THE

JOURNAL

OF

THE LINNEAN SOCIETY.

ZOOLOGY.

VOL. XX.

LONDON:

SOLD AT THE SOCIETY'S APARTMENTS, BURLINGTON HOUSE,

AND BY

LONGMANS, GREEN, AND CO.,

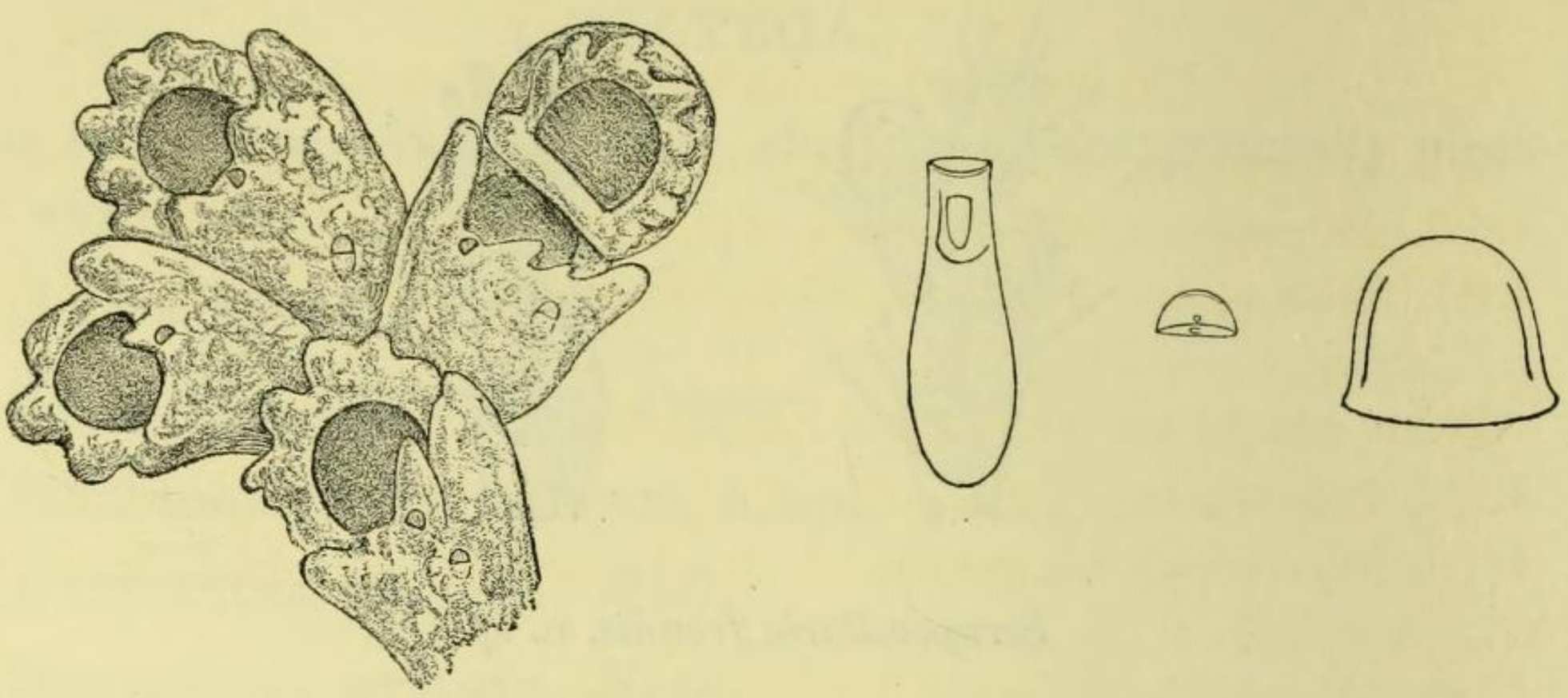
AND

WILLIAMS AND NORGATE.

1890.

cell; mucronate processes on the upper surface; front wall of oœcium with a semicircular membranous area on the front wall.

Fig. 2.



Cellepora Ridleyi, n. sp.

The oœcium of *C. Ridleyi* is remarkable in its shape and relations to the zoœcium; also there is a curious resemblance between the membranous area and the orifice of the zoœcium.

Loc. Fernando Noronha.

CRUSTACEA.

By R. I. Pocock,
Assistant in the Zoological Department, British Museum.

Introductory Remarks.—The fauna is in all essential respects allied to that of the mainland and of the Antilles. The following wide-spread forms were, as might have been expected, met with:—*Grapsus maculatus*, *Leiolophus planissimus*, *Hippa scutellata*, *Alpheus Edwardsii*, and *Gonodactylus chiragra*. There are two new species of *Alpheus*, one of *Panulirus*, and one of *Stenopusculus* (*S. spinosus*). The last mentioned genus has hitherto only been known from the island of Mauritius; its occurrence here, therefore, is of great interest. A new freshwater Ostracod was also obtained.

DECAPODA.

MAIOIDEA.

Family PERICERIDÆ.

Genus MICROPHRYS, *M.-Edwards.*

1851. Microphrys, *M.-Edwards, Ann. Sci. Nat. Zool.* 3, xvi. p. 251.
1879. Microphrys, *Miers, Journ. Linn. Soc.* (*Zool.*) xiv. p. 664.
1881. Microphrys, *A. M.-Edwards, Miss. Sci. Mex.* (*Crust.*) p. 59.

MICROPHRYS BICORNUTUS (*Latreille*).

1825. Pisa bicornuta, *Latreille, Encycl. Méth. Hist. Nat.* x. p. 141.
1872. Microphrys bicornutus, *A. M.-Edwards, Nouv. Arch. Mus. Hist. Nat.* viii. p. 247.
1881. Microphrys bicornutus, *id. Miss. Sci. Mex.* (*Crust.*) p. 61, pl. xiv. figs. 2, 3, 4.

Nine specimens, six males and three females (two with ova).

This species is common on the coasts of Florida, Mexico, and of the West-Indian Islands. Occurred under stones and on coral-reef.

Genus MITHRAX (*Leach*).

1817. Mithrax (*Leach*), *Latreille, Règne Animal*, iii. p. 23.
1834. Mithrax, *Milne-Edwards* (in pt.), *Hist. Nat. Crust.* i. p. 317.
1879. Mithrax, *Miers, Journ. Linn. Soc.* (*Zool.*) xiv. p. 667.

MITHRAX VERRUCOSUS, *M.-Edwards.*

1832–38. Mithrax verrucosus, *M.-Edwards, Mag. Zool.* vii. pl. 4.
1881. Mithrax verrucosus, *M.-Edwards, Miss. Sci. Mex.* p. 102.

Four specimens, two males and two females (one with ova).

The largest specimen (a male), with the following measurements of carapace, width 42 mm., length 35 mm., differs considerably from the others, of which the smallest (the female with ova) gives the following measurements of carapace :—width 17 mm., length 15 mm. In the three small specimens all the spines are sharper and relatively longer, and the carpus of the chelipedes is armed above with four or five minute spines in addition to the three spines which adorn its anterior (interior) margin.

Brazil and the West Indies are localities given for this species. Under stones at Morro do Chapeo.

MITHRAX (TELEOPHRYS) CRISTULIPES (*Stimpson*).

1862. Teleophrys cristulipes, *Stimpson, Ann. Lyc. Nat. Hist.* vii. p. 190 pl. ii. fig. 2.

1881. Teleophrys cristulipes, *A. M.-Edwards, Miss. Sci. Mex.* (*Crustacea*), p. 113, pl. xix. fig. 2.

Regions of the carapace defined by shallow sulci. Superior surface of body and limbs tubercular, inferior surface smooth.

Carapace broader than long, beset with low, inconspicuous, scattered tubercles which vary in distinctness. The principal tubercles arranged as follows:—two or three on each half of the rostrum between the superior orbital prominences, one on each side of the middle line at the base of the rostrum, two in longitudinal series on each side of the gastric region, several on the branchial regions, and three on the anterior lateral margin of each. Orbit furnished in front with a superior and an inferior blunt prominence. Not furnished with spines or prominences behind.

Rostrum short, broad, with upturned anterior margin, not deeply bifid, marked above with central sulcus, and separated on each side from the superior orbital prominence by a conspicuous depression. Its anterior margin projecting slightly beyond the middle of the basal segment of the antennæ and slightly in front of the inferior orbital prominence.

Chelipedes large; merus tubercular above and furnished below in front with three large, rounded, compressed teeth; carpus furnished above with four or five tubercles, and with one blunt tooth in front. Hand smooth; its distal portion compressed above and below into a crest. Dactylus and pollex meeting only at the apices. Dactylus furnished with a single tooth.

In the first pair of legs the merus is furnished above with two longitudinal rows of prominences, the posterior row consisting of lower rounded tubercles, which distally decrease in size, the anterior row of five higher, compressed, sharper teeth, which distally increase in size; distal margin of the segment produced into five rounded prominences, varying in size; the carpus, in addition to three or four low tubercles on its centre, with its distal margin furnished with a larger anterior and a smaller posterior tubercle, and its antero-superior surface with a larger proximal and a smaller distal tooth; propodos furnished above with two tubercles, one near the centre, the other at its distal margin; claw long, curved, hairy below, with its distal portion serrate below.

The arrangement of tubercles and teeth upon the second, third, and fourth pairs of legs is nearly the same as the arrangement upon the first pair, but the posterior row of meral tubercles becomes progressively fainter from before backwards, and the teeth of the anterior row become gradually modified in form and number until, in the posterior pair of limbs, this row is formed of four teeth, two larger and two smaller, the larger and smaller alternating, and one of the larger being the most proximal of the series. Width of carapace $7\frac{1}{2}$ mm., length 7 mm.

One male specimen was obtained.

To guide me in the identification of the Fernando-Noronha specimen, which I refer to *T. cristulipes* (Stimps.), I have had to trust to the descriptions and figures of that species published by Dr. Stimpson and by M. Alphonse Milne-Edwards, and to my own examination of a single imperfect individual which was taken off Cape St. Lucas (California), and presented to the British Museum by the Smithsonian Institute.

Now, although with the above-mentioned figures and descriptions the specimen from Fernando Noronha does not present agreement in all points, yet, making allowance for possible errors on the part of the artists, I should unhesitatingly have referred this specimen to *T. cristulipes* (Stmps.) were it not for the fact that the points of difference between it and the specimen from Cape St. Lucas are by no means inconsiderable.

In the Californian specimen the sulci defining the regions of the carapace are conspicuously deeper, and the tubercles of the same part, though exhibiting in the main the same arrangement, are much larger. This is especially the case with regard to those of the branchial region, the three low tubercles of the antero-lateral margin in the Noronha specimen being represented in the Californian specimen by three large upstanding teeth. Again, with regard to the limbs, the merus of the chelipede in the Californian specimen is furnished below in front with one large compressed tooth and the pollex is armed with two small teeth, these small teeth being scarcely represented in the Noronha specimen. The other limbs present much the same arrangement of teeth in the two specimens, but, as in the case of the carapace, the teeth of the Californian specimen are relatively larger than those of the Noronha specimen.

I am well aware that the differences thus set forth are amply sufficient to justify the separation as distinct species of the spe-

cimens which they characterize; yet having but one example from each locality, I am unable to determine the constancy of the differences presented, and must consequently leave the decision of the question as to the specific identity or distinction of the two to those whom either the possession of a long series of forms or a more perfect acquaintance with this group of Crustacea places in a better position to judge than myself.

I am not aware that this species, or at all events any closely allied form, has before this been recorded from the eastern coast of America. Stimpson obtained it from Cape St. Lucas and M. Alphonse Milne-Edwards has described it from the Bay of Panama.

MITHRAX (MITHRACULUS) CORONATUS (*Herbst*).

1782. Cancer coronatus, *Herbst, Naturg. der Krabben*, i. p. 184, pl. xi. fig. 63.

1881. Mithraculus coronatus, *A. Milne-Edwards, Miss. Sci. Mex.* (*Crustacea*), p. 106, pl. xx. fig. 1.

Eight males and seven females (three with ova) were taken.

This species occurs on the coasts of Brazil, Central America, and of the West-Indian Islands. Its presence in Fernando Noronha has been previously mentioned by Mr. E. J. Miers, two small specimens having been obtained from that island during the voyage of H.M.S. 'Challenger.'

CANCROIDEA.

Family CANCRIDÆ.

Genus CARPILIUS (*Leach, MS.*), *Desmarest.*

1825. Carpilius, *Desmarest, Consid. gén. sur la classe des Crust.*, footnote, p. 104.

1834. Carpilius, *Milne-Edwards* (pt.), *Hist. Nat. Crust.* i. p. 380.

1865. Carpilius, *A. Milne-Edwards* (pt.), *Nouv. Arch. Mus. Hist. Nat.* i. p. 212.

1886. Carpilius, *E. J. Miers, Brachyura of H.M.S. 'Challenger,'* p. 110.

CARPILIUS CORALLINUS (*Herbst*).

1782. Cancer corallinus, *Herbst, Naturg. der Krabben*, i. p. 133, pl. v. fig. 40.

1865. Carpilius corallinus, *A. Milne-Edwards, Nouv. Arch. Mus. Hist. Nat.* i. p. 216.

Three specimens, two males and one female.

This species is the West-Indian representative of the genus. [These crabs are exported in wooden crates filled with dry leaves to Pernambuco, where they are in great demand as food. We were told they were land-crabs.—*H. N. R.*]

Genus Actæa, *de Haan*.

1850. Actæa, *de Haan, Crust. in Siebold, Fauna Japonica*, dec. i. p. 18.

Actæa acantha, *Milne-Edwards*.

1834. Cancer acanthus, *M.-Edwards, Hist. Nat. Crust.* i. p. 379.

1881. Actæa acantha, *A. M.-Edwards, Miss. Sci. Mex.* (*Crust.*) p. 245, pl. xliii. fig. 1.

One minute specimen, a male, was obtained.

It is only comparatively lately that the locality of this species has been made known by M. Alphonse Milne-Edwards, who received a specimen of it from Guadeloupe.

Genus Leptodius, *A. Milne-Edwards*.

1863. Leptodius, *A. Milne-Edwards, Ann. Sci. Nat., Zool.* sér. 4, xx. p. 283.

1873. Leptodius, *A. Milne-Edwards, Nouv. Arch. Mus. Hist. Nat.* ix. p. 221.

1886. Leptodius, *Miers, Brachyura of H.M.S. 'Challenger,'* p. 136.

Leptodius americanus (*Saussure*).

1858. Chlorodius americanus, *H. de Saussure, Mém. sur divers Crust. nouv. du Mex. et des Antilles*, p. 14, pl. i. fig. 5.

1881. Leptodius americanus, *A. Milne-Edwards, Miss. Sci. Mex.* (*Crust.*) p. 269.

Of this species eight specimens (5 males, 3 females with ova) were obtained. It is found in the West Indies and Florida.

Genus Lophactæa, *A. Milne-Edwards*.

1862. Lophactæa, *A. Milne-Edwards, Ann. Sci. Nat., Zool.* sér. 4, xviii. p. 43.

1865. Lophactæa, *A. Milne-Edwards, Nouv. Arch. Mus. Hist. Nat.* i, p. 245.

1886. Lophactæa, *E. J. Miers, Brachyura of H.M.S. 'Challenger,'* p. 113.

Lophactæa lobata, *Milne-Edwards*.

1834. Cancer lobatus, *Milne-Edwards, Hist. Nat. Crust.* i. p. 375.

1865. Lophactæa lobata, *A. Milne-Edwards, Nouv. Arch. Mus. Hist. Nat.* i. p. 249, pl. xvi. fig. 3.

A single male specimen. This is a West-Indian and Mexican species.

GRAPSOIDEA.

Family OCYPODIDÆ.

Genus OCYPODA, *Fabricius*.

1798. Ocypoda, *Fabricius* (pt.), *Ent. Syst. Suppl.* p. 347.
1837. Ocypoda, *Milne-Edwards, Hist. Nat. Crust.* vol. ii. p. 41.
1880. Ocypoda, *Kingsley, Proc. Acad. Nat. Sci. Philad.* p. 179.
1886. Ocypoda, *Miers, Brachyura of H.M.S. 'Challenger,'* p. 237.

OCYPODA ARENARIA (*Catesby*).

1771. Cancer arenarius, *Catesby, Hist. of the Carolinas,* ii. p. 35, pl. xxxv.

1880. Ocypoda arenarius, *Kingsley, Proc. Acad. Nat. Sci. Philad.* p. 184.

1882. Ocypoda arenarius, *Miers, Ann. Mag. Nat. Hist.* ser. 5, x. p. 384, pl. xvii. fig. 7.

Five adult specimens (four males and one female).

[Common in holes in the sand at Sueste Bay and Sambaquichaba.—*H. N. R.*]

Family GRAPSIDÆ.

Genus GRAPSUS, *Lamarck*.

1818. Grapsus, *Lamarck* (pt.), *Hist. Nat. Anim. sans Vert.* v. p. 247.
1880. Grapsus, *Kingsley, Proc. Acad. Nat. Sci. Philad.* p. 192.
1886. Grapsus, *Miers, Brachyura of H.M.S. 'Challenger,'* p. 254.

GRAPSUS MACULATUS (*Catesby*).

1771. Pagurus maculatus, *Catesby, Nat. Hist. Carolinas,* ii. p. 36, pl. xxxvi. fig. 1.

1880. Grapsus maculatus, *Kingsley, Proc. Acad. Nat. Sci. Philad.* p. 192.

This species has a very wide range, occurring upon the coasts of the warmer temperate and tropical parts of the Indian, Pacific, and Atlantic Oceans. It is exceedingly variable, and the extent of variation is well shown by the specimens brought from Fernando Noronha.

Five immature and two adult males were obtained; the former

are of a dark green colour with feeble indications of *maculæ*, the latter red-brown with maculæ well developed. [Very common on the rocks all over the group, running briskly just above water-mark and leaping from stone to stone.—*H. N. R.*]

Genus Plagusia, *Latreille*.

1806. Plagusia, *Latreille* (pt.), *Gen. Crust. Ins.* i. p. 33.
1837. Plagusia, *Milne-Edwards, Hist. Nat. Crust.* ii. p. 90.
1878. Plagusia, *Miers, Ann. Mag. Nat. Hist.* ser. 5, i. p. 148.
1886. Plagusia, *Miers, Brachyura of H.M.S. 'Challenger,'* p. 271.

Plagusia depressa (*Fabricius*).

1775. Cancer depressus, *Fabricius, Syst. Ent.* p. 406.
1782. Cancer squamosus, *Herbst, Naturg. der Krabben,* i. p. 260, pl. xx. fig. 113.
1878. Plagusia depressa, *Miers, Ann. Mag. Nat. Hist.* ser. 5, i. p. 149.

[This ran about on the stones and rocks like the *Grapsus*.—*H. N. R.*]

Genus Leiolophus, *Miers*.

1850. Acanthopus, *de Haan, Faun. Japon., Crust.*, p. 29 (nom. præocc.).
1876. Leiolophus, *Miers, Cat. New-Zeal. Crust.* p. 46.
1878. Leiolophus, *Miers, Ann. Mag. Nat. Hist.* ser. 5, i. p. 153.

Leiolophus planissimus (*Herbst*).

1804. Cancer planissimus, *Herbst, Naturg. der Krabben,* iii. Heft 4, p. 3, pl. lix. fig. 3.
1878. Leiolophus planissimus, *Miers, Ann. Mag. Nat. Hist.* ser. 5, i. p. 153.

A single specimen (female with ova) of this wide-spread form was taken.

PORCELLANIDEA.

Family Porcellanidæ.

Genus Petrolisthes, *Stimpson*.

1859. Petrolisthes, *Stimpson, Proc. Acad. Nat. Sci. Philad.* x. p. 227.

Petrolisthes marginatus, *Stimpson*.

1862. Petrolisthes marginatus, *Stimpson, Ann. Lyc. Nat. Hist. New York,* vii. p. 74.

I have had no opportunity of examining specimens of *P. marginatus* (Stimpson), and consequently not being certain of the

correctness of the identification of the specimens that I have referred to that species, I have thought it desirable to publish a description of them which may, so far as is possible, furnish a test as to the accuracy of the conclusion that has been arrived at.

Carapace and upper surface of limbs pubescent. Width of carapace approximately equal to its length. Carapace smooth, punctured; its anterior half furnished laterally with a small, sharp, upstanding spine. From this spine there extends backwards into the posterior half of the carapace a granular ridge which serves to separate the superior portion of the carapace from the lateral portion. The frons is slightly depressed and is marked off from the hinder portion of the carapace by a distinct ridge, which runs transversely between the posterior margins of the orbits. In the middle this ridge is interrupted by a conspicuous sulcus, which extends to the central lobe of the frons. This lobe is rounded anteriorly; its lateral margins are nearly vertical to the remainder of the anterior margin of the frons and approximately parallel to the superior margin of each orbit, which is the lateral border of the frons. The anterior half of this lateral border marked off from the posterior half by being at a conspicuously lower level.

Basal segment of antenna furnished on the inner side with a small acute spine.

Upper surface of chelipede covered with more or less squamiform granules; lower surface smooth. Anterior margin of upper surface of meral segment produced into a sharp process; beneath this, on the under surface, is a sharp spine, which may be bifid; posterior margin of upper surface spined. Anterior margin of upper surface of carpal segment furnished with three or four sharpened processes; posterior margin spined and produced distally into a spined process. The middle of the upper surface bearing a longitudinal series of larger squamiform tubercles. Inferior border of anterior surface of carpal segment granular; rest of the surface smooth. Anterior and posterior margins of manus and dactylus granular. A slightly curved series of larger squamiform granules extending along the upper surface of the manus from its carpal to the middle of its dactylar joint. Continuous with this is a series running from the base to the apex of the dactylus. Apex of dactylus and of thumb smooth and curved.

Anterior and posterior margins of meral segments of second,

third, and fourth pairs of legs spined; posterior margin of second and third pairs produced distally into a small acute spine.

Colour (of specimens preserved in spirit of wine) red or yellow above, with darker spots, reddish pink beneath.

Three specimens. Length and width of carapace in largest specimen 14 mm.; length of manus and pollex 20 mm.

The specimens that I have here described and identified provisionally as *P. marginatus* (Stmps.) are evidently closely allied to *P. asiaticus* (Leach), the common Indo-Pacific form, and I am doubtful if they should be regarded other than as varieties of that species.

HIPPIDEA.

Family Hippidæ.

Genus Remipes, *Latreille*.

1806. Remipes, *Latreille, Gen. Crust. Ins.* i. p. 45.
1837. Remipes, *Milne-Edwards, Hist. Nat. Crust.* ii. p. 204.

Remipes scutellatus (*Fabricius*).

1793. Hippa scutellata, *Fabricius, Ent. Syst.* ii. p. 474.
1858. Remipes cubensis, *H. de Saussure, Mém. sur Crust. nouv. du Mex. et des Antilles*, p. 36, pl. ii. fig. 19.
1878. Remipes scutellatus, *Miers, Journ. Linn. Soc.* (*Zool.*) xiv. p. 319.

The species occurs on the tropical coasts of the Atlantic.

Twenty-three specimens, two of which are females with ova, were taken. [Very common on the sandy shores. When a wave broke, these little crustacea were often seen running and burying themselves in the sand as the water retired.—*H. N. R.*]

THALASSINIDEA.

Family Gebiidæ.

Genus Gebia.

1816. Gebia, *Leach, art.* Annulosa, *Edinb. Encycl.* vii. p. 419.
1837. Gebia, *Milne-Edwards, Hist. Nat. Crust.* ii. p. 312.

Gebia spinigera, *S. I. Smith*.

1869. Gebia spinigera, *Smith, Rep. Peabody Acad. Sci.* p. 92.

Eight specimens, one female with ova, were brought back.

The species was originally described from specimens obtained upon the west coast of Central America.

ASTACIDEA.

Family PALINURIDÆ.

Genus PANULIRUS, *Gray*.

1847. Panulirus, *Gray, Cat. Brit. Mus.* (*Crust.*) p. 69.
1852. Panulirus, *Dana, Crust. U.S. Expl. Exp.* i. p. 519.

PANULIRUS ECHINATUS, *S. I. Smith.*

1869. Panulirus echinatus, *Smith, Trans. Connecticut Acad.* ii. p. 20.

Five specimens were taken, two adult females, one with ova, and one immature female, one adult male and one immature male.

The specimens described by Smith were from Pernambuco.

PANULIRUS ORNATUS (*Fabr.*).

1798. Palinurus ornatus, *Fabricius, Ent. Syst. Suppl.* p. 400.
1837. Palinurus ornatus, *M.-Edwards, Hist. Nat. Crust.* ii. p. 296.
1867. Palinurus ornatus, *Heller, Reise Freg. Novara, Crust.* p. 99.

In 1872 v. Martens, in his paper "Ueber cubanische Crustaceen," Arch. f. Naturg. xxxviii. p. 128, recorded the occurrence on the eastern coasts of America of a *Palinurus*, which he questionably identified as *P. ornatus* (Oliv. ?), a species which appears to have its head-quarters in the Indo-Pacific Seas. From Fernando Noronha, Mr. Ridley obtained one specimen of a *Panulirus*, which I cannot separate by any important character from *P. ornatus* (Fabr.); and in addition to this specimen there is in the British Museum Collection one other from Panama, which is also, I believe, referable to *P. ornatus* (Fabr.). It will thus be seen that this form occurs in the Indo-Pacific Seas and upon the east and west coasts of America.

It is perhaps of interest to note that the spines upon the carapace and upon the peduncles of the antennæ appear to be somewhat sharper, and relatively longer, in the American individuals than they are in the Eastern individuals that I have had an opportunity of examining.

[Tolerably common, and collected from the rock-pools for food.—*H. N. R.*]

PANULIRUS INERMIS, n. sp.

Carapace somewhat flattened above, with sides nearly vertical. The right and left portions of the upper surface meeting in the

middle line at a very obtuse angle. Carapace nearly smooth frontal spines considerably shorter than the eye-stalks, slightly incurved at the apices, armed above at the base with a single spine; one spine situated near the ocular margin of the carapace, one in the anterior third of the supero-lateral margin, and a third beneath the eye-stalk near the outer portion of the basal antennal segment.

Antennal peduncle about two thirds the length of the carapace; basal segment armed externally with a single spine on its anterior margin; second segment armed above with five spines, two forming a longitudinal series externally, three forming an oblique series internally; third segment armed above with ten short spines. Below, the three segments are smooth.

Antennular plate nearly horizontal, with rounded antero-external angles not armed with spines; the peduncle shorter than peduncle of antennæ; segments of peduncle not spined.

Epistoma with a straight unspined anterior margin.

The first and fifth pairs of limbs simple, unspined. (Second, third, and fourth pairs absent.)

Postero-external angles of the sternum prolonged into a sharp, long spine.

Abdominal tergites smooth, punctured, not marked with a transverse sulcus; inferiorly and laterally prolonged into a spine. The posterior margin of the last dorsal plate furnished with two long, sharp spines.

Proximal portion of telson furnished in the middle of its upper surface with two spines and with its posterior margin armed on each side with four spines.

Total length from anterior margin of carapace to posterior margin of telson 27 millim. Length of upper surface of carapace 11 millim.

One specimen.

Judging from its size, the specimen from which the above description has been taken is certainly immature. It, nevertheless, presents the characters of a true *Panulirus*, and differs from all the specimens of that genus that I have examined in the absence of spines from the basal plate of the antennulæ. Dredged in Water Bay. About 10 fathoms depth.

CARIDEA.

Family PALÆMONIDÆ.

Genus ALPHEUS (*Fabricius*).

1798. Alpheus, *Fabricius, Ent. Syst. Suppl.* p. 380.
1878. Alpheus, *Kingsley, Bull. U.S. Geol. Surv.* iv. p. 189.

ALPHEUS EDWARDSII (*Aud.*).

1809. Athanasus Edwardsii, *Audouin, Explic. planches de Savigny, Descript. de l'Egypte, Atlas*, pl. x. fig. 1.
1818. Alpheus heterochelis, *Say, Journ. Acad. Nat. Sci. Philad.* i. p. 243.
1884. Alpheus Edwardsii, *Miers, Rep. Crust. H.M.S. 'Alert,'* p. 284.

Twenty-nine specimens. This species is common in the warmer parts of the Atlantic, Pacific, and Indian Oceans, and in consequence of its wide range and of the variations to which individuals are subject it possesses a long list of synonyms. These synonyms may be found upon reference to the above cited work of Mr. E. J. Miers.

ALPHEUS MINOR, *Say*.

1818. Alpheus minus, *Say, Journ. Acad. Nat. Sci.* i. p. 245.
1837. Alpheus minus, *Milne-Edwards, Hist. Nat. Crust.* ii. p. 356.
1878. Alpheus minus, *Kingsley, Bull. U.S. Geol. Geogr. Surv.* iv. p. 190.

One specimen.

This species occurs upon the east and west coasts of America. Kingsley records it from N. Carolina, Bermudas, Florida on the east, and from Pearl Island Bay (Panama) on the west.

ALPHEUS RIDLEYI, n. sp.

Carapace and abdominal tergites smooth; carapace furnished in front with a short pointed rostrum, which does not nearly reach to the second segment of the antennular peduncle; rostrum separated by depression from the ocular hoods, each of which is furnished with a spine projecting in front as far as the extremity of rostrum.

Antennular spine reaching nearly to the second segment of the peduncle, which is the longest of the three, the third being the shortest.

Antennal scale as long as antennal peduncle, longer than antennular peduncle; basal segment of antenna furnished beneath with a strong spine.

Terminal segment of external maxillipede hairy.

First pair of legs very unequal in size. Dactylus of larger hand closing vertically, with evenly rounded supero-anterior

border, without accessory teeth; its greatest length equal to one half of the length of the superior margin of the manus. Anterior margin of the "thumb" on the inner side nearly vertical, forming an obtuse angle with the inclined superior margin. Superior and inferior margins of thumbs on the outer side nearly parallel: in front united by a distinct anterior border, which below curving forwards forms with the inferior border the tooth of the thumb, which does not project so far forwards as the anterior margin of the dactylus.

Upper margin of the manus with a very faint constriction in its anterior half; right and left sides smooth, without depressions; lower margin with a very faint depression in its anterior half; upper margin marked with sulcus, which in the middle of the hand curving downwards and backwards runs to the carpal joint. Carpus rounded above, not bearing a tooth; meros three-sided, flattened below, not bearing a tooth above in front. Smaller manus simple, without constrictions or depressions; dactylus, thumb, and upper margin of manus approximately equal in length; carpus furnished with a blunt tooth above, equal in size to the carpus of the larger manus; meros resembling the meros of the larger manus.

In the second pair of legs the first carpal segment is as long as the second and the third together; third about half the length of the second, equal in length to the fourth, shorter than the fifth, which itself is shorter than the second.

Meros and carpus of third and fourth pairs of legs not spined.

In size and form resembling *A. Edwardsii*, but differing from it in having the larger hand very lightly constricted above and below. Moreover, there is a large black spine on each side of the telson.

ALPHEUS PANAMENSIS, *Kingsley*.

1878. Alpheus panamensis, *Kingsley*, *Bull. U.S. Geol. Surv.* iv. p. 192.

Carapace smooth, furnished in front with a strong rostrum, which projects considerably beyond the spines of the orbital hoods, almost as far as the second segment of the antennular peduncle; separated by a depression from the ocular hoods, each of which is furnished with a small sharp spine.

Lower margin of hood continuous below the spine.

Antennular spine reaching slightly beyond the margin of the basal segment of the peduncle. Second segment of peduncle longer than the third, as long as the first.

Antennal scale and peduncle as long as each other, and slightly longer than the antennular peduncle. Basal segment of antenna furnished below with a strong sharp spine.

First pair of legs very unequal in size. Dactylus of larger hand closing vertically, its greatest length being more than half the length of the superior margin of the manus; without accessory teeth.

Anterior margin of the thumb on the inner side nearly vertical, meeting the inclined superior margin at an obtuse angle; less than half the length of the superior margin. Thumb on the outer side without a vertical anterior margin, the superior margin meeting the inferior at an acute angle and forming the tooth.

Manus smooth, without constrictions or depressions, longer than the carapace; superior and inferior margins nearly parallel. Carpus rounded above, not bearing a tooth. Meros three-sided, flattened below; superior margin produced in front into a blunt process.

Smaller manus simple; dactylus and thumb approximately equal in length to each other and to the manus.

Carpus furnished above on the inner side with a small projection. Meros resembling meros of larger limb, except that the front process is smaller.

In second pair of limbs the carpal segments are 1, 2 and 5, 3 and 4.

First segment almost as long as the second, third, and fourth together. Second segment a little shorter than the third and fourth together, these being approximately equal; fifth as long as the second.

Meros and carpus of third and fourth pairs of legs not spined. Dactyli of limbs not bifid.

One specimen. If I am right in referring this species to *Al. panamensis* of Kingsley, with the description of which it agrees well, it is of interest to note that it occurs upon the eastern and western coasts of America. Mr. Kingsley described his specimens from Panama and Acajutla.

ALPHEUS OBESO-MANUS, *Dana*.

1852. Alpheus obesomanus, *Dana, U.S. Expl. Exped., Crustacea*, i. p. 547, pl. xxxiv. fig. 7.

Carapace smooth, furnished in front with a short rostrum,

which does not reach nearly so far as the anterior border of the first segment of the antennula, but a little beyond the ocular hoods, from which it is separated on each side by a deep sulcus. Ocular hoods not spined, but slightly produced in front.

Antennular spine short, not reaching to the front margin of the first segment of the peduncle of the antennula. Second segment of peduncle the longest of the three, the third the shortest.

Antennal scale as long as peduncle of antennula, shorter than peduncle of antenna. Basal segment of antenna without a spine.

Legs of first pair very unequal in size. Dactylus of larger manus closing horizontally, about half as long as the upper margin of the manus. The superior (outer) margin of the thumb furnished with two large teeth, of which the posterior is smaller, more slender, and with a blunt apex, the anterior having a rounded margin.

Dactylus short, rounded. Dactylus and thumb very hairy.

The manus simple, cylindrical, without constrictions or depressions, as long as the carapace and the two proximal segments of the antennular peduncle. Carpus deep from above downwards, rounded above, and not furnished with a tooth. Meros deep from above downwards, three-sided, flattened below; upper margin produced in front into a conspicuous process.

Smaller hand somewhat resembling the larger, except that it is less twisted, less cylindrical, with dactylus and thumb straighter and relatively longer. Carpus less deep, and furnished on the upper inner margin with a distinct nodule. Meros less deep, with upper tooth scarcely conspicuous.

In the second pair of legs the carpals are 2, 5, 4 and 3 and 1. The first, third, and fourth segments approximately equal in length, the fifth a little longer; the second as long as the third, fourth, and fifth together. In the third and fourth pairs of legs the carpus and meros are below furnished in front with a strong spur.

Ten specimens. So far as I know, this species has not been hitherto recorded from the American coasts. Its occurrence has been mentioned in the Samoan Islands (*Kingsley*), Fiji Islands (*Dana*, *Miers*), and in Mauritius (*Richters*).

ALPHEUS ROSTRATIPES, n. sp.

Carapace smooth, anterior margin crescentically excavated, the sides of the excavation being formed by the ocular hoods, which are anteriorly produced but not furnished with spines, and not separated from the rostrum by a depression. Rostrum springing from the centre of the excavation, pointed, short, projecting slightly in front of the ocular hoods, but not reaching the anterior margin of the first segment of the antennular peduncle. Antennular spine reaching to the middle of the second segment of peduncle. Segments of peduncle short, approximately equal in length; second segment furnished externally with a small spine on its anterior margin. Antennal scale as long as the antennular peduncle, much shorter than the antennal peduncle. Basal segment of antenna furnished laterally with a conspicuous spine.

One of the legs of the first pair absent. The dactylus of the remaining one (the smaller?) closing vertically; long, longer than the manus, curved, pointed blade-like, when closed; crossing the thumb. Thumb almost as long as dactylus, and at the base twice as thick, gradually tapering to a sharp, upturned point, meeting manus at an obtuse angle. Manus elliptical, simple, without constrictions or depressions, furnished close to the dactylar joint on each side with two blunt teeth, those on the outer side being obscurely marked. Carpus furnished on its inner side with a small blunt tooth. Meros three-sided, flattened below, superior margin produced in front into a conspicuous projection. Carpals of the second pair of legs becoming progressively shorter in the following order:—1, 5, 2, 3, 4.

Carpus and meros of third and fourth pairs not furnished below with a spine. Dactylus of fourth pair bifid, of third pair absent.

ALPHEUS, sp.

(Too mutilated for identification.)

Carapace furnished in front with a small pointed rostrum, which projects slightly in front of the ocular hoods, but not nearly to the anterior margin of the basal segment of the peduncle of the antennula; ocular hoods rounded and not spined. Basal spine of antennula reaching to the anterior margin of the basal peduncular segment. Second segment of peduncle longer than the third, approximately equal to the first. Antennal scale

longer than the antennular peduncle, shorter than the peduncle of the antenna. Basal segment of antenna not provided with a spine.

Legs of first pair absent.

Carpals of the second pair differing upon the two sides, on the right side the fifth segment being longer than the second, and on the left side shorter. In each case the first is the longest, and the third and fourth the shortest.

Carpus and meros of third and fourth pairs not produced below into a tooth.

Dactyli of third, fourth, and fifth pairs simple.

ALPHEUS, sp.

(Too mutilated for identification.)

Carapace furnished in front with a short rostrum, which does not project as far as the middle of the first segment of the peduncle of the antennula, and is separated by a depression on each side from the ocular hoods. Each ocular hood furnished with a spine. Antennular spine short, sharp, not reaching to the front margin of the basal segment of the peduncle. Second segment of the peduncle the longest, the first and third approximately equal in length. Antennal scale as long as antennal peduncle, a little longer than antennular peduncle. Basal segment of antenna furnished with a long, sharp spine, which projects as far as the middle of the second segment of the antennular peduncle.

First and second pairs of legs absent. Carpus and meros of third and fourth pairs not produced below in front into a strong process. Dactyli of third, fourth, and fifth pairs bifid.

[The *Alphei* were taken in numbers from the holes in which they hid by breaking up the coral-reef.—*H. N. R.*]

Family PENÆIDÆ.

Genus STENOPUSCULUS, *Richters*.

1880. Stenopusculus, *Richters, Beiträge zur Meeresfauna der Insel Mauritius und der Seychellen, von Möbius, Richters und v. Martens*, p. 167.

STENOPUSCULUS SPINOSUS, n. sp.

? Syn. Stenopusculus crassimanus, *Richters, t. c.* p. 168, pl. xviii. figs. 27–29.

Upper portion of cephalothorax sparsely spined; spines in

front of the cervical suture larger than those behind it. Posterior margin of the cervical suture furnished above with 4 or 5 spines, and laterally with 3 or 4 larger ones. Postero-lateral portions of cephalothorax almost smooth; antero-lateral portions beset with spines arranged more or less in longitudinal series. Anterior marginal excavation adjoining the basal antennal segment armed with four spines.

Cephalothorax furnished in front with a pointed rostrum, which starts upon the anterior half of the cephalic portion of the carapace and reaches almost as far forwards as the front margin of the antennular peduncle. Upon each side the rostrum extends horizontally over the basal portion of the eye. Furnished above with eleven teeth, of which five are larger than the rest, and below near the apex with one tooth.

Proximal portion of antennular peduncle furnished externally with a strong curved spine; upper surface of peduncle with three spines; under surface with four on the inner margin and one on the outer margin.

Basal segment of antennal peduncle furnished above with two spines externally, and with a laminate process internally; second segment covered by the basal segment, furnished below with three spines; third segment with one spine externally and with three internally. External margin of antennal scale with five or six fine teeth, internal margin fringed; antennal scale somewhat triangular, laminate, projecting slightly in advance of the antennal peduncle, which is approximately as long as the antennular peduncle.

Epistome furnished with four strong teeth.

Ischial segment of external maxillipede furnished distally with three spines externally, and with one spine internally; meral segment externally with three strong spines. Internal margin of all the segments clothed with hairs.

Segments of first and second pairs of legs simple, more or less cylindrical, unspined.

Meropodite of third pair of legs cylindrical, spined, with some larger sharp spines near the distal extremity on the inner surface. Carpopodite rounded below, flattened and hollowed above; the hollowed portion with a few small spines, the rest thickly spined; spines on the outer surface larger.

Inner surface of the hand covered with small tubercles; outer

surface almost smooth, with a few small tubercles near the upper and under margins. Upper margin compressed into a serrated keel; under margin also serrated. Anterior margin of hand nearly at right angles to the axis of the pollex. Pollex upturned at the apex, furnished on its occludent margin with a tooth which closes behind the tooth of the dactylopodite. Upper margin of dactylopodite serrated.

Fourth and fifth pairs of limbs resembling each other in being slender and elongated, in having the propodite furnished below with a series of fine spines and consisting of three segments, and in having the dactylopodite bifid. But whereas the propodite of the fourth pair consists of five segments, the propodite of the fifth pair consists of but three. The number of divisions of these segments, however, appears to vary upon the two sides.

Abdominal tergites smooth above; lateral portions narrowed, somewhat pointed, and with margins more or less spined.

The outer and inner lamellæ of appendages of the sixth abdominal somite with a median longitudinal crest, serrate exterior margin, and fringed inner margin. Outer margin of inner lamella furnished below with a stronger tooth.

Telson with converging lateral margins, rounded posterior margin; each lateral margin furnished with a central tooth; posterior margin furnished with three teeth, one on each side and one in the middle. Upper surface of telson marked with two longitudinal crests, each of which bears three spines arranged longitudinally; the depression between the crests furnished proximally with four spines in two longitudinal series. Base of telson bearing on each side one marginal spine.

Two specimens.

Length from apex of rostrum to posterior margin of telson 13 millim.; total length of upper surface of carapace (including rostrum) $5\frac{1}{2}$ millim.; length of manus and pollex of third pair of feet 8 millim.

This species seems to differ from *St. crassimanus*, Richters, in the possession of a greater number of teeth upon the rostrum and in the absence of a crest upon the abdominal tergites.

The three species which hitherto have, so far as I am aware, composed the genus were taken at Touquets (Mauritius).

STOMATOPODA.

Genus Gonodactylus, *Latreille.*

1825. Gonodactylus, *Latreille, Encycl. Méth. Hist. Nat.* x. p. 473.
1837. Gonodactylus, *Milne-Edwards, Hist. Nat. Crust.* ii. p. 528.
1880. Gonodactylus, *Miers, Ann. Mag. Nat. Hist.* v. p. 115.
1886. Gonodactylus, *Brooks, Stomatopoda of H.M.S. 'Challenger,'* p. 55.

Gonodactylus chiragra (*Fabricius*).

1793. Squilla chiragra, *Fabricius, Ent. Syst.* ii. p. 513.
1880. Gonodactylus chiragra, *Miers, Ann. May. Nat. Hist.* v. p. 115.

Fourteen specimens of this widely distributed species were brought back. In the coral-reef.

MYRIOPODA.

By R. I. Pocock,
Assistant in the Zoological Department, British Museum.

The island does not seem to be rich in members of this group, since four species only were obtained in it. Two of these appear to be new to science, one being referable to the genus *Geophilus*, the other to the genus *Spirobolus*. The others are the two wide-spread tropical species, *Scolopendra morsitans* (Linn.) and *Paradesmus gracilis* (C. Koch).

Chilopoda.

Scolopendra morsitans (*Linn.*), emend., *Kohlrausch, Arch. f. Naturg.* 1881, p. 104.

Thirteen specimens were taken. Common under dung and stones, at the east end of the main island and base of Peak Garden and elsewhere. The bite is about as bad as a wasp's sting.

Geophilus Ridleyi, n. sp.

Length 44 millim. Width about 1 millim. Posterior end of the body slightly more slender than the anterior.