

No. X.—PENÆIDEA, STENOPIDEA, AND REPTANTIA
FROM THE WESTERN INDIAN OCEAN.

By L. A. BORRADAILE, *M.A.*, *Lecturer in Natural Sciences at
Selwyn College, Cambridge.*

(Communicated by J. STANLEY GARDINER, *M.A.*, *F.R.S.*, *F.L.S.*)

(Plate 16.)

Read 17th June, 1909.

THE Crustaceans enumerated in the following systematic list were collected by Mr. Stanley Gardiner's two expeditions to the Islands and Banks of the Western Indian Ocean. Together the collections contained twenty-two species, of which eight, or perhaps nine, are new, one being the type of a new genus. All the species which were already known have previously been recorded from some part of the Indian Ocean or neighbouring waters, but *Sicyonia carinata* is interesting as having been taken also in the Western Atlantic.

DECAPODA NATANTIA.

PENÆIDEA.

Family Penæidæ.

Subfamily Penæinæ.

Genus *METAPENÆUS*, W.-Mason, 1891.

1. *Metapenæus mogiensis* (Rath.), 1903.

Parapenæus mogiensis, Rathbun, Proc. U.S. Nat. Mus. xxvi. p. 39.

Metapenæus mogiensis, Alcock, Cat. Ind. Dec. Crust. iii. i. p. 29, pl. 5. fig. 15.

The antennular flagella in most of the specimens are rather longer and more tapering than in Alcock's figure, and the rostrum curves slightly upwards, more as in Miss Rathbun's figure than as in Alcock's. The relative width of the two halves of the petasma varies and the right half is sometimes rather larger than the left.

Many specimens taken in depths down to 34 fathoms throughout the Maldives and in the Seychelles and Cargados Carajos.

2. *Metapenæus stridulans*, Alc., 1905.

Ann. Mag. Nat. Hist. (7) xvi. p. 526; Cat. Ind. Dec. Crust. iii. i. p. 27, pl. 4. fig. 14.

Taken in various localities in the Maldives.

3. *Metapenæus* sp. aff. *lysianassa* (de Man), 1888.

A single somewhat damaged specimen dredged in 25–80 fathoms in the Amirante group is closely related to this species, but differs in having the rostrum larger, reaching nearly the end of the eyes.

Genus *HALIPORUS*, Bate, 1881.4. *Haliporus malhaensis*, sp. n. (Plate 16. fig. 2.)

Diagnosis.—A *Haliporus* with the carapace stout, leathery, smooth; the rostrum straight, slightly outreaching the eyes, and bearing above six teeth, of which three are on a crest which continues the rostrum on the back as far as the cervical groove; no branchiostegal spine at the edge of the carapace, but a spine a short distance behind the branchiostegal angle; the second joint of the mandibular palp as long as but narrower than the first; the carpopodite of the legs not broadened at the base; the fourth leg rather longer and the fifth a good deal longer than the third, neither of these legs particularly slender; the abdomen keeled; and the telson pointed, grooved above, bearing two spines at the sides one-third of its length from the end, and shorter than the endopodite of the last limb.

Length to end of rostrum 8 cm.

One female was dredged in 145 fathoms off Saya de Malha.

Genus *SOLENOCERA*, Lucas, 1850.Subgenus *PARASOLENOCERA*, W.-Mason, 1891.5. *Solenocera* (*Parasolenocera*) *maldivensis*, sp. n. (Plate 16. fig. 1.)

Diagnosis.—A *Parasolenocera* with the carapace smooth, its grooves slightly marked, bearing antennal and hepatic teeth only; the rostrum gently rising, slightly wavy, bearing above nine teeth, of which four are on the body, and a trace of a tooth below near the end; the first pair of legs short, the last two pairs of moderate length and slenderness; only the last two abdominal segments keeled; and the telson short and pointed, without spines at the sides.

Length to end of rostrum 2.75 cm.

One female specimen was taken in Funadu Velu, Miladumadulu Atoll, Maldiv Islands.

Subfamily *Aristæinæ*.Genus *BENTHESICYMUS*, Bate, 1881.6. *Benthesicymus investigatori*, Alc. & And., 1899.

The keel on the fifth abdominal segment ends in a small spine in the present specimens, which were dredged in 300–500 fathoms off Saya de Malha.

Subfamily Sicyoninæ.

Genus *SICYONIA*, H. M.-E. 1830.7. *Sicyonia lancifer* (Olivier), 1811.

Bate, 'Challenger' Macrura, p. 297, pl. 43. fig. 4.

Specimens were taken in various depths down to 34 fathoms in South Nilandu, Mulaku and Suvadiva Atolls, all in the Maldives.

8. *Sicyonia carinata* (Olivier), 1811.

H. Milne-Edwards, Ann. Sci. Nat. i. xix. p. 339, pl. 9. figs. 1-8; Bate, 'Challenger' Macrura, p. 29, pl. 43. fig. 1.

The distribution of this species is interesting. Milne-Edwards, Dana, and Bate describe it from the Western Atlantic, while Pearson has recently reported it from Ceylon (Pearl Fisheries Report). My specimens, which were taken at Haddumati Atoll, Maldive Islands, agree with Milne-Edwards's figure rather than with Bate's in the shape of the teeth of the keel on the carapace, which project less upwards than in Bate's figure.

Genus *SICYONELLA*, nov.

The collection contains many specimens of a new prawn which must be placed in the subfamily Sicyoninæ on account of its having (1) no exopodite on any thoracic leg behind the first maxilliped, (2) no podobranchs, (3) arthrobranchs in a single series, (4) no leaf-like appendage on the basal joint of the antennule, and perhaps because (5) the rostrum is very short. At the same time it differs widely from *Sicyonia* in the following features:—(6) the carapace is not unusually hard, (7) the crest of the rostrum is not continued along the back, (8) the eye-stalks are very long, (9) the flagella of the antennules are long and slender, (10) the scales of the antennæ do not narrow rapidly to the end, which is broad and bears its spines at the side, (11) the gill-formula consists only of one arthrobranch on each of the limbs from the second maxilliped to the fourth leg inclusive and a pleurobranch on the fifth leg, without mastigobranchs, (12) the abdominal segments are not keeled, and (13) the swimmerets are biramous. I propose accordingly to place the animal in a new genus *Sicyonella*.

9. *Sicyonella maldivensis*, sp. n. (Plate 16. figs. 3, 3 a.)

Diagnosis.—A *Sicyonella* with the rostrum very short, bearing two teeth above and none below; the antennal teeth present and placed a little behind the fore edge of the carapace, the branchiostegal tooth present but small; the third maxilliped very long, tapering, and sparsely set with strong hairs; the first leg shorter than the second and the second shorter than the third; the fourth and fifth of moderate length, with the last two joints flattened and fringed with long hairs; and the telson deeply grooved above

and shorter than the endopodite of the last limb, which in turn is shorter than the exopodite. The petasma is complicated, and has the shape shown in fig. 3 *a*.

Length of largest specimen 3.75 cm.

Specimens were taken throughout the Maldives and in Cargados Carajos in various depths.

STENOPIDEA.

Family **Stenopidæ**.

Genus *STENOPUS*, Latr. 1825.

10. *Stenopus hispidus* (Olivier), 1811.

Bate, 'Challenger' Macrura, p. 211, pl. 30.

Found by the expeditions throughout the Western Indian Ocean, living in pairs under loose coral masses on all the surface-reefs.

11. *Stenopus tenuirostris*, de Man, 1887.

Arch. Naturg. liii. i. p. 567, pl. 22 *a*. fig. 5.

Two small specimens of this species were taken in Coetivy Island, Seychelles.

12. *Stenopus robustus*, sp. n. (Plate 16. fig. 4.)

Diagnosis.—A *Stenopus* with the cuticle stout; the body broad and depressed; the spines on the carapace regularly arranged, fewer and stouter than in *S. hispidus*; the rostrum bent somewhat downwards, slender, bearing on its free part three teeth above and none below; the first two pairs of legs smooth; the third very massive, its hand almost smooth, with a rough edge below and a rough-edged crest above, its wrist rougher, with a few stout spines above and below, its arm rough, with several sharp spines below; the last two pairs of legs moderately slender, with short, curved end-joints each bearing a spine below; the abdominal segments smooth, transversely ridged, with sharp pleura; the telson short, broad, with two longitudinal ridges bearing obsolescent spines.

Length to end of rostrum 1.5 cm.

A single specimen from Salomon Atoll, Chagos Archipelago.

DECAPODA REPTANTIA.

PALINURA.

Family **Palinuridæ**.

Genus *PANULIRUS*, White, 1847.

13. *Panulirus penicillatus* (Olivier), 1811.

Bate, 'Challenger,' Macrura, p. 82, pl. 12. fig. 2.

A specimen was taken on the reef at Egmont Atoll, Chagos Archipelago.

14. *Panulirus versicolor*, juv. (Latr.), 1804.*Puer spiniger*, Ortmann, Jena. Denkschr. viii. p. 19, pl. 2. fig. 2.*Panulirus versicolor*, juv., Calman, Ann. Mag. Nat. Hist. (8) iii. p. 441.

A specimen was dredged in 39 fathoms on the Seychelles bank.

Genus *PUERULUS*, Ortmann, 1897.15. *Puerulus carinatus*, sp. n. (Plate 16. fig. 5.)

Calman (Ann. Mag. Nat. Hist. [8] iii. p. 441) has reduced the genus *Puerulus* to a single species (*angulatus*, Bate), by showing that all the other forms hitherto assigned to it are the young of various species of *Panulirus*. I am now able to add a second species to the genus on the evidence afforded by an individual taken near Saya de Malha. The following is a diagnosis of the new species:—A *Puerulus* with the carapace almost smooth save for certain rows of teeth and knobs, almost square save that the back slopes from a keel in the middle; a furrow on the hinder half of the epistome; the horns which overhang the eyes wide apart; just inside each of these horns a smaller horn, cleft at the tip; between the eye-horns and the cervical groove two teeth; in front of the cervical groove four knobs forming a square and in front of the square a small patch of little knobs; behind the cervical groove four knobs on a middle keel and two side keels bearing knobs on their course and a tooth at their fore end; below the eye two spines on the edge of the carapace, the upper being the larger, and behind the upper two smaller teeth; the flagella of the antennule of moderate length, the outer broad and the inner stout; five teeth on the third joint of the antenna, three on the second joint; the flagellum of the exopodite of the third maxilliped stout, cylindrical, tapering, reaching the carpopodite of the endopodite; the legs slender, none (except perhaps the last, which is broken on both sides in the specimen) showing any approach to chelation; the abdomen smooth, pleura 2–5 bearing two spines, pleuron 6 one spine; and on each of the pieces of the tail-fin a small tooth on the outer edge at the junction of the hard and soft parts.

Length 19 cm.

One male specimen was dredged in 125 fathoms off Saya de Malha bank.

Family **Scyllaridæ**.Genus *SCYLLARUS*, Fabr., 1781.16. *Scyllarus arctus* (L.), 1758.

H. Milne-Edwards, Cuvier's Règ. Anim., Crust. p. 119, pl. 14. fig. 1 (1849).

Dredged in 25–80 fathoms off the Amirante bank.

Genus *THENUS*, Leach, 1814.17. *Thenus orientalis*, Fabr., 1798.

H. Milne-Edwards, Cuvier's Règ. Anim., Crust. p. 120, pl. 45. fig. 2 (1849).

Dredged in 55 fathoms off Saya de Malha bank.

ASTACURA.

Family **Nephropsidæ**.Genus *NEPHROPSIS*, Wood-Mason, 1873.18. *Nephropsis malhaensis*, sp. n.

A specimen dredged in 300 fathoms off Saya de Malha belongs to a species closely related to *N. atlantica*, Norman, 1881, but differing from it in the following points:— (1) there is no fur on the body; (2) the second pair of small spines behind the rostrum is wanting; (3) the median tubercle behind the rostrum is not enclosed by spinules, but two rows of granules hardly larger than those which cover the rest of the back start just before the tubercle on each side and converge towards the spines at the base of the rostrum; (4) the keels on the back of the abdominal segments are wanting.

Length 7.75 cm.

ANOMURA.

THALASSINIDEA.

Family **Axiidæ**.Genus *AXIOPSIS*, Borradaile, 1903.19. *Axiopsis spinipes* (de Man), 1887.*Axius spinipes*, de Man, Arch. Naturg. liii. i. p. 464, pl. 19. fig. 6.

A specimen from Salomon Atoll, Chagos Archipelago.

Family **Callianassidæ**.Subfamily **Upogebinæ**.Genus *UPOGEBIA*, Leach, 1814.Subgenus *CALLIADNE*, Strahl, 1861.

Nobili (Bull. Sc. Fr. Belg. xl. (1907) p. 61) has shown that this subgeneric name must be substituted for *Gebiopsis*, A. M.-E., 1868.

20. ? *Upogebia* (*Calliande*) *darwinii* (Miers), 1884.*Gebiopsis darwinii*, Miers, 'Alert' Report, p. 281, pl. 32. fig. A.*Upogebia* (*Calliadne*) *darwinii*, Nobili, Ann. Sci., Zool. (9) iv. (1906) p. 97.

A specimen dredged in 55 fathoms at Saya de Malha unfortunately has the rostrum damaged, but appears to belong to this species. It agrees with Miers's description and figure, and not Nobili's, in being without the spines on each edge of the wrist.

21. *Upogebia (Calliadne) cargadensis*, sp. n. (Plate 16. fig. 6.)

Specimens dredged in 30 fathoms at Cargados Carajos belong to a new species, which may be distinguished from the other members of the group of closely related forms which make up the subgenus *Calliadne* by the following characters:—(1) the rostrum considerably outreaches the eyes and bears five spines on each side; (2) the antennal stalk outreaches the antennular by its last joint; (3) the last four joints of the first two pairs of legs are fringed above and below by long hairs; (4) the first leg has on the moveable finger two teeth inside and several thorns outside on the hand, two or three sharp thorns near the base below and many on the upper side towards the end, its wrist is smooth save for a tooth on the inner side at the end of the upper edge, and its arm has two or three small thorns below; (5) the hinder edge of the sixth abdominal segment is smooth, but there is a group of small spines at each hinder angle.

Length of largest specimen 3 cm.

In some small specimens, which seem to belong to this species, the upper side of the palm and finger are smooth. These individuals probably represent a variety, for in another specimen of the same size the spines, though fewer than in large individuals, are present.

Subfamily Callianassinæ.

Genus *CALLIANASSA*, Leach, 1814.

Subgenus *TRYPÆA*, Dana, 1852.

22. *Callianassa (Trypæa) cristata*, sp. n. (Plate 16. fig. 7.)

Diagnosis.—A *Trypæa* with the rostrum sharp, nearly as long as the eyes; the stalks of the antennules longer than those of the antennæ, the inner flagellum about twice as thick as the outer; the great chela simple in shape, hairy on the somewhat hooked moveable finger and along the sharp lower edge, a blunt lobe between the fingers, the wrist nearly square, sharp edged above and below, the arm longer than broad, bearing below a long crest with two large and several small teeth, and on the lower side of the ischium a few small teeth; and the telson rather shorter than the endopodite of the last limb, which has a broad, gently rounded end.

Length 1.5 cm.

A specimen was taken at Salomon Atoll, Chagos Archipelago.

EXPLANATION OF PLATE 16.

- Fig. 1. *Solenocera* (*Parasolenocera*) *maldivensis*, sp. nov. $\times 4$.
Fig. 2. *Haliporus malhaensis*, sp. nov. Natural size.
Fig. 3. *Sicyonella maldivensis*, sp. nov. $\times 3$.
Fig. 3 a. „ „ first pair of abdominal limbs of male, highly magnified.
Fig. 4. *Stenopus robustus*, sp. nov. $\times 6$.
Fig. 5. *Puerulus carinatus*, sp. nov. $\times \frac{1}{2}$.
Fig. 6. *Upogebia* (*Calliadne*) *cargadensis*, sp. nov. Great chela. $\times 4$.
Fig. 7. *Callianassa* (*Trypaea*) *cristata*, sp. nov. Great chela. $\times 7$.

