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FURTHER ADDITIONS
TO THE
CRUSTACEAN FAUNA-LIST
OF
PORTUGUESE EAST AFRICA

BY

K. H. BARNARD

South African Museum, Cape Town

(Separata das «Memórias do Museu Dr. Álvaro de Castro»)

4. 1958.

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For a number of years the Mozambique Government has sponsored marine investigations in its coastal waters. At Inhaca Island in Delagoa Bay it has placed facilities at the disposal of the Zoology Department of the Witwatersrand University; and in 1954 under its auspices a party from the Zoology Department of the University of Cape Town investigated the Inhambane estuary.

The Crustacea collected during these investigations have been submitted to me for identification. Needless to say intensive search has brought to light species not hitherto reported from this area on the east African coast, several of them undescribed. Some of these records have appeared in my monograph of South African (Africa south of 15° S. lat.) Decapods and Stomatopods (1950. Ann. S. Afr. Mus. vol. xxxviii.), and in a subsequent paper (1955. Ann. S. Afr. Mus. vol. xliii. part. I.). The present paper records species obtained during recent collecting. The letters U. W. and U. C. T. indicate respectively the Universities of Witwatersrand and Cape Town.

Localities for species already reported from Portuguese East Africa are not listed here unless they represent a notable extension of the previously known distribution.

The rediscovery of Paulson's genus *Racilius*, 80 years after its description, is of great interest.

DECAPODA:

- Cyphocarcinus capreolus* (Paulson). Mozambique Island (U. W.).
Pseudomicippe nodosa Heller. Baixa Pinda, Memba, N. of Mozambique Island (U. W.).
Micippa philyra (Herbst). Mozambique Island (U. W.).
Eumedonus granulatus McGil. Mozambique Island (U. W.).
Pinnotheres dofleini Lenz. Delagoa Bay (U. W.).
Macrophthalmus depressus Rüppell. Delagoa Bay (U. W.).
Melopograpsus oceanicus (J. & L.). Nacala Bay (U. W.).
Ilyograpsus rhizophorae Brnrd. Delagoa Bay, very common in mangroves (U. W.).
Sesarma catenata Ortm. Delagoa Bay (U. W.).
Actaea hirsutissima (Rüpp.). Delagoa Bay (U. W.).
Lybia plumosa Brnrd. Mozambique Island (U. W.).
Hippa adactyla Fabr. Inhambane (U. W.).
Porcellanella triloba White. Delagoa Bay (U. W.).
Galathea australiensis Stimpson (*aegyptiaca* Paulson), Delagoa Bay (U. W.).
Callianidea typha M. Edw. Memba, N. of Mozambique Island (U. W.).
Synalpheus anisocheir Stebb. Delagoa Bay (U. W.).

ISOPODA:

- Paranthura punctata* Stimpson. Delagoa Bay (U. W.).
Paracilicsea teretron Brnrd. Delagoa Bay (U. W.).
Dynoides serratisinus Brnrd. Delagoa Bay (U. W.).
Alloniscus pigmentatus B-L. Delagoa Bay (U. W.).

AMPHIPODA:

- Stenothoe valida* Dana. Delagoa Bay (U. W.).
Cymadusa australis (Brnrd). Inhambane, in tubes formed of Hydroids (U. C. T.).
Erichthonius brasiliensis (Dana). Inhambane, in tubes formed of Hydroids (see: Sars. Crust. Norw. p. 603) (U. C. T.).
Caprella scaura Templ. Delagoa Bay (U. W.).

DECAPODA

FAM. PORCELLANIDAE

Porcellana serratifrons Stimpson

1858. Stimpson. Proc. Ac. Nat. Sci. Philad. x. p. 242.

1888. Henderson. Challenger Rep. xxvii. p. 110. pl. xi. figs. 5, 5a.

1907. Stimpson ed. Rathbun. Smiths. Misc. Coll. XLIX. p. 189. pl. 23. fig. 2.

Carapace with scattered plumose setae; post-frontal lobes well marked. Median frontal tooth broad, rounded-truncate, lateral sharply triangular; all teeth serrulate. Lateral margin with 3 spine-teeth, and 4-5 small ones

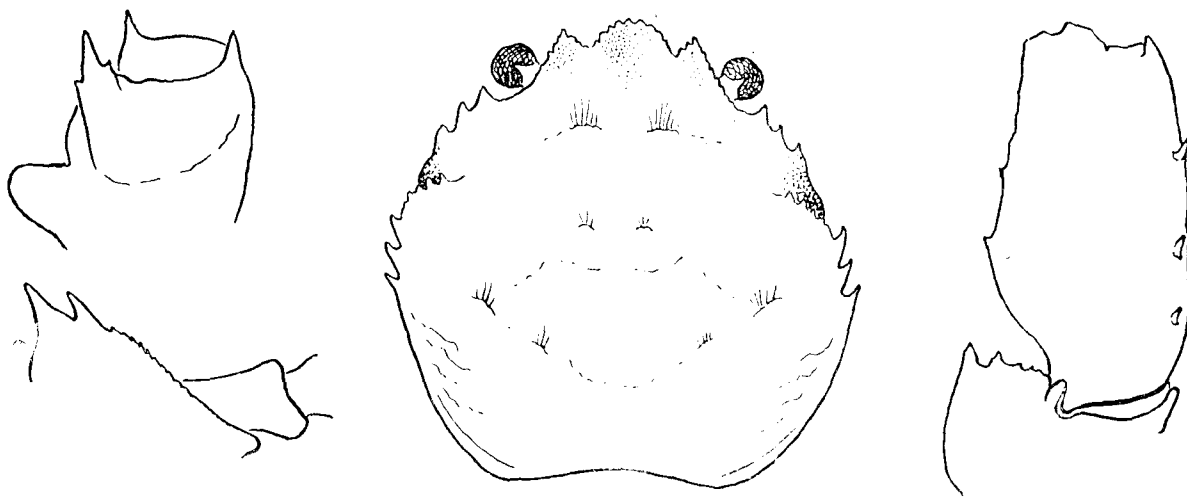


Fig. 1. — *Porcellana serratifrons* Stimpson

Carapace. Ventral view of basal joint of left 1st antenna; the same of 2nd antenna. Fourth and fifth joints of cheliped

where the margin turns inwards on surface of carapace; 3 spine-teeth above insertion of antenna 2.

First peduncular joint of antenna 1 thick, triquetral in cross-section, ventral transverse margin with one spine-tooth on inner corner, with minute basal cusps, one spine-tooth at outer corner, distal margin with one spine-tooth at inner corner. Basal peduncular joint of antenna 2 with 2 teeth at apex, and margin minutely serrulate.

Fourth joint of cheliped with inner apical lobe squarely truncate, with 2 prominent denticles (sometimes only one) on inner apical corner, and some smaller ones on apical margin; 5th joint with 3-4 feeble points on inner margin, the two more prominent ones sometimes tipped with minute spines (♂), outer margin with 3 teeth and one at apex. Hand with granulate inner margin, median ridge not very prominent, serrulate (♂) or

granulose (♀); outer margin denticulate, more strongly so (almost spinulose) in ♂ than in ♀; finger and thumb furry on inner side. Smaller chela similar to the larger; outer surface of hand sparsely pilose in ♀.

Dactyl of legs with 3 spines increasing in length distally, and a small subsidiary denticle alongside the distalmost one at base of unguis.

Length 6.75, breadth 6.25mm. Pinkish or reddish-orange, more or less mottled.

Locality: Delagoa Bay (U. W.).

Distribution. Hong Kong. Apparently not recorded from any intermediate locality.

FAM. PASIPHAEIDAE

1955. Holthuis. Zool. Verh. no. 26. p. 32 (key to genera).

Gen. *Leptochela* Stimpson

1860. Stimpson. Proc. Ac. Nat. Sci. Philad. 1860. p. 42.

1920. de Man. Siboga Exp. monogr. xxxix a 3. p. 4. (list of species) and p. 18.

1925. Kemp. Rec. Indian Mus. xxvii. p. 249 (key to species; dimorphism of ♀♀).

Leptochela robusta Stimpson

1860. Stimpson. *loc. cit.* p. 43.

1875. Paulson. Red Sea Crust. p. 100. pl. 16. figs. 1-15. (*aculeocaudata*).

1902. de Man. Abh. Senckenb. Ges. xxv. p. 902.

1915. Balss. Dekapod. Roth. Meeres. i. p. 17.

1916. de Man. Zool. Meded. ii. p. 148.

1920. *Id. loc. cit.* p. 19. pls 3 and 4. figs. 7-7x.

1925. Kemp. *loc. cit.* p. 252.

1939. Calman. John Murray Exp. Rep. vi. p. 188.

Three specimens, 8-9mm. in length, have the outer orbital angle and anterior border of carapace rounded as in *robusta* (de Man. 1920. pl. 3. fig. 7b), but with the strong spine on lower border of 6th abdominal segment as in *pugnax* (de Man. 1920. pl. 4. fig. 8a). From de Man's description of juvenile specimens (1920. pp. 24, 25) it would appear that the latter character is a juvenile character, and is not a valid specific character for separating *pugnax* from *robusta*. *L. pugnax*, moreover, has an antennal spine, and one pair (not two) of lateral spines on telson.

Locality: Morrumbene estuary, Inhambane (U. C. T.).

Distribution. Red Sea, Djibouti, Maldives, Andamans, Nicobars, East Indies, NE. Australia, China, Hawaiian Islands: 0-77 fathoms.

FAM. OGYRIDIDAE

Ogyrides striaticauda Kemp.

1915. Kemp. Mem. Indian Mus. v. p. 284. figs. 28-30.

1951. Kubo. J. Tokyo Univ. Fish. xxxviii. p. 271. figs. 9, 10.

Carapace with 3 medio-dorsal spine-teeth in ♂, 5 in ♀. Antennal scale as in *striaticauda* in ♂, but in ♀ the lamella is slightly more obliquely truncate.

Wrist of 2nd leg 4-jointed. Sternal process between coxae of 4th legs as in *striaticauda*. Telson with 3 basal ridges ventrally; lateral margin with very slight prominence.

Length 10mm. As preserved, pale brown, eyes black.

Locality: Delagoa Bay, 1 ♂, 1 ovig. ♀. July 1956. (U. W.).

Distribution. India: Chilka Lake on the east coast, and Cochin on the south-west coast; Japan.

Remarks. The number of spine-teeth on the carapace seems to be subject to variation, and consequently is not a very good diagnostic character. Kemp's specimens had 7-9, Kubo's 8-10; and *sibogae* de Man (1910, 1911 and 1915) had 3-4.

With only two specimens at hand, identification must be to some extent provisional. When more abundant material from several localities is available, Kemp's species may even be shown to be synonymous with *sibogae*.

FAM. ALPHEIDAE

Gen. **Arete** Stimpson

1860. Stimpson. Proc. Ac. Nat. Sci. Philad. p. 32.

1905. Coutière. Fauna Geogr. Mald. Laccad. II. pt. 4. p. 861.

1911. de Man. Siboga Exp. monogr. xxxix a 1. p. 162. (with key to Indo-Pacific species).

Arete indica Cout.

1880. Richters. Beitr. Meeresf. Mauritius Seych. p. 164. (*Athanas mascarenicus*).

1903. Coutière. Bull. Soc. Philom. 9. v. p. 85 (*dorsalis* var. *indica*).

1904. Id. Bull. Mus. Hist. Nat. Paris. no. 2. p. 58.

1905. Id. *loc. cit.* p. 863. figs. 134 (a-c), 135.

1911. de Man. *loc. cit.* p. 163 (in key).

In agreement with Coutière's description and figures, except that the 6th joint of 3rd pereopod is armed with 9-10 spines along lower margin.

Length 11–13 mm. As preserved (after one month in alcohol) pale yellowish or orange, with brighter broad dorsal band on abdomen divided medianly by a pale stripe, a brighter longitudinal stripe across the side of carapace and continued along abdomen; chelae orange, darker on upper inner surface, finger distally pale. When alive said to be violet, simulating the colour of its host.

Locality: Delagoa Bay, 2 ♂♂, 3 ♀♀ (2 ovig.). July 1956, associated with the Echinoid *Echinometra mathaei*. (U. W.).

Distribution. Djibouti; and Maldive Archipelago.

Remarks. Coutière (1905, *loc. cit.* p. 868) has already included Richters' Mauritian species in this genus; and in all probability *indica* is identical with it. Until Richters' material is reexamined, however, or more material obtained from Mauritius, Coutière's name must be used for the species.

***Alpheus collumianus* Stimpson**

1860. Stimpson. Proc. Ac. Nat. Sc. Philad. p. 30.

1911. de Man. Siboga Exp. monogr. XXXIX a 1. p. 309 (in key), p. 334, pl. 14, figs. 65, 65a, b (chelae).

1954. Barnard. Mem. Inst. Sci. Madagascar. A. IX. p. 104.

Whereas 1 ♂ 11mm. and 1 ovig. ♀ 13mm. have the lower margin of the 4th joint of peraeopods 3 and 4 unarmed (cf. *paradentipes* Coutière, 1905, Laccadives), a larger ovig. ♀ 15mm. has 4 movable spines along this margin (cf. de Man's description). An 11mm. ♂ from Natal also has no spines on the 4th joint of peraeopods 3 and 4.

Localities: Delagoa Bay (U. W.); Embotje, Pondoland (U. C. T.).

Distribution. Djibouti, Maldives, Laccadives, Madagascar, Indo-Pacific to Japan.

Gen. *Racilius* Paulson

1875. Paulson. Red Sea Crust. p. 107.

1899. Coutière. Les Alpheidae. pp. 27, 56, 337, 352, et passim.

1958. Barnard. Ann. Mag. Nat. Hist. (12). X. (Oct. 1957). p. 752.

Body strongly compressed (like a sheet of «pasteboard»: Paulson); carapace and anterior segments of abdomen keeled. Carapace deeper than long; supraorbital tooth present. Dactyls of 3rd—5th peraeopods simple. No scale at base of uropods. Outer ramus of uropod with thick proximal portion, ending in 2 strong teeth and between them a large articulated spine, diaeresis very oblique, distal laminar portion large. Telson without dorsal spines; anal tubercles present. Gill formula as in *Alpheus*. Eggs large.

Remarks. Coutière (p. 27) says that Paulson's description and figures do not carry absolute conviction; and because all the features relied upon for the new genus can be paralleled in other Alpheids, he doubts the validity of the genus. Comparison of an actual specimen, however, with the description and figures does carry conviction, and confirms Paulson's accuracy.

Coutière (p. 352) finds the special features of *Racilius* also in the *macrochirus* group of *Alpheus*, and throughout his treatise compares *Racilius* with *Alpheus laevis* Randall (= *ventrosus* M. Edw. = *lottini* Guérin). But Paulson had specimens of *laevis* for comparison (p. 106. pl. 14. fig. 3.) and therefore could assess the differences; his judgement in instituting a separate genus should be respected.

Coutière claims the strong spine on the outer ramus of the uropod as one of the features of the *macrochirus* group, but in making no mention of the remarkable structure of the *whole* ramus he is fully excused because he did not see the type (the only known specimen) (p. 352). The thick basal portion and an extra large laminar portion beyond the diaeresis seems to be a unique development in the family, and this one feature alone seems to justify recognition of Paulson's genus.

The finding of a specimen of this genus, based on a single specimen and not collected since Paulson's time, was one of the most surprising and pleasing results of the investigations carried out by the Zoology Department of the Witwatersrand University at Delagoa Bay.

I have to thank Dr. Gordon and Dr. Harding of the British Museum (Nat. Hist.) for a translation of Paulson's Russian text.

***Racilius compressus* Paulson**

1875. Paulson. *loc. cit.* p. 107. pl. 14. figs. 2-2 g. (♂).

1899. Coutière. *loc. cit.* passim (several of Paulson's figures reproduced).

♀ — Keel on carapace entire, not notched as described and figured for ♂. Keel on anterior abdominal segments not quite so strong as on carapace, and petering out posteriorly; segment 5 only feebly keeled, and segment 6 not at all (though laterally compressed). Pleurae of abdominal segments 1-4 rounded below, postero-inferior angle of segment 5 bluntly quadrate, of segment 6 sharply angular.

Telson as figured by Paulson, dorsally convex, no spines; apex with one small spine at each corner, and between these several plumose setae, of which 3 (1 median and 1 on either side near lateral margin) are thicker and longer than the others. Anal tubercles present.

Antenna 1. stylocerite extending to end of basal joint, which has a prominent lanceolate tooth on ventral margin; upper apex of both 1st and 2nd joints somewhat produced. Antenna 2 as in Paulson's figure. Cutting-edge of mandible 12-dentate.

Peraeopod 1 missing on both sides. Peraeopod 2, 4th joint subequal to first 3 jointlets of wrist, 1st jointlet subequal to 2nd-4th together, 5th subequal to 3rd plus 4th and longer than palm, palm very slightly longer than chela.

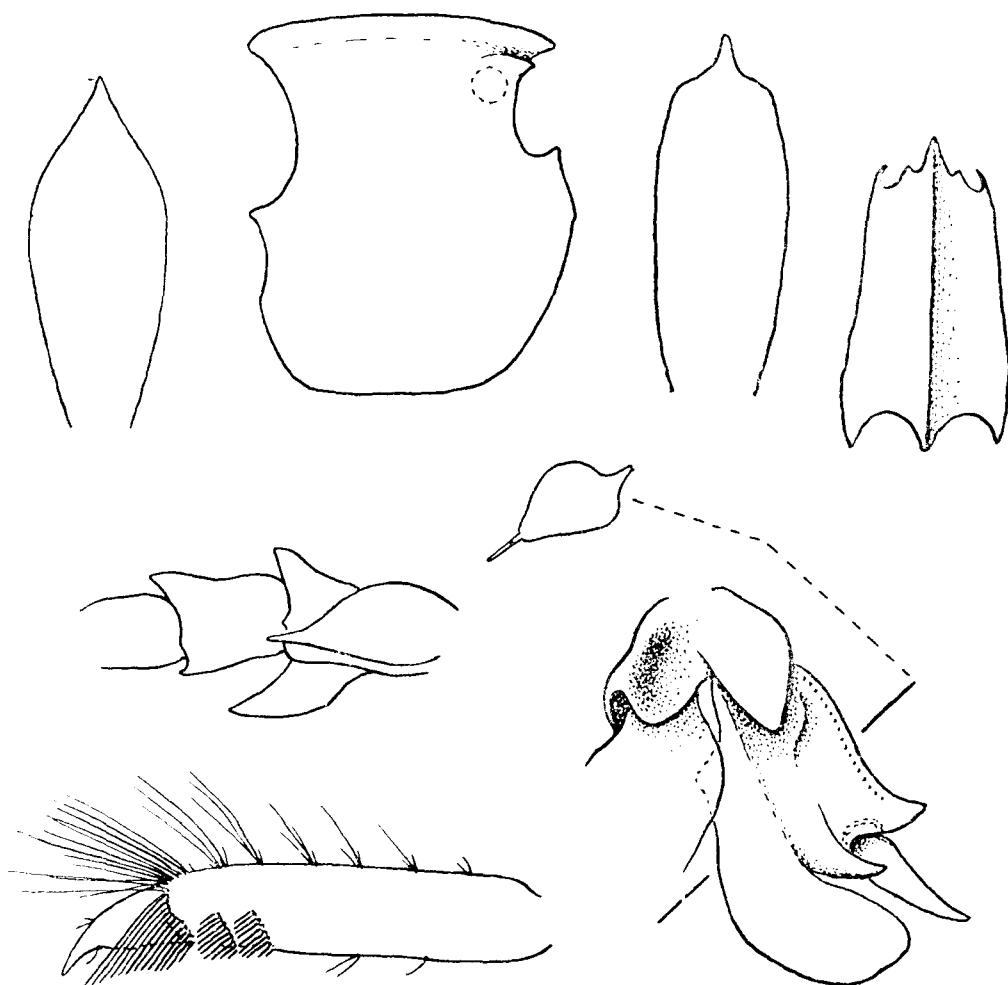


Fig. 2. — *Racilius compressus* Paulson.

Side view of carapace, with transverse sections at posterior end (left) and at anterior end through orbital hoods (right). Dorsal view of carapace. Outer view of left 1st antenna. Sixth joint and dactyl of 5th peraeopod. Dorsal view of right uropod, with cross-section of outer ramus (plumose setae omitted)

Peraeopod 3, 6th joint with 1 stout spine in middle of lower margin, 1 subapical and 1 apical. Peraeopod 4 not quite so robust as peraeopod 3, 6th joint with 1 apical spine. Peraeopod 5 distinctly less robust than peraeopod 4, 6th joint distally with 3 transverse series of spines, the apical

one extending across nearly the whole apical margin, and with longer spines than in the other two series; these spines minutely biserrulate; outer margin with long setae especially distally (cf. Paulson's figure).

Pleopods 2-5, appendix interna about midway along inner margin of inner ramus, apex with cincinulli.

Uropod, inner half of dorsal surface of peduncle hollowed for reception of anal tubercle (cf. Coutière, pp. 306, 313, 317, fig. 389; this figure shows a left uropod, but the rami seem to be wrongly labelled); outer ramus proximal portion very thick, with short keel on dorsal surface near base, abutting against the outer lobe of peduncle; the inner of the 2 large apical teeth projecting upwards; the large movable spine inserted ventrally; outer margin with a dorsal and a ventral submarginal series of plumose setae; diaeresis very oblique, almost longitudinal; distal laminar portion large.

Length 16 mm. Caparace length 4mm., depth 5 mm., thickness barely 2 mm. Ova 1 mm. diameter. As preserved, white.

Locality: Delagoa Bay, 1 ovig. ♀ (9 ova remaining attached) (U. W.).

Distribution. Red Sea.

Remarks. Paulson's single specimen was a ♂. Most unfortunately the present ♀ has lost both the 1st legs. It is to be hoped that continued investigation will produce further specimens of both sexes complete with chelipeds.

Coutière (p. 338) gave the length of the type as ca. 50 mm., but did not observe that Paulson's figure was x 4, which would give the length as ca. 15 mm. if the abdomen were straightened out.

FAM. PALAEMONIDAE

SUBFAM. PONTONÜNÆ

Species known from South Africa

Palaemonella vestigialis Kemp. Provisionally included, see p. 14.

Periclimenes (*Periclimenes*):

lanipes Kemp. Mozambique (Kemp, 1922).
delagoae n. sp. See p. 14.
rex Kemp. Barnard, 1955.
commensalis Borrard. See p. 16.

Periclimenes (*Harpilius*):

seychellensis Borrard. See p. 17.
brevicarpalis (Schenkel) Barnard, 1950.
grandis (Stimpson) }
demani Kemp. } Barnard, 1955.

<i>Paranchistus ornatus</i> Holthuis.	Mozambique (Holthuis, 1952).
<i>Periclimenaeus tridentatus</i> (Miers)	See p. 18.
<i>natalensis</i> (Stebb.)	Species dubia.
<i>uropodialis</i> n. sp.	See p. 18.
<i>Anchistus custos</i> (Forsk.)	Barnard, 1950 (as <i>inermis</i>).
<i>Harpiliopsis beaupresii</i> (Aud.)	} Barnard, 1950.
<i>depressus</i> (Stimpson).	
<i>Coralliocaris graminea</i> (Dana).	Barnard, 1950.
<i>Jocaste lucina</i> (Nobili).	Barnard, 1950 (as <i>Coralliocaris lucina</i>).
<i>Conchodytes tridacnae</i> Peters.	Barnard, 1950 (<i>tridacnae</i> and <i>meleagrinae</i>).

Key to genera

(after Holthuis 1952)

- I. Mandible with palp *Palaemonella*
- II. Mandible without palp.
- A. Dactyls of last 3 legs without basal projections (if broadened, this disappears in a slit in 6th joint when dactyl closes).
1. Pleurae of first 5 abdominal segments broadly rounded or bluntly (never sharply) pointed.
- a. Hepatic spine present.
- i. Hepatic spine fixed. Rostrum conspicuously dentate.
- Dactyls of last 3 legs biunguiculate *Periclimenes* (sensu stricto).
- Dactyls simple *P.* subgen. *Harpilius*.
- ii. Hepatic spine movable. Rostrum with small teeth at apex only *Paranchistus*.
- b. Hepatic spine absent.
- i. Rostrum compressed, dentate *Periclimenaeus*.
- ii. Rostrum depressed, non-dentate *Anchistus*.
2. Pleurae of 4th and 5th abdominal segments sharply pointed. Body depressed. Rostrum dentate above and below *Harpiliopsis*.
- B. Dactyls of last 3 legs with 1 or 2 (in South African genera only 1) basal projections which do not disappear when dactyl closed.
1. Body strongly depressed. Basal projections of dactyls hoof-shaped. Rostrum dentate.
- a. Hepatic spine absent. 2nd legs similar in shape but sometimes unequal in size *Coralliocaris*.
- b. Hepatic spine present. 2nd legs strongly dissimilar in shape *Jocaste*.
2. Body clumsy, not strongly depressed. Basal projections of dactyls flat. Rostrum nondentate *Conchodytes*.

Keys to the species

PERICLIMENES (sensu stricto)

1. Supraorbital spine absent. Basal joint of antenna 1 with one apical spiniform tooth.
 - a. Rostrum with not more than 10 teeth.
 - i. Legs setose. 4th joint of 2nd leg with apical spine. R $\frac{8-9}{0-1}$ *lanipes*
 - ii. Legs not setose. 4th joint of 2nd leg without apical spine. R $\frac{10}{2}$... *delagoae*
 - b. Rostrum with 23-28 teeth *rex*
2. Supraorbital spine present. Basal joint of antenna 1 with 2 apical spiniform teeth *commensalis*

PERICLIMENES subgen. HARPILIUS

1. 4th joint of 2nd leg without apical spine (tooth). Supraorbital spine absent.
 - a. A papilla on eyestalk. R $\frac{7-9}{2-5}$ *seychellensis*
 - b. No papilla on eyestalk. R $\frac{5-7}{0-2}$ *brevicarpalis*
2. 4th joint of 2nd leg with apical spine (tooth). Supraorbital spine present.
 - a. Spine of antennal scale extending well beyond apex of scale. R $\frac{6-10}{2-5}$ 5th joint of 2nd leg shorter than palm in both ♂ and ♀ *grandis*
 - b. Spine not or scarcely extending beyond apex of scale. R $\frac{7-9}{1-3}$ 5th joint of 2nd leg subequal to palm in ♀, longer than in ♂ *demani*

PERICLIMENAEUS

1. Outer margin of outer ramus of uropod smooth.
 - a. Supraorbital spine present. R $\frac{2-4}{0-1}$ Telson length about twice basal width, dorsal spines moderately large *tridentatus*
 - b. Supraorbital spine absent. R $\frac{11}{3}$ Telson narrow, length $3\frac{1}{2}$ times basal width, dorsal spines small, both pairs in the distal half *natalensis*
2. Outer margin of outer ramus of uropod dentate *uropodialis*

The deep-water species *natalensis* is included in this genus by Holthuis 1952; but in my opinion it is better regarded as a species dubia; the only known specimen is not in the South African Museum.

HARPILIOPSIS

1. Hepatic spine on a lower level than the antennal spine. Antepenultimate joint of maxilliped 3 narrow *depressus*
2. Hepatic and antennal spines on the same level. Antepenultimate joint of maxilliped 3 broad *beaupresii*

***Palaemonella vestigialis* Kemp**

1922. Kemp. Rec. Indian Mus. xxiv. p. 123. pl. 3. fig. 2. and textfigs. 1, 2, 7 a.

1952. Holthuis. *Siboga* Exp. monogr. xxxix a 10. p. 24. figs. 2 a, b, 3. (references).

Although the crucial appendage, the mandible, is missing on both sides, the shape of the rostrum and the characters of the 1st and 2nd pereopods agree so well with Kemp's description that the single specimen is *provisionally* referred to this genus and species. It may at least serve as a guide when more material is available. There is no improbability in the occurrence of this wide-spread species at Delagoa Bay.

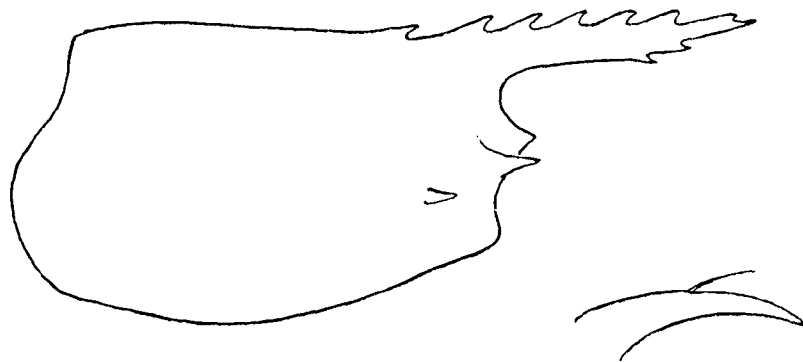


Fig. 3. — ***Palaemonella vestigialis* Kemp.**

Carapace. Dactyl of 3rd and 4th pereopods

Holthuis (*loc. cit.* p. 25) states that one of the sharp angles at the apex of 5th joint of 2nd leg may be distinctly spiniform: such is the case in the larger 2nd leg of the present specimen; in fact this feature, *taken by itself*, would almost suggest referring the specimen to *tenuipes* Dana.

The 5th legs and the telson are also missing.

Length about 14mm.

Locality: Delagoa Bay, 1 specimen from coral (U. W.).

Distribution of vestigialis. Red Sea, Ceylon, Andamans, Nicobars, Mergui, Malay Archipelago, to Hawaii and Japan.

P. tenuipes has the same distribution, and in addition has been recorded from the Maldive and Laccadive Archipelagos.

***Periclimenes* (s. s.) *delagoae* n. sp.**

♀ — Rostrum strong, straight but slightly arched dorsally, 10 teeth above, the 1st postorbital and separated by a greater interval from the

2nd than the latter from the 3rd, the 2nd vertically above the orbital sinus; 2 teeth below; antennal angle sharp but not produced, antennal spine well developed, hepatic spine present, but no supraorbital spine.

Fused portion of outer antennular flagellum about 6-jointed, slightly longer than free portion.

Peraeopod 1 without spines at apices of 3rd, 4th and 5th joints, 4th joint a little longer than 5th joint, which is subequal to palm plus chela, palm slightly longer than chela, cutting-edges entire.

Peraeopod 2 (only one present), no spines at apices of 3rd, 4th or 5th joints; 3rd and 4th joints subequal, 5th about half the length of 4th,



Fig. 4-B. — *Periclimenes delagoae* n. sp.

Carapace. Dactyl of 3rd to 5th pereopods. Telson

and $\frac{1}{3}$ length of palm, palm about $2\frac{1}{2}$ times length of chela; cutting-edges entire except a tooth basally on finger fitting into notch between 2 teeth on thumb.

Peraeopods 3-5 slender, 2 or 3 pairs of slender spines and a few setae distally on 6th joint; dactyl slender, biunguiculate.

Telson narrow, $2\frac{1}{2}$ times as long as basal width, tapering evenly; both pairs of dorsal spines small and situated in distal half.

Uropod, outer margin of outer ramus sparsely setose (the setae inserted submarginally and liable to be overlooked), one spine at diaeresis. Length 13mm.

Locality: Delagoa Bay, 1 ovig. ♀ in coral (U. W.).

Remarks. Near to *laccadivensis* (Alc. & And.) but rostrum stouter, and 5th joint of 2nd leg proportionately longer.

Differs from *impar* Kemp 1922 by the slender dactyls of the last 3 legs, and by the position of the dorsal spines on telson.

Compared with *curvirostris* Kubo 1940, the rostrum is not curved downwards, the proportions of the joints of 1st leg are different, and the 6th joint in legs 3-5 is not so thickly setose distally.

The narrow telson with small dorsal spines is reminiscent of «*Palaemonetes*» *natalensis* Stebb. 1915.

***Periclimenes* (s. s.) *commensalis* Borradaile.**

1915. Borradaile. Ann. Mag. Nat. Hist. (8) xv. p. 211.

1917. Id. Trans. Linn. Soc. Lond. (2) xvii. p. 364.

1922. Kemp. Rec. Indian Mus. xxiv p. 166.

1952. Holthuis. *loc. cit.* p. 53. figs. 18, 19.

Rostrum ♀ with 7 teeth above (all anteorbital) and one below (Borradaile: $\frac{5}{2}$, Holthuis $\frac{6}{2}$); ♂ with 8 above and 2 below; dorsally there is a minute 9th tooth close behind the apical point.



Fig. 4-A. — *Periclimenes commensalis* Borradaile.

Carapace. Basal joint of 1st antenna. Dactyl of 3rd to 5th pereopods. Pleopod 1 ♂ (plumose setae on exopod omitted)

Exopod of uropod with outer margin non-setose, one spine at diaeresis.

Pleopod 1 ♂ endopod bluntly oblong, inner margin with 2 plumose setae and 4 (5) minute spinules.

In other respects agreeing with the descriptions of Borradaile and Holthuis. The characteristic two spiniform teeth on distal margin of basai joint of 1st antenna are quite distinct in both the present specimens.

Length ♂ 8.5, ♀ 12mm.

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

Distribution. Torres Straits, on a Crinoid (Borradaile); Malay Archipelago, 0-40 metres (Holthuis).

Periclimenes (Harpilius) seychellensis Borradaile.

1915. Borradaile. Ann. Mag. Nat. Hist. (8) xv. p. 212.

1917. Id. Trans. Linn. Soc. Lond. (2) xvii. p. 375. pls. 54, 55, figs. 14 a-i.

1922. Kemp. Rec. Indian Mus. xxiv. p. 176. pl. 6. fig. 7. and text-figs. 34, 35.

1952. Holthuis. *loc. cit.* p. 66. fig. 25 (mandible).

Rostrum deep, with 7 teeth above, 2 of them postorbital, and 3 teeth below. Eye with a papilla on dorsal surface of stalk; 2 bands of pigment across the cornea (more or less visible in preserved specimens). Fourth and

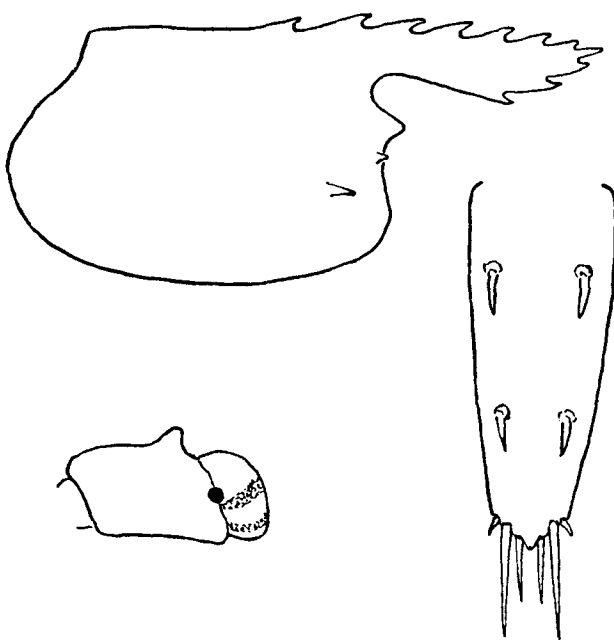


Fig. 5. — *Periclimenes seychellensis* Borradaile.

Carapace. Eye. Telson

5th joints of 2nd leg without apical spines; 5th joint subequal to palm (or slightly shorter) and subequal to chela. Peraeopods 3-5 slender, dactylus simple. The 2 pairs of telsonic spines rather stout, but not long, dividing the telson into 3 more or less equal parts.

Length 14mm. Up to 19mm. (Kemp).

Locality: Delagoa Bay, 1 ovig. ♀ in coral (U. W.).

Distribution. Gulf of Suez. Ceylon, Andaman Islands, Seychelles, Malay Archipelago.

Gen. **Periclimenaeus** Borradaile.

1915. Borradaile. Ann. Mag. Nat. Hist. (8) xv. p. 207.
 1917. Id. Trans. Linn. Soc. Lond. (2) xvii, p. 377.
 1952. Holthuis. *loc. cit.* p. 114 (key to species).

Periclimenaeus tridentatus (Miers)

1884. Miers. Crust. H. M. S. *Alert*. p. 294. pl. 32. fig. C. (? *Coralliocaris*).
 1906. Nobili. Ann. Sci. Nat. zool. (9) 4. p. 58. pl. 3. fig. 2. (*Coralliocaris hecate*).
 1939. Calman. John Murray Exp. Rep. vi. p. 211. fig. 5. (*crassipes*).
 1952. Holthuis. *loc. cit.* p. 140. figs. 63-65. (references).
 1955. Id. Zool. Verhand. no. 26. p. 63. fig. 35 (after Calman).

Agreeing with the descriptions. Rostral teeth 3 in two specimens, 2 in the largest specimen (excl. apical point). The minute claw at base of dactylus of pereopods 3-5, mentioned by Miers but seemingly overlooked by Calman, is present; and Calman's fig. 5 B shows only one spine at apex of 6th joint, whereas in these specimens there are 2, as shown by Holthuis.

Length 11, 12, and 16mm.

Locality: Delagoa Bay, 3 ovig. ♀ ♀ in coral (U. W.).

Distribution. Red Sea, South Arabian coast, Malay Archipelago, NW Australia, Hawaiian Islands. 7-77 metres. Associated with sponges and Ascidians.

Periclimenaeus uropodialis n. sp.

♀ — Rostrum about $\frac{1}{2}$ length of carapace; 7 teeth above, the 1st postorbital, a minute denticle between 7th and apex; 3 teeth below, 1st largest, 2nd small. Supraorbital spine present. Antennal spine well developed, but no supporting crest. Outer margin of basal joint of 1st antenna lobed in front of stylocerite.

Pereopod 1, palm twice length of chela, cutting-edges of finger and thumb entire. Pereopod 2, lower margin of 3rd and 4th joints with short spiniform denticulation, upper and lower surfaces of hand minutely scabrous with sharp spiniform denticles, inner surface distally setose (not thickly), some of the setae minutely plumose; finger and thumb setose, less so in larger than in smaller chela; scarios cutting-edge forming an even, slightly concave curve in finger of smaller chela, in larger chela straight proximally, concave distally.

Pereopod 3, 3rd and 4th joints stout, 3rd with 6 short stout spines on lower margin, 4th with 19-21, 5th with 5; 6th joint with 18-19 longer spines, the proximal two and the distal one (or two) paired. Pereopod 4 subequal to 3rd in length, but 3rd and 4th joints less stout, 3rd with 5 short stout spines, 4th with 15, 5th with 5; 6th joint with 12 spines.

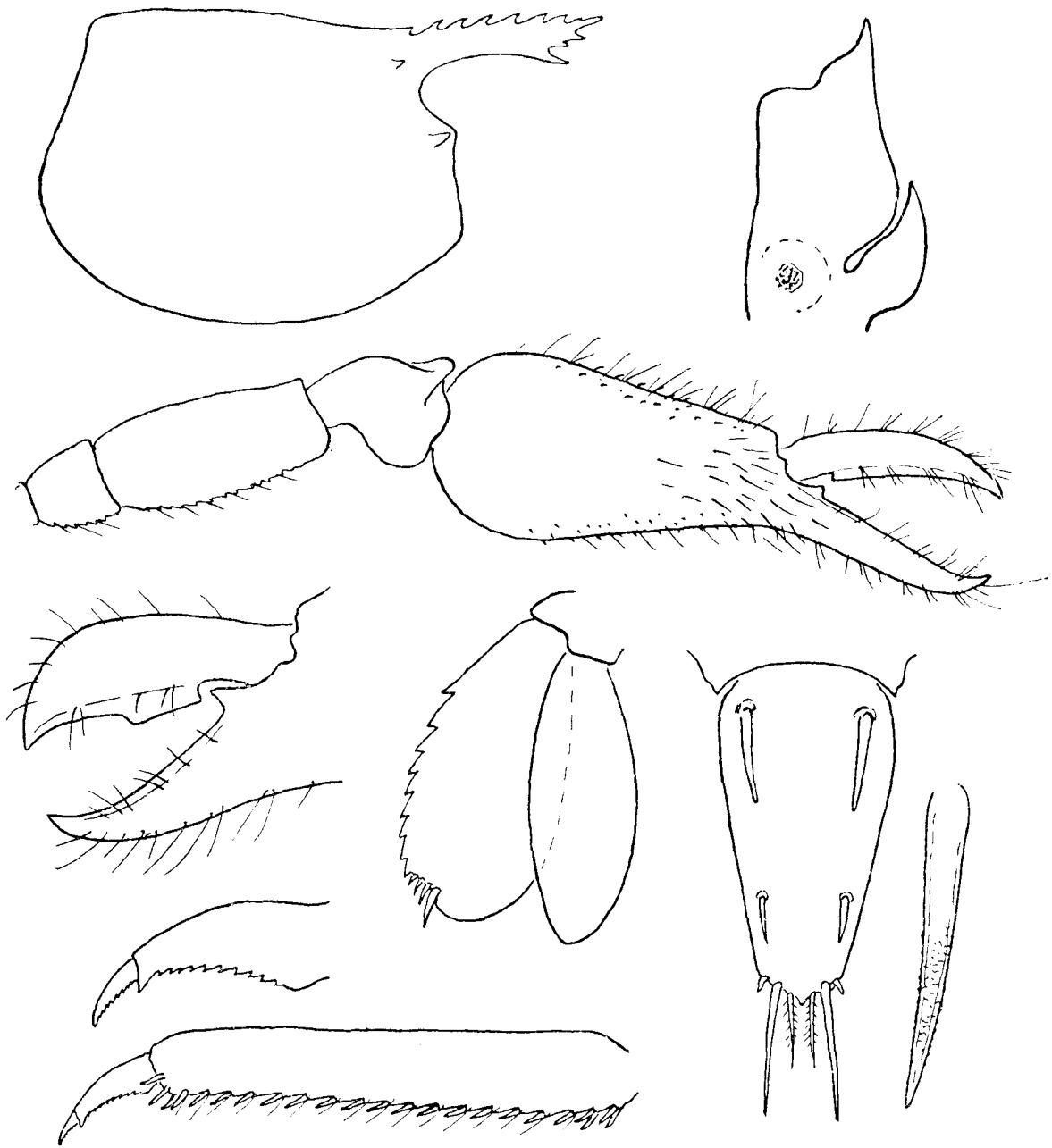


Fig. 6. — *Periclimenaeus uropodialis* n. sp.

Carapace. Basal joint of 1st antenna. Inner view of smaller cheliped. Chela of larger cheliped. Sixth joint and dactyl of 3rd pereopod, with dactyl further enlarged. Left uropod (plumose setae omitted). Telson, with one of the basal spines further enlarged

Peraeopod 5 shorter and more slender than 4th, no spines on any of the joints except 2 subapical ones on 6th joint.

Dactyls of peraeopods 3-5 with about 10 denticles on lower margin, the articulated tip also with about 10 tiny denticles.

Telson about twice as long as basal width, a pair of large spines near base, minutely serrulate or corrugate, a pair of smaller spines in distal half; apex with 6 unequal spines, the median pair minutely plumose.

Outer margin of outer ramus of uropod with 9 *denticulations* (no articulated spines), and 4 graduated spines on the diacresis, the inner one the largest.

Length 13.5mm.

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

Remarks. The armature of the outer ramus of the uropod of this species has some resemblance to that of *truncatus* (Rathbun) (see Holthuis, 1952. *loc. cit.* p. 117. fig. 48.), but in the latter species it consists of *articulated spines*, not merely marginal indents. The only other Pontonine exhibiting this feature is *Onycocaris aualitica* Nobili. Not having Nobili's description or figure I cannot say whether the outer margin is denticulate or spiniferous.

Ventral teeth on the rostrum are found only in *P. gorgonidarum* (Balss) and Stebbing's «Palaemonetes» *natalensis* (1915. Ann. S. Afr. Mus. xv. p. 78. pl. 19.) which Holthuis 1952 includes in the genus *Periclimenaeus*.

The armature of the 3rd and 4th legs seems to be distinctive of the present species, although Kubo (1940. Journ. Imp. Fish. Inst. xxxiv. fig. 7 E.) figures a very similar *sixth* joint for *gorgonidarum*, but says nothing about the armature (if any) on the other joints of these legs.

The telson is similar to that of *gorgonidarum* as figured by Kubo (*loc. cit.* fig. 7 H.). I have not seen Balss' original paper.

STOMATOPODA

FAM. SQUILLIDAE

Lysiosquilla hystricotelson n. sp.

Carapace smooth. Rostrum quadrate, very slightly longer than broad, trispinose, the acute median and antero-lateral points extending to about the same level. Cornea scarcely wider than ocular peduncle, rounded. Mandible without palp.

Sixth abdominal segment with curved spiniform process laterally in front of insertion of uropod; ventral posterior margin with a spine on each side midway between median line and lateral margin.

Telson dorsally convex. no sharp distinction between dorsal and ventral surfaces at posterior profile except laterally; an arcuate series of spines at beginning of distal half, followed by numerous smaller spines somewhat irregularly arranged; on ventral surface a semicircle of strong spines distal to the anal papilla, flanked by a curved line of strong spines; most of the spines, particularly the larger ones, appear to be movable.

Raptorial claw on right side with 9 spines (8 plus the terminal one), on left side with 7 (6+1); outer margin with 2 small denticles near base, the proximal one larger and sharper than the other.

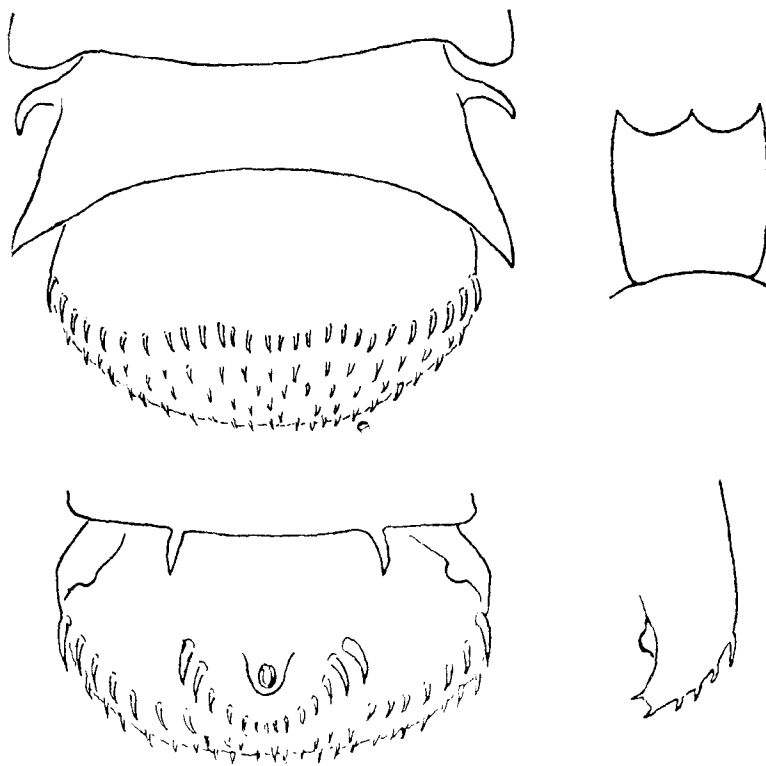


Fig. 7. — *Lysiosquilla hystricotelson* n. sp.

Dorsal and ventral views of 6th abdominal segment and telson, with median sagittal section of telson. Dorsal view of rostrum

Shorter ramus on the legs on thoracic segments 6 and 7 broadly ovate, on segment 8 less broadly ovate (but by no means linear).

Peduncle of uropod with one spine dorsally in middle of apical margin; inner spine of ventral bifurcate process longer than the outer, latter curved inwards; 4 graduated spines on outer apex of proximal joint of exopod, all apically bluntly rounded.

Length 25mm. As preserved, with scattered stellate specks, not forming any well marked pattern.

Locality: Delagoa Bay, 1 ♂ (U W).

Remarks. The only other species with trispinose rostrum are *vicina* Nobili (Red Sea and Philippine Islands) and *digueti* Coutière (California), both of which differ in the ornamentation of the telson.

The total absence of the mandibular palp appears to be unique in the genus.

Gen. **Odontodactylus** Bigelow

1950. Barnard. Ann. S. Afr. Mus xxxviii. p. 840 (in key, and footnote).

Odontodactylus scyllarus (Linn.)

1913. Kemp. Mem. Indian Mus. iv. p. 135 (references).

Raptorial dactylus much swollen at base, with 2 teeth.

Carapace obscurely mottled, abdomen segments with faint crossbands; antennal scale with dark patch at apex; antennal flagella, legs, pleopods, telson and uropods dark crimson, with crimson fringes.

Locality: Delagoa Bay, 1 specimen, 50 mm. in length (U. W.).

Distribution. Mauritius, Madagascar, Zanzibar, Seychelles, Indo-Pacific to Japan.

ISOPODA

FAM. BOPYRIDAE (PHRYXIDAE)

Gen. **Diplophryxus** Rich.

1904. Richardson, Proc. U. S. Nat. Mus., xxvii, p. 50.

1923. Chopra. Rec. Indian Mus., xxv, p. 442.

1930. Id., *ibid.*, xxxii, p. 119 (key to species).

1933. Shiino, Mem. Coll. Sci. Kyoto, viii, p. 293.

1935. Id., *ibid.*, ix, p. 278.

1950. Pearse, J. Elisha Mitchell Sci. Soc. Chapel Hill., lxvi, p. 41.

Diplophryxus alpei Shiino

1935. Shiino, *loc. cit.*, p. 278, fig. 10.

An ovig. ♀, without ♂, not in very good condition, appears to be referable to this species.

Colour white, without any pigmented patches. All 7 peraeopods present on the shorter non-deformed side, only peraeopod 1 present on the deformed side. Only 24 pleopodal processes (i. e. side-plates and true pleopods), but 2 of them have lateral processes indicating a partial fusion of the normal biramous appendages.

Locality: Delagoa Bay, on *Alpheus edwardsii* (U. W.).

Distribution. Japan, on a species of *Alpheus* of the *edwardsii* group.

Gen. **Anathelges** Bonn.

1900. Bonnier, Trav. Sta. zool. Wimereux, VIII, p. 215.

1931. Nierstrasz & Brender a Brandis, Vid. Medd. Dansk. nat. Foren., xci, p. 195.

Anathelges mossambica n. sp.

♀ ovig. approximately 12 mm. First pair of oostegites scarcely visible dorsally in front of oral cone. Side-plates of pleon segment 1 semicircular, broader than long, margins non-setose, set transversely and turned forwards, forming an additional closure to the hind end of the marsupium, of which the 4th pair of plates have setose hind margins. A pair of oval pleopods on each side, each shortly pedunculate.

Pleon segments 2-4 similar, but the side-plate resembles the pleopod in shape, though not pedunculate. Pleon segment 5 with side-plate, but only one pleopod, on each side. Segment 6 with a pair of oval uropods resembling the pleopods but not pedunculate.

♂. 2.25 mm., among the pleopods of ♀. Pleon segments fused, elongate-triangular, twice as long as basal width: cf. Sars. Crust. Norw. Isopoda, pl. 88, but with a slight basal projection on each side.

Locality: Delagoa Bay, on a Hermit crab. (U. W.).