

Gen. *CYATHURA*, Norman and Stebbing.

1886. *Cyathura*, Norman and Stebbing, Trans. Zool. Soc. London, vol. xii., pt. 4, p. 121.

1904. *Cyathura*, Stebbing, Spolia Zeylanica, vol. ii., pt. 5, p. 9.

5. *Cyathura pusilla*? juv. Stebbing.

1904. *Cyathura pusilla*, Stebbing, Spolia Zeylanica, vol. ii., pt. 5, p. 9, pl. 6 B.

A specimen, measuring only 3 mm. in length, obtained by Mr Crossland at Wasin from ten fathoms depth, fairly agrees with the Ceylon species, except that it has evident dark eyes. It exhibits the organs near the base of the telson described by Thienemann as statocysts (Zool. Anzeig., vol. xxvi., p. 406, figs. 1, 2, 1903). It has, I think, been already pointed out that the species to which they are attributed is not really *Anthura gracilis* (Montagu). In re-examining *Cyathura pusilla* from Ceylon, I find that the dissected specimen now shows them very conspicuously, in full agreement with Thienemann's illustration.

Gen. *CALATHURA*, Norman and Stebbing.

1886. *Calathura*, Norman and Stebbing, Trans. Zool. Soc. London, vol. xii., pt. 4, p. 122.

1887. *Calathura*, H. J. Hansen, Vidensk. Meddel., p. 181.

1897. *Calathura*, Sars, Crustacea of Norway, vol. ii., pt. 3, p. 44.

1900. *Calathura*, Stebbing, Ann. Nat. Hist., ser. 7, vol. v., p. 13.

1901. *Calathura*, Whitelegge, Mem. Australian Mus., vol. iv., pt. 3, p. 225.

1901. *Calathura*, H. Richardson, Proc. U.S. Nat. Mus., vol. xxiii., p. 509.

1901. *Calathura*, Ohlin, Bihang till K. Svenska Vet. Akad. Handl., vol. xxvi., No. 12, p. 17.

1904. *Calathura*, Stebbing, Gardiner's Maldiva and Laccadive Arch., vol. iv., pt. 3, p. 700.

1905. *Calathura*, H. Richardson, Bull. U.S. Nat. Mus., No. 54, p. 71.

To the four species of this genus which I distinguished in 1904 should have been added the Australian *C. gigas*, Whitelegge, nearly the largest of all, since it attains a length of 42 mm., while for its northern rival, *C. brachiata* (Stimpson), next to it in size, the greatest length recorded by Hansen in 1887 was 40.5 mm., but in 1901 Ohlin met with a specimen 43 mm. in length. Ohlin regards *C. brachiata* as quite blind, and Whitelegge says of *C. gigas*, "eyes undistinguishable, destitute of pigment." The new species about to be described will not compete with either of these giants in size, and its eyes are beyond dispute. By the shape and much greater length of the masculine appendix in the second pleopods it is well separated from *C. borradalei*, and by the acutely ending telson from *C. crenulata*, Richardson, in which the telson is round-ended.

6. *Calathura sladeni*, n. sp. (Plate 7 A.)

The antero-lateral corners of the head are well rounded, the head itself about two-thirds as long as the first segment of the peræon. The second segment of the peræon is elongate urn-shaped, with a tuft of setæ at each front corner. The fourth, fifth and

sixth segments have setæ at or near the hind corners, the seventh segment is much the shortest. Following upon six distinct, moderately short, pleon segments, the telson is of long narrowly oval form, ending acutely, with serrate distal margins, set with setæ of various lengths, the largest pair not actually at the apex, though near it.

The eyes are dark, round, near the front corners of the head.

The first antennæ form a leading feature, the first joint longer than second and third combined, the third rather longer than the second; the flagellum is composed of nineteen joints, ten of them stout and furnished with a great bush of long hair-like setæ, from which emerges the slender remainder of the lash, carrying short setæ. The second antennæ have a very stout second joint, the next longest being the fifth, which is only half as broad; the moderately setose flagellum of nineteen joints is rather shorter than the peduncle.

The mandibles end in a long simple tooth; the three joints of the palp are nearly equal in length, rather stout, the curved third being bordered with a neat row of about 13 short spines with a long one at the apex.

The lower lip appears to agree very nearly with the description which Whitelegge gives for that organ in the large *Calathura gigas*, where no doubt the details would be more easy to make out. He says, "The lower lip is keeled externally on the proximal half and exhibits a tuft of hairs on either side internally which arise from near the base and reach almost to the apex." In our species the hairs or setæ appear to arise at some distance from the base.

The first maxillæ have the normal character, the lancet-like head widening a little just below the apex and the inner margin forming a dozen teeth to the backward-directed serrature. The second maxillæ were not clearly made out. The maxillipeds have a small epipod adjacent to a slight concavity in the outer margin of the long second joint at its base, this joint being outdrawn on the inner side so as to overlap the first and part of the second joint of the palp. The triangular plate thus formed carries one seta near its apex; the first joint of the palp has four very unequal setæ on its inner margin, and the longer second ten such on its apex.

The first gnathopods have the third joint rather longer than the second but less broad, the fourth almost semicircular, by its transverse position helping the fifth joint to form a wrist, the long massive hand resting upon them, the basal process of its inner margin strongly projecting, and the whole inner margin being closely beset with little spines and longer setæ, the former chiefly planted on the convex border, the latter projecting from lines of origin on the surface. The finger, distally much curved, fits over the convex border into the hollow between this and the basal process.

The second gnathopods have the third joint rather shorter than the second, both slender, the fourth not longer than broad, wrist like, the fifth very small, triangular, under-riding the sixth, which is two and a half times as long as its greatest breadth, fringed on inner margin with long setæ and six well-defined spines, the finger slightly curved, not nearly so long as the hand, ending in a very small nail.

The first peræopods resemble the second gnathopods, but have the fourth joint rather longer, the sixth more slender.

The second to the fifth peræopods agree together in general structure, though the relative lengths of the joints vary a little. The second and fifth pairs are subequal in length, the third and fourth pairs longer than these. All the joints are slender, the fifth longer than the fourth, and neither overlapped by that nor under-riding the sixth; the finger rather short and a little curved. The second pleopods have both branches narrow, equal in length, both distally fringed with plumose setæ, and the inner having the masculine appendix (its second joint) attached at some little distance from the base, but far above the middle, and descending far below the distal border of the first joint, a narrow straight bar as far as the apex which curves slightly inward.

The uropods reach a little beyond the telson, the upper ramus very long, reaching slightly beyond the long peduncular part which supports the inner ramus at its end, a plate about half the length of the peduncle, fringed with plumose setæ.

Length 10 mm.

Localities. Cargados Carajos, from 28 fathoms, and Saya de Malha, from 26 fathoms. At the latter station the specimen obtained is also about 10 mm. long; the eyes larger; the first antennæ without the thickening and hairy furniture of the flagellum, which is eighteen-jointed; second antennæ with flagellum twenty-two-jointed; fifth peræopods notably shorter than the preceding pairs; second pleopods showing no masculine appendix.

The specific name is given out of respect to the memory of the late Percy Sladen.

Gen. *APANTHURA*, Stebbing.

1900. *Apanthura*, Stebbing, Willey's Zoological Results, pt. 5, p. 621.

This genus was defined as follows:

"Pleon with segments distinct. Mouth-organs as in *Anthura*, except maxillipeds, which have a three-jointed palp, of which the middle joint is much the largest. The last four pairs of peræopods, as well as the preceding pairs of peræon appendages, have the fifth joint under-riding the sixth."

From the character of the peræopods, it seems desirable that *Anthelura abyssorum*, Norman and Stebbing, should be transferred, along with *Anthelura affinis*, Richardson, to the present genus. With the original species *Apanthura sandalensis* and the new one about to be described, there will then be four species, distinguishable as follows:

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|---|---|---|----|
| 1 | } | First gnathopods with small finger closing within apical tooth of the sixth joint, | 2. |
| | | 1. <i>A. xenocheir</i> , n. sp. | |
| 2 | } | First gnathopods without apical tooth to sixth joint, finger conspicuous. | 3. |
| | | Eyes absent; telson apically subacute. | |
| 3 | } | Eyes present; telson apically rounded. | 4. |
| | | First gnathopods with strong hand and finger; upper branch of uropods apically emarginate. | |
| 3 | } | 3. <i>A. sandalensis</i> , Stebbing. | 4. |
| | | First gnathopods with small hand and short finger; upper branch of uropods not apically emarginate. | |
| | | 4. <i>A. affinis</i> (Richardson). | |

It is possible that the New Zealand species *Anthura affinis*, Chilton, 1882, may be properly referable to this genus, in which case Miss Richardson's species would require to be renamed, but Dr Chilton's species makes a still nearer approach perhaps to *Cyathura carinata* (Kröyer).

7. *Apanthura xenocheir*, n. sp. (Plate 7 B.)

The lateral corners of the head are well rounded; its rostral point is acute. The segments of the pereon are not very elongate, the third, fourth, and fifth longer than the others. The first six segments of the pleon are short, with their lines of separation not by any means conspicuous, partly owing to the pattern of irregular dark brown spots, with which the whole of the back is diversified; the corners of the fifth segment exhibit each an outstanding tuft of five plumose setæ. Eyes round, dark, close to rounded corners of the head.

First antennæ short, first joint the largest, third a little longer but narrower than the second, flagellum shorter than the third joint of peduncle, three-jointed, the last two joints minute. Second antennæ a little longer than the first, second joint of peduncle the largest, the small flagellum setulose, perhaps three-jointed.

The mandibles ending bluntly in two transparent teeth or lobes, the palp with a stout middle-joint, the third joint much smaller, fringed with five spines. First maxilla with serrature of three denticles at the apex. Other mouth-parts not well made out, but maxillipeds seemingly in agreement with those of *A. sandalensis*.

The first gnathopods are the distinctive feature of this species. The second joint is as usual distally widened, the third nearly as long as the second, the fourth in coalescence with the fifth forming a small cup-like wrist, the sixth joint or hand massive, the hind margin produced into a strong tooth fringed on its inner side with four spinules, a little cavity being left between it and the circular lobe which covers the base of the finger. Into this cavity the strongly curved but very small finger closes down. In Chilton's *Anthura affinis* the hand has a small apical tooth, but the finger closes over the tooth to meet a setiferous process of the fifth joint produced along the inner margin of the sixth joint. This is also the case in *Cyathura carinata* (Kröyer).

The second gnathopods and the five pairs of pereopods are all almost exactly alike, the second gnathopods and first pereopods confronting the others and having a little advantage in robustness, but this is chiefly over the fifth pereopods. In the second gnathopods the fourth joint with its outer apex actually reaches the sixth joint, in the following limbs there is a small but successively increasing interval. In all these limbs, however, the small fifth joint has the quality of under-riding the sixth joint at its base. The four pairs of marsupial membranes enclosed in this specimen thirty-three large eggs.

The first pleopods have a large distally widened outer branch, rather longer than the narrow inner branch which has plumose setæ on its rounded apex; the plumose setæ of the outer branch begin at its greatest breadth on the outer margin and are carried a very short distance up the inner.

The uropods have serrate margins, carrying plumose setæ, to the large upper branch which is partially unfolded on the outer side, and a little exceeds the peduncular part

of the inner branch. The terminal joint of the latter is also strongly plumose except on the straight proximal part of its inner margin; it widens a little from the base, and is more than half as long as the peduncle.

The oval telson is broadly rounded at the end, which carries centrally two pairs of rather long setæ beset with some short ones.

Length about 5 mm.

Locality. Egmont, breakers on reef edge.

Specific name from ξένος, strange, and χείρ, hand, in allusion to the unique character of the hand and finger in the first gnathopods.

Fam. **Eurydicidæ.**

1905. Eurydicidæ, Stebbing, in Herdman's Rep. Ceylon Pearl Fish., pt. 4, Rep. 23, p. 10.

Gen. *EURYDICE*, Leach.

1815. *Eurydice*, Leach, Trans. Linn. Soc. London, vol. xi., p. 370.

8. *Eurydice truncata* (Norman).

1868. *Cirolana truncata*, Norman, Ann. Nat. Hist., ser. 4, vol. ii., p. 421, pl. 23, figs. 12—15.

1869. *Cirolana truncata*, Norman, Brit. Assoc. Report for 1868, pp. 255, 288.

1882. *Eurydice truncata*, Norman, Proc. R. Soc. Edinburgh, 1881—2, p. 683.

1890. *Eurydice truncata*, H. J. Hansen, Vid. Selsk. Skr., ser. 6, vol. v., pl. 3, pp. 366, 375.

1895. *Eurydice truncata*, H. J. Hansen, Isopoden, Cum. u. Stomat. der Plankton Exp., p. 13, pl. 1, fig. 5—5 h.

1905. *Eurydice truncata*, Tattersall, Fisheries, Ireland, Sci. Invest., 1904, II. [1905], p. 45, pl. 11, figs. 5—8.

The broad telsonic segment has the lateral margins finely crenulate and the truncate distal margin cut into twelve teeth, of which the outermost but one at each end is conspicuously the largest. This character apparently distinguishes the species from all others of the genus hitherto described. The segment is quite pellucid, except for a band of colour at the base. Under high magnification it is seen to be covered with scale-like markings. The truncate uropods are likewise pellucid, the outer plate much smaller than the inner, this latter in our specimens being considerably larger than shown in the figure of Norman's North-Atlantic specimen. The first antennæ have also a longer first joint to the flagellum than in his figure, but this feature is doubtless variable within the lifetime of the individual*. The flagellum of the second antennæ may have as many as twenty-seven joints, and is sometimes as long as the whole animal. The first gnathopods in the Eastern specimens are in exact agreement with Norman's figure. In the second pleopods the masculine appendage is attached a little above the middle of the inner plate's inner margin, and extends beyond both plates. It is thickest at each extremity, but the

* See on this subject Tattersall's observations, which corroborate my supposition and give further information.

apex forms a little tooth, which, however, may not be invariably present, as it is not shown in Hansen's figure of this appendage; the hairy inner margin is slightly concave.

The mouth-organs are almost exactly as figured by Hansen for *E. elegantula*. The horn of the clypeus is narrow, a little emarginate at the tip. The colour dorsally is brown, with stellate markings on the peræon, only the telsonic segment being colourless except at its base.

The length of the specimen measured was 4.5 mm.

Locality. S. of Saya de Malha Bank, in surface net (*m*).

9. *Eurydice humilis*, n. sp. (Plate 8 A.)

This species, founded on a single specimen, an adult male, is distinguished by its small size, its poorly furnished limbs, the shape of the telsonic segment, and the form of the male appendix in the second pleopods. The species to which it makes the nearest approach are *E. achata* (Slabber), *E. inermis*, Hansen, and *E. convexa*, Richardson. The first two, like most species of this genus, have the telsonic segment more or less truncate, in the third it is denticulately rounded at the apex, but on each side there is a tooth separated by an interval from the apical dentation. In the present species there are five apical teeth on the narrowly rounded apex, preceded on each side by a short space of faintly perceptible serration.

The eyes are large and dark. The first antennæ reach about to the end of the third joint of the second pair, in which the fourth joint is not twice as long as the third, supporting a flagellum of twenty-one joints with a long apical seta.

The upper lip is furnished with six little dark spinules fringing the emargination of its distal border.

The mandibles have the cutting-edge divided into three teeth on one member and four on the other, there are six spines in the spine-row, and about fourteen teeth on the blade which represents the molar. The second joint of the palp is much the longest, and carries a single seta; the third joint is tipped with five setæ. The other mouth-organs, so far as could be seen, did not depart from the usual type.

As will be seen from the figures the gnathopods and peræopods are content with few spines and setæ. The first and second gnathopods and first peræopods are nearly alike in size and structure. The last four peræopods agree in structure, but the second pair is much the smallest, and the fourth notably larger than the third or fifth. The male appendages on the ventral part of the seventh peræon segment are short and cylindrical.

The second pleopods have three spines on the inner margin of the peduncle. The male appendix or second joint of the inner ramus is attached a little above the middle of the first joint, descending considerably below it as a straight narrow rod, with a little point turned outward at the apex, without any deep incision such as is noted for *E. achata* (commonly called *E. pulchra*). The uropods have the outer branch much shorter than the inner, and do not nearly reach the apex of the telsonic segment.

Length 3 mm., apparently smaller than any other record for an adult male in this genus.

Locality. At anchor off Salomon Atoll, in surface net (Q). Several cryptoniscian larvæ were obtained on the same occasion.

PONTOGELOS, n. g.

Only the male known. Flagellum of first antennæ of extraordinary length; mandibles as in other Eurydicidæ with the molar part elongate-triangular, laminar, serrate on the front margin, but with second joint of palp unusually long; second maxillæ with the middle lobe much narrower than either of the others and carrying a single seta; maxillipeds with hooks on the plate of the second joint; uropods with peduncle very moderately produced on the inner margin, the outer of the membranaceous rami much the smaller.

The generic name is formed from *πόντος*, sea, and *γέλως*, laughter, a joke, or, colloquially, a lark, in allusion to the name of the exploring vessel.

10. *Pontogelos aselgokeros*, n. sp. (Plate 8B.)

To the generic characters above given might possibly be added the comparative size of the pleon which equals in length the anterior part of the animal, but nearly the same proportion is attained in *Eurydice elegantula*, Hansen. As will be seen from the figure I have given of the lower lip, that part differs greatly from the form generally found in this family. My dissection, however, did not afford an entirely satisfactory view of it, so that I cannot lay much stress on the representation.

The head is rather strongly produced, with the rostral point bent over towards the frontal lamina which is spatulate with flattened distal margin. The peræon and pleon are nearly parallel-sided. The first peræon segment has the produced front corners rounded. The side-plates of the six following segments are neither deep nor acute. The large telsonic segment has a length equal to its breadth at the base, from which it presently widens, then curves to a subrotund ending. For rather more than its distal third its finely serrulate margin is fringed with setæ of moderate length, the central point having a couple of setules, and about midway of the fringing a scarcely perceptible angle is formed. The segment itself, except at the base, like the uropods, is pellucid.

The eyes are large, roughly rounded, in spirit light orange-brown.

The first antennæ have a stout, almost round, first joint, followed by a much smaller joint which is probably the true third, unless that is represented by what looks like the first joint of the slender, monstrously elongated, flagellum. This with its ninety joints extends considerably beyond the telsonic segment. It is true that Hansen in his conspectus of this family speaks of some genera having numerous joints in the first antennæ, but what has hitherto been considered as long is a flagellum of fifteen joints reaching the hind margin of the third peræon segment, as in *Cirolana chiltoni*, H. Richardson, 1905.

The second antennæ are here contrary to custom much shorter than the first, yet absolutely they are of unusual length, having a flagellum of fifty joints. The fifth joint of the peduncle is about once and a half as long as the fourth.