobate' almost as completely as the terrestrial *Tylos*, and in fact bears a strong resemblance to this littoral Isopod. It belongs to the *hirtipes* group, but is at once distinguished by the short, rounded telson.

*Cirolana capitella* n. sp.

Fig. 26*d-g*.

A fringe of setae on hind margins of the peraeon segments laterally and on side-plates, smaller specimens not so setose as the largest (in fact almost glabrous); pleurae of pleon segments sparsely setose; pleon and telson with very fine pile.

Head with an upstanding median process between the eyes, apically slightly bifid, and near the inner margin of eye a very low rounded tubercle; median process not developed in juveniles 7 mm. in length, but indicated in specimens 9-11 mm. in length, in which latter also the tubercles can just be seen if specimen examined semi-dry.

Frontal lamina obovate, anterior margin rounded, freely projecting, separated from small rostral point by the contiguous bases of 1st antennae.

Hind margins of peraeon segments each with a series of small sharp denticles, 5 or 6 on either side of a median one, feeble and obscure on 1st and 2nd segments, but becoming more prominent on hinder segments.

Pleon segments 3 and 4 each with 3 or 4 denticles on either side of a median one; in the largest specimen the denticles on segment 4 stronger than on segment

3, and the submedian pair stronger than the others; segment 5 with a median and 2 (or 3) lateral denticles. Telson with an obscure median groove bounded by very feeble ridges; this sculpture can only be seen when specimen is semi-dry; a strong acute tooth laterally over the articulation of uropod; apex narrowly rounded, with plumose setae and about 6 spines.

Uropod, inner ramus broad, outer ramus ovate, of about equal length, margins with plumose setae and spines.

Vasa deferentia opening by pores flush with surface.

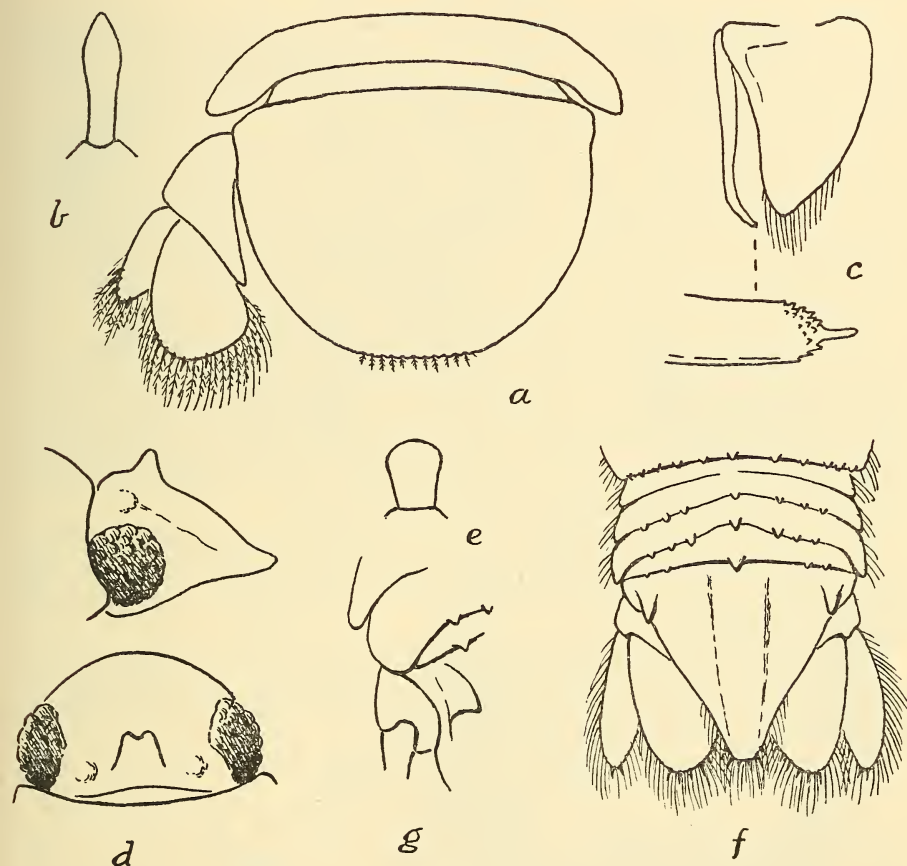


FIG. 26.

*Cirolana pilula* n. sp. a. pleon segments 4 and 5, telson and uropod. b. frontal lamina. c. pleopod 2 ♂ with apex of stylet further enlarged.

*Cirolana capitella* n. sp. d. lateral and dorsal views of head. e. frontal lamina. f. peraeon segment 7, pleon, telson and uropods. g. lateral view of pleon segments 3-5, basal corner of telson, and peduncle of uropod.

Pleopod 1, inner ramus  $\frac{2}{3}$  as broad as outer ramus. Pleopod 2 ♂ stylet as long as ramus, slender, apically acute.

Largest specimen  $12 \times 4.5$  mm. Preserved, uniform pale yellowish, eyes black.



*Locality.* Inhambane, and in the Lagoa Poelela at Inharrime. 1 adult ♂, 3 immature ♂♂, 7 juv. (U.C.T. 1954)

*Remarks.* Closely resembling *willei* Stebb. (1904, *Spol. Zeylan.*, II, p. 11, pl. 3) but pleon segment 3 not overlapping segment 4, and frontal lamina not pentagonal with anterior point meeting rostral point (see: Barnard, 1935, *Rec. Ind. Mus.*, xxxvii, pp. 309, 312, fig. 18b). In this last respect the present species is comparable with *fluviatilis* (see: Barnard, loc. cit., p. 310, fig. 19).

#### Gen. *Conilorpheus* Stebb.

The coinciding of three characters, viz. transverse impressed lines" on the peraeon segments, a particular kind of sculpture on the telson, and a narrow inner ramus on pleopod 1, in *Conilorpheus scutifrons* and *Cirolana cingulata* led to a check-up on all the South African species of *Cirolana*.

A narrow inner ramus on pleopod 1 was recorded in the original descriptions of *cingulata* and *palifrons*, and is found in *imposita* n. sp. (*supra*), but the transference of these three species to *Conilorpheus* is precluded by the frontal lamina being separate from the rostral point, and the bases of 1st antennae contiguous. In *C. scutifrons* the bases of 1st antennae are definitely separated by the junction of the rostral point and the strongly produced frontal lamina.

A narrow inner ramus on pleopod 1 is also found in *C. sulcata*. But in this species—with the same basic type of telsonic sculpture in its simplest form—the contiguity of the bases of 1st antennae is an ambiguous character: in some specimens the bases are sufficiently bulbous to meet over the lower-lying septum joining the rostral point and the frontal lamina, in others the rostral point and the frontal lamina meet, or almost meet, on the surface.

One cannot go farther than say: there is a group of four species of *Cirolana* with closely comparable telsonic sculpture: *sulcata*, *palifrons*, *imposita* and *cingulata*, the last of which shows a truly remarkable convergence with *Conilorpheus scutifrons*.

In the course of examining the *Cirolana* species one or two features were noted suggestive of a possible division of the rather numerous species into groups. It would, however, be premature to attempt this.

#### *Conilorpheus scutifrons* Stebb.

Fig. 27a-d.

1908. Stebbing, *Ann. S. Afr. Mus.*, vi, p. 46, pl. 5 (Crustacea pl. 31).

1920. Barnard, *ibid.*, xvii, pp. 351, 352.

An unfortunate error occurred in the latter description; the ♂ and ♀ symbols were transposed. The first paragraph (p. 352) applies to the ♀, the second to the ♂. As is often the case, the ♂ is the more highly sculptured of the two sexes, but not to a very great extent. The sculpturing typical of the species is the same in both sexes.

There are traces sometimes of feeble tubercles on peraeon segment 2, but usually one of the 3 or 4 transverse impressed lines is merely undulate or

crenulate; these crenulations are more marked on segments 3 and 4, and on segment 5 become definite denticles or tubercles. There are usually accessory denticles between the major tubercles on segments 5-7.

On the pleon the median pair of tubercles on segments 3-5 are more prominent than any of the other tubercles, of which there appear to be constantly 2 on either side, and some minor denticles.

For reasons given by Stebbing the full development of the telsonic sculpture was not present in his (type) specimen, and as no mention was made in my

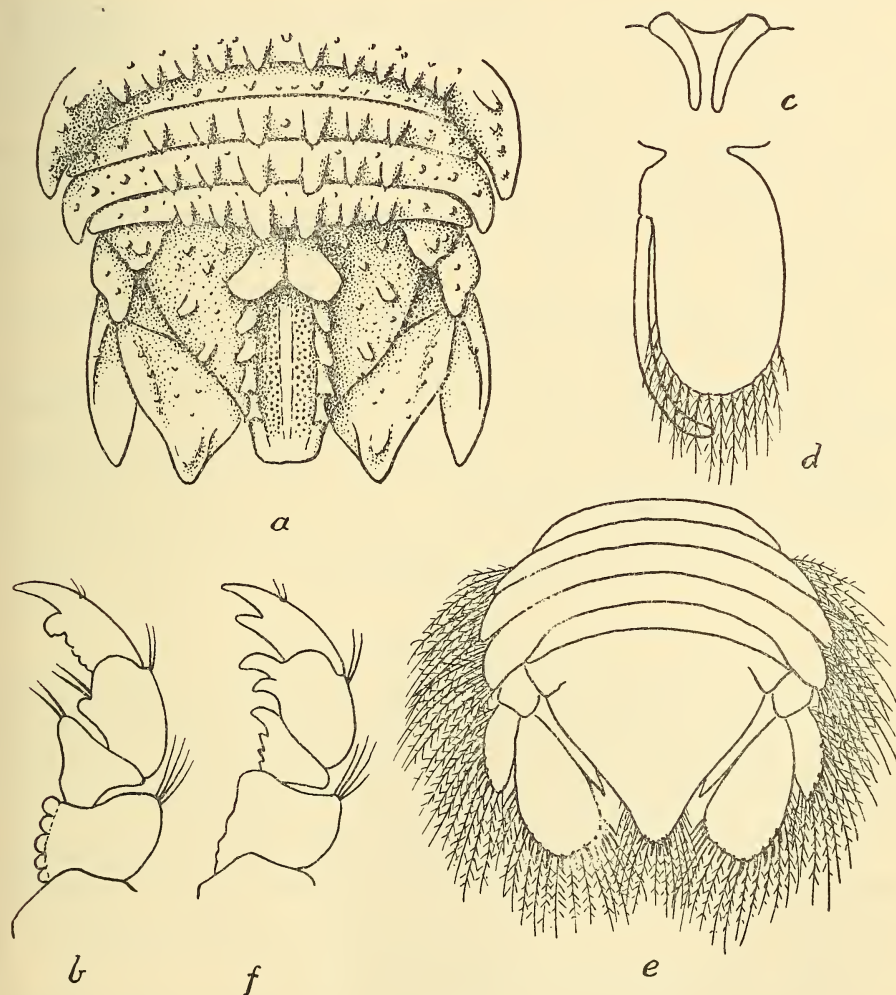


FIG. 27.

*Conilorpheus scutifrons* Stebb. a. peraeon segment 7, pleon, telson and uropods (marginal spines and setae on telson and uropods omitted). b. peraeopod 1. c. ♂ penial processes on peraeon segment 7. d. pleopod 2 ♂.

*Conilorpheus blandus* n. sp. e. pleon, telson and uropods. f. peraeopod 1.

note, a description and figure is given here. As will be seen from the figure the sculpturing is distinctly reminiscent of that of *Cirolana cingulata* (fig. 25e), which species also has transverse impressed lines on the peraeon segments. The median ridge is overlapped at the base by two adnate lobules, there is a slight ridge (sometimes obscure) in the middle of the central groove, each margin of the latter being ornamented with 4 little tubercles, often apically bifid. There are several other little denticles and points on the telson, as also on the inner ramus of uropod. Minor variations in arrangement occur among the smaller denticles.

Peraeopod 1 as described by Stebbing. The 4th joint has 4 (sometimes 5) bluntly rounded teeth as shown in his figure (not 'spines' as in his description); 5th and 6th joints each with 2 spine-setae on inner apex; inner margin of 7th joint crenulate, ending in a 'squared' or rounded lobe at base of unguis.

Penial processes on 7th peraeon sternite separated by about twice the basal width of one of them; apices curving inwards.

Stylet on pleopod 2 in *fully adult* ♂ arising at basal quarter of inner ramus, not midway as in the 'subadult'; uniform in width, distally curved outwards, apex rounded.

One ♀ has large brood lamellae on peraeopods 2-5. Only one embryo, 2.5 mm. in length, remains in the pouch.

Length ♂ 9 mm., ♀ 10 mm. As preserved, the Algoa Bay specimen has greyish irregular mottling on the peraeon; the other specimens are yellowish, eyes black.

*Additional localities.* East London, littoral. 1 ♂, 1 ♀ (Prof. Stephenson, 1937); False Bay and Algoa Bay. (U.C.T.)

*Conilorpheus blandus* n. sp.

Fig. 27e, f.

♀—Head and body covered with very fine and short pile, which becomes thicker on pleon and telson; when semi-dried the head and peraeon are seen to be obscurely rugulose. Postero-inferior corners of side-plates 1-4 with a few plumose setae; whole inferior margins of 5-7 thickly set with plumose setae, as are also the pleural margins of the (exposed) pleon segments.

Frontal lamina as in *scutifrons*, meeting the rostral point and separating the bases of 1st antennae, tridentate, with an accessory denticle on each side proximally.

Flagellum of 1st antenna 5-7-jointed, of 2nd antenna 9-10-jointed.

Maxilla 1 inner lobe with 3 strongly setose spines.

Peraeopod 1, 4th joint with undulate inner margin, feebly crenulate proximally, 5th joint with 4 blunt teeth increasing in size distally, 6th with 2 large blunt curved teeth, 7th with a strong curved tooth at base of unguis.

Pleopod 1, inner ramus only half the width of outer ramus.



Uropod, inner ramus obovate, outer distal corner extending slightly beyond telson apex, outer ramus ovate, not reaching level of telson apex, both rami with marginal spines and thick fringe of plumose setae.

Telson apex more narrowly rounded than in *scutifrons*, with about 6 spines, and thick fringe of plumose setae.

8-8.5 mm.  $\times$  4 mm. As preserved, yellowish, eyes black.

*Locality.* Algoa Bay. 2 subadult ♀♀. (U.C.T.)

*Remarks.* Both specimens are subadult, preparing for ecdysis. The contrast between this smooth velvety species and the sculptured *scutifrons*, both with a tridentate frontal lamina, is very striking.

### Fam. CORALLANIDAE

#### Gen. *Corallana* Dana

1879. Schiödte and Meinert, *Nat. Tidsskr.* (3), xii, p. 286.

1904. Stebbing, *Fauna Geogr. Mald. Lacc. Archip.*, ii, p. 703.

1914. Barnard, *Ann. S. Afr. Mus.*, x, p. 358a.

1931. Nierstrasz, *Siboga Exp. monogr.*, xxxii, c., p. 163.

#### *Corallana furcilla* n. sp.

Fig. 28c-e.

♀ with embryos—Body with scattered setules, chiefly on side-plates and hind margins of pereaeon segments. Surface obscurely rugulose or foveolate, pleon and telson with irregularly scattered pits.

Pereaeon segments 1-4 without sculpture; segment 5 with 4-5 obscure flattened tubercles laterally; segment 6 with 3 tubercles, the submedian pair obscure; segment 7 with 5-6 tubercles, the lateral ones more prominent than the central ones.

Pleon segment 2 smooth; segments 3 and 4 each with a median pair of tubercles and a single lateral one, upper margin of pleuron of segment 4 crenulate; segment 5 with a median pair of longitudinal tubercles.

Telson with a very obscure transverse series of granules at base, outer basal corner upturned, carinate; surface slightly concave between the lateral margins but with a very slight central convexity, apex with a pair of short slightly upturned points, distal margin with plumose setae, a pair of spines in the sinus, and one spine on outer margin of each prong.

Basal joints of 1st antennae contiguous, not anteriorly dilated, flagellum 13-jointed. Antenna 2 flagellum 23-jointed.

Epistome transverse, vertical and not visible until upper lip is depressed.

Pereopods 1-3, inner apex of 3rd joint with 3 blunt tubercles, 5th with 4 blunt tubercles on inner margin; these tubercles do not lie in the plane of the limb, but curve backwards towards the posterior surface.

Uropod, inner ramus extending almost to telson apex, obovate, apically truncate with 2 spines near inner corner, outer and apical margins with

plumose setae; outer ramus slightly longer than inner, narrow, ovate, articulating vertically, upper margin thick, both margins with plumose setae.

13 × 5 mm. As preserved, slaty-grey, somewhat mottled, eyes black.

Embryo 3.3 mm. Telson with broadly rounded, subtruncate apex.

Juvenile 8.5 mm. Peraeon and pleon without sculpture. Telson as in embryo, but apical margin with plumose setae and 6 spines; distal margin of

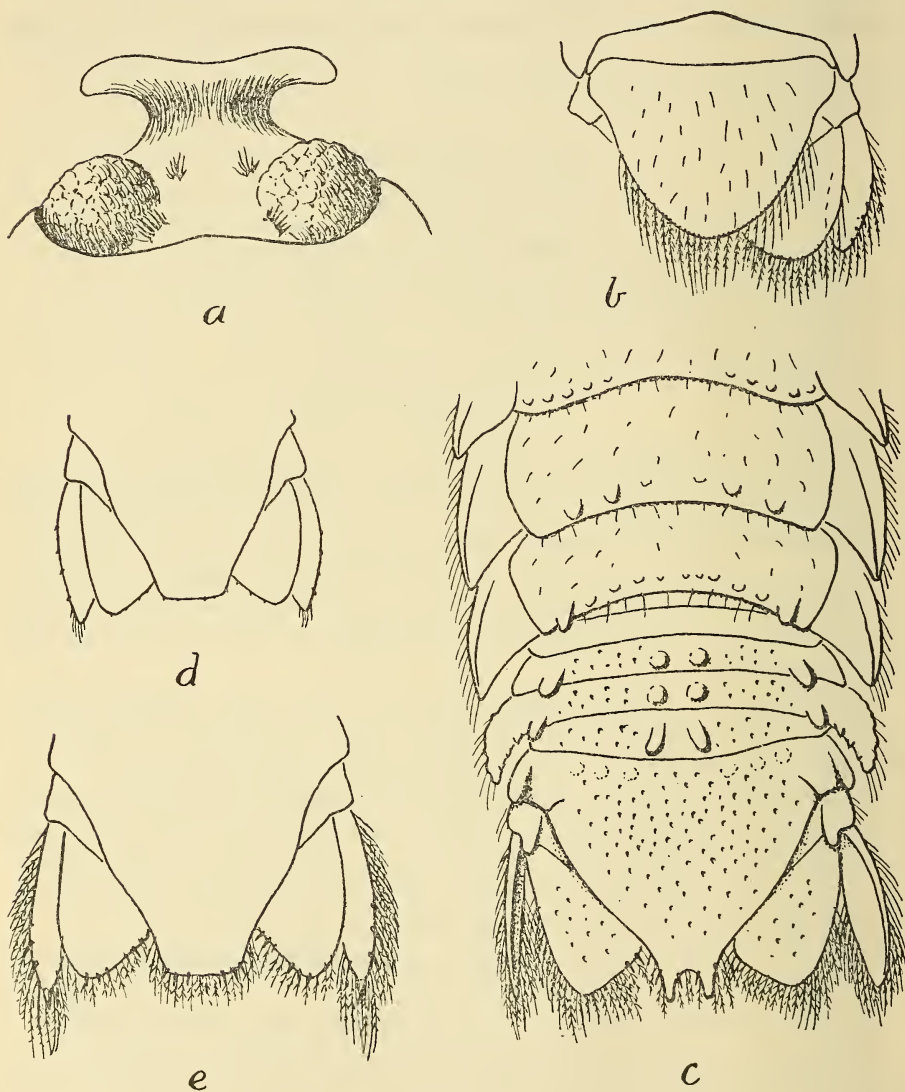


FIG. 28.

*Lanocira latifrons* Stebb. a. head. b. telson and uropod.

*Corallana furcilla* n. sp. c. peraeon segments 5-7, pleon, telson and uropods of adult ♀. d. telson and uropods of juvenile from brood pouch, 3.3 mm. e. telson and uropods of juvenile 8.5 mm.

inner ramus of uropod with plumose setae and 6 spines; outer ramus with 3 spines on outer and 1 on inner margin distally, apex with 1 stout spine and plumose setae.

*Locality.* Inhambane, from holes in roots of mangroves. 1 ♀ with embryos, 1 juv. (U.C.T.)

*Remarks.* Similar to *nodosa* S. & M. and *hirsuta* S. & M. as regards the tubercular sculpture of the hinder peraeon segments.

The juvenile, presumably, is conspecific with the adult.

The recurved tubercles or stout spines on the anterior peraeopods appear to be well adapted to excavating holes or burrows.

*Lanocira latifrons* Stebb.

Fig. 28a, b.

1910. Stebbing, *J. Linn. Soc. Lond.*, xxxi, p. 217, pl. 21.

♂—Agreeing with Stebbing's description except in two features: one obvious, the other rather obscure.

The telson has not a 'rather narrowly rounded apex'. The margins are convex, without any concavity, and the apex is broadly rounded. Moreover there are no marginal spines among the plumose setae, though marginal spines are present on both rami of uropods.

The second feature is one which may not have been developed in Stebbing's smaller ♂ (7.75 mm.), or may have been overlooked. There are two pairs of tufts of setae on the head, one near inner hind margin of eye, the other near inner front margin of eye. Unless examined semi-dry these little tufts might easily be overlooked.

Bases of 1st antennae contiguous, separating the pentagonal frontal lamina from the rostral point.

Length 9.5 mm. As preserved, yellowish, eyes black.

*Locality:* Inhaca Island, Delagoa Bay. 1 ♂. (U.W.)

*Distribution.* Sudanese Red Sea.

*Remarks.* In a large number of specimens the growth of the rostral process in the ♂ could be followed. The suggestion seems not unreasonable that *latifrons* may be only the fully adult ♂ of the earlier species *gardineri* Stebb. 1904, and *zeylanica* Stebb. 1905. The latter was also found in the Sudanese Red Sea; and *gardineri* and *zeylanica* at Ceylon.

One point deserves attention: Stebbing's figure (pl. 51A) of *gardineri* seems to indicate that the frontal lamina separates the bases of the 1st antennae.

Fam. SPHAEROMIDAE

*Sphaeroma annandalei* Stebb.

1940. Barnard, *Ann. S. Afr. Mus.*, xxxii, p. 405.

A ♂ and an ovigerous ♀ from Inhambane (U.C.T.) have the transverse ridges on the peraeon segments continuous from side to side, not broken up into



tubercles; there are 2 circular tubercles on pleon segment 4, very indistinct in ♂; in ♀ the left-hand one only of one of the normal 2 pairs of submedian tubercles on telson is present, the other pair and the median tubercle being obsolete; in ♂ there is a mere suspicion of one submedian pair of tubercles on telson.

Gen. *Isocladus* Miers

1914. Barnard, *Ann. S. Afr. Mus.*, x, p. 384.

The two species here described are the first representatives of this genus to be recorded from South African waters.

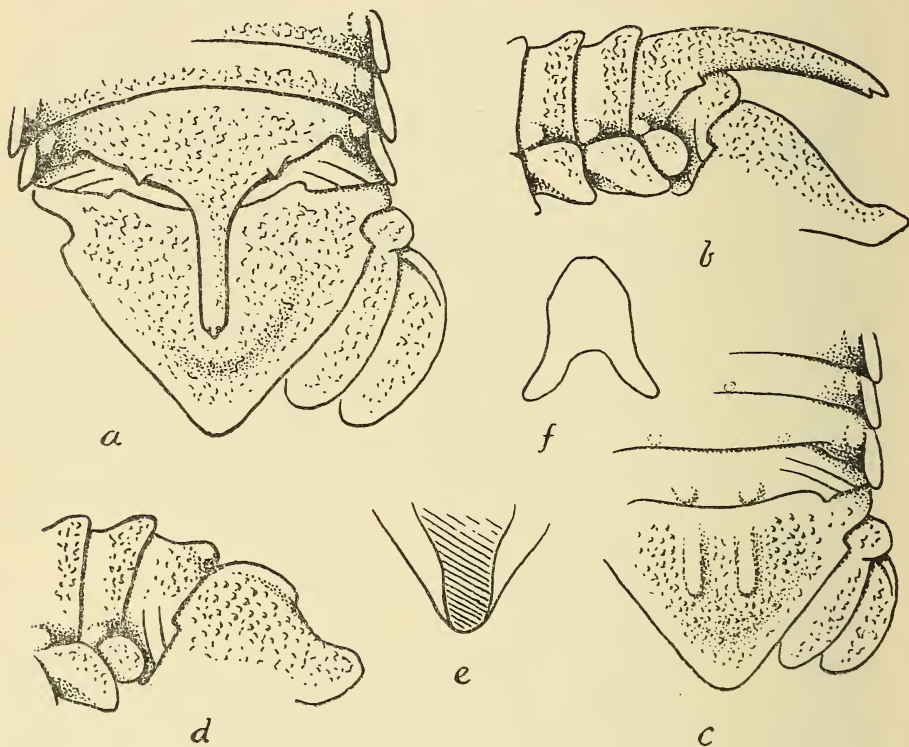


FIG. 29.

*Isocladus otion* n. sp. a. 5th-7th peraeon segments and pleotelson with uropod ♂. b. lateral view, ♂. c. 5th-7th peraeon segments, pleotelson with uropod ♀. d. lateral view ♀. e. ventral view of apex of telson. f. epistome.

The sharp denticle on either side of the median process in ♂ is a distinctive character. The ridge formed by the bulbous junctions of the peraeon segments with their side-plates does not occur in *tristensis* (Leach) or *integer* (Heller), in both of which the transverse profile forms a perfectly even curve. It occurs, however, to a lesser degree in the Australian *Zuzara venosa* (Stebb.) of which I have seen specimens, and in the Cape *Z. furcifer* Brnrd.; and appears to be

quite well marked in *Z. (Isocladus) excavata* Baker judging by his figure (1910, *Trans. Roy. Soc. S. Austr.*, xxxiv, pl. 24, fig. 4).

*Isocladus otion* n. sp.

Fig. 29.

Body glabrous, inconspicuously rugulose (best seen when removed from liquid and semi-dry). Epistome without crest, almost in contact with rostral process. Hind margins of peraeon segments rather prominent. Antero-lateral corner of peraeon segments bulbous at junctions with epimera, the latter also bulbous at the junctions so as to form a rather prominent lateral ridge on each side of the peraeon. On 7th segment the epimeron stands up conspicuously, more so in ♂ than in ♀, like a little ear (hence the specific name).

Seventh segment in ♂ with a median process, its apex obscurely trifid, and flanked on each side (midway between median line and epimeron) by a sharp denticle; in ♀ hind margin only slightly more convex than in preceding segments, with a mere suggestion of a pair of granules corresponding with the sharp denticles in the ♂.

Pleon smooth in ♂, but with a submedian pair of inconspicuous knobs. Telson in ♂ smooth, with bluntly pointed apex; in ♀ more strongly convex proximally, with 2 submedian parallel ridges and the rugulosity becoming almost granular; a shallow ventral groove in both sexes.

Uropods not extending to apex of telson in either sex, ovate, broader in ♂ than in ♀.

Penial processes on 7th peraeon segment close together but bases not contiguous. Stylet on pleopod 2 straight, longer than endopod, apex acute.

Length, 6.5 mm. As preserved, chalky white.

*Locality.* False Bay, 4-10 fathoms. 2 ♂♂, 1 ovig. ♀. Sept. 1946; 2 immat. ♀♀. Febr. 1947. (U.C.T.)

*Remarks.* The apices of the uropods falling short of the telsonic apex may perhaps indicate that the only two males are not quite fully grown, although in other respects (separation of stylet on pleopod 2) they seem to be mature.

*Isocladus mimetes* n. sp.

Fig. 30.

Body glabrous. Head and peraeon segment 1 granulate. Epistome as in *otion*, without crest, almost in contact with rostral process. Posterior half of segments 2-6 rather conspicuously ridged in side view, each segment with 2 submedian small granules, segments 2-4 also with a less conspicuous median granule; additional intervening minute granules can be seen when examined semi-dry.

Segment 7 in ♂ inconspicuously granulose, with median process, its apex forked, flanked on either side by a prominent conical denticle; in ♀ similar to segment 6, with the 4 well-marked granules, and additional minute ones.

Junctions of peraeon segments with their side-plates bulbous, forming a rather prominent lateral ridge. Side-plates vertical, scarcely visible in dorsal view; side-plate on 7th segment not so prominent as in *otion*.

Pleon in ♂ granulose, but without definite granules, in ♀ distinctly granulate, and with a submedian pair of short ridges or longitudinally oval tubercles.

Telson in ♂ obscurely granulose, apex slightly raised, with a rather wide open notch; seen from behind the ventral groove is rather deep; in ♀ distinctly granulate with 2 submedian parallel ridges, apex bluntly pointed, dorsally raised, scarcely carinate but with a few granules; the profile of telson but not that of pleon closely resembles that of *Zuzara furcifer* (fig. 31c), in hind view the ventral groove not so deep as in ♂.

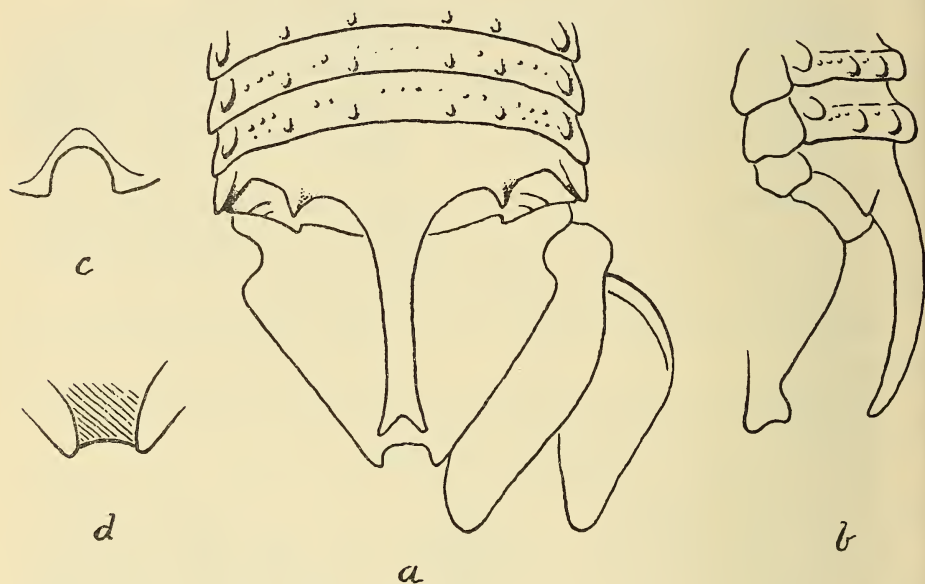


FIG. 30.

*Isocladus mimetes* n. sp. a. 5th-7th peraeon segments and pleotelson with uropod ♂. b. lateral view. c, d. posterior and ventral views of apex of telson.

Uropods in ♂ extending beyond telsonic apex, inner ramus rather narrow, outer margin in distal  $\frac{2}{3}$  nearly straight, outer ramus subtriangular, basally rather broad, distal half of outer margin nearly straight and sloping to the narrowly pointed apex; in ♀ not extending to telsonic apex, ovate.

Penial processes on 7th peraeon segment close together but bases not contiguous. Stylet on pleopod 2 ♂ straight, longer than endopod, apex acute.

Length, 5 mm. (the ♂ appears larger than ♀ on account of the projecting uropods). As preserved, amber-coloured, with minute pigment specks, uropods paler.

*Locality.* Off Roman Rock, False Bay, 12-14 metres. 3 ♂♂. 1 ♀. (U.C.T. 1954.)



*Remarks.* The forked process on peraeon segment 7 in the ♂ gives a remarkably deceptive likeness to *Zuzara furcifer*. The absence of the median process on telsonic apex, and the shape of the uropods, however, at once distinguish the present species.

The ♀ is distinguished from that of *otion* by the four longitudinal series of granules on the peraeon, and by the tubercles on the pleon being more longitudinally oval than circular. The telson is more rugged and in this respect resembles that of *Z. furcifer* (*infra*).

These three species were found at slightly different sites, but in each case both sexes were found in association; otherwise the correlation of the sexes would have been difficult if not impossible.

*Zuzara furcifer* Brnrd.

Fig. 31.

1920. Barnard, *Ann. S. Afr. Mus.*, xvii, p. 361, pl. 15, figs. 26, 27 (♂).

Adult ♂. On 6th peraeon there is a feeble tubercle about midway between the median line and the side-plate. This was overlooked in the original description and figure.

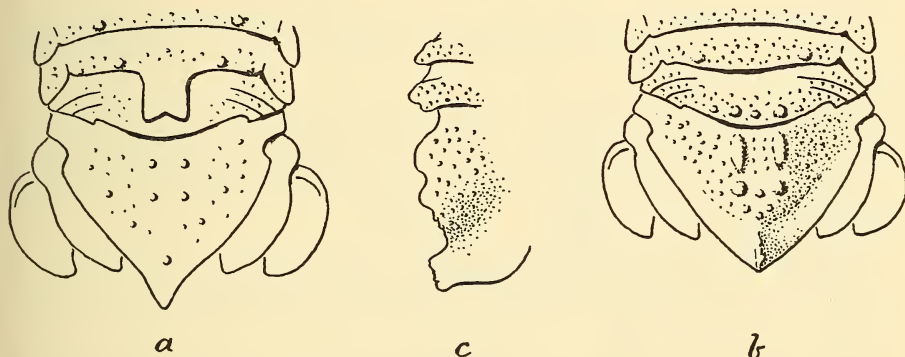


FIG. 31.

*Zuzara furcifer* Brnrd. a. dorsal view of 6th and 7th peraeon segments and pleotelson with uropods of immature ♂ 4.5 mm. b. the same of ♀ 5.5 mm. c. lateral view ♀.

Immature ♂, 4.5–5 mm. in length: 7th peraeon segment with a submedian tubercle on either side of the short, quadrangular median process, which does not extend beyond the hind margin of pleon segment 4; the second tubercle clearly seen in the adult, is very faint. Telson relatively a little shorter than in adult, apex acute, subapical margin slightly concave; small tubercles or granules as in adult. Rami of uropods not reaching telsonic apex.

♀, 5.5–6 mm.: more strongly granulose than ♂; no trace of tubercles on 6th peraeon segment; 7th peraeon segment with an obscure tubercle about midway between median line and side-plate; pleon segment 4 with a small median

granule, flanked by a larger tubercle. Telson shield-shaped, apex acute, margins evenly convex; a submedian pair of elongate tubercles followed by a pair of round tubercles, apex upturned and bluntly keeled, with 2 granules. Rami of uropods not reaching telsonic apex.

*Additional localities.* Keurbooms River estuary (K.H.B. 1931. 1 ♂); Kleinmond (Caledon Division) (K.H.B. 1 ♂); False Bay, 7 fathoms (U.C.T. ♂♂, ♀♀, juv.).

Gen. *Sphaeramene* Brnrd.

1914. Barnard, *Ann. S. Afr. Mus.*, x, p. 405.

*Sphaeramene microtylotos* n. sp.

Fig. 32a-e.

In general very similar to *polytylotos* Brnrd. 1914, but the larger tubercles, especially the submedian ones on the pleo-telson, are conical instead of button-like, and the smaller ones are rounded granules (cf. fig. 32f).

Telson with 3 pairs of submedian conical tubercles, increasing in size and diverging posteriorly; apex bluntly pointed, with a rounded tubercle dorsally, and a groove ventrally.

Epistome pentagonal, the bluntly pointed apex meeting the rostral point. Antenna 1, 1st joint L-shaped, with prominent conical boss on anterior margin.

Uropods extending to telsonic apex, inner ramus oblong, margins subparallel, with a median series of 6-7 granules. Distal margin truncate, slightly emarginate; outer ramus ovate, apex turned outwards, outer distal margin feebly serrulate.

Length 6-7 mm. As preserved, pinkish.

*Localities.* False Bay, from stomach of cormorant. 3 specimens (R. W. Rand, Biologist to Guano Islands Administration, 1954); False Bay, 14-17 metres. 1 ovig. ♀. (U.C.T. 1954.)

*Remarks.* The great likeness to *polytylotos* obviously suggests inclusion in the same genus, although the characters of the ♂, when discovered, may necessitate the removal of the new species to another genus.

The 3 specimens are fairly well preserved in spite of their having been taken from the stomach of a cormorant, in all probability having been first swallowed by a fish. The dorsal integument of two of the specimens has not suffered from the gastric juices, and the pleopods are intact. All three specimens appear to be immature, because neither brood lamellae, penes, nor ♂ stylets on pleopod 2 could be found.

The tubercles and granules are not quite symmetrically arranged, and differ slightly in the 3 specimens.

The ovig. ♀ was received later, and confirms the description based on the three specimens.

*Cymodoce zanzibarensis* Stebb.

1910. Stebbing, *Trans. Linn. Soc. Lond.*, zool., xiv, p. 105, pl. 9, fig. D.

♂—Agreeing with Stebbing's description. It is a little tempting to make this species a synonym of the earlier *bicarinata* Stebb., described from Minikoi, Ceylon and Zanzibar; but the fact that Stebbing himself (1910, loc. cit., pp. 105, 106) has recorded both species from Zanzibar precludes this. Moreover *zanzibarensis* is a larger species, less setose, especially anteriorly, and the stylet on pleopod 2 ♂ is straight and relatively shorter than the long, inward curving stylet in *bicarinata* (see: Stebbing, 1904, *Fauna Geogr. Mald. Lacc. Arch.*, II, p. 712, pl. 52, fig. B).

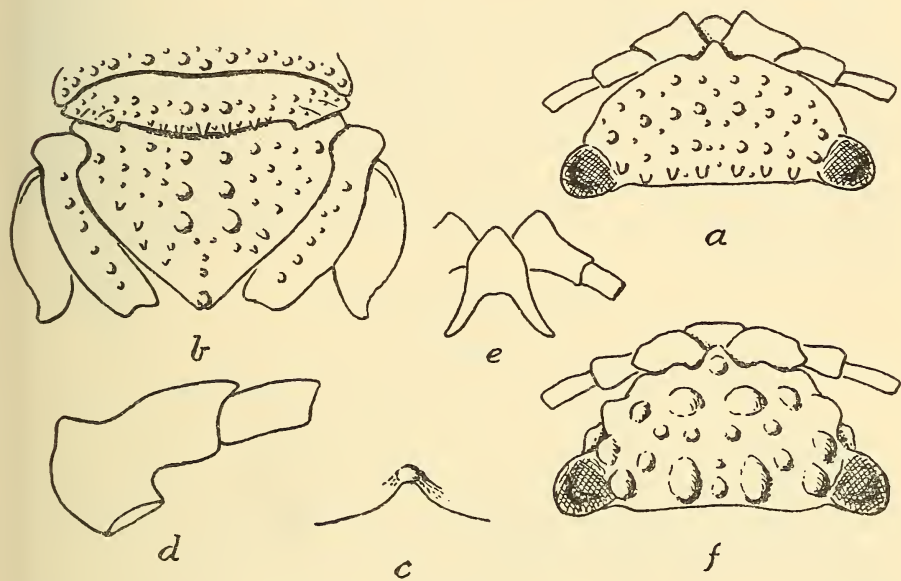


FIG. 32.

*Sphaeramene microtylotos* n. sp. a. head with peduncles of 1st antennae. b. 7th peraeon segment, pleotelson with uropods. c. posterior view of apex of telson. d. dorsal view of first two joints of peduncle of 1st antenna. e. epistome with bases of 1st antennae.

*Sphaeramene polytylotos* Brnrd. f. head for comparison with a.

11–12 × 6 mm. As preserved, pinkish-brown, buff, or greyish, the smooth telsonic boss rose-pink or pale orange. In Stebbing's specimens the rose-coloured boss on the telson had retained its colour for seven or eight years.

♀—At one station 5 ovig. ♀♀ were taken in the same haul as 5 ♂♂, and may be presumed to belong to this species. 9–10 mm. Telson with 2 small submedian tubercles or low rounded bosses, each surmounted by a granule; the median lobe of the trilobate apex bears no dorsal tubercle or boss, but is slightly gibbous, and more densely setose than the surrounding area. Rami of uropods of equal length, extending to level of telsonic apex.



On another occasion 1 ♀ was taken with ♂♂ of both *C. zanzibarensis* and *Paracilicæa clavus*; which raises a little doubt as to whose wives these females really are.

*Locality.* Inhambane. 9 ♂♂. (U.C.T.)

*Distribution.* Zanzibar.

*Cymodoce natalensis* Brnrd.

1920. Barnard, *Ann. S. Afr. Mus.*, xvii, p. 366, pl. 16, figs. 1, 2 (*japonica* Rich. var. *n.*).

*Additional locality.* Algoa Bay. 2 ♂♂. (U.C.T.)

These two specimens correspond exactly with the Natal specimens, which were formerly considered as a variety of *japonica*. I now think this form should be given specific status. The 3 pairs of tubercles (1 on 4th pleon segment and 2 on telson) are all very nearly of the same size; in fact the anterior pair on the telson are usually larger than the posterior pair; and the closely fitting opposed surfaces of the former pair and the pair on the 4th pleon segment is distinctive; neither Richardson's nor Thienemann's figures bear the least resemblance to this arrangement.

*Cymodoce cryptodoma* Brnrd.

Fig. 33d.

1920. Barnard, loc. cit., p. 368, pl. 16, figs. 6, 7.

*Additional locality.* Algoa Bay. 1 ♂, 1 ovig. ♀. (U.C.T.)

The present ♂ has the 4th pleon segment more prominent than in the type ♂; it might almost be said to have a submedian pair of low bosses. A lateral view is given here, as the shape of the telsonic projections is not fully indicated in a dorsal view. On the outer side of each ridge is a shallow submarginal hollow.

*Cymodoce lis* n. sp.

Fig. 33a, b.

♂—Head, peraeon and pleo-telson perfectly smooth and glabrous, obscurely and sparsely punctate (seen when examined semi-dry). Telson apically broadly rounded. Antenna 1, basal peduncular joint entire (not dentate). Epistome broadly  $\wedge$ -shaped. Penial processes on 7th peraeon segment close together, elongate, slender and tapering to fine points. Pleopod 2 ♂ stylet tapering to a fine point, extending slightly beyond apex of ramus. Uropod, inner ramus obovate, apically truncate, inner distal angle extending to level of telsonic apex, outer ramus much longer, narrow ovate, apex narrowly rounded.

11 × 6 mm. As preserved, creamy whitish, eyes black.

*Locality.* Algoa Bay. 1 ♂. (U.C.T.)

*Remarks.* A species with the telson of an *Exosphaeroma* (cf. *truncatitelson*) combined with the broad, arrowhead-like epistome and the long slender penial processes of a *Cymodoce*.

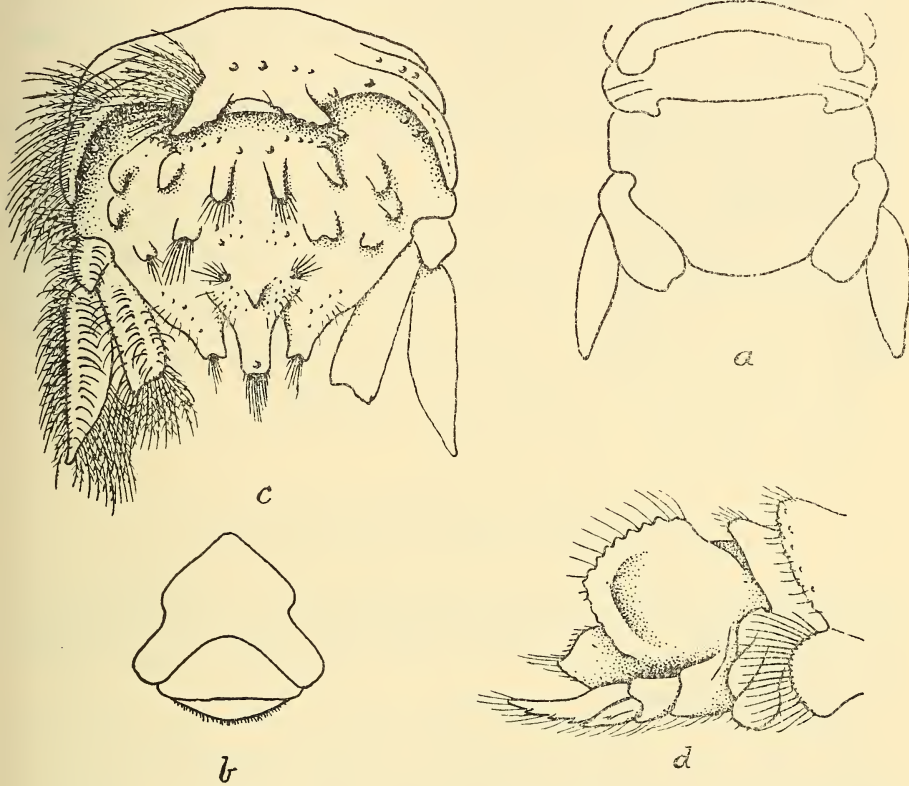


FIG. 33.

*Cymodoce lis* n. sp. a. peraeon segment 7, pleotelson and uropods. b. epistome.

*Cymodoce alis* n. sp. c. pleotelson and uropods.

*Cymodoce cryptodoma* Brnrd. d. lateral view of peraeon segment 7, pleotelson and uropod.

*Cymodoce alis* n. sp.

Fig. 33c.

♂—Setulose, becoming densely setose on pleo-telson and uropods. Peraeon segments 2–7 each with a transverse series of granules on the thickened hind margin, becoming more conspicuous posteriorly, almost tubercles on segments 6 and 7. Pleon, some small granules on pleura of segment 3, segment 4 with a submedian pair of large conical tubercles on hind margin overlapping base of

telson, splayed outwards, their inner margins more or less crenulate, flanked externally by 2 small granules; on anterior portion of segment a series of 4-6 granules.

Telson basally with a transverse (curved) row of 4 tubercles, centrally with 2 widely separated apically bifid tubercles; laterally a (longitudinal) series of 3 tubercles, the hindmost one apically bifid; apex trilobate, median lobe with a submedian pair of small setiferous tubercles and a larger conical median one, apex truncate, with a small medio-dorsal conical tubercle; lateral lobes apically bifid; minute granules basally, centrally and apically.

A strong fringe of plumose setae on pleura of segment 4 and on the submedian tubercles. The bifid tubercles on telson setiferous, and the apical lobes with stiff golden-brown setae.

Penial processes on 7th peraeon segment close together, slender. Pleopod 2 ♂ stylet  $1\frac{1}{4}$  times as long as ramus, moderately stout, tapering to an acute apex.

Uropods extending beyond telsonic apex, inner ramus oblong, apex obliquely truncate, outer apical corner with an acute point, outer ramus longer, narrow ovate, apex with acute point; peduncle and rami with stiffish brown setae on upper surfaces, margins with long plumose setae.

First peduncular joint of antenna 1 not denticulate.

9.9.5 × 4.4.25 mm. As preserved, dull yellowish-grey, eyes black.

*Locality.* Algoa Bay. 3 ♂♂. (U.C.T.)

*Paracilicæa mossambicus* Brnrd.

1914. Barnard, *Ann. S. Afr. Mus.*, x, p. 397, pl. 34, fig. D.

♂—Agreeing with the type, but: peraeon segments 2-7 each with 2 transverse rows of granules on hind margin, feeble on segment 2, becoming stronger posteriorly, but not conspicuous. Each boss on telson with 2 denticles more or less concealed among setae.

♀—Whole body setulose, especially pleon segment 4 and telson. Telson with 2 low bosses, each surmounted by an inconspicuous glabrous point; no depression between the bosses at base of telson; apex trilobate, the lobes broad and separated by short clefts. Rami of uropods not extending beyond telsonic apex, subequal, ovate, apices blunt.

Length ♂ 9 mm., ♀ 8 mm. As preserved, ♂ amber-coloured, the telsonic bosses and the subcircular basal depression between them castaneous; ♀ pale greyish-cream; eyes black.

*Locality.* Inhaca Island, Delagoa Bay. 1 ♂, 2 ovig. ♀♀. (U.W.)

*Paracilicæa teretron* n. sp.

Fig. 34a, b.

Setulose. Head, peraeon and pleon without tubercles or granules; in a few specimens there is a hint of a submedian pair of granules on hind margin of 4th pleon segment.



Telson in ♂ with a submedian pair of small tubercles in centre; in some specimens these granules are the end points on very feeble and obscure ridges; apex trilobate, median lobe not bulbous dorsally; in ♀ evenly convex, without any tubercles, apex not so deeply trifold as in ♂.

Uropod, inner ramus extending to level of telsonic apex in ♂, slightly beyond in ♀, oblong, obliquely truncate, outer apex acute; outer ramus in ♂ twice as long as inner ramus, terete, outer margin gently convex, tapering to an acute apex; in ♀ a little longer than inner ramus, ovate, apex acute.

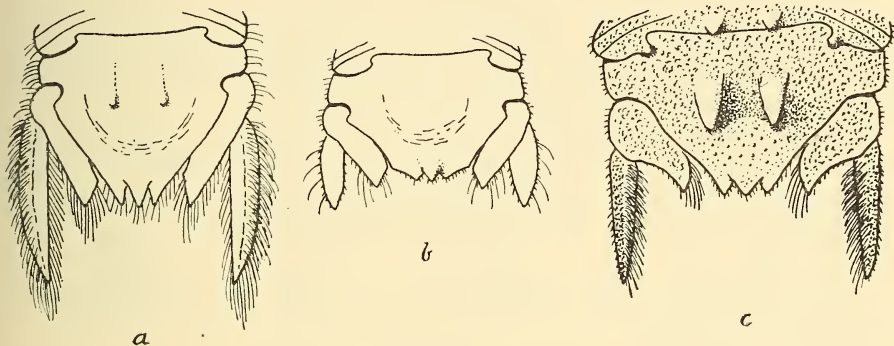


FIG. 34.

*Paracilicaea teretron* n. sp. a, b. pleon, telson and uropods, ♂ and ♀.

*Paracilicaea clavus* n. sp. c. pleon, telson and uropods ♂.

Penial processes on 7th peraeon segment close together, elongate, slender, tapering to acute points. Pleopod 2 ♂ stylet one third longer than ramus, scarcely tapering, apex blunt.

Length ♂ 7.5 mm., ♀ 6 mm., breadth 3 mm. As preserved, slaty-grey or buff coloured.

*Locality.* Inhambane. ♂♂, ♀♀. (U.C.T.)

*Remarks.* Very close to *mossambicus* Brnrd. (1914, loc. cit., *supra*) but differing by the simpler sculpturing on the telson, and the narrower, terete outer rami of the uropods.

There can be little doubt that the present ♂♂ and ♀♀ are conspecific, as they were found on several occasions, and always together. The ♀ of *hanseni* Stebb. 1910 (Zanzibar) is unknown. '*Cymodoce*' *hamata* Baker (1908, *Trans. Roy. Soc. S. Austr.*, xxxii, p. 141, pl. 4, figs. 1-11) appears to belong to *Paracilicaea*, but Baker has described the ♀ as being very similar to the ♂ both as regards the telson and the outer rami of uropods.

A small ♂, 6 mm., with penial processes and pleopod 2 stylet already developed, appears to belong to this species, but the telsonic apex is not so deeply incised, and the inner margin of outer ramus of uropod is gently convex, consequently the ramus is not so narrow and terete. Delagoa Bay (U.W.).

*Paracilicæa clavus* n. sp.

Fig. 34c.

♂—Smooth; when semi-dried the whole surface is seen to be shallowly and rather coarsely pitted; glabrous except for a few setae on the margins of the side-plates, pleura, telson and uropods.

Pleon segment 4 with a submedian pair of low conical tubercles; the angle of the pleuron where it articulates with the telson is also often rather prominent. Telson with a submedian pair of large bosses; apex trilobate, the median lobe not dorsally gibbous.

Uropod, inner ramus not extending to apex of telson, somewhat curved, outer distal corner sharp, distal and inner margins forming a continuous curve; outer ramus elongate, outer and inner margins straight, terete, with apical point, rather thickly setose on inner margin.

Penial processes on 7th peraeon segment close together, elongate, slender, tapering to acute points. Pleopod 2 ♂ stylet one third longer than ramus, proximally rather stout, distally tapering to a subacute apex, inner margin proximally and the apex minutely setulose (cf. *hanseni* Stebb., loc. cit., pl. 9, fig. C m. a.).

Length (largest) 11 mm., breadth 6 mm. As preserved, cream or greyish, mottled, or slaty-grey.

*Locality.* Inhambane. 10 ♂♂. (U.C.T.)

*Remarks.* Similar to *mossambicus* in having submedian tubercles on 4th pleon segment and submedian bosses on telson, but smooth (to the naked eye) and almost glabrous.

The ten specimens were taken on three different occasions, but no females referable to this species were caught.

*Dies monodi* Brnrd.

1951. Barnard, *Ann. Mag. Nat. Hist.* (12), iv, p. 701, fig. 3.

*Additional locality.* Inhambane estuary. (U.C.T.)

*Remarks.* Dr. Th. Monod has suggested to me that *Cassidina pulchra* Chilton (1924, *Mem. Ind. Mus.*, v, p. 888, fig. 8, and pl. 60, fig. 4) might belong to the genus *Dies*. This may well be so, but it cannot be decided without further details, e.g. if *pulchra* has a single penial process, it should be transferred to *Dies*, if double it can remain in *Cassidina* (see: M. Edwards, *Hist. Nat. Crust.*, pl. 32, fig. 11, which shows two processes on the 7th sternite).

*Gen. Artopoles* Brnrd.

1920. Barnard, *Ann. S. Afr. Mus.*, xvii, p. 376.

*Artopoles capensis* n. sp.

Fig. 35.

♂—Body depressed, almost circular; surface granulose, margin setose. Rostral point curved downwards, abutting against the projecting apex of epistome which is visible in dorsal view.

Antenna 1, 1st and 2nd joints each with a triangular lobate expansion on front margin.

Peraeopod 1 dissimilar from the other peraeopods, much stouter, 4th joint produced at lower apex, lower margin crenulate, upper apex with a biserrate spine, 5th joint underriding 6th and partly enclosed in 4th joint, with stout biserrate spine on lower apex, 6th joint with a similar spine on lower apex.

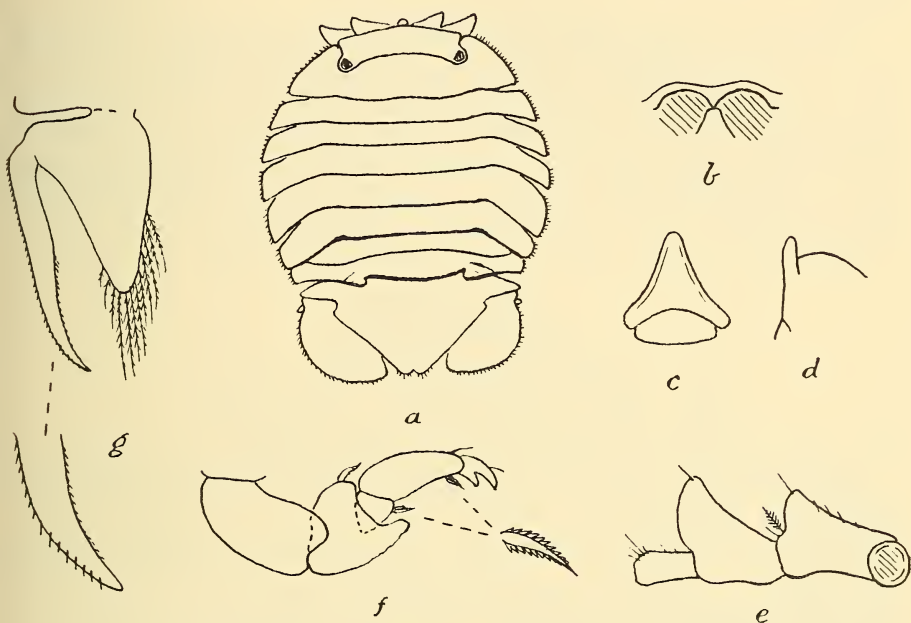


FIG. 35.

*Artopoles capensis* n. sp. a. dorsal view. b, c, d. frontal, ventral and lateral views of epistome; in b sockets of 1st antennae shaded. e. inner view of peduncle of left 1st antenna. f. anterior view of left peraeopod 1 ♂, with biserrate spine further enlarged. g. pleopod 2 ♂, with apex of stylet further enlarged.

Penial processes on 7th peraeon sternite contiguous. Stylet on pleopod 2 longer than inner ramus, rather stout, margins minutely spinulose, apex acute.

Pleopod 3 outer ramus obscurely 2-jointed. Pleopods 4 and 5 both rami without marginal setae, inner ramus with 3 or 4 transverse undulations (scarcely folds or pleats); pleopod 5 outer ramus 2-jointed, squamiferous processes distinct.

Telson with small apical notch, no ventral groove. Uropod (peduncle plus inner ramus) broad, almost semicircular, outer ramus minute.

Length 6 mm., breadth 5 mm.

*Locality.* False Bay (south of Kogel Bay), 14-17 metres, rock. 1 ♂. (U.C.T.)



*Remarks.* This ♂ specimen is obviously a species of *Artopoles*, a genus which was based on a single ♀ specimen; no other specimens have been recorded, and no other species has been added to the genus. The generic diagnosis needs some slight emendations to accommodate sexual dimorphism, viz.: telson with small apical notch in ♂; peraeopod 1 in ♂ with enlarged 4th joint.

The small differences in the pleopods may or may not be important; for the present they can only be recorded. The appearance of the inner rami of pleopods 4 and 5 at first glance seem to indicate affinity to the Hemibranchiate group.

The question arises whether this specimen is the ♂ of *A. natalis*. The ♂ is very much broader than the ♀ (6 : 5 and 4 : 3.25 resp.); if the reverse were the case, one might accept the difference as being merely sexual. The notch at the telsonic apex and also the different shape of the uropods might well be characteristic of the male. But the difference in shape of the lobate expansions on 1st and 2nd joints of the 1st antennae is too great to be considered as sexual. This ♂ specimen is therefore described as a new species.

#### Fam. IDOTEIDAE

##### *Synidotea variegata* Cllge.

1917. Collinge, *Rec. Ind. Mus.*, xii, p. 2, pl. 1.

1936. Barnard, *ibid.*, xxxviii, p. 185, fig. 16a.

1940. *id.*, *Ann. S. Afr. Mus.*, xxxii, p. 428.

*Additional localities.* Durban, Empangazi, Richards Bay, St. Lucia Bay; Inhambane. (U.C.T.)

*Remarks.* In the key, loc. cit., 1940, p. 507, in the first couplet the words 'Peraeopods . . . peduncle' should be omitted in both sets of characters. An additional character for separating *hirtipes* and *variegata* is the width relative to the length: width  $2\frac{1}{4}$ – $2\frac{1}{2}$  in length in the former, at least 3 in the latter.

##### *Synidotea setifer* Brnrd.

1914. Barnard. *Ann. S. Afr. Mus.*, x, p. 205, pl. 18 A.

The fully developed stylet on pleopod 2 of a ♂, 21 mm. in length, is rather remarkable, but the specimen was received too late for figuring in this paper. It extends beyond the apex of the inner ramus of the pleopod; the inner edge (i.e. remote from the ramus and facing its fellow on the opposite side) is formed by a rather strongly chitinized rib, ending in a short point; from about midway a thin flange extends on one side to the apex, widening distally; this flange is armed with numerous close-set parallel lines of spinules, appearing under a low magnification as if obliquely striated.

There is a single median penial process, as in *S. hirtipes* and *variegata* (Barnard, 1920, *Ann. S. Afr. Mus.*, xvii, p. 380, footnote; and 1936, *Rec. Indian Mus.*, xxxviii, p. 185).

Largest specimen 23 mm., an ovigerous ♀ 16 mm. Colour of some freshly preserved specimens: cream, with a row of tiny black dots along the lateral margins and on upper surfaces of antennae and legs.

*Additional localities:* 33° 53' S., 25° 51' E. 26 fms. 6 specimens, incl. 1 ovig. ♀, on red Fan-coral (*Gorgonia*). s.s. *Pieter Faure*; 34° S., 20° 49' E. 91 metres. s.s. *Africana* (per U.C.T., 1948); 34° 49' S., 20° 21' E. 47 fms. 1 specimen 23 mm., 1 ♂ 21 mm. (trawler, 1947, per U.C.T.).

*Cleantis natalensis* Brnrd.

1925. Barnard, *Ann. S. Afr. Mus.*, xx, p. 394.

1936. id., *Rec. Indian Mus.*, xxxviii, p. 186, fig. 17.

This is the first recorded ♂. A pair of penial processes. Stylet on pleopod 2 half as long again as inner ramus, rather stout, triquetral in section at base, distal third curving gently outwards, apex subacute. Length 8 mm.

*Locality:* Richards Bay, Natal. 1 ♂. (U.C.T.)

*Distribution:* Described from Durban Bay, and later recorded from India.

Fam. JAERIDAE

*Ianiropsis bisbidens* n. sp.

Fig. 36.

Head, peraeon and pleon sparsely setose dorsally, profusely laterally, setae on lateral margins of posterior peraeon segments and pleon especially long.

Head produced in a prominent triangular rostral process, apex bluntly pointed. Side-plates on segments 1 and 5-7 unilobate, on segments 2-4 bilobate.

Antenna 1 flagellum 15-16-jointed. Mouth-parts normal. Maxilliped with external distal angle of 2nd and 3rd joints acutely produced; 4th and 5th joints broad.

Peraeopod 1 ♂ more robust than the following peraeopods, distal half of lower margin of 4th joint and whole lower margin of 5th and 6th joints with dense fringe of long, very fine (non-plumose) setae. In the larger ♂ the right peraeopod is thus enlarged and furry, but the left is similar to peraeopod 2; in a smaller ♂, 5 mm. in length, the reverse is the case. In ♀ all peraeopods similar (except the hinder ones increase in length, as in ♂).

Pleopod 1 ♂ peduncles fused, rami well developed, adnate but not fused, apices of peduncle and rami each with a tiny scarious projection. Pleopod 2 ♂ normal. Pleopods 1-2 ♀ forming a circular operculum with shallowly emarginate distal margin.

Pleopod 3 ♂ operculiform, inner ramus with truncate apex, 1 plumose seta on inner angle, 2 on outer; outer ramus enormously enlarged, ovate, incompletely 2-jointed, the suture indicated only on inner and outer margin. In ♀ also operculiform, but outer ramus not enlarged to such an extent as in ♂.

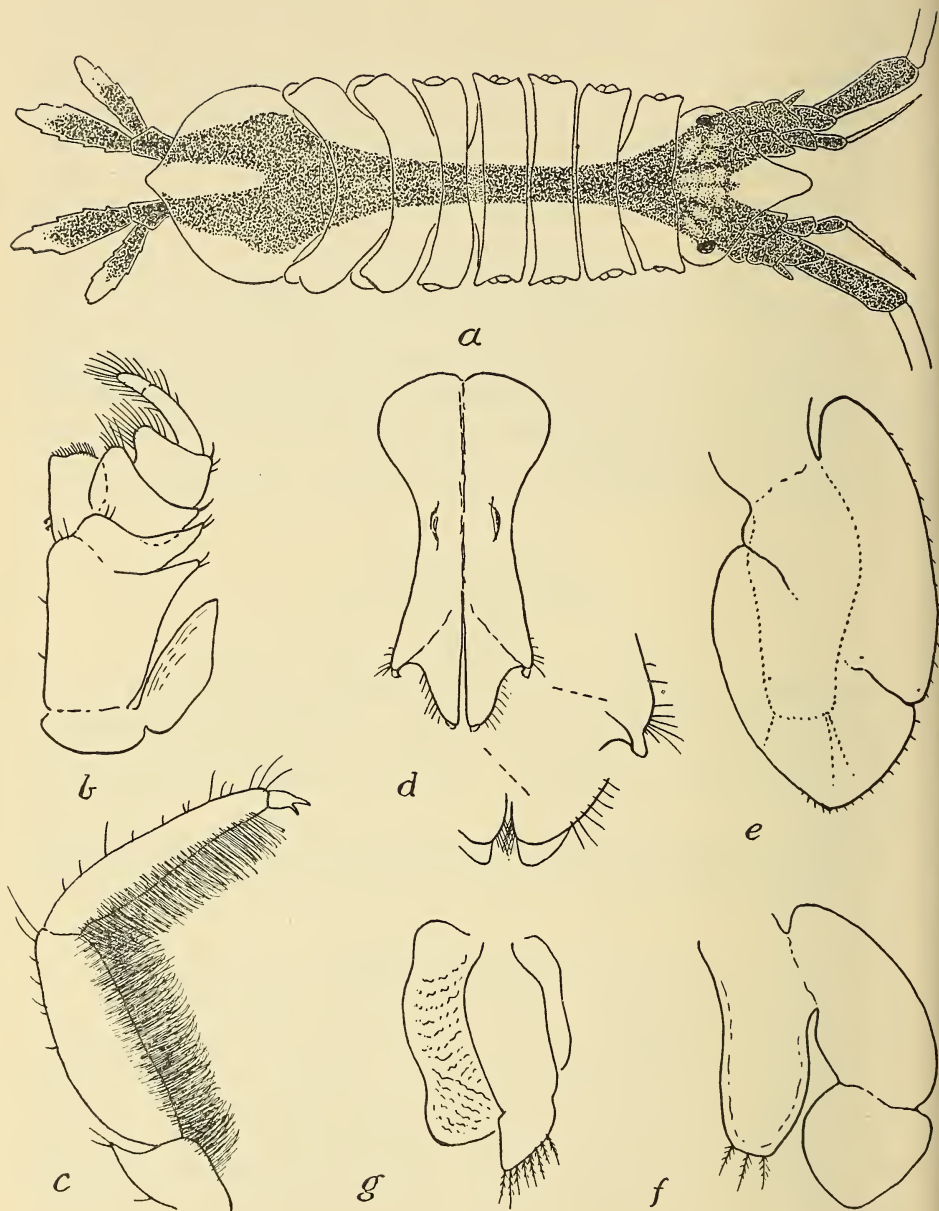


FIG. 36.

*Ianiropsis bisbidens* n. sp. a. whole animal, flagella of 2nd antennae omitted. b. maxilliped. c. 4th-7th joints of pereopod 1 ♂. d. pleopod 1 ♂, with apices of peduncle and ramus further enlarged. e. anterior view of left pleopod 3 ♂. f. pleopod 3 ♀. g. pleopod 4 (♂ and ♀).

Pleopod 4 ♂ and ♀ inner ramus with 7-8 plumose setae on the oblique distal margin. Pleopod 5 normal, uniramous.

Uropods well developed, rami in both sexes well developed, narrowly ovate, strongly setose, especially the distal half of the inner ramus.

Length, 2 ♂♂ 5 and 8 mm., 2 ovig. ♀♀ 7 and 9 mm. Pale cream becoming white laterally where the integument is thin, probably semitransparent when alive; a black medio-dorsal stripe which bifurcates in front on the head and behind on the pleon; in front the black colour is continued on to the peduncles of 1st antennae, and peduncles of 2nd antennae except the last (6th) joint; behind it is continued on to the peduncles and proximal halves of the uropods. Eyes black.

*Locality.* False Bay (Oatland Point, south of Simonstown), 4-6½ metres, rock. 2 ♂♂, 2 ovig. ♀♀. (U.C.T. 1953.)

*Remarks.* Remarkable at first sight on account of its striking colour pattern. It would be interesting to discover the particular habitat and habits of this animal. The coloration may be concealing, adapted possibly to that of some Hydroid or Alcyonarian. The colour appears to be fast in alcohol; the specimens were caught in June 1953 and submitted to me in November 1954, and the colour is still (1955) intense black.

Morphologically the shape of the head is noticeable, but there are no unusual features in the appendages except the 3rd pleopods. These are operculiform in both sexes; in the ♀ the outer ramus is moderately enlarged, somewhat similar to that of *Jaera marina* (Sars, 1897, *Crust. Norw. II*, pt. 5-6, pl. 43, labelled 'plp. 1'), but in the ♂ the outer ramus is enormous.

#### Fam. BOPYRIDAE

##### Gen. *Athelges* Gerst.

1861. Hesse, *Ann. Sci. Nat.* (4), zool., xv, p. 91 (*Athelgue* ? vernac.).

1862. Gerstaecker, *Arch. Naturg.*, xxviii, Abt. 2, p. 558.

1898. Sars, *Crust. Norw.*, II, p. 209.

As the genus *Parathelges* Bonnier 1900 does not seem to be differentiated by very tangible and distinctive characters from *Athelges*, the present species may be assigned to the older genus.

##### *Athelges caudalis* n. sp.

Fig. 37a.

♀—First pair of oostegites projecting beyond head like a double 'cocked hat', the outer angles curving backwards (cf. *Parathelges whiteleggei* N. & B., 1931, *Vidensk. Medd. Dansk. nat. Foren.*, xci, pl. 1, fig. 4).

Pleon narrower than peraeon; 5th segment and 'pleo-telson' freely projecting (not embraced by pleura of 4th segment as in *P. weberi* N. & B. 1923), with a



pair of circular uropods. The two pleopodal lamellae on each pleuron arise from a common stalk; both lamellae of pleopods 1 and 2 are ovate; the anterior one of pleopods 3 and 4 is subcylindrical and the other ovate.

♂—Attached on outside of bases of last peraeopods on left side of ♀. Similar to that of *A. paguri*. The pleon segments fused, longer than basal width, not so elongate as in *A. paguri* (cf. Sars, 1898, pls. 88, 89), but more elongate than in

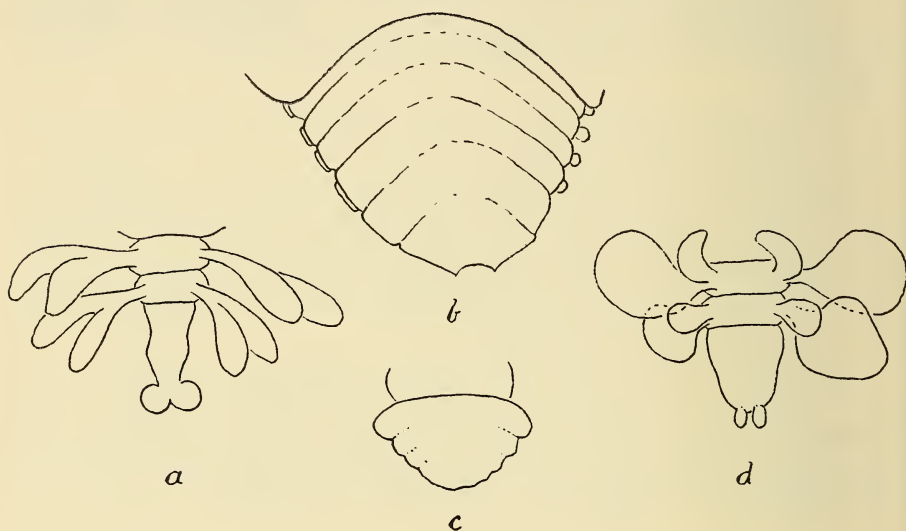


FIG. 37.

*a. Athelges caudalis* n. sp. *b, c. Bopyrella hodgarti* Chopra ♀ and ♂.  
*d. Miophrixus latreutidis* n.g., n. sp.

*P. whiteleggei* N. & B. (1931, loc. cit., fig. 92) and *P. weberi* (cf. Nierstrasz & Brandis, 1929, *Zool. Anz.*, lxxxv, p. 302, fig. 11). Eyes distinct.

Length, ♀ ca. 9 mm., ♂ 1.3 mm.

*Locality.* Inhambane. 1 ovig. ♀ with ♂, on the Pagurid *Diogenes senex*. (U.C.T.)

#### Gen. *Bopyrella* Bonnier

- 1900. Bonnier, *Trav. Sta. zool. Wimereux*, viii, p. 347.
- 1923. Nierstrasz & Brandis, *Siboga Exp. monogr.*, xxxii, b, p. 95.
- 1923. Chopra, *Rec. Ind. Mus.*, xxv, pp. 467, 540.
- 1929. Nierstrasz & Brandis, *Vid. Medd. Dansk. Naturh. Foren.*, lxxxvii, p. 29.
- 1930. Chopra, *Rec. Ind. Mus.*, xxxii, p. 132.
- 1931. Nierstrasz & Brandis, *Vid. Medd. D. Naturh. Foren*, xci, p. 150.
- 1936. Shiino, *Mem. Coll. Sc. Kyoto Univ.*, B. xi, 3, p. 157.

*Bopyrella hodgarti* Chopra

Fig. 37b, c.

1923. Chopra, loc. cit., p. 473, pl. 14, figs. 7-12.

*Locality.* Inhambane. One ovig. ♀, with ♂, in left branchial cavity of *Alpheus crassimanus*. (U.C.T.)

*Distribution.* Vizagapatam, Madras, on *Alpheus crassimanus*.

One ovig. ♀, without ♂, on *Hippolyte*, may also belong to this genus. Length 1.25 mm. Pleon segments fused, outline entire but slightly undulate on the one side.

*Miophrixus* n. g.

♀—Body asymmetrical. All 7 peraeopods present on the shorter side, but only peraeopods 1 and 2 on the longer side. Pleon 3-segmented, segments 1 and 2 distinct, followed by a larger segment representing the fused 3rd-5th segments and telson. A pair of bilobed processes on each side of pleon segments 1 and 2; the dorsal processes (side-plates or exopods of pleopods) more or less pedunculate, the ventral processes (uniramous pleopods or endopods of pleopods) smaller, sessile. Uropods distinct.

♂—Pleon segments fused. Eyes distinct.

*Remarks.* The presence of only two free pleon segments, with pleopods, seem to differentiate this form from the several closely related genera or subgenera of the original genus *Hemiarthrus* (olim *Phryxus*). If *Hemiarthrus* Giard & Bonnier 1887 is adopted for the preoccupied name *Phryxus* Rathke, as Chopra (1923, *Rec. Ind. Mus.*, xxv, p. 428) has done, *Phrixus* proposed by Caroli (1929, and adopted by Nierstrasz & Brandis 1931) falls into synonymy.

*Miophrixus latreutidis* n. sp.

Fig. 37d.

Length, ♀ 3-3.5 mm. Attached between the pleopods and facing telson of host. ♂ 0.75 mm.

*Locality.* Inhambane. 3 ovig. ♀♀, 1 ♂, on *Latreutes pygmaeus*. (U.C.T.)

## Fam. DETONIDAE (SCYPHACIDAE)

*Camorta nicobarica* Brnrd.1936. Barnard, *Rec. Ind. Mus.*, xxxviii, p. 190, fig. 19.

Two ♂♂ and 2 ovig. ♀♀, 5-6 mm. in length, appear to belong to this species. The short telson has the minute apical indent (loc. cit., fig. 19b). The mouth-parts also agree, except that the spines on the apex of outer lobe of maxilla 1 are not so blunt, and the lobe on outer distal corner of 2nd joint of the maxilliped is more broadly rounded. This last feature should be checked in

the type specimens; the acute lobe shown in my fig. 19*f* may be an error in observation or draftsmanship.

*Locality.* Inhambane, among mangroves. (U.C.T.)

*Distribution.* Nicobar Islands.

*Remarks.* The genus *Olibrinus* Budde-lund (1912, *Trans. Linn. Soc. Lond.* (2), zool., xv, p. 389), placed by its author in a separate subfamily of the *Oniscoidea*, appears to have some similarity with the above genus. Both have a multi-articulate flagellum in antenna 2, but the apex of inner lobe of maxilla 1 has 2 plumose setae in *Olibrinus*, and only a few setules in *Camorta*.

The three species of *Olibrinus* have been recorded from the Malay Peninsula, Djibouti, and the Chagos Archipelago.

## AMPHIPODA

### Fam. LYSIANASSIDAE

#### *Euonyx conicurus* n. sp.

Fig. 38.

Closely resembling the North Atlantic *chelatus* Norman (see: Sars, *Crust. Norw.*, pl. 40, fig. 1), but differing as follows:

Pleon segment 3 dorsally ridged, but not sharply keeled; postero-interior angle quadrate with a short sharp point; segment 4 dorsally depressed at base, then raised into an acute forwardly directed process (cf. *Tryphosa onconotus* Stebb. 1908).

Antenna 1, basal joint prominently lobed in distal half. Gnathopod 2, 6th joint about two-thirds length of 5th joint, upper distal corner gibbous, palm short, rounded, finger weak.

Length 6.5 mm. As preserved, white.

*Locality.* Fish Hoek Bay (False Bay), 15 metres. (U.C.T.)



FIG. 38.

*Euonyx conicurus* n. sp. Pleon segments 3 and 4; 1st antenna; 6th joint and dactylus of 2nd gnathopod.

#### *Tryphosa normalis* n. sp.

Fig. 39.

No eyes. Lateral angles of head moderately acute. Postero-lateral angles of pleon segment 3 quadrangular, the angle rounded. Pleon segment 4 with convex dorsal hump, but not sharply carinate. Epistome moderately projecting, rounded above, front margin straight. Gnathopod 1, palm of 6th joint very oblique and almost as long as hind margin, angle between the two about

160°, defined by two slender spines. Telson with 2 pairs of dorsal spines, and a pair of small spines on apex of each lobe.

8-9 mm. As preserved, white.

*Locality.* Langebaan, Saldanha Bay; False Bay, 26 metres. (U.C.T.)

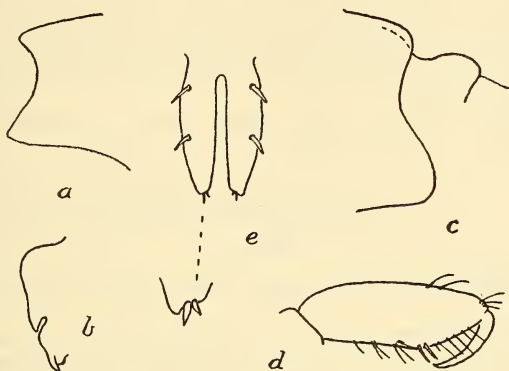


FIG. 39.

*Tryphosa normalis* n. sp. a. lateral view of head. b. epistome and upper lip. c. pleon segments 3 and 4. d. 1st gnathopod. e. telson, with apex of one lobe further enlarged.

*Remarks.* A very ordinary and featureless species. The best differential character seems to be the very oblique palm of gnathopod 1, not unlike that of *onconotus* Stebb., but the whole joint is more slender and parallel-sided than in the latter species. The epistome is similar in these two species. The dorsal profile of the 4th pleon segment resembles that of the eyeless *bispinosa* Schell. from the Falkland Islands.

*Tryphosa africana* n. sp.

No eyes. Lateral angles of head moderately acute. Postero-lateral angle of pleon segment 3 as in *trigonica* (Stebbing, *Challenger Rep.*, pl. 9) but rather more produced (cf. *Tryphosites longipes*, Sars, *Crust. Norw.*, pl. 29, fig. 1); pleon segment 4 with rounded carina. Antenna 2 ♂ 4th joint broadly oval, width more than half the length. Epistome rounded above, front margin straight. Gnathopod 1 6th joint slightly ovoid, palm very oblique, subequal to hind margin. Gnathopod 2, 5th joint ovoid, width slightly more than half length of anterior margin. Telson tapering, with 2 pairs of dorsal spines, and a spine and seta on apex of each lobe.

Length 7-8 mm. Colour as preserved white.

*Locality.* 32° 5' S., 17° 52' E. (off Lamberts Bay), 123 metres. ♂♂, ovig. ♀♀. 5 Febr. 1953. (Trawler, per U.C.T.)

*Remarks.* Rather like *trigonica* from Kerguelen Island as regards pleon segment 3, and like *normalis* as regards gnathopod 1.



## Fam. AMPELISCIDAE

*Ampelisca excavata* Brnrd.

Fig. 40a.

1925. Barnard, *Ann. S. Afr. Mus.*, xx, p. 336, pl. 34, figs. 5-7.

This species grows to a length of 10 to 13 mm. The 2nd joint of peraeopod 5 in the original specimen appears to have been abnormal, and a figure is here given of the normal form.

*Additional localities.* Gordon's Bay (False Bay), 36 metres; Algoa Bay, 14 metres. (U.C.T.)

*Byblis anisuropus* Stebb.

Fig. 40b.

1908. Stebbing, *Ann. S. Afr. Mus.*, vi, p. 72, pl. 10 (Crust., pl. 36).

A co-type from Stebbing, and three other examples from approximately the same locality (off East London) have been examined. These confirm Stebbing's description.

The present specimen also agrees with Stebbing's description except as regards the 5th peraeopod and the length of the 3rd uropods. It is smaller than the above-mentioned specimens, but about the same size as Stebbing's type. The 3rd uropod reaches beyond the apices of the other two pairs of uropods by only half, instead of the whole, length of its rami.

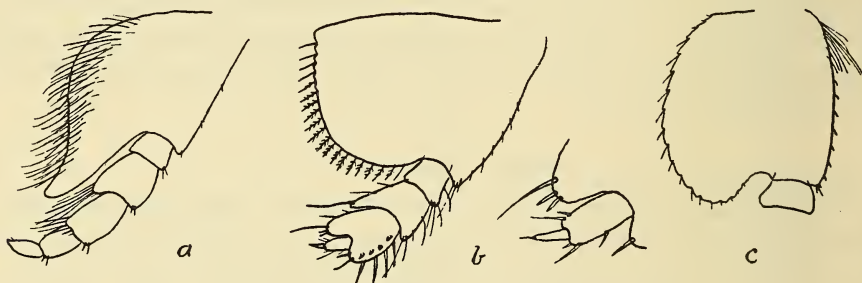


FIG. 40.

a. *Ampelisca excavata* Brnrd. 5th peraeopod. b. *Byblis anisuropus* Stebb. 5th peraeopod, with 6th and 7th joints further enlarged. c. *Nototropis granulosa* Wlkr. 2nd joint of 5th peraeopod.

In general, peraeopod 5 agrees with Stebbing's description, but the 2nd joint is broader, the 5th joint is relatively larger and the front and hind apices, especially the hind apex, embrace the base of the 6th joint, which is shorter and stouter, 7th joint much smaller. Peraeopods 3 and 4 of both sides missing.

*Locality.* False Bay. 1 specimen, 7 mm. in length. (U.C.T., Sept. 1953.)

*Remarks.* When more specimens are available, a separate specific name may be justified for this form.



*Remarks.* Reid (1951, *Atlantide Rep.* II, p. 221, fig. 21) has described *U. leone* from the coast of Monrovia, a species so close to *pulchella* as almost to amount to synonymy. The quadrate, slightly produced and acute postero-inferior corner of 2nd joint of pereopod 3 is unusual and may be abnormal (only 1 ♀ was obtained). The oblique series of spine-setae near the apices of 4th and 5th joints of pereopods 1 and 2 are not shown in the figure (in any case they are not specific characters), nor are any stout spines shown on the 4th joint of pereopod 3.

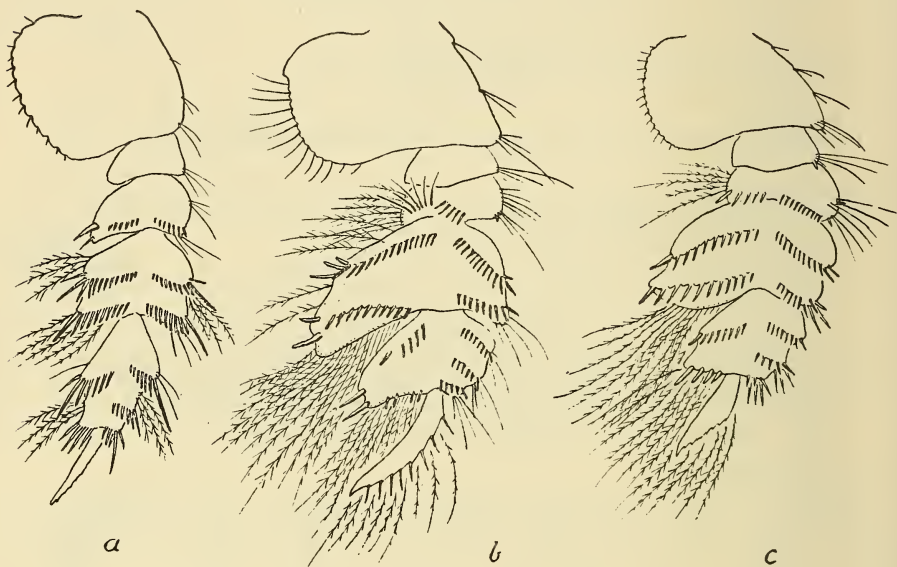


FIG. 41.

Outer view of 3rd pereopod of: a. *Urothoe pulchella* (Costa); b. *U. grimaldii* Chevr.  
c. *U. serrulidactylus* n. sp.

*Urothoe grimaldii* Chevr.

Fig. 41b.

1895. Chevreux, *Mem. Soc. zool. Fr.*, viii, p. 428, figs. 1-4 (♂).  
1925. Chevreux & Fage, loc. cit., p. 99, fig. 93 (♂ ♀); and var. *inermis*, p. 100.  
1935. Chevreux, *Res. Sci. Camp. Monaco*, fasc. xc, p. 69, pl. 16, figs. 10, 16-18 (♂) (♀ stated to be unknown).  
1951. Reid, *Atlantide Rep.*, II, p. 220 (localities only).

Pereopods 1 and 2, 4th joint is slightly oval, the front and hind margins being slightly convex,  $1\frac{1}{2}$  times as long as 5th joint (in *pulchella* the 4th joint is twice as long as 5th, and parallel-sided). The usual oblique rows of long slender setae near apices of 4th and 5th joints, on outer surface.

Peraeopod 3, 4th joint with 5 spines immediately above articulation of 5th joint, and in its hinder half a fan-like series of 6 slender spine-setae, plumose setae on hind margin but not on distal margin (inner surface); marginal plumose setae on hinder half of distal margin of 5th and 6th joints; dactyl cultriform, with (6) 7-8 slender spines in a *single* row on front margin in both sexes.

Length 5 mm. As preserved (U.C.T. specimens), white, eyes black.

*Localities.* 21 and 33 miles off Cape St. Blaize, 44 and 60 fathoms. 1 ♂, 5 ♀♀ (S. Afr. Mus., s.s. 'Pieter Faure' coll.); False Bay, 26 metres; 32° 12' S., 16° 38' E., 215 fms.; from sponge; Langebaan, Saldanha Bay. (U.C.T.)

*Distribution.* North and west coast of France; Moroccan coast (Mediterranean); off Monrovia, Ivory Coast and French Guinea.

*Remarks.* These specimens seem referable to Chevreux's species without much doubt. Chevreux & Fage describe the dactyl of peraeopod 3 as having 12 spines in a *double* row in ♀, in contrast with the single row of 6 in ♂. In the present specimens both sexes have only a single row. The variety *inermis* (French coast and coast of Sahara) has no spines on the dactyl.

*Urothoe serrulidactylus* n. sp.

Fig. 41c.

1951. Barnard, *Ann. Mag. Nat. Hist.* (12), iv, p. 704 (*ruber*, non Giles).

Antenna 1, flagellum 6-7-jointed, accessory flagellum 3-4-jointed.

Peraeopods 1 and 2, front and hind margins of 4th joint slightly convex, 5th joint as broad as long.

Peraeopod 3, 4th joint with a series of 10 spines in front half and one of 5 spines in hind half, plumose setae on hind margin and a tuft of 4-5 in middle of distal margin on inner surface (not shown in figure); marginal plumose setae on hind half of distal margins of 5th and 6th joints; dactyl cultriform, front margin serrulate.

Peraeopod 4, 2nd joint about  $1\frac{2}{3}$  longer than wide, hind margin entire, with a few setules, and a submarginal row of long plumose setae on inner surface.

Peraeopod 5, 2nd joint nearly as wide as long, hind margin convex, entire, with a few setules.

Pleon segment 2, postero-inferior corner quadrate, outer surface with tuft of plumose setae. Lower margins of segments 1 and 3 rounded. Telson with 3 spinules on apex of each lobe.

Length 4-5 mm. As preserved, yellowish, eyes black.

*Locality.* Kosi Bay, Zululand. 10 ♀♀, some ovig. (U.C.T.)

*Remarks.* These specimens were erroneously recorded as *ruber*. The character of the dactyl of peraeopod 3 is against such identification. In the present specimens it is serrulate, whereas Giles's figure shows two spines on the front margin; probably there are, normally, more than two spines. I still consider that *spinidigitus* Wlkr. 1904 will prove to be a synonym of *ruber*.



The somewhat oval shape of the 4th joint, and the broad 5th joint of peraeopods 1 and 2 seem to be differential characters in the present specimens.

*Urothoe pinnata* n. sp.

Fig. 42a, b.

Antenna 1, flagellum 6-8-jointed, accessory flagellum 5-6-jointed.

Peraeopods 1 and 2, front and hind margins of 4th joint slightly convex, 5th joint longer than broad.

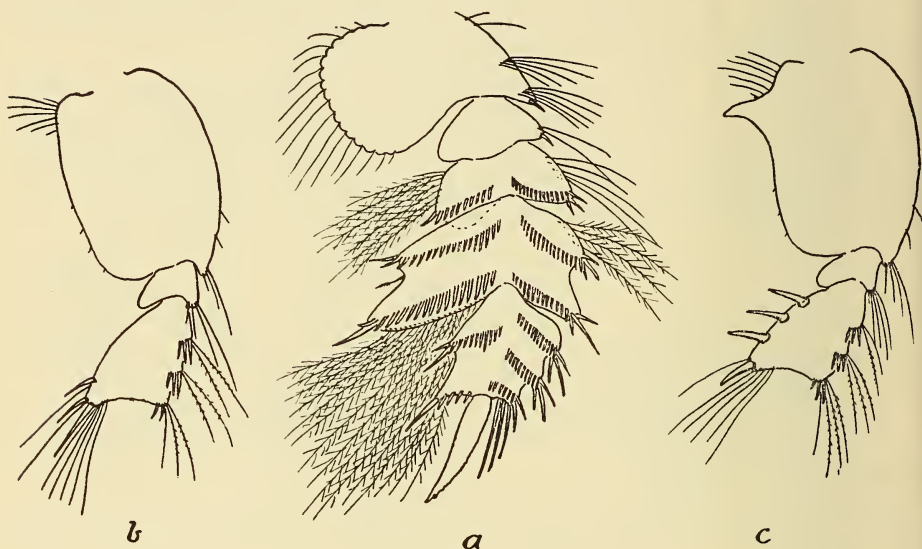


FIG. 42.

*Urothoe pinnata* n. sp. a. outer view of 3rd peraeopod. b. 2nd-4th joints of 5th peraeopod. c. 2nd-4th joints of 5th peraeopod of *femoralis* n. var.

Peraeopod 3, 4th joint with a row of 14 spines in front half, with 3 larger ones at apex, a row of 9-10 in hind half, plumose setae on hind margin, and along hind half of distal margin on inner surface (not shown in figure), some of the latter very long, extending to apex of dactylus; marginal plumose setae on hind half of distal margin of 5th joint, and a tuft on inner surface of 6th joint (not shown in figure); dactyl narrow cultriform, front margin more or less crenulate (sometimes obscure).

Peraeopod 4, 2nd joint about  $1\frac{1}{3}$  as long as broad, hind margin entire with a few setules, and a submarginal row of plumose setae on inner surface; plumose setae on hind margin of 4th joint.

Peraeopod 5, 2nd joint about  $1\frac{1}{4}$  as long as broad, hind margin convex, entire, with a few setae at upper corner, and a few setules below, 4th joint with 3 graduated spines near hind apex and some long setae.

Pleon segment 2 with postero-inferior corner quadrate, outer surface with large and conspicuous tuft of long plumose setae. Lower margins of segments 1 and 3 rounded. Telson with 2-3 spinules on apex of each lobe.

Length 5-10 mm. As preserved, white, eyes black.

*Locality.* False Bay, 30 metres. 18 ♀♀, some with ripe ovaries, but none actually ovigerous, Sept. 1953. (U.C.T.).

var. *femoralis* n.

Fig. 42c.

Six of the above specimens are exceptional in possessing an acute projection proximally on the hind margin of 2nd joint of peraeopod 5, and 4 very stout equidistant spines on hind margin of 4th joint.

*Remarks.* The long plumose setae on either side of pleon segment 2 seem to be more abundant than in other species, and appear in a dorsal view of the animal like little wings.

The feature which characterizes the variety is remarkable. If a specimen with this feature had been collected separately (in a different locality, or even in the same locality on a different date) it would undoubtedly have been regarded as a species. But the eighteen specimens, all of the same sex, were collected together at the same time and place, and the six exceptional specimens can only be regarded as a variety or an aberration.

#### Fam. ACANTHONOTOZOMATIDAE

##### *Iphimedia capicola* Brnrd.

1932. Barnard. *Discovery Rep.*, V, p. 118, fig. 66.

The original ♂ was only 4.5 mm. in length; the present two ovigerous ♀♀ are 11 and 12 mm. in length. They are from the same area as the 'Discovery' specimen, and, in spite of two discrepancies from the original description, must be ascribed to this species.

The postero-inferior corners of peraeon segments 6 and 7 are quadrate in the smaller, but acute in the larger specimen. The postero-inferior corners of side-plates 5-7 are acute in both specimens.

The telson is apically concave between rounded apices, without any lateral denticles.

*Locality.* Langebaan, Saldanha Bay; mussel bank at low spring tide mark in main channel. 2 ovig. ♀♀. (U.C.T., May 1951.)

##### *Cypsiphimedia* n.g.

Near *Iphimedia*. Peraeon segment 1 dorsally enlarged and gibbous, front margin nearly horizontal; head projecting vertically downwards (cf. figure of *ebblanae* in Bate, 1862, pl. 22, fig. 3); segments 2-7 increasing in length, 7th about twice the 2nd.

Side-plate 1 small, partly concealed at hind base by side-plate 2; anterior and lower margins of side-plates 1-3 forming an even curve; 3 deepest, 4 not so deep as 3, narrow. Telson short, apically incised.

Upper lip incised. Lower lip with lobes apically notched. Mandible without spine-row and molar (position of latter indicated by a facet), secondary cutting-edge feeble or absent, palp well developed. Maxilla 1 palp extending beyond apex of outer plate. Maxilla 2 and maxilliped as in *Iphimedia*, inner apex of 2nd joint of palp of maxilliped produced.

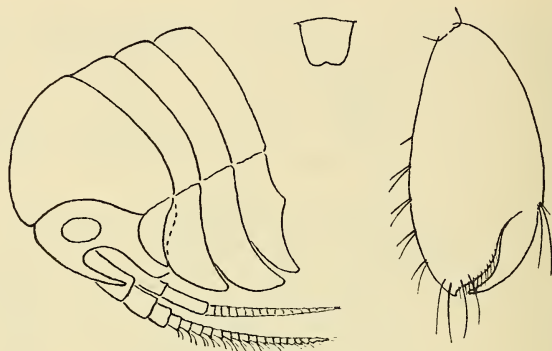


FIG. 43.

*Cypsihimedia gibba* n.g., n. sp. Head and pereopod segments 1-4, with side-plates; 6th and 7th joints of 2nd gnathopod; and telson.

Gnathopod 1 slender, minutely chelate; gnathopod 2 subchelate. Hind apex of 4th joint of pereopods 5-7 acutely produced.

The swollen 1st pereopod segment with its reduced side-plate, and the absence of any dorsal denticles on pereopod and pleon, seem to indicate a new genus. The *entirely* smooth body is an unusual feature in this family.

Genotype: *C. gibba* n. sp.

*Cypsihimedia gibba* n. sp.

Fig. 43.

Pereopod and pleon smooth, without processes or denticles. Postero-inferior corner of pleon segment 3 rounded, with a small point.

Antenna 1 flagellum 17-jointed; antenna 2 flagellum 15-16-jointed. Gnathopod 1 as in *I. obesa* (see: Sars, *Crust. Norw.*, pl. 132), 2nd joint sinuous. Gnathopod 2 6th joint ovate, shorter than the (dorsal margin of) 5th joint, and broader. Hind margin of 2nd joint of pereopods 5-7 entire, with a few widely spaced minute setules in notches.

Length (front of pereopod segment 1 to telson) 4.5 mm. As preserved, dull yellowish, eyes black.

*Locality.* Algoa Bay, 5-7 metres. 1 specimen. (U.C.T.)

*Remarks.* Apart from the swollen 1st peraeon segment, distinguished from the other South African species of this family (*Iphimedia capicola* and *Panoploea excisa* (both from the Saldanha Bay area) by the absence of any dorsal denticles on peraeon and pleon.

Fam. LILJEBORGIIDAE

*Liljeborgia epistomata* Brnrd.

Fig. 44.

1932. Barnard, *Discovery Rep.*, v, p. 144, fig. 83 (♀).

♂—Integument smooth. Corneal lenses and ocular pigment absent.

Side-plate 1 enormously enlarged, ovoid, hind margin concave, front and lower margins very finely setulose; side-plate 2 trapezoidal, deeper than long, lower hind corner bluntly pointed; side-plate 3 subtrigonal, deeper than long, front margin convex, hind margin straight.

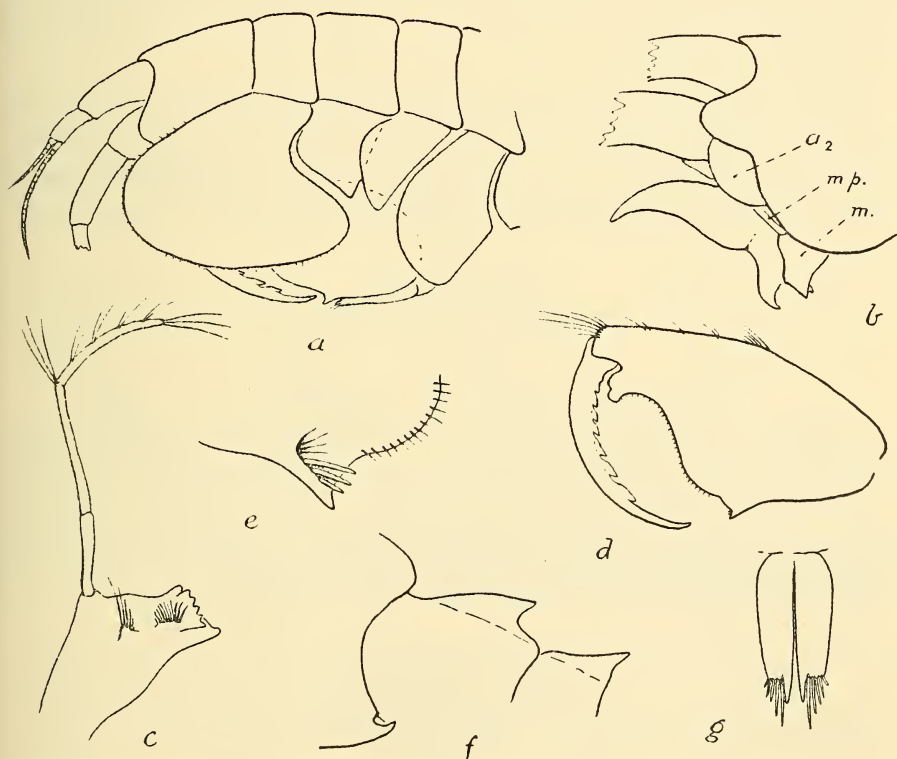


FIG. 44.

*Liljeborgia epistomata* Brnrd. ♂. a. head and peraeon segments 1-4, with side-plates (gnathopod 2 partially visible). b. anterior margin of head with bases of 1st and 2nd antennae, mandible with basal joint of palp, epistome and upper lip. c. mandible. d. outer view of 6th and 7th joints of gnathopod 2. e. inner view of palmar angle of hand of gnathopod 2. f. pleon segments 3-5. g. telson.



Pleon segment 2 with a very slight dorsal keel ending in a minute denticle; segment 3 dorsally rounded and gibbous above base of segment 4, margin medianly notched to receive the keel on segment 4. Telson longer than its basal width, cleft to base, each lobe apically with 5 graduated spines external to the acutely produced inner apex.

Epistome strongly produced, cultriform, apically curved and acute. Mandible with cutting-edge straight, entire, with blunt tooth at each end, secondary cutting-edge 5-dentate, spine-row with 11 spines, molar tubercle with a tuft of setae, palp nearly twice as long as mandible, very slender, 2nd and 3rd joints subequal, 1st joint shorter. Innermost seta on inner lobe of maxilla 2 longer than any of the others.

Antenna 1 reaching to about midway along 5th peduncular joint of antenna 2, or when laid back, to end of 2nd pereon segment; antenna 2 almost as long as body (14 mm.).

Gnathopod 2, 6th joint about  $1\frac{1}{2}$  times as long as greatest width, palm oblique, sinuous, with prominent bilobed tooth near finger-hinge, finger with 7-8 serrations; on inner surface tip of finger fits into a shallow pit bordered by 3 setae and 3 stout spines.

*Locality.* False Bay. 1 specimen. (U.C.T., Sept. 1953.)

*Remarks.* There can be no doubt that this is the ♂ of *epistomata* described from ♀♀ collected by the 'Discovery' at Saldanha Bay. It is not unexpected to find sexual dimorphism in the 2nd gnathopod, but the enormous development of the 1st side-plate and the elongate mandibular palp in the ♂ are remarkable.

#### Fam. ATYLIDAE

##### *Nototropis granulosus* Wlkr.

Fig. 40c.

1914. Barnard, loc. cit., p. 173.

Integument (examined semi-dry) minutely shagreened and punctate, which gives an impression of being granulose when tilted at certain angles to the light.

Postantennal angle of head rounded, below a shallow notch (cf. *vedlomensis* Sars, pl. 164, fig. 2). Peraeopod 3 as in *vedlomensis*. Peraeopod 5 2nd joint broadly lobed (more so than in *homochir*).

*Additional localities.* False Bay and Algoa Bay. (U.C.T.)

#### Fam. GAMMARIDAE

##### *Melita machaera* n. sp.

Fig. 45.

Integument sparsely pitted. Head with lateral corner rounded, post-antennal corner quadrate, a little larger than in *obtusata* (as figured in Sars, pl. 180, fig. 1; more like fig. 243 in Chevreux & Fage, *Faune de France*). Side-plates 1-3 deep, a minute denticle at lower hind corner; side-plate 4 in ♀ not modified.

Pleon segment 3 with a small medio-dorsal tooth (not developed in juv.), segment 4 with medio-dorsal tooth (in one specimen flanked on one side by a minute denticle); segment 5 with a lateral tooth on each side. Postero-lateral corner of segment 1 rounded, of segment 2 quadrate, of segment 3 shortly produced.

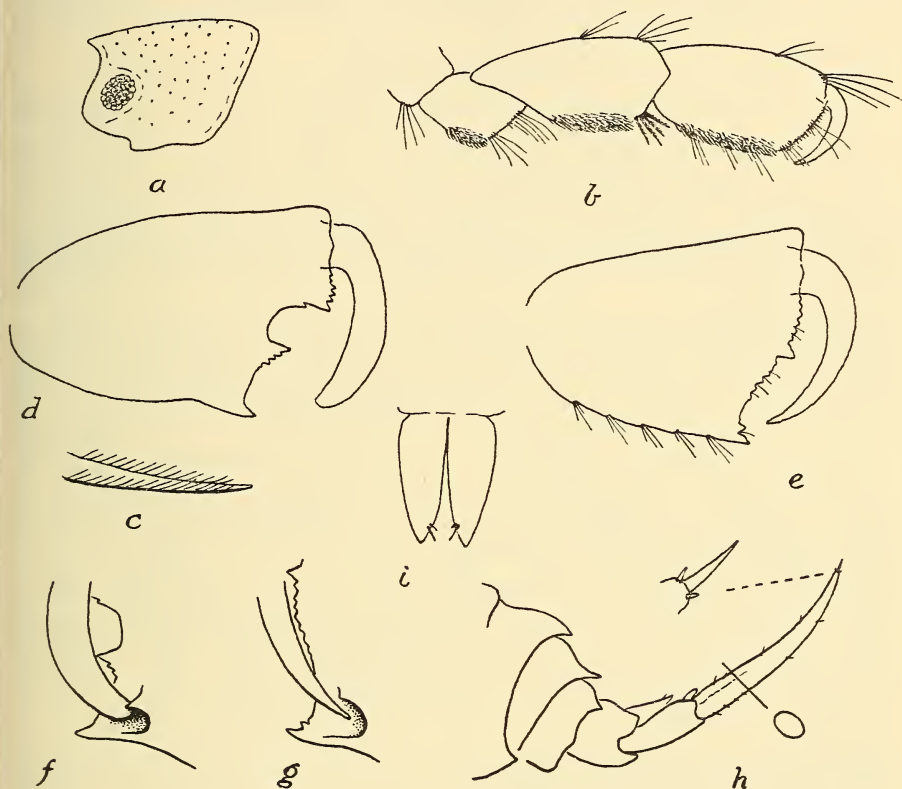


FIG. 45.

*Melita machaera* n. sp. a. head. b. gnathopod 1 (♂ and ♀). c. spine from lower apex of 5th joint of gnathopod 1. d, e. gnathopod 2, ♂ and ♀ respectively. f, g. inner view of palmar angle of hand of gnathopod 2, ♂ and ♀ respectively. h. pleon segments 3-6, with uropod 3. i. telson.

Telson longer than basal width, cleft to base, lobes narrow-ovate, each with 1 long and 1 short spine subterminally on inner margin.

Antenna 1 with 5-jointed accessory flagellum. Mandibular palp slender (as in *obtusata*).

Gnathopod 1 ♂ ♀, 4th-6th joints with thick fringe of short setae on lower margin, extending a short distance on to inner margin (as in *obtusata*; see Bate, 1862, pl. 33, fig. 3h; Bate & Westwood, 1863, vol. i, p. 342; and Sars, pl. 180, fig. 1). These fringes are present in a juvenile 3 mm. in length.

Gnathopod 2 ♂, 6th joint nearly as in *obtusata* as figured by Bate, 1862, pl. 33, fig. 3i, but with a stronger palmar tooth between the basal tooth and the defining angle; dactylus widest in middle (not subterminally), apex rounded but not quite evenly (cf. *gladiosa*, Bate, pl. 33, fig. 6). In ♀ almost as large and robust as in ♂, 6th joint with palm denticulate, with a larger tooth in the middle, defining angle bidentate, dactylus more slender than in ♂, tapering to an acute apex which closes on inside of palm. In juveniles the palm resembles that of ♀, but without the larger denticle in middle.

Peraeopods 3-5, hind margin of 2nd joint with very feeble indents.

Uropod 3 very long, nearly equal to length of pleon segments 2-6, peduncle extending to apices of rami of uropods 1 and 2, outer ramus about  $2\frac{1}{2}$  times as long as peduncle, sword-like, slightly curved distally, broadly oval in cross-section, feebly setulose, with apical spine (2nd joint). In juv. up to about 6-7 mm. the ramus is of more normal shape, relatively broader and less sword-like, more strongly setulose; from about 8-9 mm. in length the ramus assumes the adult shape.

Length 11 mm. (14 mm. incl. urop. 3). As preserved, chocolate or vinous brown, with white transverse bands at the sutures of the segments, i.e. hind margin of head, and both front and hind margins of segments 1-7 are narrowly bordered with white, pleon segments with only the hind margins bordered with white; front margin of side-plates 1-3, front and hind margins of 4 and 5, and hind margins of 6 and 7 white, continuing in line with the white sutural bands on peraeon; 2nd joints of peraeopods 5-7 with front margin, the 'mid-rib' (muscles) and the hind margin white; antennae white but suffused basally; gnathopods 1 and 2 brown, the dactylus of gn. 2 white; peraeopods 1 and 2 white, 3-5 white (except 2nd joints); peduncles of uropods 1-3 brown, rami of urop. 1 and 2 white, of urop. 3 brown basally, distally white. Front margin of head with white border, which also surrounds the dark brown eye.

*Locality.* False Bay. ♂♂, ovig. ♀ and juv. (U.C.T., Nov. 1953 and Sept. 1954.)

*Remarks.* These specimens have so many features in common with *obtusata* (North Atlantic and Mediterranean) that they might be regarded as only a variety of this species. But as the ♀ has the hand of gnathopod 2 almost as large and robust as that of the ♂ (the ovigerous ♀ leaves no doubt on this point), a fact which does not seem to be recorded for *obtusata* (or any species of *Melita*), there seems some justification for specific status. To this character may be added the greater length of the telson, and especially the length and shape of the 3rd uropod, the latter being a most outstanding feature.

The coloration is comparable with that of *dentata*: 'yellowish, with broad transverse bands of a dark reddish brown hue' (Sars, *Crust. Norw.*, I, p. 514). Of *gladiosa* Chevreux & Fage (*Faune de France. Amphip.*, p. 234) say: 'couleur persistant longtemps dans l'alcool'; this applies to the present specimens, some of which have been in alcohol two years without, so it seems, any appreciable fading of the intensity of the brown colour.

*Elasmopus affinis* Della Valle

1893. Della Valle, *F. Fl. Golf. Neap.*, p. 734, pl. 1, fig. 9 (col.), pl. 22, figs. 1-15.  
 1920. Shoemaker, *Bull. Amer. Mus. N.H.*, xliii, p. 371, figs. 1, 2 (*congoensis*).  
 1930. Monod, *Bull. Soc. zool. Fr.*, lv, p. 496, figs. 7, 8.

*Locality.* Langebaan, Saldanha Bay. ♂♂, ♀♀, juv. (U.C.T., Dec. 1950.)

*Distribution.* Mediterranean; Port Etienne; St. Paul de Loanda.

## Fam. TALITRIDAE

*Talorchestia malayensis* Tatt.

1922. Tattersall, *Mem. Asiat. Soc. Bengal*, VI, p. 453, pl. 21, figs. 11-20.

*Locality.* Delagoa Bay. 2 ♂♂, 2 ♀♀. Length 7 mm. (U.W.)

*Distribution.* Singapore Botanic Gardens. According to Annandale (in Tattersall, loc. cit.) this is a completely terrestrial Amphipod, being found in damp places at considerable distances from water.

*Remarks.* This species is distinguished from all the species recorded up to the present from southern Africa by having a scabrous lobe on the lower margin of the fourth joint of gnathopod 1 ♂, as well as on the 5th and 6th joints.

*Hyale grandicornis* (Kröyer)

Fig. 46.

This opportunity is taken to figure the 1st gnathopod of a ♂ specimen from Port Edward, which appears to be *grandicornis*. The 2nd gnathopod agrees with this species, but the anterior margin of 2nd joint is crenulate, with setules in the notches.

*Additional localities.* Various localities from Lambert's Bay on the west coast to Port Shepstone, Isipingo, and Port Edward in Natal. (Professor Stephenson and Professor Day, U.C.T.)

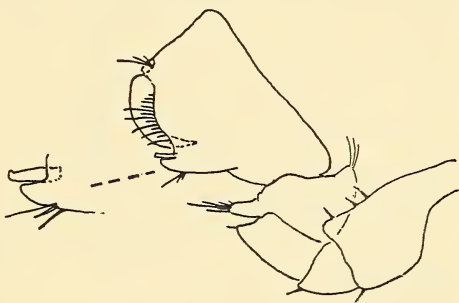


FIG. 46.

*Hyale grandicornis* (Kröyer). Gnathopod 1 of a ♂ specimen from Port Edward, Natal, with palmar angle further enlarged.

*Afrochiltonia* n.g.

As in *Chiltonia* Stebb. emend. Hurley, but: gnathopods 1 and 2 similar to one another and alike in both sexes (gnathopod 2 not enlarged in ♂), and pleopod 1 not modified in ♂.

Genotype: *Chiltonia capensis* Brnrd. 1916.

*Remarks.* To include this species, with '1st and 2nd gnathopods alike in both sexes, the 2nd not enlarged', in the genus *Chiltonia*, I suggested enlarging the



generic diagnosis. Hurley has recently (1954, *Tr. Roy. Soc. N. Z.*, lxxxi, p. 565) amended the diagnosis to read 'Gnathopods 1 and 2 subchelate in both sexes'. But he has made the interesting discovery that in the type species (*mihiwaka* Chilton) and two other New Zealand species the 1st pleopod in the ♂ is modified. This fact entirely alters the situation. The species *capensis* is not a suitable companion with species in which the males have an enlarged gnathopod 2 and a modified 1st pleopod.

At Dr. Hurley's suggestion I re-examined the type material of *capensis* and found there was no modification of the 1st pleopod in ♂. This fact was communicated to him. He has suggested the possible desirability of raising the South African and Australian species to subgeneric or generic rank (Hurley, loc. cit., p. 576 and footnote). The Australian species still await detailed investigation, but I have no hesitation in removing *capensis* to a different genus. The adoption of the prefix *Afro-* indicates my doubt that the Australian species will be found to be congeneric with the South African.

Rühe's record (1914, *D. Südpol. Exp.*, xvi, p. 35, figs. 13, 14 a-c) of '*Chiltonia subtenuis* Sayce' from Lakeside Vlei is curious and needs further inquiry. He figures an enlarged gnathopod 2 (fig. 13b) but says he had 6 young females measuring 1.5 mm. Lakeside Vlei is the same as Muizenberg Vlei, from which I have seen material collected by U.C.T. In this material there are no ♂♂ with enlarged 2nd gnathopods.

*Additional localities.* Muizenberg Vlei; Kosi Bay, Zululand; Olifants River mouth. (U.C.T.)

Another apparent error in Rühe's paper: he records a *Paramoera* sp. ? and figures (fig. 14d) the characteristic telson of *P. capensis*, but gives the locality 'Plumstead', which is some five miles inland from the coast.

#### Fam. AORIDAE

##### *Lembos teleporus* n. sp.

##### Fig. 47.

A strong ventral, slightly forwardly curved spine on pereon segment 3 in ♂ (adult).

Gnathopod 1 ♂ elongate, 6th joint 3 times as long as 5th, sub-

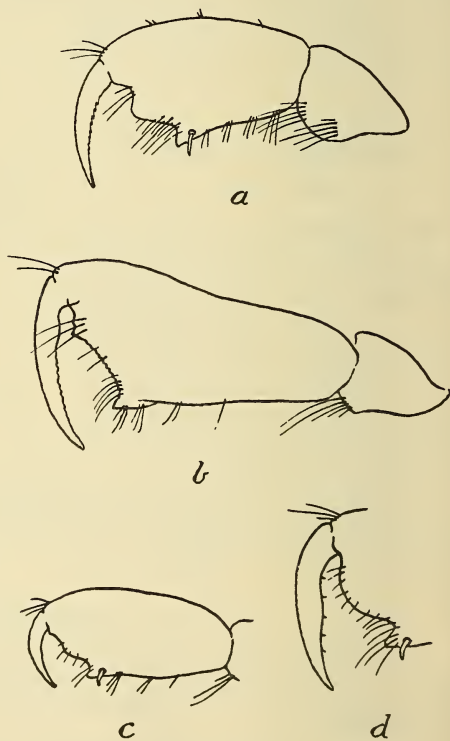


FIG. 47.

*Lembos teleporus* n. sp. a, b. gnathopod 1, ♀ and ♂ respectively. c, d. gnathopod 1 ♂, juvenile and intermediate stage.

equal in width to 5th at base, widening distally, palm oblique, a blunt tooth near finger hinge, palmar angles quadrate, margin between finely crenulate, inner margin of finger crenulate. In ♀ 6th joint twice as long as 5th, widening slightly to the oblique palm, with broad tooth, palmar angle rather sharp, with spine on lower margin.

In juv. ♂ 6th joint oval, palm oblique, slightly convex, with notch near the acute palmar angle, near which a spine on lower margin, inner margin of finger serrate. Intermediate stage, 6th joint beginning to widen distally, palm with a stronger convexity, inner margin of finger neither serrate nor crenulate.

Gnathopod 2 ♂ ♀ 6th joint subequal to 5th in length (outer margin) and width, palm transverse, palmar angle square, with a spine, both joints setose, finger serrate on inner margin.

Length ♂ ♀ 8 mm., 2nd–6th joints of gnathopod 1 ♂ 5 mm., ♀ 3 mm. As preserved, greyish, speckled, eyes black.

*Locality.* Inhambane, 1–2 fathoms. ♂♂, ♀♀. (U.C.T.)

*Remarks.* The 1st gnathopod ♂ bears some resemblance to that of *gambiense* Reid (1951, *Atlantide Rep.*, 2, p. 255, fig. 47), but the 6th joint is more cuneiform and without the strongly produced spiniform palmar angle.

#### Gen. *Lemboides* Stebb.

1932. Barnard, 'Discovery' *Rep.*, v, p. 222.

1940. id., loc. cit., p. 537 (key to species).

*L. afer* has been shown (1932) to have ventral spines, and therefore my 1940 key is wrong. The following may be substituted.

- |   |                             |
|---|-----------------------------|
| 1. No ventral spines or processes.  | . . . . <i>crenatipalma</i> |
| With ventral spines or processes.   | . . . . 2                   |
| 2. Gnathopod 1 ♂ palm defined by two denticles, finger short, not overlapping palm. | . . . . <i>afer</i>         |
| Gnathopod 1 ♂ defined by a strong tooth, finger long, overlapping palm.             | . . . . <i>acanthiger</i>   |

#### Fam. PHOTIDAE

##### *Eurystheus holmesi* Stebb.

Fig. 48a–d.

1908. Stebbing, *Ann. S. Afr. Mus.*, vi, p. 85, pl. 14 A (Crustacea, pl. 40 A).

1910. id., *ibid.*, p. 461.

Gnathopod 2 ♂ differs in shape from Stebbing's figure. The hind margins of 2nd joints of pereopods 3–5 are not *irregularly* dentate, and the 2nd joint of pereopod 3 is not proximally expanded into a lobe. As Stebbing says, pereopod 4 is longer than pereopod 5.

*Locality.* False Bay. 1 ♂. Length 7 mm. (U.C.T.)

*Eurystheus palmoides* Brnrd.

Fig. 48e-g.

1932. Barnard, 'Discovery Rep', v. p. 231, fig. 144.

The discovery of these adult ♂ and ♀ specimens shows that *palmoides* was based on the immature ♂, and that the species has considerable resemblance to *maculatus* (Johnston) from the North Atlantic, Norway to France, Azores, and Senegal.

The 2nd joint of gnathopod 2, however, is relatively more slender, and the 6th joint in ♂ (at least when fully developed) is stronger and differently shaped. The 2nd gnathopod ♂ bears a striking similarity to Stebbing's enlarged figure of this appendage in *holmesi* (loc. cit., *supra*, pl. 40 A, gn. 2).

Length ♂ 4.5 mm., ♀ ovig. 4-5.5 mm.

Locality. Fish Hoek Bay (False Bay), 7-9 metres. (U.C.T.)

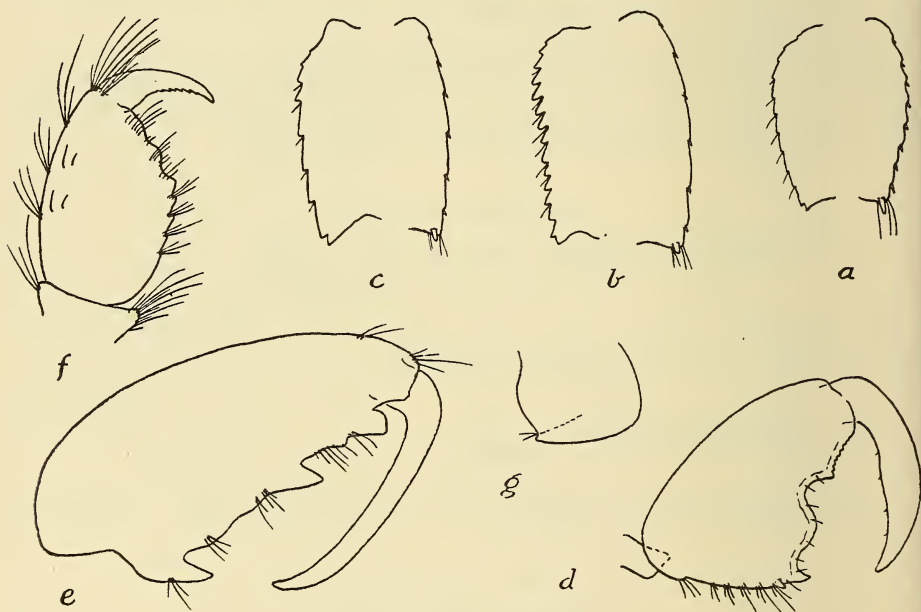


FIG. 48.

*Eurystheus holmesi* Stebb. a, b, c. 2nd joint of 3rd-5th peraeopods respectively. d. gnathopod 2 ♂. *Eurystheus palmoides* Brnrd. e, f. gnathopod 2 ♂ and ♀ respectively. g. postero-inferior angle of pleon segment 3.

## Fam. COROPHIIDAE

Gen. *Unciolella* Chevr.

1910. Chevreux, *Mem. Soc. zool. Fr.*, xxiii, p. 263.

1928. Schellenberg, in Fox, *Trans. Zool. Soc. Lond.*, xxii, p. 633.

Differs from *Unciola* in having the hind corners of pleura of pleon segments rounded, and styliform dactyls on peraeopods 1 and 2. The unattached ♂

gnathopod 1 assigned by Schellenberg to Chevreux's species has the 5th joint greatly enlarged (somewhat in the manner of *Microdeutopus*).

*Unciolella foveolata* n. sp.

Fig. 49.

Integument coarsely but closely pitted. Head with vertical groove laterally near posterior margin, post-antennal corner acutely quadrate but not produced. Eyes well developed, oval.

Peraeon segments each with a lateral furrow, oblique on segments 1-3 but thereafter becoming more horizontal, and continued on pleon segments 1-3 as a shallow furrow immediately above the pleura. Peraeon segments 2-7 each with a transverse furrow near the anterior margin. No sternal spines or hooks on any of the segments. Side-plates shallow, 1-4 subtriangular, 5-7 bilobed. Pleura with postero-inferior corners completely rounded.

Telson subtriangular, with slight median projection apically, and a minute spine on each lateral margin.

Antenna 1 subequal to head plus peraeon segments 1-4 (or 5), flagellum 17-20-jointed, accessory flagellum 4-5-jointed.

Antenna 2 shorter than antenna 1, flagellum 7-8-jointed.

Mouth-parts as in *Unciola* (Sars, pl. 222), but mandibular palp more robust, larger than in *U. lunata* (Chevreux, loc. cit., pl. 20, fig. 6) with thick brush of setae on 3rd joint.

Gnathopod 1 nearly alike in both sexes, 5th joint not enlarged, oblong, lower margin convex in ♂, less so in ♀, densely setose, 6th joint subequal to 5th, somewhat ovate, palm oblique, less so in ♀ than in ♂ and defining angle consequently better defined, with 1 strong spine, dactyl serrate.

Gnathopod 2 nearly alike in both sexes, similar to gnathopod 1, but slightly longer.

Peraeopods 1 and 2, 4th joint about  $\frac{3}{4}$  length of 2nd and as broad, 5th abruptly narrower, 6th slightly longer than 5th, only half as wide at base, dactyl subequal to 5th joint, styliform.

Peraeopod 3 robust, 2nd joint not quite twice as long as broad, oval, 5th shorter than 4th, with 3-4 stout blunt spines on posterior apex, 6th subequal to 5th but only half as wide, with 1 stout blunt spine on posterior apex, and a bunch of plumose setae on anterior apex, more or less concealing the dactyl which is less than half length of 6th joint.

Peraeopod 4 nearly twice as long as peraeopod 3, relatively slender, 2nd joint with plumose setae on hind margin, 4th joint  $2\frac{1}{2}$  times as long as 5th, 6th slightly shorter than 4th, twice as long as 5th, dactyl strong, curved.

Peraeopod 5 not present on any of the specimens, presumably similar to 4th but probably slightly longer.

Uropod 1, 4 strong spines on upper margin of peduncle, and a stronger apical one, rami subequal, setose. Uropod 2, 2 strong spines on upper margin



of peduncle, outer ramus shorter than inner. Uropod 3 transversely oblong, inner apex with a short spine (? representing the inner ramus), outer ramus extending to apex of rami of uropod 2, with apical tuft of plumose setae.

Length 13-14 mm. As preserved, whitish, eyes pale brown.

*Locality.* False Bay. ♂♂, ovig. ♀♀ and immature. (U.C.T., Sept. 1953.)

*Remarks.* Apart from the foveolate integument the present species is distinguished from *lunata* Chevr. (Algeria and Suez) by the 3rd peraeopod and 3rd uropod.

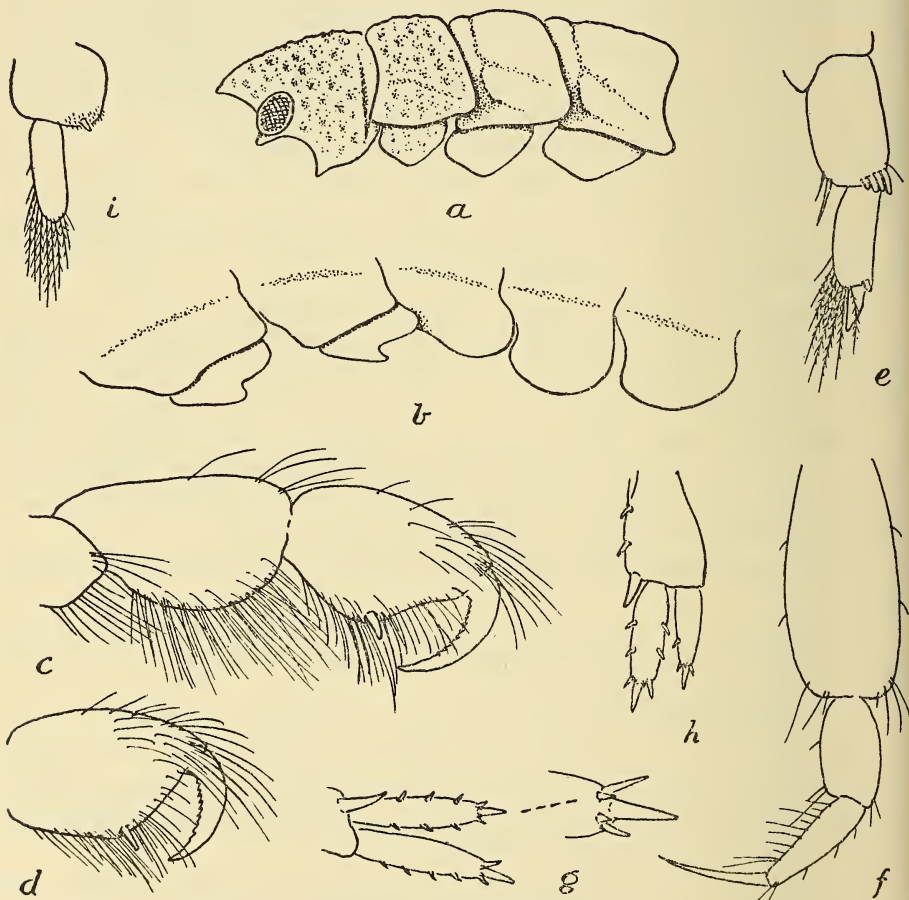


FIG. 49.

*Unciolella foveolata* n. sp. a. head and peraeon segments 1-3. b. peraeon segments 6 and 7, and pleon segments 1-3. c, d. gnathopod 1 ♂ and ♀ respectively. e. apical joints of peraeopod 3. f. apical joints of peraeopod 1. g. apex of peduncle, and rami of uropod 1. h. uropod 2. i. uropod. 3.

## Fam. CAPRELLIDAE

Gen. *Paracaprella* Mayer

1890. Mayer, *F. Fl. Golf Neapel.*, xvii, p. 41.

1903. id., *Siboga Exp. monogr.*, xxxiv, p. 65 (with key to species).

In my 1940 key (loc. cit., p. 542) in the second alternative of couplet 4, after '(fig. p. 522)' insert: . . . 4 a. Transfer 'Mandibular palp 3-jointed . . . 6.' to couplet 4 a, and add: 'Mandibular palp absent . . . *Paracaprella*'.

*Paracaprella pusilla* Mayer

1890. Mayer, loc. cit., p. 41, pl. 1, figs. 28-30, pl. 3, figs. 45-7, pl. 5, figs. 48, 49, pl. 6, fig. 10.

1903. id., loc. cit., p. 67, pl. 2, figs. 36, 37, pl. 7, fig. 52 (adult ♂♀).

A 5 mm. ♂ specimen agreeing exactly, including the 12-jointed flagellum of antenna 1, with Mayer's description of this Brazilian and West Indian species, was scraped from a ship's hull in Durban harbour. (U.C.T., 1951.)

*Caprellina spiniger* Brnrd.

1916. Barnard, *Ann. S. Afr. Mus.*, xv, p. 282, pl. 28, fig. 35 (♀).

The large dorsal bifid hook-like spine on the 3rd segment is present in a juv. 4 mm., a ♀ with incipient brood lamellae 5.5 mm., and a ♂ 6.5 mm.; in a ♀ with developed brood lamellae 5 mm. there is only a slight medio-dorsal hump. In all the specimens the other dorsal spines on the 2nd and 4th segments are absent.

*Locality.* Langebaan, Saldanha Bay. (U.C.T.)

*Remarks.* The coloration, though faded, is similar to that of the ♀ described from False Bay; the dark band at base of 6th joint of 5th peraeopod is present in the ♂.

## COPEPODA PARASITICA

Gen. *Caligus*

See: Barnard, *Ann. S. Afr. Mus.*, xli, p. 244, 1955.

*Extended key to South African species*

## I. Fourth leg 4-jointed.

## A. Abdomen 2-segmented

1. 1st abdominal segment 4 times length of 2nd. . . . *pelamydis*

2. 1st abdominal segment shorter than 2nd. . . . [*elongatus*]

B. Abdomen 1-segmented, shorter than genital segment. . . . *lunatus*

## II. Fourth leg 3-jointed.

A. Abdomen ♀ 4-segmented, ♂ 2-segmented. . . . *coryphaenae*

## B. Abdomen 1-segmented, or more or less distinctly 2-segmented.

1. Abdomen long, in ♀ about as long as genital segment, in ♂ longer.

a. Caudal rami long, in ♂ about half length, in ♂ longer than, abdomen. . . . *lalandei*

b. Caudal rami short or very short.

- i. Caudal rami short. Abdomen distinctly 2-segmented, a little shorter than genital segment. . . . *cossackii*
- ii. Caudal rami short. Abdomen ♀ 1-segmented, ♂ 2-segmented. . . *rapax*
- iii. Caudal rami short. Abdomen a little longer than genital segment, indistinctly 2-segmented. . . . *mauritanicus*
- iv. Caudal rami very short. Abdomen 1-segmented, a little longer than genital segment. . . . *arii*
- 2. Abdomen about as long as genital segment; in ♂ distinctly, in ♀ indistinctly, 2-segmented. . . . *bonito*
- 3. Abdomen short or very short, about half, or less, genital segment.
  - a. Caudal rami much longer than wide. . . . *engraulidis*
  - b. Caudal rami about as broad as long
    - i. Genital segment a little longer than broad.
      - a. Abdomen longer than broad. 2nd joint of antenna 1 very long. Prongs of sternal fork apically acute. . . . *zei*
      - β. Abdomen broader than long. Antenna 1 normal. Prongs of sternal fork apically rounded. . . . *brevicaudatus*
    - ii. Genital segment broader than long.
      - a. 5th leg visible dorsally. . . . *labracis*
      - β. 5th leg invisible dorsally. . . . *tetrodontis*

### Gen. *Hermilius* Heller

1865. Heller, *Novara Crust.*, p. 186.

The genus is easily distinguished by the carapace being longitudinally folded, like that of an Ostracod or Concostracan.

The only other species: *longicornis* Bassett-Smith (1898, *Ann. Mag. Nat. Hist.* (7), ii, p. 80, pl. 3, fig. 2) from Trincomalee on *Arius acutirostris*, is probably synonymous with Heller's species.

### *Hermilius pyrivertris* Heller

1865. Heller, loc. cit., p. 187, pl. 18, figs. 1, 1a, 1b.

1899. Bassett-Smith, *Proc. Zool. Soc. Lond.*, p. 445.

1924. Brian, *Parasit. Mauritan*, fasc. 1, p. 32.

*Localities.* Gordons Bay (False Bay) and Table Bay, on gills of *Galeichthys* (*Tachysurus*) *feliceps*. (U.C.T.)

*Distribution.* Java, on *Arius acutus* (Heller); Mauritania, on *Arius heudeloti* (Brian).

### *Chondracanthus neali* L-S.

Fig. 50.

1930. Leigh-Sharpe, *Parasitology*, xxii, p. 468, figs. 1, 2 (♀♂).

The present specimens agree with the description, but have four (as in *C. zeii*) medio-dorsal processes instead of three, and a single medio-ventral process close behind the second pair of legs.

The ovisacs are 3-4 times the length of the body, and irregularly coiled.

*Locality.* 32° 15' S., 16° 30' E., 230-250 fathoms, on *Malacocephalus laevis*. (U.C.T.)

*Distribution.* Off south-west Ireland, deep water, on the same fish-host.

*Chondracanthus colligens* n. sp.

Fig. 50.

♀—Head longer than wide, postero-lateral corners rounded, without noticeable projections. Thorax elongate, about as long as genital segment, obscurely segmented, the first part carrying posteriorly the 1st pair of biramous legs, the second part fused with the genital segment, carrying the 2nd pair of biramous legs, and laterally produced on each side into a large curved process; the latter may actually belong to the genital segment. Genital segment oblong, with an acute process in middle of each lateral margin, a medio-ventral process at about the same level, and short, incurved postero-lateral corners. Ovisacs cylindrical (but not fully preserved). 8–10 mm.

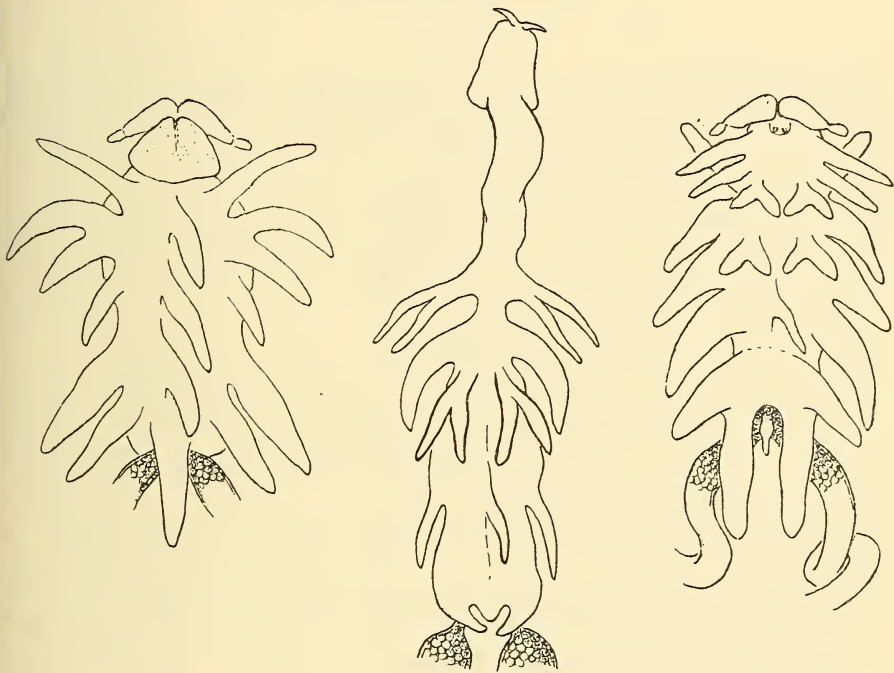


FIG. 50.

*Chondracanthus neali* L-S. Left and right, dorsal and ventral views respectively of ♀.  
*Chondracanthus colligens* n. sp. Centre, ventral view of ♀.

*Localities.* Approximately 32° 15' S., 16° 30' E., 230–250 fathoms, and Table Bay, on Kingklip (*Genypterus capensis*). (U.C.T.)

*Remarks.* From microfilm photographs of *C. ophidii* Kröyer 1863, which I owe to the kindness of Dr. J. P. Harding of the British Museum, the Cape specimens seem to be quite different from the South American species taken from a fish of the same genus (or family).



The resemblance to the New Zealand *C. genypteri* Thomson 1890 may be closer, but there are neither lateral processes nor a medio-ventral process in the middle of the genital segment; nor can one be certain from either of Thomson's two figures whether the postero-lateral processes are actually the postero-lateral processes flanking the abdomen, or an additional larger pair concealing the latter.

It is a little curious that there should be three forms of a *Chondracanthus* (or possibly allied genus) on three fishes so closely allied generically or specifically, or even specifically identical, from subantarctic waters of South America, New Zealand, and the Cape.

*Brachiella supplicans* n. sp.

Fig. 51.

♀—Cephalothorax somewhat shorter than trunk, carapace of head distinct; a pair of uniramous posterior processes ventral to the ovisacs, a pair of biramous processes dorso-laterally dorsal to the ovisacs. Second maxillae completely fused, or fused only at base and tips, in both cases enclosed in a common membranous sheath; or separate, fused only at base and at tips, and each appendage enclosed in its own sheath; bulla small. The membranous sheath encloses also the whole body and processes, each biramous process being enclosed in its own sheath. Ovisacs short, ovoid, not enclosed in sheaths. Cephalothorax to junction with 2nd maxillae 2 mm., 2nd maxillae 2 mm., trunk 2.5 mm., ovisac 1 mm.

♂—*Brachiella*-type (Wilson, 1915, *Proc. U.S. Nat. Mus.*, xlvii, pl. 25 C). 1.3 mm.

*Locality.* Table Bay, on Kingklip (*Genypterus capensis*). (U.C.T.)

*Remarks.* Thanks to Dr. Harding for sending photographs of Kröyer's figures of 'Anchorella' *appendiculosa* and *appendiculata*, I am able to say that the present specimens do not appear to be referable to either of these species.

No specific importance is attached to the parasites being enclosed in a membranous sheath; it may be due to the method of

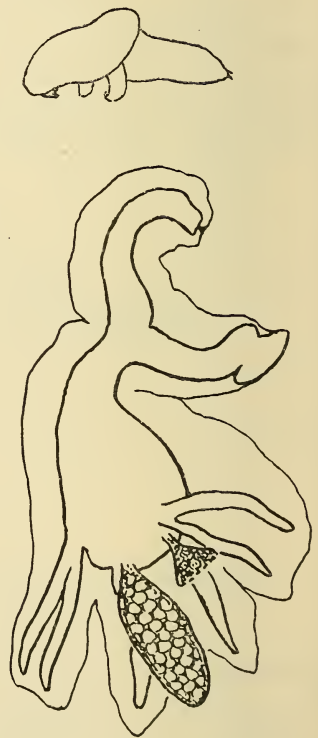


FIG. 51.

*Brachiella supplicans* n. sp. ♂ and ♀ (one of the ovisacs not completely drawn).

preservation (cf. Brian, 1906, *Copep. Parasit. Pesci Ital.*, pl. 8, fig. 6, of *Brachiella impudica*, and other figures).

Gen. *Medesicaste* Kröyer

1955. Barnard, *Ann. S. Afr. Mus.*, xli, p. 300.

The genus contains the genotype *triglarum* Kröyer and *penetrans* Heller. The species *asellinum* described and figured in T. and A. Scott (1913, *Brit. Parasit. Copep.*, p. 184, pl. 52, fig. 6) as belonging to this genus, is really the genotype of *Lernentoma* (see: Leigh-Sharpe and Oakley, 1927, loc. cit., *infra*).

*Medesicaste penetrans* Heller

1955. Barnard, loc. cit., p. 301, fig. 31.

The posterior bilobed expansion of the thorax is often much more developed than in Heller's figure (copy in Barnard, loc. cit., fig. 31a). One specimen measures from head to end of genital segment 18 mm., from head to end of thorax 9 mm., posterior expansion of latter 3.5 mm. wide.

In my description the term 'neck' applies to the thinnest portion of the animal between the thoracic expansion and the genital segment, not to the constriction between head and thorax.

*Localities.* Table Bay, on *Trigla capensis*, and False Bay, on *Trigla queketti*. (U.C.T.)

Gen. *Oralien* B-S.

- 1899. Bassett-Smith, *Proc. Zool. Soc. Lond.*, p. 489.
- 1927. Leigh-Sharpe and Oakley, *Parasitology*, xix, pp. 456-8.
- 1927. Oakley in Leigh-Sharpe, *ibid.*, p. 465.
- 1932. Wilson, *Bull. U.S. Nat. Mus.*, no. 158, pp. 494, and 614, 616 (in key).

Leigh-Sharpe and Oakley (jointly) give an historical account of the genera *Lernentoma*, *Oralien*, and *Medesicaste*, with their genotypes *L. asellina* (Linn.), *O. triglae* (Blainville), and *M. triglarum* Kröyer; and justify the validity of *Oralien*. Oakley (solo) gives revised definitions of the three genera.

*Oralien triglae* (Blainville)

Fig. 52.

- 1822. Blainville, *Journ. Phys.*, xcv, p. 441, pl. 62, fig. 12 (*Lernentoma t.*).
- 1927. Oakley, loc. cit., p. 460, figs. 3-6, 7 B; and p. 465.
- 1932. Wilson, loc. cit., p. 495, fig. 296 b, c (♀♂).

Head and neck 3-4 mm. (somewhat foreshortened in the drawing) 'body' (thorax and genital segment) about as wide as long, 2.75 mm.

*Locality.* Table Bay, on gills of *Trigla capensis*. (U.C.T.)

*Distribution.* British coasts; Mediterranean; Martha's Vineyard, U.S.A.

Gen. *Sphyrion* Cuv.

1955. Barnard, loc. cit., p. 305.

R. W. Rand, Biologist to the Guano Islands Administration, has submitted several specimens of this genus taken from the stomachs of seals which had been feeding on the fish-hosts of the parasites.

Two specimens have a cylindrical knob on either side of the buccal mass, and indications of a developing knob on each postero-lateral corner of the 'hammer'. The width of the hammer is 8 mm. and 12 mm., and the length of

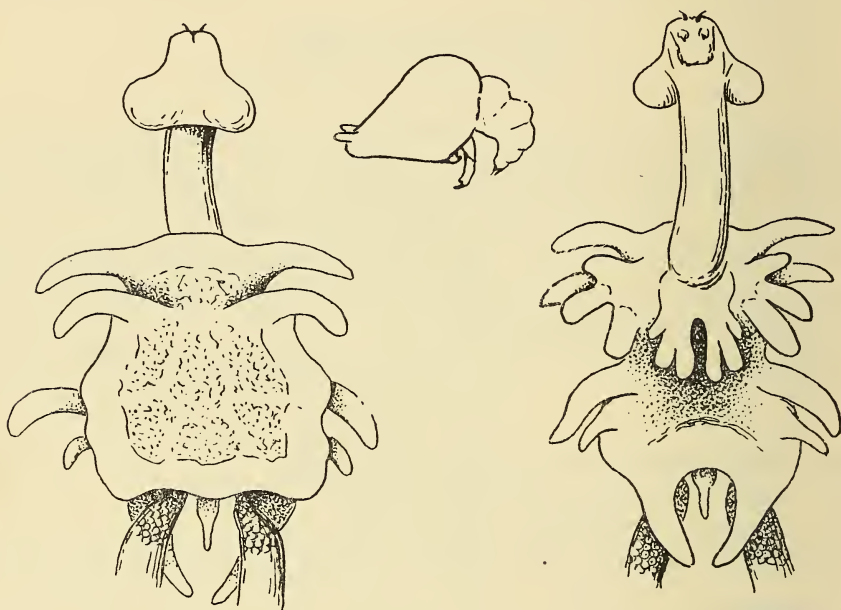


FIG. 52.

*Oralien triglae* (Blainville). Dorsal (left) and ventral (right) views of ♀; and ♂.

the neck 26 and 14 mm. respectively. The '8 × 26' specimen has an even longer neck, relatively, than the long-necked specimen 12 × 25 recorded in my paper, p. 306.

The other specimens have a smooth, transversely oblong hammer as figured for *lumpi* (loc. cit., fig. 33 *b*). The hammer and neck proportions vary as follows: 9 × 11, 13 × 16 (two specimens), 7 × 22, 11 × 22, 11 × 11, 7 × 18, 9 × 14, 9 × 12, 9 × 9.

Tyvold (1914, *Bergens Mus. Aarbok.*, p. 15) came to the conclusion, based on 24 examples, that the neck is much longer relatively in young than in old examples. It may, therefore, be used as an indication of age, but not as a specific character.

## PYCNOGONIDA

## Fam. PALLENIDAE

Gen. *Propallene* Schimk.

1909. Schimkewitsch, *Zool. Anz.*, xxxiv, pp. 7, 9 (table), 11.  
 1937. Calman, *Ann. Mag. Nat. Hist.* (10), xx, p. 534.  
 1951. Stock, *Mem. Inst. R. Sci. Nat. Belg.*, (2) fasc. 43, p. 9 footnote.

Ocular tubercles at hind end of cephalic segment. Legs without auxiliary claws. Palp consisting of 2 slender joints. Oviger without apical claw; 5th joint in ♂ with distal lobe(s), last 4 joints with lanceolate serrate spines. Finger and thumb of chelifer spinose or setose. Proboscis with setae around mouth.

*Propallene similis* n. sp.

Fig. 53a-c.

♂—Very similar to *kempi* (Calman) (*Rec. Ind. Mus.*, xxv, p. 277, fig. 6 as *Parapallene k.*) from India. The thumb of chelifer has 8 setae, 4 longer and 4 shorter; the finger has 7 short spines (in *kempi* both have 4 strong 'teeth').

Calman regards the short basal tubercle of the palp as a joint, with an elongate 2nd joint. Here the elongate slightly clavate joint is definitely divided into two, and arises from a knob-like expansion of the integument (cf. *longiceps* as figured by Schimkewitsch, loc. cit.).

Oviger, 5th joint apically with a setose lobe on one side, and a recurved tooth on the opposite side (as in Calman's figure), distal joints with lanceolate serrate spines: 12, 11, 11, 13 = 47 (Calman does not give the numbers in *kempi*).

Length 2.5 mm. (proboscis 0.5 mm.).

*Locality.* Algoa Bay, 9 metres. 1 non-ovigerous ♂. (U.C.T.)

*Remarks.* I have seen Schimkewitsch's description of the Japanese *longiceps* (Böhm) but not Böhm's or Ortmann's descriptions. Schimkewitsch does not give the numbers of serrate spines on the distal joints of the oviger.

Gen. *Pallenoides* Stock

1951. Stock, loc. cit., p. 8.  
 1952. id., *Bull. Inst. R. Sci. Nat. Belg.*, xxviii, 14, p. 4.

*Pallenoides proboscideum* n. sp.

Fig. 53d, e.

♂—Body as in *magnicollis* Stock, but with a pair of knobs, ending in sharp points, on cephalic segment, which also has one tooth and a denticle on each lateral margin. An obscure median knob on each segment and on crurigers; the anterior and posterior distal corners of the latter with sharp points.



Proboscis squarish, slightly wider distally than proximally, apically truncate. Chelifer scape with denticles on outer and distal margins, and 3-4 rather stout spines on inner distal corner; thumb expanded basally on inner margin, with crenulate edge; finger curved, without gape. Oviger with apical lobe on 5th joint, distal joints with 8, 7, 6, 8 = 29 obovate, extremely finely serrate spines, with one or two longer serrations basally.

Length 3 mm.

*Locality.* Algoa Bay, 5-7 metres. 1 non-ovig. ♂. (U.C.T.)

*Remarks.* Agrees generally with the genotype except for the presence of an apical lobe on 5th joint of oviger. According to Schimkewitsch (1909, loc. cit., table on p. 9) this lobe may be present or absent in species of *Parapallene*; its generic importance therefore seems doubtful.

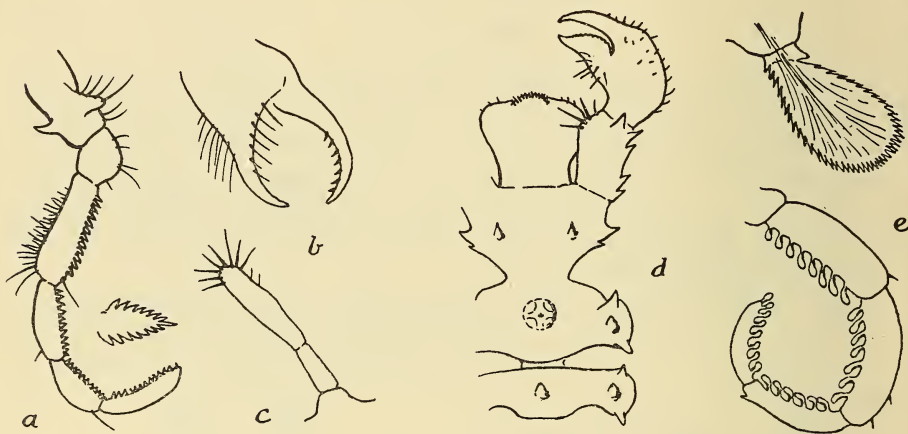


FIG. 53.

*Propallene similis* n. sp. a. oviger, with serrated spine further enlarged. b. chelifer. c. palp. *Pallenoides proboscideum* n. sp. d. proboscis, chelifer, cephalic and 1st segment. e. oviger, with spine further enlarged.

#### Fam. PYCNOGONIDAE

##### *Pycnogonum nodulosum* Dohrn

1881. Dohrn, *F. Fl. Golf. Neapel.*, III, p. 203, pl. 16, figs. 1-3.

1953. Fage, *Bull. Mus. Paris* (2), xxv, p. 381 (in list of West African species).

Agreeing with Dohrn's description and figures, including the tubercle on the proboscis.

Length 4.75 mm.

*Locality.* Algoa Bay, 9 metres. 1 ♀. (U.C.T. 1954.)

*Remarks.* I have not seen the papers on which Fage based his 1953 (loc. cit.) list of species occurring on the west coast of Africa from Gibraltar to the Congo.

*P. cessaci* Bouvier also occurs on the West African coast (1952, *Fage. Bull. Mus. Paris* (2), xxiv, p. 531, fig.), but lacks the tubercle on the proboscis and the nodulose legs. Both species are distinguished from *pusillum* by the absence of auxiliary claws.

*Pycnogonum* sp. cf. *microps* Loman

Two immature specimens 6.5 and 5.5 mm. in length, collected at Inhaca Island, Delagoa Bay (U.W.).

Surface minutely granulate, the larger specimen faintly reticulate on proboscis and cephalic segment. No auxiliary claws. 3rd and 4th segments distinct; crurigers not contiguous. A small knob on hinder part of cephalic segment, one each on segments 2 and 3; feeble knobs on crurigers, those on the 4th pair being the best developed. Proboscis cylindrical in the smaller, slightly tapering in the larger specimen. Ocular tubercle small, eyes obscure. Legs scarcely nodulose in the smaller, but distinctly so on 1st and 2nd tibiae in the larger specimen. Oviger short, 8-jointed (incl. claw), apparently not fully developed.

The smaller specimen has a strong resemblance to *microps* Loman (see: Barnard, 1954, *Ann. S. Afr. Mus.*, xli, p. 154) from Natal, especially as there is a suspicion of a minute tubercle behind the ocular tubercle as well as the larger one on hind part of cephalic segment.

*Incertae sedis*

*Queubus jamesanus* Brnrd.

1946. Barnard, *Ann. Mag. Nat. Hist.* (xi), 13, p. 63.

1954. id., loc. cit., p. 157, fig. 34.

The University of Cape Town Ecological Survey collection contains two specimens of this species: one from the type locality St. James (False Bay), the other from East London (1937).

