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INVERTEBRATE
ZOOLOGY
Crustacea

Natural History Notes from H.M. Indian Marine Survey Steamer 'Investigator,' Commander R. F. Hoskyn, R.N., late commanding.—Series II., No. 1. *On the Results of the Deep-sea Dredging during the Season 1890-91 (concluded).* By A. ALCOCK, M.B., Surgeon-Captain I.M.S., Superintendent of the Indian Museum.

[Continued from p. 334.]

X

BRACHYURA.

Family Inachidæ.

ECHINOPLAX, Miers.

85. *Echinoplax pungens*, Wood-Mason.

Echinoplax pungens, Wood-Mason, Ann. & Mag. Nat. Hist., March 1891, p. 259.

Station 115, 188-220 fathoms.

PLATYMAIA, Miers.

86. *Platymaia Wyville-Thomsoni*, Miers.

Platymaia Wyville-Thomsoni, Miers, 'Challenger' Brachyura, p. 13, pl. ii. fig. 1.

Station 115, 188-220 fathoms, and Station 116, 405 fathoms.

ANAMATHIA, S. I. Smith.

87. *Anamathia Livermorii*, Wood-Mason.

Anamathia Livermorii, Wood-Mason, Ann. & Mag. Nat. Hist., March 1891, p. 260.

Station 112, 561 fathoms.

Family Cancridæ.

NECTOPANOPE, Wood-Mason.

88. *Nectopanope longipes*, Wood-Mason.

Nectopanope longipes, Wood-Mason, Ann. & Mag. Nat. Hist., March 1891, p. 262.

89. *Platypilumnus gracilipes*, gen. et sp. n.

[Wood-Mason, Admin. Report Marine Survey of India for 1890-91, p. 20, name only.]

Carapace much depressed, perfectly flat above, with the surface nearly smooth centrally and very finely and closely granular laterally, and with the regions indistinctly defined. The front has the form of a horizontally projecting bilobed lamella, with the free edge sharply and very evenly spinate and the sides turned abruptly downwards. The margins of the orbit are spinulate, the upper margin the more distinctly so, and the lower margin terminates internally in a strong oblique spine, the point of which inclines towards the sharply vertical tooth formed by the already mentioned downfolding of the lateral edge of the frontal lamella.

The antero-lateral borders of the carapace, which are arcuate and are shorter than the postero-lateral, are armed with three large spines, in front of, between, and behind which are several spinules. The pterygostomial regions are large and inflated, and the branchial apertures, especially the efferent aperture, are large and patulous.

The eye-stalks are large and are of moderate length; the corneal region is rather small.

The antennules are long and are transversely folded, their basal joint is large and inflated.

The antennæ are long, their basal joint is slender and free; the second joint lies within the internal orbital hiatus.

The inner edge of the meropodite of the external maxillipeds is convex, with a pair of little spines at the summit of the convexity; the succeeding joint arises at the antero-internal angle.

The thoracic legs are furnished with many spines and long hairs. The chelipeds, which are robust, are unequal; their prismatic meropodite has all its borders spiny; the short inflated carpus is sharply granular and spinulate in the distal half of its dorsal surface and along the outer edge, while the inner edge bears a pair of rather large spines; the palm is spinulate everywhere in the smaller cheliped, but only in the proximal third of its outer surface in the larger; the fingers also of the smaller cheliped are spinulate on the outer surface, while those of the larger cheliped are smooth; the cutting-edges of the fingers are finely and unevenly toothed.

The other thoracic legs are long, compressed, and slender, and have the meropodite spiny along both edges, the carpopodite and propodite spiny along the front edge, and the dactylopodite styliform.

Colour in the fresh state yellowish red.

An egg-laden female from Station 115, 188-220 fathoms, has the following measurements:—

Length of carapace 18 millim., breadth of carapace 20 millim., length of larger cheliped 27 millim., length of longest leg (fourth pair) 40 millim.

Family Ocypodidæ.

90. *Psopheticus stridulans*, gen. et sp. n.

Psopheticus stridulans, Wood-Mason, Illustrations of the Zoology of H.M. I.M.S. 'Investigator,' Crustacea, part i. pl. v. fig. 1 [no description].

Body and legs smooth and polished, quite devoid of hairs except for a few distant setæ on the front edge of the second to fifth legs.

The carapace is quadrilateral, convex from before backwards, and its length is three fourths of its breadth. The front is a prominent declivous lamina with the edges entire and sharp. The superior orbital margin is smooth and sharp, and, although strongly excavated on the whole, has a strong median convexity; the inferior orbital margin is microscopically

pically granular, and ends internally in a blunt-pointed tooth.

The lateral margins are armed in front with two very strong teeth, the anterior one of which, situated at the external angle of the orbit, surmounts a remarkable inflation of the whole infraorbital and infrahepatic region; this inflation culminates at the base of the spine in a finely granular eminence, against which a strong unciform tooth situated on the upper border of the meropodite of the cheliped can be played, producing in the dead animal a shrill sound.

The pterygostomian regions are small, but the branchial apertures are large and patulous.

The abdomen in the male is distinctly seven-jointed.

The eye-stalks are stout and the corneal region is reniform and expanded, its major diameter being one fifth the length of the carapace.

The antennules are long and are transversely folded.

The antennary peduncle lies within the internal orbital notch, the first joint being short and slender; the antennary flagellum is more than half the length of the carapace.

The external maxillipeds have the meropodite square, the succeeding joint springing from the antero-internal angle.

The thoracic legs are spiny. The chelipeds are subequal; the prismatic meropodite has distally on the lower edge two or three spines and on the inner edge a single one, while about midway along the upper edge is the large unciform tooth already mentioned; the rhomboidal carpus has two spines, one at the external the other at the internal angle; the palm is large and swollen, and the fingers, which have the cutting-edge strongly and unevenly toothed, are not capable of complete apposition.

The second to fifth legs are slender, compressed, and of moderate length; in all the meropodite is distantly and markedly spinate and the carpopodite closely and finely spinulate along the front edge—the spination in the case of the second pair only being indistinct, or even in part obsolete—and the dactyli grooved and extremely slender.

In the female the chelipeds are relatively feebler and the other legs shorter than they are in the male.

Colours rose-pink, corneal region violet.

Several specimens of both sexes from Station 115, 188–220 fathoms.

In the largest male and female the carapace is 15 millim. in length and 19 millim. in breadth, the cheliped in the male measuring 29 millim. and in the female 25 millim.

Family **Leucosidæ**.**RANDALLIA**, Stimpson.91. *Randallia lamellidentata*, Wood-Mason.

Randallia lamellidentata, Wood-Mason, Illustrations of the Zoology of H.M. I.M.S. 'Investigator,' Crustacea, part i. pl. v. fig. 5.

Carapace subcircular, inflated; the surface granular, beaded, and in the middle line and on the branchial regions pustular, the margins lamellar and irregularly lobulated.

The front is bilobed; the antero-lateral margin, like the anterior part of the postero-lateral, is extended horizontally to form a sharp lamella, which is cut up into several unequal lobes larger than the two lobes of the posterior margin. The hepatic, branchial, and intestinal regions are all very clearly delimited, leaving only the boundary between the gastric and cardiac regions undefined; in the centre of the tumid intestinal region is a blunt spine. The sternum is finely beaded.

The abdomen is finely granular, and although the segments from the third to the sixth are coalescent, they are all distinctly defined.

The eyes and orbits are very small, the latter having two fissures above and one below, and a pronounced hiatus internally. The antennular fossæ are large; the antennary flagella are minute.

The external maxillipeds are large, with the exposed surface closely and finely beaded; the exopod, which is rather broader than the endopod, has the outer margin nearly straight and does not quite reach to the pointed extremity of the meropodite.

The thoracic legs are all granular or finely beaded. The chelipeds, though stout, are not remarkably prolonged, their length not greatly exceeding the breadth of the carapace; the bead-like granules on the upper edge of the meropodite are large; there is a small tooth on the outer side of the carpus at its distal end; the palm and the dactylopodite have the outer edge broadly and sharply crested, the immobile finger also being slightly carinated.

The remaining thoracic legs are short and slender.

Colour white, with a pinkish blush.

A male from Station 115, 188-220 fathoms.

Length of carapace about 12 millim., its breadth being about 13 millim.

Family Dorippidæ.

ETHUSA, ROUX.

92. *Ethusa andamanica*, sp. n.

This species closely resembles *Ethusa orientalis*, Miers ('Challenger' Brachyura, p. 330, pl. xxviii. fig. 1), from which it appears to differ only in the following points:—The carapace is smooth instead of being granular; the cervical and cardio-branchial sutures are ill- instead of well-defined; the tooth at the external orbital angle is not so prominent in relation to the front.

A male from Station 115, 188–220 fathoms.

Length of carapace about 9 millim., breadth about 9 millim., length of cheliped 11 millim., length of third leg about 29 millim., length of fourth leg 11 millim.

Compared with the other Indian species the most remarkable character of *Ethusa andamanica* is the robustness of the fourth and fifth pairs of legs.

93. *Ethusa indica*, sp. n.

Carapace finely and closely granular and a little broader than long.

The front is bilobed and four-toothed; the antero-lateral or external orbital angle forms, not a tooth, as in *Ethusa andamanica*, but a great spike projecting far beyond the frontal spines; the lateral margins are strongly convex in their branchial extent and then converge, so that the breadth of the anterior portion of the carapace is not two thirds that of the posterior portion. The cervical and cardio-branchial sutures are well marked, and the small tumid intestinal region stands out like a wart between the even more tumid branchial regions.

The eye-stalks are slender and are freely mobile; the eyes are small but well developed; the orbits are imperfect.

The basal joint of the antennules is not inflated. The antennary flagellum is only about half the length of the carapace.

The chelæ are equal; the meropodite and fingers are compressed and the carpus and palm inflated; the cutting-edges of the fingers are closely apposable and are finely crenulate in the distal half or two thirds.

The dactyli of the second and third legs are broad scimitar-like blades.

The fourth and fifth pairs of legs are filiform, granular, and in the distal third hairy.

An egg-laden female from Station 120, 240 fathoms, has the following dimensions:—Length of carapace 9·5 millim., greatest breadth a little over 10 millim., length of cheliped about 13 millim., length of third leg 33 millim., length of fourth leg 11 millim.

The most remarkable character of this species is the great size of the external orbital spines.

94. *Ethusa pygmæa*, sp. n.

Carapace and appendages very finely and closely granular; the length of the carapace not quite equal to the greatest breadth. The front is bilobed and four-spined; the antero-lateral or external orbital angle forms a spine, much as in the preceding species, only that it does not reach to the level of the tips of the frontal spines; the lateral margins are strongly convex in their branchial extent and then converge, so that the breadth of the carapace in front is only two thirds of its breadth behind. The cervical and cardio-branchial sutures are well marked and the gastric, cardiac, and intestinal regions are all quite plainly delimited.

The eye-stalks are slender, the eyes are slightly dilated, and the orbits are very imperfect.

The chelipeds are equal and the fingers are closely appposable and finely crenulate in the distal half to two thirds of the cutting-edge.

The second and third legs have long scimitar-like dactyli; the fourth and fifth legs are moderately stout.

An egg-laden female from Station 115, 188–220 fathoms, has the following dimensions:—Length of carapace 6 millim., breadth nearly 7 millim., length of cheliped about 8 millim., of third leg 22 millim., of fourth leg 8 millim.

This species closely resembles the preceding, from which it is distinguished by its much smaller size, by the better definition of the regions of the carapace, by the smaller antero-lateral spine, by the granulation of the thoracic legs, and by the more robust fourth and fifth pairs of legs.

95. *Cyonomops glaucomma*, gen. et sp. n.

Carapace subcircular; it and the appendages are very closely and finely granular beneath a dense pubescence. The front consists of three deeply cut lobes, the middle one of which is the largest and most prominent. The middle lobe

again is slightly cleft at the tip, and in the cleft is to be seen projecting the roof of the remarkably prolonged buccal cavity.

The external orbital angle, which is somewhat ventrad in position, also forms a projecting tooth, so that the orbito-frontal region, which is sharply delimited from the rest of the inflated carapace, has the form of a five-pronged crest or crown. The regions of the carapace are plainly delimited, excepting only in the case of the boundary between the gastric and cardiac regions. The pterygostomian regions are most remarkably puffed out.

The abdomen (in the female) is large, and the terminal segment has the form of a broad semicircular plate, broader than any of the other segments and nearly as long as all of them put together.

The orbits are capacious, but the eye-stalks are slender and the eyes are unpigmented and semiopaque.

The antennules, which are much larger and longer than the antennæ, are incapable of flexion beneath the front.

The external maxillipeds are of great length, in correspondence with the remarkable trough-like prolongation of the buccal cavity, which they completely close in below; their meropodite, which is prolonged far beyond the insertion of the palp, covers the bases of the antennules and antennæ, their tips in fact being visible from above; the slender exopod does not much surpass the ischium.

The chelipeds are short but massive, and are equal; the merus is curved, the carpus is very small, the palm is large, tumid, and crooked, and the fingers are broad, compressed, pointed, very closely apposable, and have their cutting-edge very finely denticulated.

The second and third legs are of great length, being more than four times the length of the body, the merus forming more than half their extent; their dactyli are filiform and are not much longer than their protopodite. The fourth and fifth legs have the family position, but are mere rudiments, being of hair-like tenuity and only about three fourths of the carapace in length; the fifth ends in a hook-like dactylus.

A female from Station 116, 405 fathoms, has the following dimensions:—Length of carapace 6·5 millim., breadth 6·5 millim., length of cheliped 9 millim., length of second leg 28·5 millim., of fourth leg 4·5 millim.

Colour in the fresh state chalky pink.

Family Homolidæ.

HOMOLA, Leach.

96. *Homola megalops*, sp. n.

Carapace quadrilateral, its greatest breadth being fifteen sixteenths of its length, its surface like that of the appendages finely and sharply granular and pubescent. Viewed from in front the front edge of the carapace has the form of an extremely well-marked double -shaped curve, armed throughout its extent with sharp spines and culminating in a concave declivous rostrum with a slightly cleft tip; a pair of spines on either side of the rostrum, forming the armature of the front proper, are stouter than any of the others, and immediately behind the inner spine of each pair is a sharp tubercle.

The rostrum itself in its basal portion descends between the antennules as a vertical plate which ends in a sharp epistomial spine. The lateral margins have a slight elegant double curve, are very regularly spinulate up to the level of the hepatic region, and end in a strong spine at the anterolateral angle.

The gastric, cardiac, hepatic, and branchial regions are all distinctly delimited; the gastric region is crossed from side to side by a sinuous row of seven spines, and each hepatic region is surmounted by a puckered eminence.

The segments of the abdomen are all distinct and separate in both sexes, the second segment having a sharp spine centrally; all are granular and pubescent, and in the third to sixth the granules have a tendency to concentrate in a raised transverse band.

The eyes are very large, their major diameter being about one fifth the length of the carapace; they are borne on long, slender, granular, and hairy eye-stalks, and the hairs at the corneal margin form a heavy fringe.

The auditory tubercle is very prominent.

The external maxillipeds, like the other thoracic legs, are granular and hairy; the outer edge of their ischiopodite and meropodite is carinated, the carina of the meropodite forming a projecting lobe.

The chelipeds are symmetrical in both sexes and are about a carapace and a half in length; the three crests of the ischiopodite and meropodite, the four or five crests of the carpopodite, and the single (superior) crest of the palm are closely spiny, and the fingers, which are about the same length as the palm, have the cutting-edge sharp and entire.

The other thoracic legs are long, stout, and compressed, the third and fourth pairs, which are the longest, being twice the length of the chelipeds.

In the second to fourth legs the meropodite has both the anterior and the posterior edges closely spinate and the dactylus is long. In the fifth pair the meropodite is spinate on the posterior edge only, the anterior edge having only a single terminal spine. The fifth pair also differs in having a strong terminal spine on the posterior edge of the carpopodite, which joint is also longer than it is in the other legs. In the fifth pair a very efficient subchela is formed by the closing of the short dactylus against a serrated eminence that occupies the middle two fourths of the propodite.

From the orifice in the basal joints of the fifth pair of legs the vas deferens protrudes as a curved tube.

In the male the appendages of the first two abdominal somites are well developed; the first pair are long and hairy and reach to the base of the chelipeds; they are broadly tubular in their distal half and are papillated at the tip; the second pair are stoutish rods about two thirds the length of the first pair, and end each in a broad sucker-like disk. In both of these appendages all the normal component parts are recognizable, although of course modified.

In the female there are five pairs of abdominal legs, of which the first are uniramous.

Colour in life salmon-pink.

A male and a female were dredged at Station 115, 188-220 fathoms; they both have the same dimensions, namely:—Length of carapace 30 millim., breadth 28 millim., length of chelipeds 46 millim., length of third leg 94 millim., length of fifth leg 60 millim.

Order STOMAPODA.

SQUILLA, auctororum.

97. *Squilla tenuispinis*, Wood-Mason.

Squilla tenuispinis, Wood-Mason, Ann. & Mag. Nat. Hist., March 1891, p. 271.

Station 115, 188-220 fathoms, and Station 119, 95 fathoms.

98. *Squilla stridulans*, sp. n., Wood-Mason.

The late Professor Wood-Mason has recorded the following diagnosis of this species:—

“Dorsal integument foveolate-rugose, the sculpture coarser

on the median lobe of the carapace and between the sublateral carinæ of the free thoracic and abdominal terga than at the sides. Rostrum oblong, with slightly convergent concave and upturned sides, rounded antero-lateral angles, and concave or straight or slightly arched anterior margin, without longitudinal ridge, but with a slightly rounded elevation in the middle.

"Eyes large, asymmetrical in themselves, both lobes being greatly produced, the major diameter of their corneæ contained two and a half times in the antennal scale.

"Processes of antennular ring curved, sharp, submucronate-triangular.

"Anterior end of ventral arc of optic ring weakly arched, with a small subacute tooth at each antero-lateral angle, ventrally convex posteriorly, the nauplius eye persistent on the anterior slope of the convexity.

"Median dorsal ridge of anterior lobe of carapace forked just in front of the dorsal tubercles, the prongs of the fork straight, contained about $2\frac{7}{10}$ times in the whole ridge. Carapace obtuse-angulated at the junction of the lateral and postero-lateral margins.

"The acute lobes of the outer ends of the fifth thoracic tergum are separated by a wide notch, the anterior lobe tending towards the ventral position; anterior lobe of the outer end of the sixth tergum is squarish, with the hinder angle acute.

"The dorsal crest of the carpopodite of the great raptorial limbs is entire; the dactylopodite weak and slender, its outer margin level for a short distance at the very base, whence it is regularly arched to the extremity, six-toothed, all the teeth distinctly separate to the very base; the outer and inferior apex of the meropodite is not spinous.

"Interrupted dorsal tubercles on second to fifth abdominal terga not cariniform; of the abdominal terga the lateral carinæ of the first to sixth, the sublateral carinæ of the third to sixth, and the submedian carinæ of the fifth and sixth terminate in a spine.

"Telson thin, with the submedian and sublateral spines of its free margin long and slender, with ten teeth between the submedians and fourteen between the submedian and sublateral on each side; median crest faintly notched; oblique ridges very short.

"In the caudal swimmerets the spinous prolongation of the base is exceedingly slender, with the blunt tooth on the outer margin of its inner and longer lobe reduced to a rudi-

mentary condition; the inner margin of the upper surface of the endopodite is very distinctly and regularly crenulate."

Station 119, 95 fathoms, and Station 120, 240 fathoms.

Order AMPHIPODA.

Family Stegocephalidæ.

ANDANIA, Boeck.

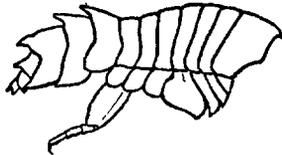
99. *Andania spinescens*, sp. n.

The head is entirely concealed beneath the pointed hood-like expansion of the first thoracic segment.

The first four abdominal segments are carinated, the carina being prolonged backwards as a great spine overhanging the succeeding segment.

Eyes appear to be absent.

Colour in the fresh state pale lilac.



Carapace of *Andania spinescens*, natural size.

Station 110, 1997 fathoms; two specimens, both nearly 40 millim. in length from the tip of the overhanging hood to the end of the minute telson.

Owing to the mutilation of the appendages it is impossible to properly describe this species.

Specimens of two small blind species of Gammaroids were extracted from their burrows in the husk of a sunk coconut dredged from the bottom at Station 108, 1043 fathoms.

The species described in this paper that have not been already figured will be figured in "Illustrations of the Zoology of the R.I.M.S. 'Investigator,'" part iii., to appear either at the end of this year or the beginning of next year.