

No. VI.—ISOPODA FROM THE INDIAN OCEAN AND BRITISH
EAST AFRICA.

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(Plates 5—11.)

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IN two of the earlier reports specimens collected by Mr Cyril Crossland in British East Africa have been discussed in combination with those obtained by Mr Stanley Gardiner from the Indian Ocean in 1905. This procedure, in itself by no means unsatisfactory, I am following not quite by intention. The report on Mr Crossland's Isopoda from the Red Sea was already out of my hands before I became aware that specimens which he had collected on a previous expedition at Zanzibar and Wasin in 1901—2 were included with those due to the voyage of the "Sealark." Though the distances are considerable between some of the collecting stations of the three expeditions, there is probably little to interfere with the wide distribution either of the free-swimming Isopoda or of those partially parasitic on fishes. It is reasonable, therefore, when circumstances permit it, to group together in a single survey the gatherings from the extensive area with which these exploring agencies have been concerned.

Only four out of the thirty-four species here under discussion are of relatively important size. Many of them are rather perplexingly small. Several are represented in the collections by single specimens.

The diversity, however, is not only specific, seeing that they are spread over five tribes, thirteen families, and no fewer than twenty-nine genera. Four of the genera and fourteen of the species are set forth as new. Among these *Kalliapseudes makrothrix* from Wasin, *Pontogelos aselgokeros* from Mauritius, representatives of new genera, and the new species *Apanthura xenocheir* from Egmont Reef, have rather striking peculiarities which will repay attention.

Besides the Isopoda Mr Crossland's collection included one gathering of Leptostraca. At Wasin from a depth of ten fathoms he obtained six specimens of *Paranebalia longipes* (v. Willemoes Suhm). By Professor Sars in the "Challenger" Reports, vol. xix., 1887, and by Dr J. Thiele in the "Valdivia" Reports, vol. viii., 1904, this member of the family Nebaliidæ has been treated with admirable fullness of description and illustration. As the Wasin specimens comprised none of the rare males, there is no need here to add anything further to the literature of the subject.

ISOPODA ANOMALA.

Tribe *CHELIFERA*.Family *Apseudidæ*.

	Collected at	By
<i>Apseudes</i> sp. ? juv., p. 85.	Wasin.	Crossland.
<i>Kalliapseudes</i> , n. g., p. 86.		
<i>Kalliapseudes makrothrix</i> , n. sp., p. 86, pl. 5.	Wasin.	Crossland.
<i>Parapseudes hirsutus</i> , n. sp., p. 89, pl. 6 B.	Egmont Reef.	Gardiner.

Family *Tanaidæ*.

<i>Heterotanais anomalus</i> (?) Sars, p. 90.	Zanzibar.	Crossland.
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ISOPODA GENUINA.

Tribe *FLABELLIFERA*.Family *Anthuridæ*.

<i>Cyathura pusilla</i> juv. (?) Stebbing, p. 91.	Wasin.	Crossland.
<i>Calathura sladeni</i> , n. sp., p. 91, pl. 7 A.	Cargados Carajos and Saya de Malha.	Gardiner.
<i>Apanthura xenocheir</i> , n. sp., p. 94, pl. 7 B.	Egmont Reef.	Gardiner.

Family *Eurydicidæ*.

<i>Eurydice truncata</i> (Norman), p. 95.	S. of Saya de Malha Bank.	Gardiner.
<i>Eurydice humilis</i> , n. sp., p. 96, pl. 8 A.	Off Salomon Atoll.	Gardiner.
<i>Pontogelos</i> , n. g., p. 97.		
<i>Pontogelos aselgokeros</i> , n. sp., p. 97, pl. 8 B.	Mauritius.	Gardiner.
<i>Cirolana minuta</i> , Hansen, p. 98.	Praslin Reef, Coetivy, Diego Garcia.	Gardiner.

Family *Corallanidæ*.

<i>Alcirona maldivensis</i> , Stebbing, p. 99.	Cargados Carajos.	Gardiner.
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Family *Argathonidæ*.

<i>Argathona reidi</i> , n. sp., p. 100, pl. 9 A.	Zanzibar.	Crossland.
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Family *Ægidæ*.

<i>Ega ommatophylax</i> , Stebbing, p. 101, pl. 9 B.	Mauritius.	Gardiner.
<i>Rocinela orientalis</i> , Schiödte and Meinert, p. 101.	Zanzibar.	Crossland.

Family *Cymothoidæ*.

<i>Nerocila trichiura</i> (Miers), p. 102.	Great Chagos.	Gardiner.
<i>Cymothoa eremita</i> (Brünnich), p. 102.	Zanzibar.	Crossland.
<i>Meinertia carinata</i> (Bianconi), p. 103.	Seychelles.	Gardiner.

Family *Sphæromidæ*.

<i>Cymodoce pubescens</i> (Milne-Edwards), p. 104.	Zanzibar, Wasin.	Crossland.
<i>Cymodoce zanzibarensis</i> , n. sp., p. 105, pl. 9 D.	Zanzibar, Wasin.	Crossland.
<i>Cymodoce bicarinata</i> , Stebbing, p. 106.	Zanzibar.	Crossland.
<i>Cilicæa latreillii</i> , Leach, p. 106.	Wasin.	Crossland.
<i>Paracilicæa</i> , n. g., p. 106.		
<i>Paracilicæa hanseni</i> , n. sp., p. 107, pl. 9 C.	Zanzibar.	Crossland.

Tribe *VALVIFERA*.Family *Idoteidæ*.

<i>Idotea metallica</i> , Bosc, p. 108.	Collected at Between Saya de Malha and Coetivy.	By Gardiner.
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Tribe *ASELLOTA*.Family *Jæridæ*.

<i>Janira crosslandi</i> , Stebbing, p. 108, pl. 6 A.	Egmont.	Gardiner.
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Family *Stenetriidæ*.

<i>Stenetrium chiltoni</i> , Stebbing, p. 110.	Amirante.	Gardiner.
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Tribe *EPICARIDEA*.Family *Bopyridæ*.

<i>Kepon halimi</i> , n. sp., p. 112, pl. 10 c.	Cargados Carajos.	Gardiner.
<i>Dactylokepon</i> , n. g., p. 113.		
<i>Dactylokepon richardsonæ</i> , n. sp., p. 113, pl. 11 c.	Seychelles.	Gardiner.
<i>Dactylokepon catoptri</i> , n. sp., p. 113, pl. 10 b.	Amirante.	Gardiner.
<i>Trapezicepon amicornum</i> (Giard and Bonnier) with parasite, p. 114, pl. 11 b.	Amirante.	Gardiner.
<i>Ergyne savignyi</i> , n. sp., p. 115, pl. 10 a.	Cargados Carajos.	Gardiner.
<i>Cancricepon</i> sp., p. 116.	Amirante.	Gardiner.
<i>Gigantione rathbunæ</i> , n. sp., p. 117, pl. 11 a.	Salomon Atoll.	Gardiner.
<i>Cryptoniscian larvæ</i> , pp. 97, 115.	Off Salomon Atoll and Amirante.	Gardiner.

LEPTOSTRACA.

Family *Nebaliidæ*.

<i>Paranebalia longipes</i> (v. Willemoes Suhm) Preface.	Wasin.	Crossland.
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Tribe *CHELIFERA*.Family *Apseudidæ*.

1880. *Apseudidæ*, Sars, Arch. Naturv. Christian., vol. vii., p. 6.
 1886. *Apseudidæ*, Sars, Arch. Naturv. Christian., vol. xi., p. 265.
 1886. *Apseudidæ*, Norman and Stebbing, Trans. Zool. Soc. London, vol. xii., pt. 4,
 p. 77.
 1895. *Apseudidæ*, Hansen, Plankton Exp., Tanaidacea, vol. ii., G. c., p. 49.
 1896. *Apseudidæ*, Sars, Crustacea of Norway, vol. ii., p. 5.
 1901. *Apseudidæ*, Whitelegge, Mem. Australian Mus., vol. iv., pt. 3, p. 204.
 1905. *Apseudidæ*, H. Richardson, Bull. U.S. Nat. Mus., No. 54, p. 37.

Gen. *APSEUDES*, Leach.

1814. *Apseudes*, Leach, Edinb. Encycl., vol. vii., p. 404.

1. *Apseudes* sp. ?juv.

At Wasin from a depth of ten fathoms Mr Crossland obtained a specimen of this genus only 2 mm. in length. The important first gnathopods were unfortunately missing

and the uropods imperfect. The outer branch of the latter in being four-jointed agrees with Hansen's description of his *Apseudes intermedius*, though his figure represents this branch as five-jointed. The Wasin species has the telsonic segment parallel-sided, without the two blunt processes on each side that occur in Hansen's species. Our specimen has a six-jointed flagellum to the second antennæ, and respectively one, three, and four spines on the fourth, fifth, and sixth joints of the second gnathopods. Hansen founded his species on two female specimens with half developed marsupium, their length being 2.3 mm., flagellum of second antennæ four-jointed, spines one, two, and four on the above-named joints of the second gnathopods. Though the very small size suggests specific identity between the Cape Verde specimens and the present form from East Africa, details of structure do not warrant their union.

KALLIAPSEUDES, n. g.

Plumose setæ extensively developed on large fourth joint of second antennæ, on fifth joint of first gnathopods, and on palps of mandibles and maxillipeds. Maxillipeds with the terminal sixth joint the longest. Finger of second gnathopods not apically narrowed, its round end encircled by setæ. Fingers of first and second peræopods very elongate, curved, acute, of third and fourth short, straight, apically blunt, of fifth like those of the first and second pairs, but much shorter. Pleopods with inner ramus much longer and broader than the outer.

The generic name is compounded of κάλλος, beauty, and *Apseudes*, the designation of the closely allied genus, from which it is however strikingly distinguished by the group of characters above given. It is possible that others may be added, whenever opportunity offers for a more satisfactory examination of the mouth-organs, but the palps of the maxillipeds are of themselves sufficient to mark a new genus.

2. *Kalliapseudes makrothrix*, n. sp. (Plate 5.)

Cephalic segment areolated, front obtuse, lateral angles without eyes or separated eye-lobes. Penultimate and antepenultimate segments of peræon the longest, pleon not much narrower than peræon, its first five segments with rounded setiferous lateral margins, these and the peræon segments furnished each with a medio-ventral spine. The telsonic segment broader than long, the lateral margins convex to the insertion of the uropods, then narrowing to a bluntly triangular area, a little more than a third of the total length.

First antennæ. The large first joint more than twice as long as the two successively smaller following joints combined; flagellum not more than half as long as peduncle, its first joint common to the two flagella, but more produced on the inner than the outer side, the outer flagellum with six, the inner with three, additional joints.

Second antennæ. These just reach the flagella of the first pair, by the broad bases of which their peduncles are almost completely concealed. The first joint is produced on the inner side to a setiferous process, possibly an epipod in coalescence. A corresponding process is found in some species of *Apseudes*, but apparently less developed than here. The second joint, broader than long, has on the outer side a narrow exopod bearing four

setæ. The third joint is extremely short, while the fourth is exceptionally long and provided with a fringe of very long plumose setæ, the fifth joint is short, and might pass for a member of the five-jointed flagellum, which by its help would just equal the length of the fourth joint of the peduncle.

The mandibles proved to be exceedingly brittle, but most of their characters could be made out. They have the long narrow trunk and strongly projecting molar as in *Apseudes*. Each has a pellucid curved strap-like plate, strongly projecting and carrying apically four to five spines, representing the spine-row. Between this and the stout dentate cutting edge one mandible has a delicate slightly denticulate accessory plate, which is not represented on the other mandible, where the cutting edge is surmounted by a rather conspicuous tooth on the upper margin. The palp, which is a very distinctive feature, was unfortunately in each case broken, so that the jointing remained obscure. Possibly there is a coalescence of the first and second joints, with a third joint about half the length of these two combined. In any case the palp is very large and closely fringed on the inner margin with very long plumose setæ, a feature not found in other members of the family.

The first and second maxillæ were not very clearly made out, except as regards the outer plate, which in each is distally widened, in the first maxillæ carrying some eleven short apical spines, in the second short apical setæ.

The maxillipeds are six-jointed, with a large epipod, the plate of the second joint fringed on the inner and distal margin with short spines, the third joint short, the three following rather long, successively longer and all three closely fringed with long plumose setæ, the longest at the apex of the last joint. The latter characters make these appendages apparently unique in this family, so far as at present known.

The first gnathopods are of the usual pattern, the second joint carrying a very small two-jointed setiferous exopod, the third and fourth joints coalesced, short, the fifth very long, fringed with closely set plumose setæ of great length, an exceptional feature, the two following joints forming a chela, with the thumb broader than the movable finger, their acute apices crossing when their straight denticulate inner margins are closed together. The front margin of hand and finger is convex, and near to that of the hand there is an open fringe of plumose setæ. Hind margin of hand sinuous.

Second gnathopods stouter than first; exopod of the stout second joint apparently a single-jointed rudiment, third joint short, fourth nearly as long and stout as the second, fifth short, with two stout spines on hind margin, sixth joint shorter than fifth, broader than long, with four stout spines on hind margin and one on apex of front, these spines being minutely pectinate on both edges; the finger nearly as long as the hand, slightly curved, broader at the rounded apex than at the pellucid base, and apically surrounded by a bush of setiform spines or spiniform setæ, presenting as a whole a very singular character.

First and second peræopods closely alike, distinguished from the others by the great length of the slender, curved finger, which is twice as long as the sixth joint, that and the bulkier fifth having each four conspicuous but slender spines on the hind margin.

Third and fourth peræopods closely alike, the finger narrow, straight, blunt-ended,

less than half as long as the sixth joint, tipped with a spine and setæ; the sixth joint as long as the fifth, carrying various spines chiefly on the distal half, and having on the outer margin near the base the plumose cilium spoken of by Professor Sars as an auditory appendage characteristic of these limbs; high up on the outer margin of the second joint there are two similar but much smaller cilia.

Fifth peræopods. These have the finger shaped as in the first and second pairs, but very much shorter, with a little distinct nail preceded by a setule; the sixth joint, scarcely so long as the finger and shorter than the preceding joint, has four conspicuous curved spines on the inner margin, which is fringed with a row of spinules.

The five pairs of pleopods are uniform in character, the second joint of the peduncle having its inner margin and the branches of their free margins, except the broad base of the inner one, fringed with plumose setæ; the outer branch not longer than the peduncle, but the inner much longer and broader than either, with a long plumose spine, bent at the base and tipped with two setules, issuing from the top of the inner margin.

The uropods have a peduncle reaching the end of the telsonic segment, supporting a short slender three-jointed ramus, of which the first two joints are very small, and a long inner ramus of twenty-two joints varying in length and all together about equal to the length of the pleon.

The specimen, not including antennæ or uropods, measured 5.25 mm. in length.

Locality. Wasin, E. Africa, 10 fathoms, mud.

The specific name, from the Greek *μακρόθριξ*, long-haired, alludes to the luxuriant development of setæ on several of the appendages.

Along with this specimen there was an *Apseudes*, 2 mm. long, and a *Cyathura*, 3 mm. long, both probably not adult.

Gen. *PARAPSEUDES*, Sars.

1880. *Parapseudes*, Sars, Arch. Naturv. Christiania, vol. vii., p. 16.

1886. *Parapseudes*, Sars, Arch. Naturv. Christiania, vol. xi., p. 303.

1905. *Parapseudes*, H. Richardson, Bull. U.S. Nat. Mus., No. 54, p. 47.

The earlier forms assigned to this genus are the little *P. latifrons* (Grube), scarcely more than 3 mm. long, from the Mediterranean, and *P. goodei*, Richardson, of which the length is not mentioned, from Bermudas. It is said to have a close resemblance to Grube's species.

In the amended definition of 1886 Sars gives the following characters:—Body short, depressed, broadest anteriorly. Carapace without definite sculpture; rostral lamina not delimited at the base. Eye-lobes definitely separated, with well developed visual elements. First antennæ with the two flagella subequal in length; the second with the lamellar appendage very small. Mandibular palp very small and sparingly furnished with setæ. Chelipeds about as in *Apseudes*, but scarcely differing in the two sexes. Fossorial feet [second gnathopods] with coxal joint simple, lamellar, without process. Peræopods comparatively very strongly developed, not very different from the fossorial feet, and, like these, armed with numerous strong spines on the inner margin. Pleon with only four

pairs of pleopods, these having the outer branch two-jointed; the fifth segment without appendages. The uropods as in *Apseudes*.

The principal change consists in the omission of the statement that the first and second gnathopods were devoid of a rudimentary epipod, Sars having found on renewed investigation that these rudiments were in fact present in the new genus as in the old.

The specimen now to be described is unfortunately devoid of the first gnathopods, and the presence of a rudimentary epipod on the second could not be definitely determined. The solitary specimen at command was still smaller than *P. latifrons*, which Sars speaks of as the least member of the present family, and this minuteness has left me uncertain whether the characters of the pleopods suit the requirements of the genus. I think that they do so, at least in regard to the fifth pair being absent. The agreement of the armature of the first and second peraeopods with that of the second gnathopods is well marked.

3. *Parapseudes hirsutus*, n. sp. (Plate 6 B.)

Head with rostral lamina produced into an apical point and slightly delimited at the base. General shape strongly tapering from broad head to narrow pleon. First five segments of pleon very short, first overlapped by lateral corners of last peræon segment, second and fifth horizontally produced into small lateral processes, the telsonic segment widened near the base, below the tuberculiform widening descending squarely to the insertion of the uropods, the remainder forming an equilateral triangle which reaches the end of the peduncle of the uropods. Three pairs of plumose setæ are arranged on the back of this segment, the whole animal being dorsally decorated with such setæ in a very conspicuous manner.

The first antennæ have a long setose first joint, followed by two short ones; the principal flagellum of seven joints and the not much shorter accessory of five joints are not nearly so long as the peduncle. The first joint of the principal flagellum is apparently in coalescence with that of the accessory, which in turn is not very distinctly marked off from the next following joint. The much shorter second antennæ are wide apart, being inserted just under the first pair. They have a small narrow scale or exopod on the second joint; the three-jointed flagellum is much shorter than the peduncle. The eyes are dark, the lobes ending in a pointed apex.

The mouth-organs, as will be seen by the figures, are in substantial agreement with those known for the genus *Apseudes*. The mandibular palp shows no falling off in setose armature, and the second joint is unusually broad. Between the palp and the cutting edge of the mandible the upper or outer margin shows a fine denticulation. On one member of the pair the cutting edge and the accessory plate are equal.

The second gnathopods have four stout spines on the inner margin of the fifth joint and six on that of the sixth joint; upon the apex of this joint there are some microscopically serrate spines.

The first two peræopods are very similar in their armature to the second gnathopods. In the three following pairs the strength of the marginal spines is less conspicuous, but

about the apex of the sixth joint in the third peræopods the serrate spines are more numerous. The third and fourth pairs have a minute character bringing the species into accord with *P. latifrons*. In that species Professor Sars notices, in speaking of the third and fourth peræopods, that "the auditory cilium characteristic of these feet is inserted in advance of the middle of the sixth joint's outer margin and less strongly developed than in the genus *Apseudes*." His figures of the third peræopod of *Apseudes robustus* show that the cilium in question is there very near the base of the joint. In our *Parapseudes* it will be seen that, though varying in position on the different limbs, it is always at a considerable distance from the base of the sixth joint.

The presence of the pleopods could not be made out.

Both branches of the uropods appear to begin with an ill-defined minute joint, perhaps only a cuticular fold, followed in the inner branch by eight unequal but fairly long joints, and in the outer by three such joints, most of the joints carrying long setæ.

Length, in bent position, 2 mm. Hansen's *Apseudes intermedius* measured 2.3 mm., for females with half-developed marsupium, therefore perhaps not full-grown. Our specimen contained eight large eggs in the marsupium, and was probably fully adult. It resisted efforts to straighten it out for exact measurement.

Locality. Egmont, breakers on reef edge.

The specific name alludes to the prominence of its setose furniture.

Fam. **Tanaidæ.**

Gen. *HETEROTANAIS*, Sars.

1880. *Heterotanaïs*, Sars, Arch. Naturv. Christian., vol. vii., p. 28.

4. (?) *Heterotanaïs anomalus*, Sars.

1880. *Heterotanaïs anomalus*, Sars, Arch. Naturv. Christian., vol. vii., p. 30.

An ovigerous specimen, a little under 2 mm. in length, was taken at Zanzibar by Crossland. As no male accompanied it, the identification with the Mediterranean species can only be regarded as conjectural.

Tribe *FLABELLIFERA*.

Fam. **Anthuridæ.**

1814. Anthuridæ, Leach, Edinb. Encycl., vol. vii., p. 433.

1900. Anthuridæ, Stebbing, Willey's Zoological Results, pt. 5, p. 618.

1901. Anthuridæ, Whitelegge, Mem. Australian Mus., vol. iv., pt. 3, p. 216.

1904. Anthuridæ, Stebbing, Gardiner's Maldive and Laccadive Arch., vol. ii., pt. 3, p. 699.

1904. Anthuridæ, Stebbing, Spolia Zeylanica, vol. ii., pt. 5, p. 8.

1905. Anthuridæ, Stebbing, Herdman's Ceylon Pearl Fish., pt. 4, Rep. 23, p. 8.

1905. Anthuridæ, H. Richardson, Bull. U.S. Nat. Mus., No. 54, p. 62.

Under the last reference and that for 1900 a sufficiently full account will be found of the bibliography of this family.

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. borradailei*, 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:

- | | | | |
|---|---|---|----|
| 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.

The mandibles have the cutting edge strongly tridentate, the spine row consisting of seven or more short spines, the teeth of the molar saw twelve to fourteen, the palp set much further back than usual in this family, its first joint a little more than a quarter as long as the second, shorter but much stouter than the third, which is fringed with graduated spines, increasing in size towards the apex. The distal two-fifths of the second joint are spiniferous.

The first maxillæ have three plumose setæ on the inner plate and eleven unequal spines, of which two are obscurely denticulate, on the outer.

The second maxillæ have five setæ on the inner, four on the outer, and a single seta on the little median lobe.

The maxillipeds have a broad second joint, not much longer than broad apart from its produced plate, which is tipped with two setæ and carries certainly one hook and apparently three others. The sixth and seventh joints are not very large, the fourth and fifth are broad.

The limbs of the peræon are of the usual pattern, but not powerful, the first three pairs short, the last four very slender, and of these only the two hinder pairs elongate. The ventral male appendages of the seventh peræon segment are short, parallel-sided.

The pleopods have setose fringes on the rami, excepting the inner ramus of the fifth pair. In the second pair the peduncle is broader than long, furnished with three hooked spines and a plumose seta on its inner border. The second joint of its inner ramus, constituting the masculine appendix, is affixed nearly at the base of the ramus. The structure is rather peculiar. The inner margin for about two-thirds of the length is setuliferous and sinuous, widest at the top, rather abruptly narrowing below, the last third being quite narrow, ending in a little slightly inward turned point, beyond which the body of the ramus is prolonged for a short distance. In at least the first four pairs of pleopods the inner upper corner of the inner ramus is overhung by a lappet which curves first inward and then a little outward.

The outer ramus of the uropods is much narrower and shorter than the inner, both are round ended, and setiferous on both margins.

Length of specimen in slightly curved position 7 mm.

Locality. Mauritius, 5 miles W. of Black River, in surface net (*d*).

The specific name, from the Greek ἀσελγοκέρας, signifying a creature with outrageous horns or antennæ, is applied to this species as one which by its antennæ is in violent conflict with the custom of its family.

Gen. *CIROLANA*, Leach.

1818. *Cirolana*, Leach, Dict. Sci. Nat., vol. xii., p. 347.

11. *Cirolana minuta*, H. J. Hansen.

1890. *Cirolana minuta*, Hansen, Vid. Selsk. Skr., ser 6, vol. v., p. 347, pl. 3, fig. 5, pl. 4, fig. 1.

1900. *Cirolana minuta*, Stebbing, Willey's Zoological Results, pt. 5, p. 634.

Hansen distinguishes this species from his *Cirolana parva* principally by its smaller

size, its rather more slender legs, its differently shaped masculine appendix to the second pleopods of the male, and above all by the possession of an acuminate horn on the base of the frontal lamina.

The specimens from the Seychelles agree closely in size with Hansen's measurements, which are 4.3 mm. for the male, and 4.8 mm. for the female, though I cannot pretend to the same nicety in determining the fractions of a millimetre. Also, they have the masculine appendix, not incurved as in *C. parva*, but quite straight, ending acutely much (in one case very much) beyond the other part of the ramus. But the hinder peræopods do not show the special slenderness of the second joint which Hansen figures, and I cannot perceive the required horn on the frontal lamina of either of the two males dissected.

Localities. Praslin Reef and Coetivy. A female specimen, 5 mm. long, from Diego Garcia, carried numerous young ones in an advanced stage of development. Its first antennæ have a nine-jointed flagellum, and its second one of twenty-two joints.

Fam. **Corallanidæ.**

1904. Corallanidæ, Stebbing, Gardiner's Fauna Maldive and Laccadive Arch., vol. ii., pt. 3, p. 703.

Gen. *ALCIRONA*, Hansen.

1890. *Alcirona*, Hansen, Vid. Selsk. Skr., ser. 6, vol. v., p. 285.

12. *Alcirona maldivensis*, Stebbing.

1904. *Alcirona maldivensis*, Stebbing, Gardiner's Fauna Maldive and Laccadive Arch., vol. ii., pt. 3, p. 708, pl. 51 B.

The present specimen is larger but proportionally narrower than that originally described. It is likewise a female with young, which, as in the other case, are far advanced.

Length 7.5 mm. Breadth 3 mm.

Locality. Cargados Carajos, where the "Sealark" obtained it from a depth of 30 fathoms.

Fam. **Argathonidæ.**

1905. Argathonidæ, Stebbing, Herdman's Pearl Fish., Suppl. Rep. 23, p. 16.

In the single species for which this family was founded the fourth and fifth joints of the maxillipeds are fused into one. Another species has now come to light, in which the distinctness of these two joints is clearly manifest. This might be regarded as an important generic difference, were it supported by any other character of equal weight. But that is not the case. In all other respects features than can fairly be allowed generic value appear to be the same for both species.

Gen. *ARGATHONA*, Stebbing.

1905. *Argathona*, Stebbing, Herdman's Pearl Fish., Suppl. Rep. 23, p. 17.

The statement that the maxillipeds are six-jointed through fusion of the fourth and fifth joints must be excluded from the definition alike of the family and the genus, as

inapplicable to the new species, which is well separated from its predecessor by the absence of this fusion. The two are separated further by more easily observable characters as follows:

Without upturned rostral process; dorsal surface strongly spinulose. 1. *A. normani*, Stebbing.

With strongly upturned rostral process; dorsal surface smooth. 2. *A. reidi*, n. sp.

13. *Argathona reidi*, n. sp. (Plate 9 A.)

The rather small head is scarcely half as long as broad. The rostral process is upturned so as to present in profile a flat top, its curvature over-arching a shaded hollow, behind which the distal part of the head forms a raised triangle, with a faintly-marked tubercular swelling at each end of its base. The eyes are wide apart, tending to reniform, diverging to touch the lower margin outside each tubercle. The width of the peræon increases from the first segment, which is slightly the longest, to the fourth. The three following segments are shorter. The side-plates are diagonally furrowed. The first pleon segment is completely hidden. The four following are short. The telsonic segment is wider at the base than its length and forms a broadly round-ended triangle, not reaching quite so far back as the inner ramus of the uropods. Like them it has a close fringe of not over-long plumose setæ, interspersed with little horny spines.

The first antennæ reach the middle of the last joint of the peduncle of the second. Both pairs are in close agreement with those of *A. normani*. The flagellum of the first pair has twelve joints, most of them carrying filaments. In the second pair the flagellum is composed of twenty-nine to thirty joints.

The frontal lamina is pentagonal, not very large. The epistome, emarginate at the top, has widely divergent arms, embracing a rather small area for the upper lip. The latter and also the lower lip were not clearly made out.

The mandibles are very massive at the base, near to which the palp is implanted, having its second joint much the longest, this and the third being armed with serrate spines. That which I have spoken of as a feeble blade, of quasi molar homology, in the other species, appears to be present here also, but so entangled in a transparent membrane, that I feel little confidence in its interpretation for either species.

The first maxillæ agree with those already described, except that the inner plate is apically more squarely truncate.

In the maxillipeds the sixth joint is more robust than in the other species.

The limbs of the peræon are also very near to those of *A. normani*, the superior robustness of the peræopods being no doubt related to the superior size of the new form.

The second pleopods have the male appendix of the same shape as in the other species, but not reaching the end of either ramus instead of extending a little beyond both.

The peduncle of the uropods is much produced. The inner ramus is much broader than the outer, and produced considerably beyond it, though in actual length it does not greatly exceed it. Both are round-ended.

Length 22 mm. Breadth about 10.5 mm.

Locality. The single specimen, a male, was taken by Mr Crossland at Zanzibar in 1901.

The specific name is given out of respect to Mr J. T. Rennie Reid, the Edinburgh lithographer, who during the past five and twenty years or more has faithfully reproduced on stone the majority of my drawings of Crustacea.

Fam. **Ægidæ.**

Gen. *ÆGA*, Leach.

1815. *Æga*, Leach, Trans. Linn. Soc. London, vol. xi., p. 369.

14. *Æga ommatophylax*, Stebbing. (Plate 9 B.)

1905. *Æga ommatophylax*, Stebbing, Herdman's Pearl Fisheries, Suppl. Rep. 23, p. 21, pls. 4, 5 A.

To this species I refer a specimen from Mauritius, which agrees in all essential particulars with that which I have described and figured (*loc. cit.*, p. 23, pl. 5 A) as the female or a younger form. The two pairs of antennæ and the shape of the telsonic segment perfectly agree, and the great black eyes in like manner stretch all across the head and fold under. But the size of the specimen is considerably smaller. Its greatest breadth is at the fifth peræon segment, with the two following segments shorter than the others, the seventh being completely concealed in dorsal view and furnished with a pair of legs devoid of spines and much smaller than the fourth peræopods. It is interesting to notice that this youthful characteristic is retained in a specimen otherwise so fully developed. But in the pleon also only four segments are conspicuous in advance of the telsonic segment, instead of five as in the adults.

Length 7.5 mm. Breadth at widest part 3 mm.

Locality. Mauritius, station A 2, from a depth of 100 fathoms.

Gen. *ROCINELA*, Leach.

1818. *Rocinela*, Leach, Dict. Sci. Naturelles, vol. xii., p. 349.

15. *Rocinela orientalis*, Schiödte and Meinert.

1879. *Rocinela orientalis*, Schiödte and Meinert, Naturhist. Tidsskr., ser. 3, vol. xii., p. 395, pl. 13, figs. 1, 2.

1905. *Rocinela orientalis*, Stebbing, Herdman's Pearl Fisheries, Suppl. Rep. 23, p. 24, pl. 6 c.

A single specimen, of the female sex, obtained by Mr Crossland in 1901 at Zanzibar, measures 17 mm. in length by 8 mm. in breadth. There is a longitudinal dorsal depression between the rather large dark eyes. The telsonic segment is well rounded distally.

Fam. **Cymothoidæ.**

1881. Anilocridæ + Saophridæ + Cymothoidæ, Schiödte and Meinert, Naturh. Tidsskr., ser. 3, vol. xiii., pp. 1, 281, 286.

1890. Cymothoidæ, Hansen, Vid. Selsk. Skr., ser. 6, Naturv. Afd. v., n. 3, pp. 316, 406.

1900. Cymothoidæ, Stebbing, South African Crustacea, pt. 1, p. 55.
 1905. Cymothoidæ, H. Richardson, Bull. U.S. Nat. Mus., No. 54, p. 215.

Gen. *NEROCILA*, Leach.

1818. *Nerocila*, Leach, Dict. Sci. Nat., vol. xii., p. 351.
 1829. *Ichthyophilus*, Latreille, La Règne Animal, vol. iv., p. 133.
 1902. *Nerocila*, Stebbing, South African Crustacea, pt. 2, p. 55.
 1905. *Nerocila*, H. Richardson, Bull. U.S. Nat. Mus., No. 54, p. 219.

The species which Koelbel in 1878 separated from *Nerocila* as *Emphyilia ctenophora* was united to the earlier genus by Schiödte and Meinert.

16. *Nerocila trichiura* (Miers).

1847. *Anilocra trichiura*, White, List of Crustacea in Brit. Mus., p. 108 (nomen nudum).
 1877. *Anilocra trichiura*, Miers, Proc. Zool. Soc. London, p. 677, pl. 69, figs. 6, 6 a.
 1881. *Nerocila trichiura*, Schiödte and Meinert, Naturh. Tidsskr., ser. 3, vol. xiii., p. 83, pl. 7, figs. 1, 2.

In this species the outer ramus of the uropods greatly exceeds the inner in length. The side-plates of the hinder peræon segments end obtusely, contrary to what is usual in the genus.

Locality. A single specimen was obtained at Great Chagos. It is attached by the mouth and front claws at an angle to the underside at the base of the wing fin of a flying-fish, *Exocoætus evolans*.

Gen. *CYMOTHOA*, Fabricius.

1793. *Cymothoa* (part) Fabricius, Ent. Syst., vol. ii., p. 503.
 1883. *Cymothoa*, Schiödte and Meinert, Naturh. Tidsskr., ser. 3, vol. xiv., p. 223.
 1905. *Cymothoa*, H. Richardson, Bull. U.S. Nat. Mus., No. 54, p. 247.

17. *Cymothoa eremita* (Brünnich).

1775. *Oniscus æstrum*, Spengler, Besch. Berl. Ges. Naturf. Fr. i., p. 312, pl. 7, figs. I—K.
 1783. *Oniscus eremita*, Brünnich, Vid. Selsk. Skrift. Nye Saml., vol. ii., p. 319.
 1857. *Cymothoa stromatei*, Bleeker, Crust. Ind. Archip., p. 35, pl. 2, fig. 13.
 1883. *Cymothoa eremita*, Schiödte and Meinert, Naturh. Tidsskr., ser. 3, vol. xiv., p. 259, pl. 7, figs. 3—13.

The references, but not the dates, are borrowed from Schiödte and Meinert. The first two dates are due to Sherborn's "Index Animalium," which, however, does not mention Spengler's *Oniscus æstrum*, perhaps from the opinion that it was identical with the species so named by Linnæus. The western species is now named *Cymothoa æstrum* (Linn.), distinguished by no very strongly divergent characters from Brünnich's, which inhabits the Pacific and Indian Oceans. Spengler's statement that his species was found attached to whales on the coast of Greenland is regarded by Schiödte and Meinert as

quite untrustworthy. The specimen roughly figured by Brünnich, fig. 5 on the plate illustrating his "Entomologia," 1764, as a typical *Oniscus*, is probably intended for the present species. It attains a large size, sometimes making a near approach to two inches, with great breadth. The head is very deeply sunk within the verrucose first segment of the peræon.

The specimens were obtained by Mr Crossland at Zanzibar in 1901.

Gen. *MEINERTIA*, Stebbing.

1893. *Meinertia*, Stebbing, History of Crustacea, p. 354.

18. *Meinertia carinata* (Bianconi).

1869. *Cymothæ carinata*, Bianconi, Memorie della Accademia delle Scienze dell' Istituto di Bologna, fasciculus xvii., p. 210, pl. 2, figs. 2 a, b.

1869. *Cymothoa* (*Ceratothoa*) *carinata*, Hilgendorf, Von der Decken's Reisen in Ost-Afrika, vol. iii., p. 846.

1883. *Ceratothoa carinata*, Schiödte and Meinert, Naturh. Tidsskr., ser. 3, vol. xiii., p. 327, pl. 13, figs. 1, 2.

In cataloguing this species Hilgendorf mentions that Bianconi's memoir appeared in two forms with different pagination. Thus Hilgendorf's reference to p. 344 answers to p. 210 in the "Memorie" above cited. Bianconi's *Cymothæ* may be intended for a correction of *Cymothoa* Fabricius, or it may be an error caused by Milne-Edward's use of the French form along with the Latin. As I have elsewhere explained, Schiödte and Meinert in instituting the genus *Glossobius* allotted to it precisely the two species for which Dana had established *Ceratothoa*, of which *Glossobius* consequently became a synonym, the name *Meinertia* being then substituted as generic name for the species which the two authors had assigned to *Ceratothoa*. Between the latter in the true sense and *Meinertia* the distinction drawn is that *Ceratothoa* has the fingers unequal, those of the third pair largest of all, while in *Meinertia* the fingers are all equal or subequal.

As Bianconi's Latin description of this rare species is excellent and not easily accessible, it may be convenient here to translate it.

"A *Cymothæ* with the peræon anteriorly and the pleon carinate. Telsonic segment very broad, with curved sides, distal margin deeply excavate. Head of moderate size, subtriangular, obtuse in front, on either side very sloping. First antennæ bent back, their second joint large. Margin of seventh peræon segment without any tubercle. Head broad at the base, but narrowed towards the obtuse apex; at the sides it is so much depressed that the head also itself appears carinate in the middle. The first antennæ, short and thick, strongly flattened, are bent back laterally, at their third joint, over the head. First segment of the peræon of moderate size, strongly carinate in the middle, narrowing anteriorly, and there extending forward on each side, to reach the insertion of the second antennæ; these processes end in a fairly sharp point directed forward, from a swollen base. The second and third segments are in like manner carinate. Hind margin of fifth pleon segment sinuate; it shows two shallow concavities, which divide the margin itself into three sections. Sixth segment large, very broad; its marginal lines

at the sides rather convex. Its hind margin deeply excavate in the middle, not extending further back than the rami of the uropods.

"This species is very near in some characters to *Cym. gaudichaudii*, but in others to *Cy. trigonocephalam*.

"Length 38 mm. Greatest breadth 14 mm."

The specimen described by Schiödte and Meinert in the "virgo" stage differs apparently from the ovigerous female as described by Bianconi and as seen in our specimen by having the whole length carinate, the first pereon segment much the longest, and especially by having the uropods much longer than and extending much beyond the telsonic segment. In our specimen the uropods scarcely reach the distal margin of the telson, which is 12 mm. broad by 4 mm. long at the centre and nearly 6 mm. at the longest part of the lateral surfaces. It should be noticed that the carination besides being partial, is nowhere sharp.

Length of specimen to centre of telsonic segment 28.5 mm. Breadth at sixth pereon segment, where it is widest, 13.5 mm.

Locality. Seychelles, 34 fathoms.

Fam. Sphæromidæ.

1905. Sphæromidæ, Stebbing, Herdman's Pearl Fisheries, Suppl. Rep. 23, p. 29.

1905. Sphæromidæ, Hansen, Quarterly J. Microsc. Sci., vol. xlix., pt. 1, p. 69.

Gen. CYMODOCE, Leach.

1814. *Cymodoce*, Leach, Edinb. Encycl., vol. vii., p. 433.

1905. *Cymodoce*, Hansen, Quarterly J. Microsc. Sci., vol. xlix., pt. 1, p. 120.

19. *Cymodoce pubescens* (Milne-Edwards).

1840. *Spheroma pubescens*, Milne-Edwards, Hist. Nat. Crust., vol. iii., p. 209.

1881. *Cymodocea pubescens*, Haswell, Proc. Linn. Soc. N. S. Wales, vol. v., p. 473, pl. 17, figs. 1, 1x.

1905. *Cymodoce pubescens*, Hansen, Quarterly J. Microsc. Sci., vol. xlix., pt. 1, p. 122.

Mr Crossland's specimens warrant the specific name by being covered dorsally with a kind of velvet pile, consisting of pellucid, short, club-shaped setæ, much like those which I have described on the South African Dromiid crab *Dynomene platyarthodes*. The remarkable metamorphosis of the mouth-parts in the female of this genus, to which Hansen has called attention, is exhibited in the present species, and its pleopods also satisfy the requirements of the Cymodicini, one of Hansen's sections of his group Sphærominæ hemibranchiatae. An easily observed character of the species is the strongly marked notch on the outer margin of the outer ramus of the uropods. In the specimen dissected the first antennæ have a flagellum of seventeen joints, the first being much the longest; the second antennæ have an eighteen-jointed flagellum. As in *C. pilosa*, figured by Hansen, the first joint of the mandibular palp is the longest, but in the maxillipeds the plate of the second joint differs a little, being obliquely truncate on the distal margin which is beset with a few spinules. The first gnathopods

have six sharp serrate spines on hind margin of the fourth joint, five on the fifth, and five on the sixth, the fourth in the last set being longer than its successor. The finger has a strong spine at apex of hind margin and a strong unguis.

Length about 11 mm. One specimen is slightly longer, but not approaching an inch, the measurement of Haswell's longest specimen. Milne-Edwards gives the length as ten lines*.

Localities. Zanzibar channel, from 10 fathoms depth, taken by Mr Crossland in 1901, and at Wasin in 1902.

20. *Cymodoce zanzibarensis*, n. sp. (Plate 9 D.)

This species is nearly allied to *Cymodoce pilosa*, Milne-Edwards, first described from the Mediterranean, to the Australian *C. aculeata*, Haswell, and to *C. longistylis*, Miers, from Thursday Island and Singapore. It agrees with the disposition of the hairiness and granulation of the body and with the characters of the uropods assigned by Milne-Edwards to his species. It would be almost superfluous here to describe the mouth-organs because they correspond so thoroughly with the figures which Hansen has given for those parts in the male of *C. pilosa* (Quarterly J. Microsc. Sci., vol. xlix., pt. 1, pl. 7, figs. 1 a—f). But the ornamentation of the pleon is as follows,—at the base on either side is a large flat lobe fringed with setæ; between these lobes runs a curved row of teeth, of which the submedian are the largest; flanking this pair to the rear is a much more conspicuous pair, behind which again is a pair of deeply bifid well separated processes, of length about equal to the breadth; the ends of their teeth reach a circular rose-coloured boss, fringed with setules but almost smooth at the top. It is interesting to note that in all our three specimens which have been in preservative liquid for seven or eight years the colouring of this boss has remained constant, but whether it was the same in the living animal I have no means of knowing. Behind the boss what may be described as a quadrate emargination is occupied by a broad setose apical piece, which narrows near the end to a feebly bifid or in one specimen a feebly trilobed termination, reaching a little beyond the bluntly pointed setose lateral apices. The uropods agree nearly, not only with those of *C. pilosa*, but also with Haswell's description of those in *C. aculeata*, at least as modified by Whitelegge (Mem. Australian Mus., vol. iv., pt. 4, p. 262, 1902), though in each case there are small differences, such as might be explained away, were there no other divergences between the species. In *C. longistylis* Miers records that "the rami of the uropoda are narrow, entire, nearly straight, and rather densely hairy; the outer rather shorter than the inner ramus, and more acute at its distal extremity; the inner long, projecting by about half its length beyond the terminal segment" (Zoological Collections of the "Alert," p. 306, pl. 33, fig. c, 1884). The figure of the inner ramus represents it as much curved, but both figure and description agree in giving it a relative prolongation which will not agree with our species.

With regard to the masculine appendix in the second pleopods of *C. aculeata*, Whitelegge describes it as "a slender stylet about one third longer than the ramus; in its basal two-thirds the stylet is fusiform, and the terminal third is cylindrical, and

* Twelve lines equal one inch in the old measurement.

bears numerous hairs, which become more evident as the acute apex is approached." In the present species it will be seen that this appendix is not nearly a third longer than the ramus, and that its terminal part is free from hairs.

In all the above remarks the comparison is instituted between male specimens.

Length of specimen figured 11 mm. *C. pilosa* described by Milne-Edwards was about 6 lines long, *C. aculeata*, Haswell, 9/16ths of an inch, *C. longistylis*, Miers, 9 mm.

Localities. Taken by Mr Crossland at Zanzibar in 1901 and at Wasin in 1902.

21. *Cymodoce bicarinata*, Stebbing.

1904. *Cymodoce bicarinata*, Stebbing, Gardiner's Fauna, Maldives and Laccad. Archip., vol. ii., p. 713, pl. 52 B.

1905. *Cymodoce bicarinata*, Stebbing, Herdman's Pearl Fisheries, Suppl. Rep. 23, p. 42, pl. 10 c.

Locality. Zanzibar, obtained by Crossland in 1901.

Gen. *CILICÆA*, Leach.

1818. *Cilicæa*, Leach, Dict. Sci. Naturelles, vol. xii., p. 342.

1905. *Cilicæa*, Hansen, Quarterly J. Microsc. Sci., vol. xlix., pt. 1, p. 122.

1905. *Cilicæa*, Stebbing, Herdman's Ceylon Pearl Fisheries, Suppl. Rep. 23, p. 33.

22. *Cilicæa latreillii*, Leach.

1818. *Cilicæa latreillii*, Leach; Dict. Sci. Naturelles, vol. xii., p. 342.

1905. *Cilicæa latreillei*, Hansen, Quarterly J. Microsc. Sci., vol. xlix., pt. 1, p. 122.

1905. *Cilicæa latreillii*, Stebbing, Herdman's Ceylon Pearl Fisheries, Suppl. Rep. 23, p. 36, pls. 3 B, 8.

This genus and this species have been so fully discussed recently by H. J. Hansen and contemporaneously by myself that I refrain from adding further comment, except to note that in minute points of detail specimens show some variation, which may or may not be due to the age or local circumstances or personality of the individual.

Locality. At Wasin Mr Crossland in 1902 obtained specimens of both sexes from a depth of 10 fathoms and between 6 and 9 fathoms, and one male between 7 and 10 fathoms.

PARACILICÆA, n. gen.

This genus belongs by its pleopods to Hansen's Sphærominæ hemibranchiata, even the narrowly triangular endopod of the first pleopods by their breadth at the base conforming to his measurement, "Endopod of plp. 1 at least rather broad, scarcely ever half again as long as broad." It agrees also with his section Cymodicini, but cannot be assigned to any of the genera (or in his view sub-genera) which he distinguishes in that section. The uropods in agreement with *Cilicæa* exclude it from *Cymodoce*. The want of any medio-dorsal process on the anterior part of the pleon excludes it from *Cilicæa*. The presence of a median lobe in the terminal notch of the pleon excludes it from

Cilicæopsis. The median prolongations in front and rear which distinguish *Ceratocephalus** are wanting here, and in *Cassidinella* the outer ramus of the uropods is very short, whereas here it is very long.

23. *Paracilicæa hanseni*, n. sp. (Plate 9 c.)

The single specimen, a male, has the sides of the peræon setose, and the hind borders of its segments raised, the granular ornamentation of these ridges with a sub-median pair of denticles becoming successively more distinct. The very setose pleon is strongly depressed below the very convex peræon, giving it in perspective an appearance differing from that which it has when detached. Near the base of the telsonic segment are a pair of widely separated teeth. Below these are a pair of large obliquely truncated processes, which while the specimen is somewhat bent hide from view the short inner rami of the uropods. The latter in fact extend a little beyond the three level points afforded by the apices of the segment, the strong, slightly curved, outer rami being in almost their whole length clear of these apices.

The eyes are dark, wide apart, not very large.

The first antennæ have the usual stout basal joint which appears to be composite, followed by a joint not longer than broad, presumably the third. In the fourteen-jointed flagellum the first joint is much the longest, the last two are very small, the ten joints preceding the last are furnished with filaments. In the second antennæ the fifth joint is a little longer than the fourth, the flagellum sixteen-jointed.

The mouth-organs agree very closely with those of *Cymodoce pilosa* and *Cymodoce bicarinata*.

In the first gnathopods the fourth, fifth, and sixth joints are margined respectively with five, four, and four spines. The elongate third joint of the fifth peræopods is without spines, but carries some minute spinules, on its front margin. There the three following joints have several slender spines, in pairs on the fourth and fifth joints, but in single file on the sixth.

The inner ramus of the first pleopods has a breadth at the base compared with the length in the proportion 6 : 8. Apically it is almost acute. In the second pleopods the masculine appendix is somewhat fusiform in the proximal half, the distal half narrow, reaching some way beyond the supporting plate, to the base of which it is attached. At the end it abruptly narrows to a slender terminal setulose on both margins.

Length of specimen about 5 mm., or including the uropods 6·5 mm., with a breadth of about 3·5 mm.

Locality. Zanzibar, obtained by Mr Crossland in 1901.

The specific name is designed to call attention to Dr H. J. Hansen's important treatise on the Sphæromidæ, referred to in the generic definition given above.

* *Ceratocephalus grayanus*, Woodward, was published in the *Encyclopædia Britannica* in 1877. Its synonym *Bregmocerella tricornis*, Haswell, in 1885.

Tribe *VALVIFERA*.Fam. *Idoteidæ*.Gen. *IDOTEA*, Fabricius.

1798. *Idotea*, Fabricius, Supplementum Ent. Syst., p. 302.
24. *Idotea metallica*, Bosc.
1802. *Idotea metallica*, Bosc, Hist. Nat. des Crustacés, vol. ii., p. 179, pl. 15, fig. 6.
1881. *Idotea metallica*, Miers, J. Linn. Soc., vol. xvi., p. 35.
1895. *Idothea metallica*, Hansen, Plankton-Exp., Isop., p. 10, pl. 1, fig. 3.
1905. *Idothea metallica*, H. Richardson, Bull. U.S. Nat. Mus., No. 84, p. 362, figs. 392, 393.
1905. *Idotea metallica*, Tattersall, Fisheries, Ireland, Sci. Invest., 1904, II. [1905], p. 50.

In her valuable above-cited "Monograph on the Isopods of North America" Miss Richardson quotes Miers under the date 1883, the date given on the title-page of the Linnean Journal, Zool., vol. xvi., but the following page explains that the several numbers were issued during the years 1881, 1882, 1883. The important paper by Miers belongs to the first of those years.

A specimen of this species only 6 mm. long was taken at the surface on the 9th of September, 1905, between Saya de Malha and Coetivy. The head is wide, the telsonic segment almost straight truncate with rounded corners, the colour dorsally as usual very dark with a light border. Tattersall remarks that "*I. metallica* may be distinguished from *I. emarginata* very readily by the presence of a small supplementary segment between the cephalon and the first segment of the thorax." Miers says, "near the posterior margin of the head is a deeply impressed arcuated transverse furrow." It is likely that this furrow marks off the coalesced segment which carries the maxillipeds, but it would be rather confusing to regard it as an independent segment.

Tribe *ASELLOTA*.Fam. *Jæridæ*.

1897. *Janiridæ*, Sars, Crustacea of Norway, vol. ii., pt. 5, p. 98.
1905. *Janiridæ*, Stebbing, Herdman's Pearl Fish. Rep., pt. 4, No. 23, p. 48.
1905. *Parasellidæ* (part), Hansen, Proc. Zool. Soc. London, 1904, pt. 2, p. 315.
1905. *Janiridæ*, H. Richardson, Bull. U.S. Nat. Mus., No. 54, p. 448.
1910. *Jæridæ*, Stebbing, J. Linn. Soc. London, Zool., vol. xxxi., No. 207, p. 224.

Gen. *JANIRA*, Leach.

1814. *Janira*, Leach, Edinb. Encycl., vol. vii., p. 434.
1905. *Janira*, Stebbing, Herdman's Pearl Fish. Rep., pt. 4, No. 23, p. 49.
1905. *Janira*, H. Richardson, Bull. U.S. Nat. Mus., No. 54, p. 468.
25. *Janira crosslandi*, Stebbing. (Plate 6 A.)
1910. *Janira crosslandi*, Stebbing, J. Linn. Soc. London, Zool., vol. xxxi., No. 207, p. 225, pl. 22 A.

It is not without anxiety that I distinguish this species from that which in Professor Herdman's Pearl Fishery Report I named *Janira? nana*, from the Gulf of Manaar. On re-examining the details of that minute form I find some inaccuracies in my former account. The right mandible has no accessory cutting plate, the bidentate appearance spoken of being due to two closely approximate spines. The first pleopods of the male were said to end in two pairs of overlapping shortly lanceolate lobes, and these are figured as of equal length. The fact, however, is that the outer lobe is produced beyond the inner, this inner one having on its sharp apex and outer margin several setæ, some of which gave the impression of a prolongation of the lobe itself. The first correction brings the two species into harmony, the second is concerned with a feature by which the two forms seem sharply distinguished. A third form, *Janira minuta*, H. Richardson, from Bermudas, is evidently in close relationship to the other two. The new species has the following characters.

In the male the head is without conspicuous rostrum, the fourth and fifth segments of the peræon are the shortest and the sixth is the widest. The pleon is almost smooth-rimmed.

The eyes are prominent, lateral. The first antennæ have the first joint stout, followed by two successively much smaller, with a flagellum of nine joints, each of the last five carrying a filament. The first four joints of the second antennæ are short, the third the longest, with a small cylindrical exopod. The two following joints of the peduncle are missing from all the adult specimens, but that these are at least moderately long and carry a many-jointed flagellum may be inferred from the condition of these appendages in the marsupial young, where the flagellum is already eight-jointed.

The upper lip is longer in proportion to its breadth than in *J. nana*. The cutting plate of the mandibles is divided into five teeth on the left and seven on the right member, the accessory plate on the left has seven teeth; there are six spines in the spine-row. The first maxillæ have four fine setæ on the inner plate. The second maxillæ and maxillipeds are in practical agreement with those of *J. nana*.

The first gnathopods have the fifth joint in the male with its hind margin produced into a strong tooth, the interval between this and the finger hinge being occupied by a shorter tooth, which is however produced a little beyond the outer one. In *J. nana* the structure is nearly the same, but the two teeth are much less conspicuous. In *J. minuta* there is a much longer outer tooth produced much beyond two shorter intermediate teeth. In all the three species the narrow sixth joint is capable of folding down along the whole length of the fifth, and ends in a minute finger or nail-tipped seventh joint. The first gnathopod of the female is not known for *J. nana*, but, from the analogy of *J. minuta*, it may be supposed that it has the fifth joint fusiform, not distally dentate, and this is the case in the female of *J. crosslandi*. The other limbs of the peræon follow the custom of the genus. In the present species the fifth peræopods appear to be decidedly the longest.

The first pleopods of the male show marks of separation so decided between the upper part and the part below the constriction that I think this lower part should be regarded as constituted by one or both of the rami; its convex outer margins are produced

to a sharp apical tooth, while the inner margin is rounded off distally in each division to meet the base of the tooth, not obliquely truncate as in the specimens originally described, nor produced to the end of the tooth as in *Janira maculosa*, Leach, the general appearance both here and in *J. nana* being suggestive of a coalescence of two long rami. As will be seen, the inner setiferous terminals in the two species are strikingly different. The second pleopods of the male have the characteristic sharply pointed masculine appendix, but the outer plate is here squared below, not narrowly rounded as in *J. nana*, nor somewhat acute-angled as in *J. maculosa*.

The almost circular opercular plate constituted by the first pleopods of the female, instead of being distally truncate as in *J. maculosa*, is here emarginate.

The uropods were missing from all the seven adult specimens, but one of the two females had young ones in an advanced stage of development in her marsupium. These indicated the general character of the second antennæ and of the uropods, the latter having as might be expected a fairly long peduncle supporting two setiferous rami, of which the inner is the longer.

The colour of all the specimens was claret red.

Length 2 mm. *J. nana*, also described from an adult male, measured 1.5 mm. The length of *J. minuta* is not stated, but the specific name implies that it is very small.

Locality. Egmont. Along with two males and an ovigerous female in the same tube there was an antenna, consisting of a long penultimate peduncular joint, followed by another joint rather longer, and a flagellum of nearly a hundred very small joints. It is not improbable that this appendage had become detached from one of the male specimens. The female specimen, carrying large eggs, had one of the first gnathopods still attached.

Fam. **Stenetriidæ.**

1905. *Stenetriidæ*, H. J. Hansen, Proc. Zool. Soc. London, 1904, pt. 2, p. 315.

Gen. *STENETRIUM*, Haswell.

1881. *Stenetrium*, Haswell, Pr. Linn. Soc. N. S. Wales, vol. v., p. 478.

26. *Stenetrium chiltoni*, Stebbing.

1905. *Stenetrium chiltoni*, Stebbing, Herdman's Ceylon Pearl Fish., Rep. 23, p. 54, pl. 12 A.

A specimen only 2 mm. long, with antennæ broken, and uropods missing, which seemingly belongs to this species, was taken at Amirante, station E 9, from a depth of 34 fathoms.

Tribe *EPICARIDEA.*

1825. *Epicarides*, Latreille, Fam. Nat. du Règne Animal, p. 291.

1882. *Epicarida*, G. O. Sars, Forh. Selsk. Christian., No. 18, p. 18.

1893. *Epicaridea*, Stebbing, History of Crustacea, p. 392.

1898. *Epicarida*, Sars, Crustacea of Norway, vol. ii., pt. 11, p. 193.

1905. Epicaridea, H. Richardson, Bull. U. S. Nat. Mus., No. 54, p. 497.

1909. Epicarides, Gilson, Bull. Sci. France-Belgique, vol. xliii., p. 78.

The bibliography of this tribe given by Dr Gilson extends from 1722 to 1909 and contains 279 references.

Miss Richardson gives *Bopyroidea* as an alternative name for the tribe, less significant than that proposed by Latreille, which alludes to the circumstance that the members of it are parasitic on other crustaceans, though with the disadvantage that eventually fresh members may be found on non-crustacean hosts, and that actually many crustaceans parasitic on other crustaceans do not belong to the Epicaridea.

Fam. Bopyridæ.

1853. Bopyridæ, Dana, U. S. Expl. Exp., vol. xiii., pt. 2, p. 793.

1867. Bopyridæ, Bate and Westwood, Brit. Sessile-eyed Crust., vol. ii., pt. 16, p. 209.

1887. 'Bopyriens,' Giard and Bonnier, Travaux Lab. Zool. de Wimereux, vol. v.

1893. Bopyridæ, Stebbing, History of Crustacea, p. 408.

1895. Bopyridæ, Hansen, Plankton Exp., Isop., p. 18.

1898. Bopyridæ, Sars, Crustacea of Norway, vol. ii., pt. 11, p. 195.

1900. Bopyridæ, Bonnier, Travaux Lab. Zool. de Wimereux, vol. viii.

1904. Bopyridæ, Stebbing, Gardiner's Maldive and Laccadive Arch., vol. ii., pt. 3, p. 715.

1905. Bopyridæ, H. Richardson, Bull. U. S. Nat. Mus., No. 54, p. 497.

1906. 'Bopiridi,' Nobili, Atti R. Accad. Sci. Torino, vol. xli. (extract).

1908. Bopyridæ, Stebbing, S. A. Crust., pt. 4, p. 56, in Annals S. African Mus., vol. 6.

To this family, in which the genera are already rather perplexingly numerous, I have felt it necessary to add a new one, containing two new species. Three species are added to older genera. Some notes are offered on *Trapezicepon amicorum* (Giard and Bonnier), the specimen being derived from a different host from that on which the typical example occurred. The new specimen is further worthy of note for containing, in place of eggs, an obscure but remarkable parasite apparently of the same tribe. A very small species of the genus *Cancericepon* is left unnamed for reasons assigned further on.

In 1906 the late Professor Giard was able to announce that after prolonged efforts M. Edm. Bordage at Réunion had discovered the host of *Kepon typus*, Duvernoy, in the agile crab *Grapsus strigosus* (Herbst). For some reason unexplained in place of Duvernoy's generic name *Kepon* Giard adopts the name *Grapsicepon*, previously regarded as distinct. He promises a much needed revision of Duvernoy's statements, but this promise his lamented death has prevented him from keeping, thus leaving this particular branch of the subject for the moment in some confusion.

Gen. *KEPON*, Duvernoy.

1841. *Kepon*, Duvernoy, Ann. Sci. Nat., vol. xv., p. 10.

1855. *Cepon*, Leidy, J. Ac. Sci. Philad., p. 51.

1893. *Kepon*, Stebbing, History of Crustacea, Internat. Sci. Ser., vol. lxxiv., p. 412.

1900. *Cepon*, Bonnier, The Bopyridæ, p. 250.

1906. *Grapsicepon*, Giard, Comptes rendus Soc. de Biologie, vol. lxi., p. 704.

Dec. 22, 1906.

Several other references will be found in the late M. Bonnier's great work above cited.

The species which I venture to assign to this genus agrees with *Kepon typus*, Duvernoy, but not with *Cepon? naxia*, Bonnier, in having no medio-dorsal protuberances on the peræon. In the pleon the first five segments have prolonged side-plates and carry double-branched pleopods, all of tuberculate foliaceous character, and the single-branched uropods have a similar appearance, all these points showing agreement with the type-species. On the limbs Duvernoy could not perceive any finger, but rightly surmised that it was not really absent.

27. *Kepon halimi*, n. sp. (Plate 10 c.)

The typical species, derived from an unknown crab of Mauritius, since identified as *Grapsus strigosus* (Herbst), offers scarcely any points for exact comparison with the present form. The size, however, differs very considerably. The adult female of *Kepon typus* attains a length of 12 mm., whereas the specimen here dealt with measured only about 3 mm., or at full stretch might have been 4 mm. long. The head, however, was forced towards the pleon by the enormous globe of eggs in the marsupium, in such a way that the earlier peræon segments were not dorsally visible. This condition of affairs, while introducing a difficulty into the measurement, made it fairly certain that the female was fully adult. The lateral bosses of the early peræon segments, though large, do not show that peculiar verrucosity described by Duvernoy, on which Bonnier lays stress as an exceptional character of much importance, and the existence of which has been recently endorsed by Giard.

In the present species the limbs of the peræon are all provided with a small apical seventh joint or finger as usual. The fifth peræopod is rather remarkable from the shape of the second joint, the front margin of which is produced into a large oval excrescence above and a small circular one below. This limb on the left side (right of ventral view) was lying closely adpressed to the pleopods, bearing a puzzling resemblance to one of their branches. In *Ergyne hendersoni* (Giard and Bonnier) the fifth peræopod has an oval excrescence on the lower part of the front margin. The maxillipeds have the narrow apical lobe common to all the neighbouring genera. It showed no setules. The secondary lamellæ of the cephalic lamina are small, sub-equal, almost simple.

The male, which according to Bonnier has not hitherto been recognised for this genus, was enclosed along with the eggs in the last marsupial plate of the female of this species. In shape it agrees with that figured for *Cancricepon elegans* (Giard and Bonnier) except that I could not see any medio-ventral bosses. The eyes are dark and reniform, much longer than wide. I could not make out more than two joints in the first antennæ and four in the second, but a minute apical joint might in each case be present.

Locality. This species was taken from the left branchial cavity of *Halimus* sp. nov. ♂, as identified by Miss M. J. Rathbun, at Cargados Carajos, 30 fathoms.

DACTYLOKEPON, n. g.

This genus agrees with *Trapezicepon*, Bonnier, in having no medio-dorsal bosses on the peræon, but the inner branches of the pleopods in the adult female are long and irregular. Also it differs from that genus in having the lateral bosses of the peræon small and discontinuous, and in regard to the hind lamina of the head, which, instead of two simple pointed secondary lamellæ at each corner, here has those lamellæ more or less digitate.

The generic name compounded of δάκτυλος, finger, and *kepon*, alludes in the first part to the digitate processes of the head, which find a parallel in the species *Orbione penei*, Bonnier. The second portion of the name, based on *Kepon*, Duvernoy, refers to its close alliance with that genus and with those which have been named with a similar termination by Giard and Bonnier.

28. *Dactylokepon richardsonæ*, n. sp. (Plate 11 c.)

The single specimen for which this species is instituted contained a vast multitude of eggs in the earliest epicaridian stage, but no male could be found. Miss Rathbun's notification that it was found in the left branchial cavity of *Trapezia cymodoce* (Herbst) suggested an expectation that it would prove to be *Trapezicepon amicorum* (Giard and Bonnier), but this was negated by the characters mentioned for the genus. The present species is much larger than that just named, having a length of 6 mm. instead of 3 mm., and it was taken, not at the Friendly Isles, but the Seychelles.

The anterior lamina of the head is unusually narrowed forward, but as this part of the organism is very soft, its shape might easily be altered by accidental circumstances of pressure in the branchial cavity of the host. The leading characteristic of the species is the strongly digitate form of the outer lamella in the hind lamina of the head. The inner lamella is also somewhat digitate. The maxilliped has the narrow curved extremity following an emargination, in agreement with Bonnier's description and figure of the maxilliped in *T. amicorum*. The side-plates of the pleon, the outer branches of the pleopods and the uropods are all long and digitate as in that species, but the uropods are decidedly narrower. The inner branches of the pleopods could not be at all clearly made out in the confusing mass of digitations to which they lie closely adpressed.

The species is named out of respect to Miss Harriet Richardson, who has done so much valuable work in this and other groups of the Isopoda.

29. *Dactylokepon catoptri*, n. sp. (Plate 10 B.)

The present small species agrees with the preceding species in the generic characters, but the outer lamella of the cephalic lamina is poorly instead of strongly digitate. The maxillipeds have the palp-like apical process more produced and narrower than in the preceding species. It has three minute setules on the apex. The second joint of the fifth peræopod is without excrescences of the front margin.

Length of specimen about 3 mm.

Locality. Extracted from the left branchial cavity of *Catoptrus nitidus*, A. Milne-Edwards, ♂, as identified by Miss M. J. Rathbun. Taken at Amirante, from a depth of

30 fathoms. The young were all in the epicaridian stage, in which the fifth pair of peræopods is still undeveloped.

Gen. *TRAPEZICEPON*, Bonnier.

1900. *Trapezicepon*, Bonnier, Les Bopyridæ, p. 269.

This genus is distinguished by its author from *Cancricepon* and *Grapsicepon* by the absence of the medio-dorsal bosses on the hinder peræon segments, and from *Portunicepon* by the rudimentary condition of the inner branches of the pleopods, in the adult female.

All the three genera were instituted by Giard and Bonnier in 1887, *Portunicepon* being evidently a synonym of *Ergyne*, Risso, 1816. This last has the medio-dorsal bosses, and the other two genera have the rudimentary inner branches of the pleopods, so that the differential characters of *Trapezicepon* might well have been considered as of specific rather than generic value. The four genera may be tabulated as follows:

- | | | |
|---|---|---|
| 1 | { | Without medio-dorsal bosses on the peræon. <i>Trapezicepon</i> . |
| | | With medio-dorsal bosses on the peræon. 2. |
| 2 | { | Inner branches of pleopods not rudimentary. <i>Ergyne</i> . |
| | | Inner branches of pleopods rudimentary. |
| 3 | { | Last four segments of peræon with medio-dorsal bosses. <i>Cancricepon</i> . |
| | | Only last two segments of peræon with medio-dorsal bosses. <i>Grapsicepon</i> . |

It may be added that in *Ergyne* one species has the last three, and a second the last two peræon segments raised into median processes.

30. *Trapezicepon amicorum* (Giard and Bonnier). (Plate 11 B.)

1888. *Grapsicepon amicorum*, Giard and Bonnier, Compt. Rend. Acad. Sciences, July 2, p. 2.

1900. *Trapezicepon amicorum*, Bonnier, Les Bopyridæ, p. 269, pl. 10.

The present specimen agrees in general appearance with that figured and described by Bonnier, but differs in some details. The inner branch of the pleopods is not apically pointed but obtuse in the female, and the uropods are less elongate and with little approach to digitation. In the male the medio-ventral tubercle could only be distinguished on the first three peræon segments, instead of occurring plainly on each segment of the peræon and the first of the pleon.

The length of the female was only a little over 2 mm., instead of 3 mm.

The host was not *Trapezia cymodoce* (Herbst), but *Actumnus tomentosus*, Dana, ♂, as identified by Miss M. J. Rathbun. Position of parasite in left branchial cavity of host.

Locality. Amirante, 34 fathoms.

As I was withdrawing the specimen from the tube, there fell from its well-developed marsupium what I supposed to be a mass of eggs, but it proved to be a bladder-like organism, showing no actual segmentation and no appendages unless a minute process might pass for one. It was of a size to fairly well fill the marsupium of its host. It is reminiscent of the species *Cyproniscus cypridinæ*, Sars, and the genus *Asconiscus*,

Sars. His species, *A. simplex*, is parasitic on *Boreomysis arctica* (Krøyer), and he remarks that in all instances of its capture "the marsupial pouch of the host was fully developed, and it thus seems that the parasite must have entered the pouch immediately after the young of the host had escaped; several male specimens were found with the female, and in one instance two or three females of different development were found in the same host" (Crustacea of Norway, vol. ii., pp. 233, 238, 1899). It seems possible that in these cases the marsupial plates develop round the parasite which usurps the place of eggs. In the tube with the *Trapezicepon* there were no eggs, but a *Bopyrus*-form which I have regarded as the male of *T. amicorum*, and, in addition to this, four specimens of a cryptoniscian larva, slightly larger than the *Bopyrus*-form, not very greatly differing from the male of *Asconiscus simplex* as figured by Sars. There was also present a very much smaller cryptoniscian larva, and a very small duplicate of the bladder-like organism. The relative sizes of these creatures may be judged from the plate, wherein they are drawn to the same scale. If I am right in supposing that the specimens which have lost all clear traces of segmentation belong to *Asconiscus* or some closely allied genus, it will be, I believe, a novelty to find one of the Epicaridea parasitic on one of its own tribe, though there are well-known instances of Epicaridea parasitic on other parasites. *Zeuxo longicollis*, described by Kossmann in his Zool. Ergebnisse einer Reise in die Küstengebiete des rothen Meeres, first part of second half, p. 124 (1880), as figured in his pl. 11, fig. 8, is very like in shape to the occupant of our *Trapezicepon*'s marsupium, but with a comparatively long "tap-root" instead of a short one.

Gen. *ERGYNE*, Risso.

1816. *Ergyne*, Risso, Crustacés des environs de Nice, p. 150.

1887. *Portunicepon*, Giard and Bonnier, Travaux Lab. Zool. Wimereux, vol. v., p. 73.

1893. *Ergyne*, Stebbing, History of Crustacea, Internat. Sci. Ser., vol. lxxiv., p. 413.

1900. *Portunicepon*, Bonnier, Les Bopyridæ, p. 276.

The hind lamina of the head has at the outer corners two simple lappets. The peræon carries medio-dorsal bosses. The inner branches of the pleopods are more or less lobed, like the outer branches and the lateral extensions of the segments.

Risso's original species, *E. cervicornis*, was transferred to *Cepon* by Kossmann in 1881. The species of the genus may be distinguished as follows:

Sixth and seventh segments of peræon raised into median bosses. 1. *E. hendersoni* (Giard and Bonnier).

Fifth, sixth and seventh segments so raised. 2. *E. cervicornis*, Risso.

A slight carina rising from the first segment to strongly developed bosses on the last three. 3. *E. savignyi*, n. sp.

31. *Ergyne savignyi*, n. sp. (Plate 10 A.)

Female. Head very broad; in the hind lamina the outer lappet is much longer than the inner, both are microscopically beset with minute setules. The centre of the peræon is slightly angled on the first three segments, more decidedly on the fourth, while each of

the three following segments rises into a very decided prominence, which is a little tip-tilted on the seventh segment.

The maxillipeds have the narrow anterior lobe bordered with eight well separated setæ. Between the lobes a fine membrane projects ending in an emargination between two blunt, not widely separated, apices. This is apparently the lower lip, firmly attached to the maxillipeds.

The outer branches of the five pairs of pleopods are strongly tuberculate on both margins and at least some of them on the surface, the first pair long and broad, and all tending to conceal the inner branches from a dorsal view, and the lateral prolongations of the segments from a ventral view. These prolongations and the inner branches except in size agree much in character with the outer branches. The uropods are single-branched, with the edges moderately incised.

Male. The first antennæ are three-jointed, with four short filaments on the little apical joint. The second antennæ have a setule on the second joint and five short filaments on the fourth, which is the apical joint. In the ventral view of the pleon processes will be seen which appear to represent single-jointed pleopods. Judging by the figures which Bonnier gives of the young male (*Bopyrus* stage), which shows such processes, and of the adult male without them, in *Cancripepon elegans*, it may be supposed that the male in our specimen is not fully adult.

Length of female about 4 mm.

The host was identified by Miss M. J. Rathbun as *Actæa savignyi* (A. Milne-Edwards) in which the parasite occupied the left branchial cavity.

Locality. Cargados Carajos, 30 fathoms.

Gen. *CANCRICEPON*, Giard and Bonnier.

1887. *Cancripepon*, Giard and Bonnier, Travaux Lab. Zool. Wimereux, vol. v., p. 172.

1900. *Cancripepon*, Bonnier, Les Bopyridæ, p. 257.

32. *Cancripepon* sp.

To this genus I refer two specimens, one from the right, the other from the left branchial cavity of a crab identified by Miss M. J. Rathbun as *Pilumnus longicornis*? Hilg., taken on the 18th of October, 1905, in a depth between 22 and 24 fathoms at Amirante. The specimens were alike, both loaded with eggs. The one that was measured only attained a length of 1.5 mm. The medio-dorsal upheaval is faint on the fourth segment of the peræon, but well expressed on the three following segments. The apical lobe of the maxillipeds is rather strongly emarginate and furnished with four or five setules on the concave margin. The secondary lamellæ at the corners of the cephalic lamina are simple, the outer the larger. The uropods are smooth.

The preparation of these small specimens was not sufficiently successful to enable me to give satisfactory figures. I have therefore abstained from giving a specific name.

As compared with *Cancripepon elegans* (Giard and Bonnier), which attains a length of over 9 mm., the small size of the present form adds to the probability that it is specifically distinct.

Gen. *GIGANTIONE*, Kossmann.

1881. *Gigantione*, Kossmann, Zeitschr. wiss. Zool., vol. xxxv., p. 655.

1887. *Gigantione*, Giard and Bonnier, Travaux Lab. Zool. Wimereux, vol. v., pp. 13, 74, etc.

1900. *Gigantione*, Bonnier, Les Bopyridæ, p. 276.

In the female all the segments of peræon and first five of pleon are laterally produced, the extensions on the right side being very considerable. First antennæ of female having the first joint developed into a large pad, against which the two following joints appear to be flattened about at the middle, the third joint very small. The second antennæ five-jointed in the female, six-jointed in the male. Maxillipeds of the female with principal lobe nearly circular, fringed with setules, showing no palp-like prominence. Limbs of the peræon with finger well developed in the male but almost obsolete in the female. Pleopods of the female two-branched, diminishing in size successively from the first to the fifth, with varying development of fringing lobules. Pleopods of the male simple, ovoid, diminishing in size from first to fifth. Uropods in the female very small, but with distinct peduncle and two branches, in the male each consisting of a single piece larger than the preceding pleopod.

Gigantione moebii, Kossmann, for which the genus was founded, measured in the female 15 mm. It was taken at Mauritius from the branchial cavity of *Rüppellia impressa*, de Haan. The pleopods of the male are figured more than twice as long as broad.

Gigantione bouvieri, Bonnier, measures in the female scarcely 3 or 4 mm. It was taken off the Azores from the branchial cavity of *Pilumnus hirtellus* (Linn.), var. *inermis*, A. Milne-Edwards and Bouvier. The branches of the uropods in the female are described as cylindrical, slender at the free extremity.

33. *Gigantione rathbunæ*, n. sp. (Plate 11 A.)

This species agrees very closely with the preliminary description of *G. bouvieri*, which is unfortunately not accompanied by illustrative drawings. Its size, in the female not quite 4 mm., agrees with that of Bonnier's species. Both differ in one respect from Kossmann's generic account, in that the last pleon segment is not produced into lateral lobes, but on that point Kossmann's own figures do not appear to be in accord with his statement.

In the new species eyes are visible, not only in the male, but also in the female. In *Pseudione hoylei*, the visibility of the eyes in a female 12 mm. long is regarded by Bonnier (Op. cit., p. 309) as an indication that the specimen was not yet quite adult. In the present case that inference can scarcely be drawn, since a multitude of young ripe for discharge were in the Epicaridean stage.

The characters of the antennæ, mouth-organs, and other appendages, so far as they could be made out, will be best understood by the figures. With one or two exceptions they do not appear to offer any solid specific characters. Concerning the uropods of the female Bonnier says that in his species they are in accord with the generic character,

having a broad, perfectly distinct peduncle, which carries two little cylindric branches, slenderly drawn out (effilées) at their free extremity, and almost equal. In the new species these branches are of equal breadth all along. The uropods of the male are a broad oval, closely adjacent, extending beyond the sixth pleon segment, each nearly equalling it in size.

Locality. The species was obtained from the left branchial cavity of *Actæa polycantha* (Heller), at the Salomon Isles, and forwarded to me, with subsequent determination of the host, by the distinguished carcinologist, Miss Mary J. Rathbun, after whom I have the pleasure of naming it. The male was lying transversely across the end of the pleon.

EXPLANATION OF THE PLATES.

PLATE 5.

Kalliapseudes makrothrix, n. g. and sp.

n.s. Line indicating length of specimen figured below.

C.V., a.s. Ventral view of head (distal margin) supporting the first antennæ and one of the second antennæ.

a.i. Second antenna.

Per. s. 7., prp. 5., Pl., urp. Dorsal view of fifth peræon segment and the pleon, with fifth peræopod and the uropods in position.

m., m., mx. 1., mx. 2., maxp., maxp. The mandibles (much broken), the first and second maxillæ (not very distinctly seen), the maxillipeds (detached one from the other).

gn. 1., gn. 2., prps. 2, 3, 4, 5. First and second gnathopods, second, third, fourth, and fifth peræopods. The fingers of all but the first gnathopods and some spines and setæ are separately given on the same scale of enlargement as the mouth-organs, which is higher than that of the other detail figures.

plp. 1. First pleopod.

PLATE 6.

A. *Janira crosslandi*, Stebbing.

n.s. ♂. Line indicating actual length of male specimen figured below in lateral view (*L*), and in dorsal view, minus the head (*D*).

a.s., a.i., a.i. juv. First and second antennæ with higher magnification, only the first four joints of second antennæ from the adult, but this appendage complete from the marsupial young.

l.s., l.i. Upper and lower lips.

m., m., mx. 1., mx. 2., maxp. The mandibles, first and second maxillæ, and maxillipeds (in part).

gn. 1., gn. 2., prp. 5. First and second gnathopods and fifth peræopods, to the same scale as the antennæ.

plps. 1, 2, 3. First, second, and third pleopods of the male, on the same scale of magnification as the mouth-organs, higher than that of the gnathopods.

operc. ♀. Opercular plate (first pleopods) of female, to the same scale as dorsal view of the male.

urp. Uropod of marsupial young, to the same scale as separate gnathopods of male.

B. *Parapseudes hirsutus*, n. sp.

n.s. Line indicating length of specimen in curvature as in the lateral view below.

C.V., a.s., a.i. Ventral view of head with first peræon segment, the eyes and one each of the first and second antennæ in position.

Pl., urp. Dorsal view of pleon and part of seventh peræon segment; uropods in position, outer branch on right imperfect.

- m., m., li., mx. 1, maxp.* Mandibles, lower lip (in part), first maxilla, and maxillipeds.
gn. 2., prps. 1, 2, 3, 4, 5. Second gnathopod and the five peræopods, but only terminal part of the third peræopod drawn, and that on a higher scale of magnification, agreeing with the mouth-organs and the higher enlargement of the distal parts of the second gnathopod and the second peræopod.

PLATE 7.

A. *Calathura sladeni*, n. sp.

- n.s.* Line indicating actual length of the specimen figured below in dorsal and lateral view.
a.s., a.i. First and second antennæ.
li., m., mx. 1., maxp. Lower lip, mandible, first maxilla, and maxillipeds, these parts magnified on a higher scale than the other details.
gn. 1., gn. 2., prps. 1, 5. First and second gnathopods, first and fifth peræopods.
plp. 2, urp., T. Second pleopod, uropod and telson.

B. *Apanthura xenocheir*, n. sp.

- n.s.* Line indicating actual length of the specimen figured below in dorsal and lateral view.
C., a.s. Head, with first antenna on the right in position.
a.i. Second antenna.
m., m., mx. 1. The mandibles and first maxilla, magnified on a higher scale than the other details except the distal portion of the first gnathopod.
gn. 1., gn. 2., prp. 5. First and second gnathopods and fifth peræopod.
Pl., urp., urp. Dorsal view of pleon with the uropods.

PLATE 8.

A. *Eurydice humilis*, n. sp.

- n.s.* Line indicating length of male specimen figured below in three-quarter view.
C., a.s., a.i. The head, with first and second antennæ much more enlarged.
Pl. Part of pleon, enlarged to the same scale as the preceding and other detail figures, with the exceptions subsequently mentioned.
l.s. Upper lip.
m., m. The mandibles.
gn. 1., gn. 2., prps. 1, 2, 3, 4, 5. The two gnathopods and five peræopods in order.
plp. 2. The second pleopod, with higher magnification of the male appendix, to the same scale as the mouth-organs.
urp. One of the uropods.

B. *Pontogelos aselgokeros*, n. g. and sp.

- n.s.* Line indicating real length of specimen in lateral view on left of plate.
C.D., C.V. Dorsal view of head more enlarged with basal parts of first and second antennæ; and ventral view of head with frontal lamina and first peræon segment.
Pl.D., urp. Dorsal view of pleon (in part) with the uropods.
a.s., a.i. First and second antennæ.
m., m. The mandibles. The third joint of palp missing in one and its apex broken in the other.
li., mx. 1., mx. 2., maxp. Lower lip, first and second maxillæ and maxillipeds, all the mouth-organs magnified on a uniform scale.
gn. 1., gn. 2., prps. 1, 2, 3, 4, 5. First and second gnathopods and first to fifth peræopods.
plps. 1, 2, 3. First to third pleopods, the masculine appendix of the second pair more enlarged, on the same scale as the mouth-organs, which is much higher than that of the other details.

PLATE 9.

A. *Argathona reidi*, n. sp.

n.s. Dorsal view of specimen, natural size.

C., Per. s. 1., a.i. Dorsal view of head and first peræon segment magnified, with first and second antennæ of left side *in situ*. Profile view of detached head on the right.

T., urp. Telsonic segment and uropod of left side to the same scale as the preceding figure and as the detail figures of antennæ, limbs, and pleopod.

a.s., a.i. First and second antennæ.

ep. Epistome, with frontal lamina. This and the mouth-organs are magnified to a higher scale than the preceding figures.

m., m., mx. 1., mx. 2., maxp. The mandibles, first and second maxillæ, and maxillipeds.

gn. 1., prp. 5., plp. 2. First gnathopod, fifth peræopod, and second pleopod. The spines besetting the distal margin of the peræopod's fifth joint are separately shown on a higher scale than any of the other figures.

B. *Æga ommatophylax*, Stebbing.

n.s. Line indicating natural size of the juvenile specimen figured above in dorsal aspect.

prp. 4., prp. 5. Fourth and fifth peræopods.

C. *Paracilicæa hanseni*, n. sp.

n.s. Lines indicating natural size of specimen figured in dorsal aspect.

l.s. Epistome and upper lip.

a.s. First antenna.

plp. 2., m.a. Second pleopod, with much higher magnification of the separated masculine appendix.

T., urp. Telsonic segment in dorsal view, with the uropods *in situ*. All the details are drawn to the same scale, except the separated appendix.

D. *Cymodoce zanzibarensis*, n. sp.

n.s. Lines indicating natural size of specimen figured in dorsal aspect.

plp. 2., m.a. Second pleopod, with much higher magnification of the separated masculine appendix.

T., urp. Telsonic segment with right uropod *in situ*. The details, except the separated appendix, are drawn to the same scale.

PLATE 10.

A. *Ergyne savignyi*, n. sp.

n.s. Lines indicating natural size of female specimen figured in dorsal, lateral, and ventral positions, marked respectively *D*, *L*, and *V*.

l.C., maxp. Maxillipeds in conjunction with hind lamina of the head.

Pl.V. Ventral view of pleon, showing on the left only the inner branch of the last three pleopods and the uropod, this and the preceding figure more highly magnified than the figures of the complete specimen.

n.s. ♂. Line indicating actual length of male specimen in dorsal view below.

♂. V. Ventral view of male more highly magnified, limbs of peræon omitted, except first gnathopod.

a.s. ♂, a.i. ♂, gn. 1. ♂. First and second antennæ and first gnathopod of male more enlarged, on the same scale as the tip of the head's lateral lappet and the front lobe of the maxilliped of the female.

B. *Dactylokepon catoptri*, n. sp.

- n.s.* ♀. Line indicating length of female specimen figured below.
Pl.V. Ventral view of pleon much more highly magnified.
l.C. Part of hind lamina of the head.
maxp. A maxilliped.
prp. 5. Fifth peræopod.

C. *Kepon halimi*, n. sp.

- n.s.* ♀. Line indicating length of female specimen figured below in dorsal view.
Pl.V. Ventral view of pleon, more enlarged, with higher magnification of some inner branches of the pleopods, those on left of the figure being closely curled.
l.C., maxp., gn. 1. A figure showing together *in situ* the hind lamina of the head, the maxillipeds, and one of the first gnathopods with part of its marsupial plate. Also *gn. 1* more enlarged.
prp. 5. Fifth peræopod of female, this and the preceding figure on the same scale as the ventral view of the pleon.
♂. The male magnified to the same scale as dorsal view of female, and above much more enlarged ventral view of male, without limbs of the peræon, except one first gnathopod.
C.D. ♂., C.V. ♂. Dorsal and ventral views of head of male, more enlarged.
gn. 1. ♂. First gnathopod of male more enlarged.

PLATE 11.

A. *Gigantione rathbunæ*, n. sp.

- n.s.* ♀. Lines indicating natural size of female in dorsal view, not including in the width the marsupial plates.
n.s. ♂. Line showing real length of male specimen figured below on the same scale as figure of female. A much more enlarged figure of the male on the left.
a.s., a.i. First and second antennæ of the female.
os., m.m. Mouth, showing the mandibles, not covered by the first antennæ or maxillipeds.
prp. One of the hinder peræopods of the female, with lateral lobe of segment.
Pl.V. Ventral view of pleon of female, with its five pairs of pleopods, and the uropods; part of first pleon segment not shown.
C.V. ♂. Ventral view of head of male, showing between the eyes the maxillipeds, flanked by the rudimentary second maxillæ, and, above, the mandibles projecting between the first antennæ, which are placed between the second antennæ.
gn. 1. ♂, prp. 5. ♂. First gnathopod and fifth peræopod of male.
plps 2, 3, 4, 5. ♂. Second to fifth pleopods of male.

The ventral view of the female pleon is less highly magnified than the other details, which are on the same scale for male and female.

B. *Trapezicepon amicorum* (Giard and Bonnier).

- n.s.* ♀. Lines indicating natural size of female figured below.
Pl.V. Ventral view of pleon, more enlarged.
Pl.D. Dorsal view of pleon (part).
urp. Uropod.
n.s. ♂. Line showing length of male specimen figured below.
a.i. ♂., gn. 1. ♂. Greatly enlarged figure of male in ventral view, second gnathopod and five peræopods omitted from right hand of the figure, the first and second antennæ and first gnathopod separately more enlarged.
x. x. Supposed females of unknown species, drawn to the same scale as the figures above them.

cr. Cryptoniscian form, of which the ventral view is shown in much higher magnification, the last four pairs of peræopods being omitted except one member of the last pair, and all five pairs of pleopods except one member of the first pair.

prp. 5., *plp.* 1. The fifth peræopod and first pleopod of the last-mentioned figure shown separately more enlarged.

cr'. Smaller cryptoniscian form, magnified on the same scale as the upper one, the separate figure of the uropod being enlarged to the same scale as the uropod in the figure below.

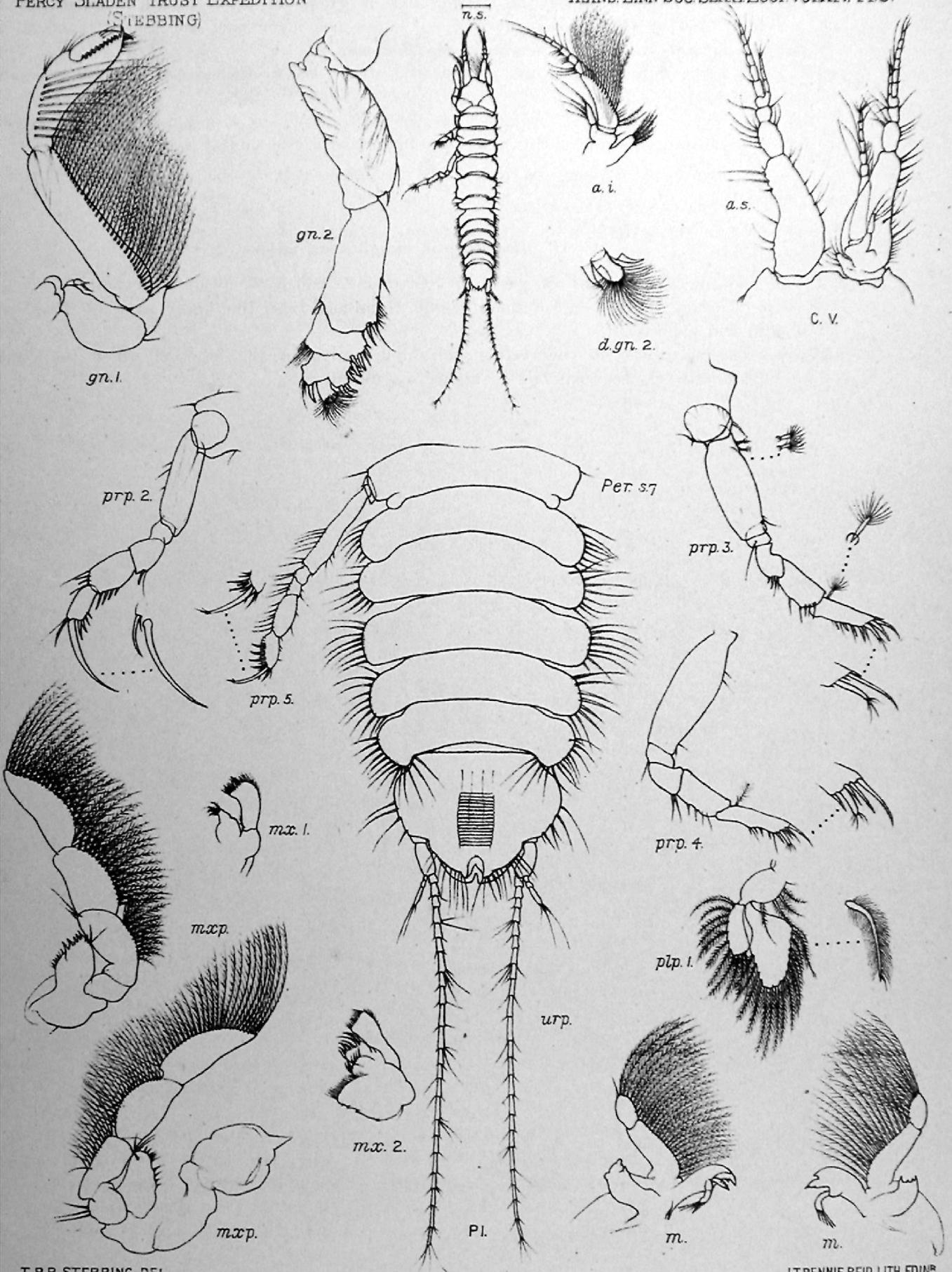
The six figures of complete specimens in the upper part of the plate are all of uniform enlargement.

C. *Dactylokepon richardsonæ*, n. sp.

n.s. Line showing actual length of specimen figured, from which the pleon is detached.

Pl.V., wrp. Ventral view of pleon more highly magnified than the figure showing dorsal view of head and peræon.

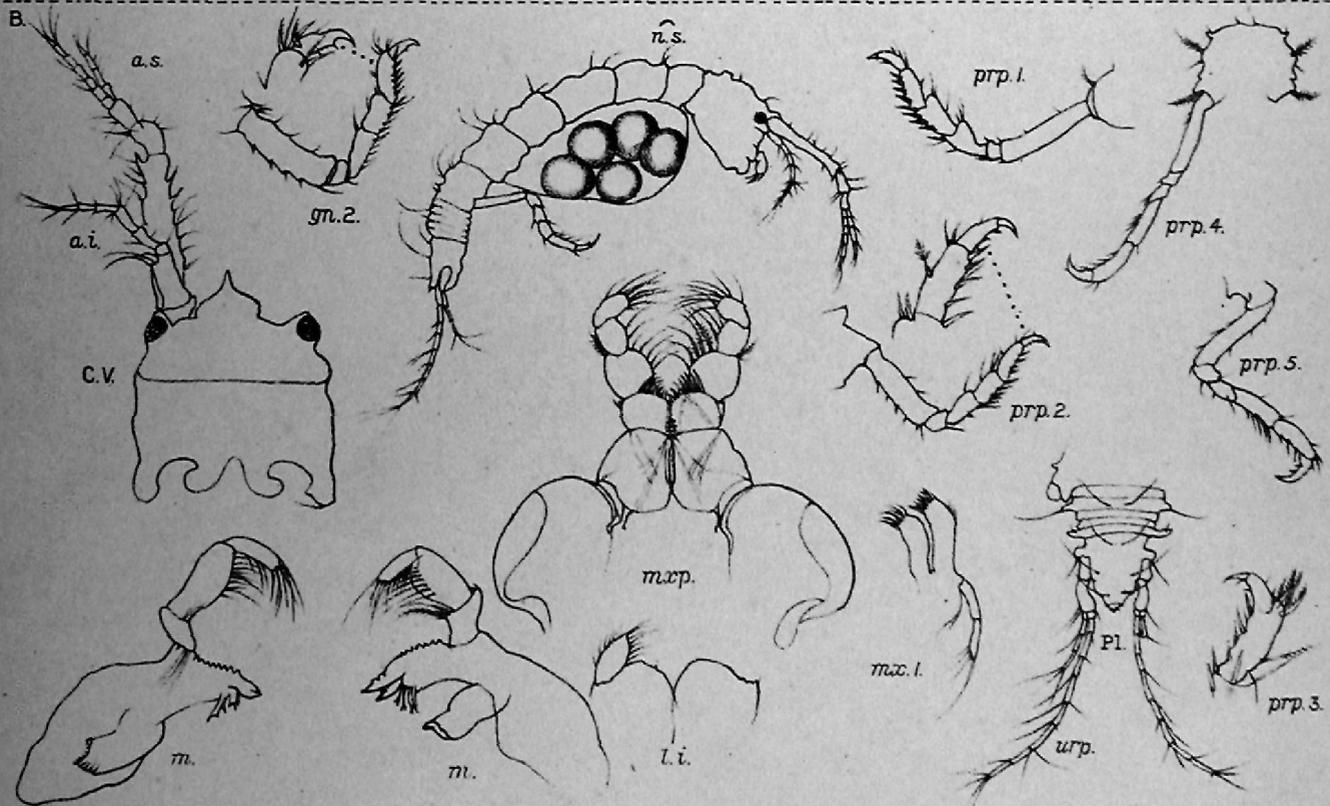
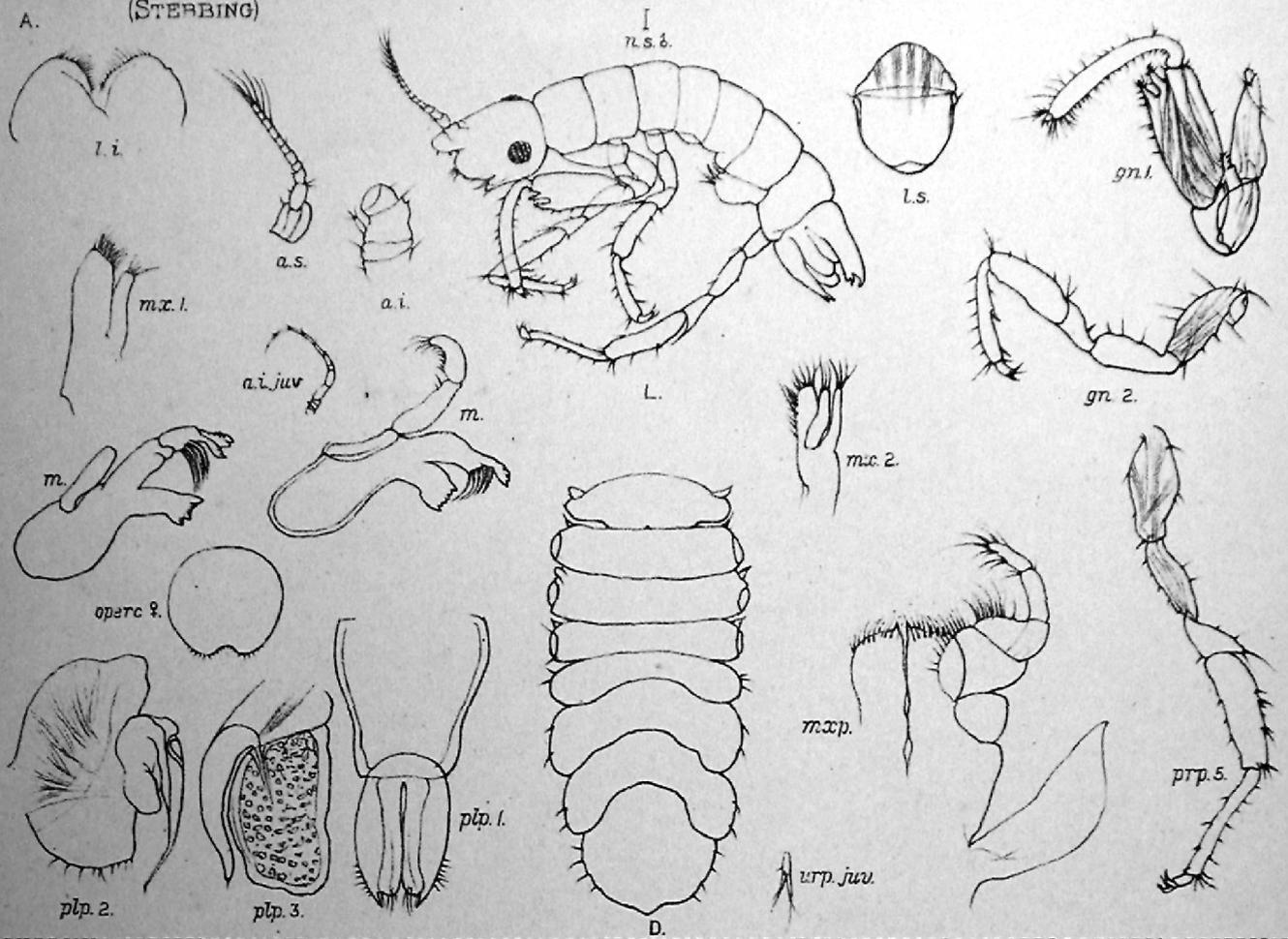
l.C., maxp. The maxilliped in conjunction with hind lamina of the head, of which the digitate lateral lobes are shown separately in higher magnification.



T. R. R. STEBBING, DEL.

J. T. RENNIE REID LITH. EDINB.

KALLIAPSEUDES MAKROTHRIX n. g. et. sp.

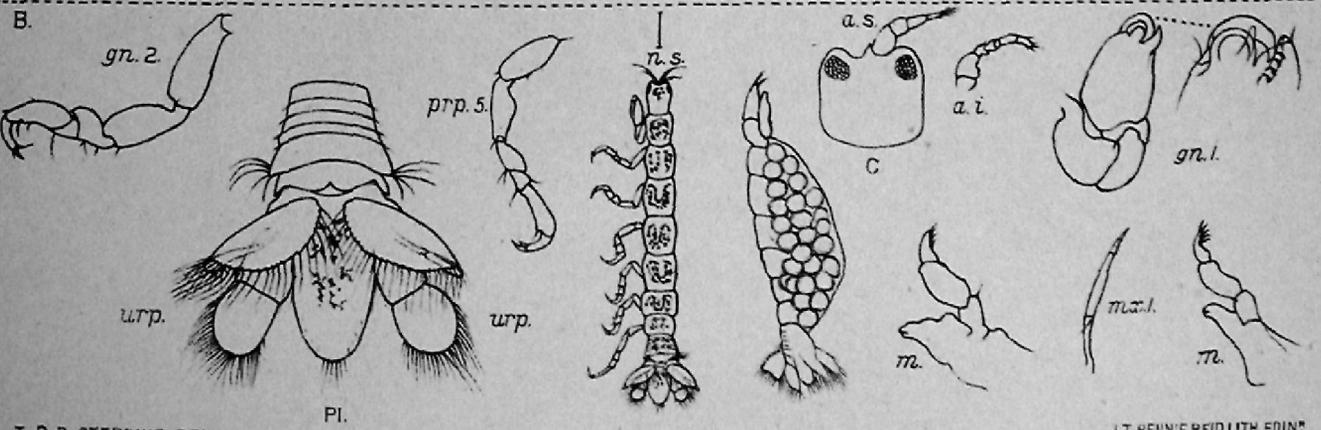
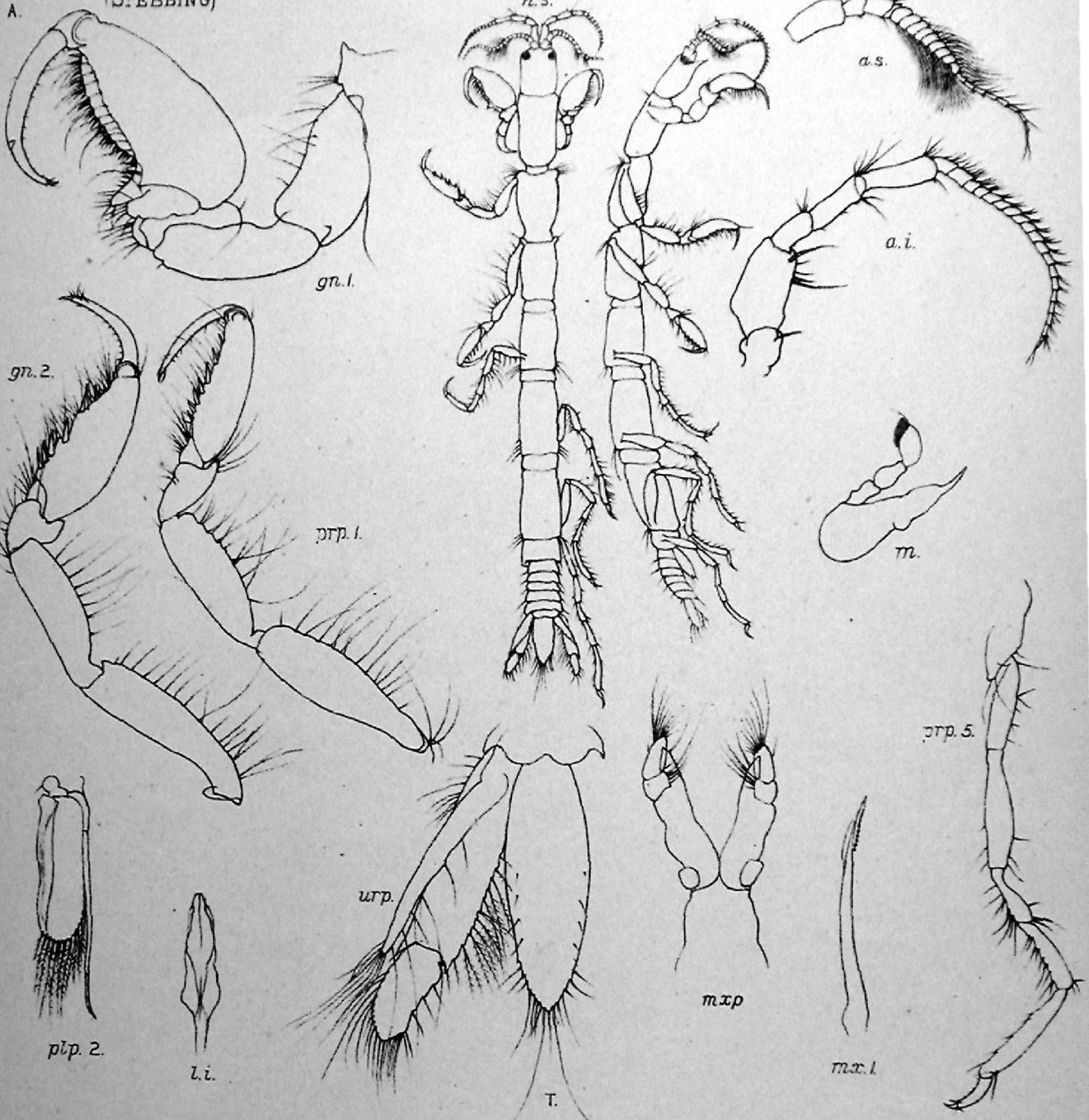


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J. T. RENNIE REID LITH. EDIN.

A. JANIRA CROSSLANDI. Stebbing

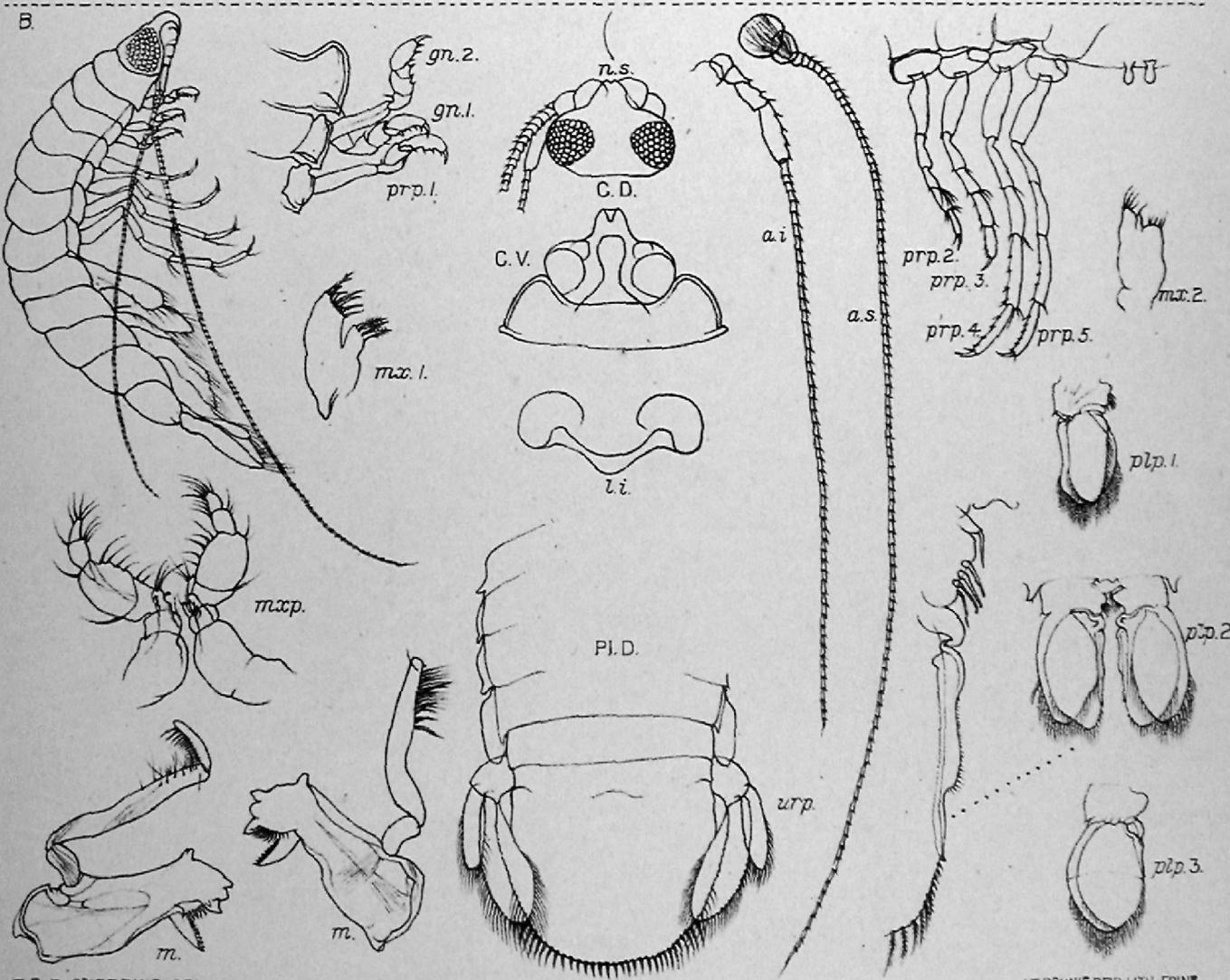
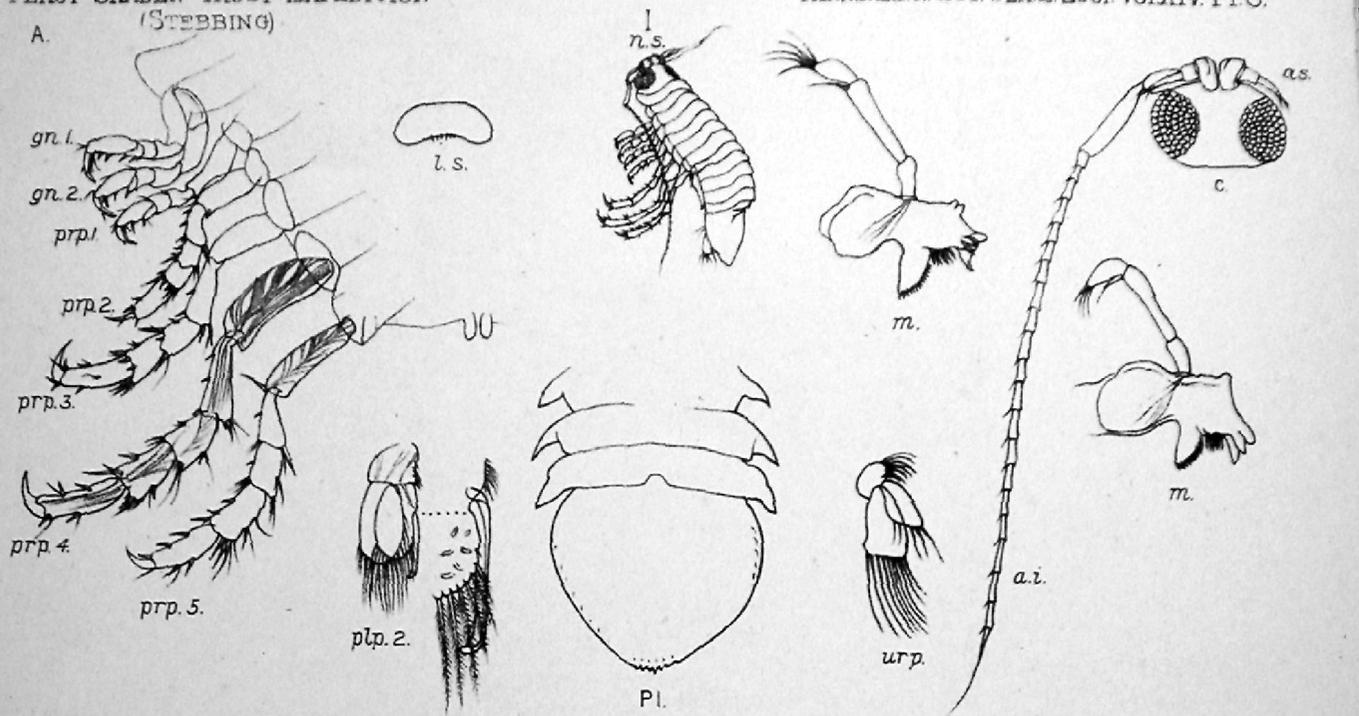
B. PARAPSEUDES HIRSUTUS n.s.



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J. T. RENNIE REID, LITH. EDIN.

A. CALATHURA SLADENI, n. sp. B. APANTHURA XENOCHIEIR, n. sp.

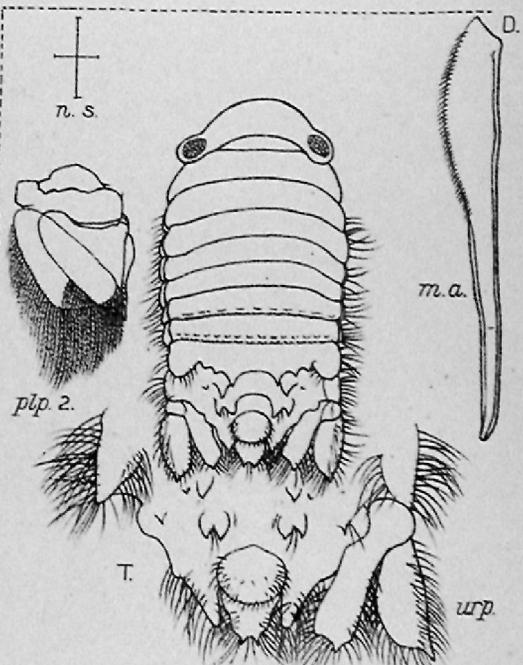
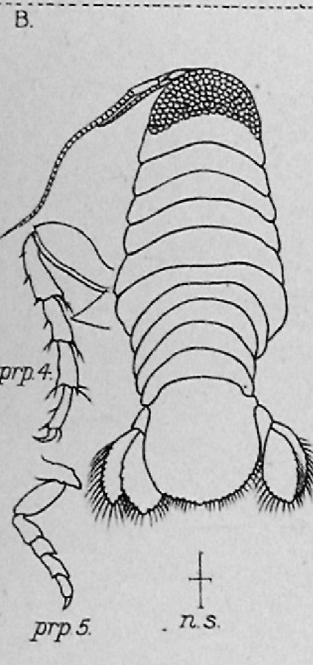
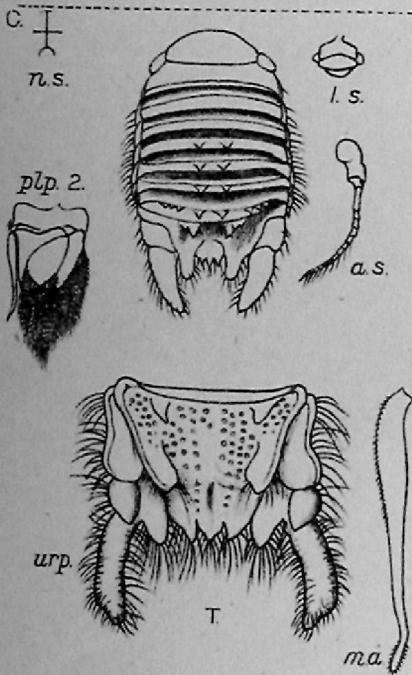
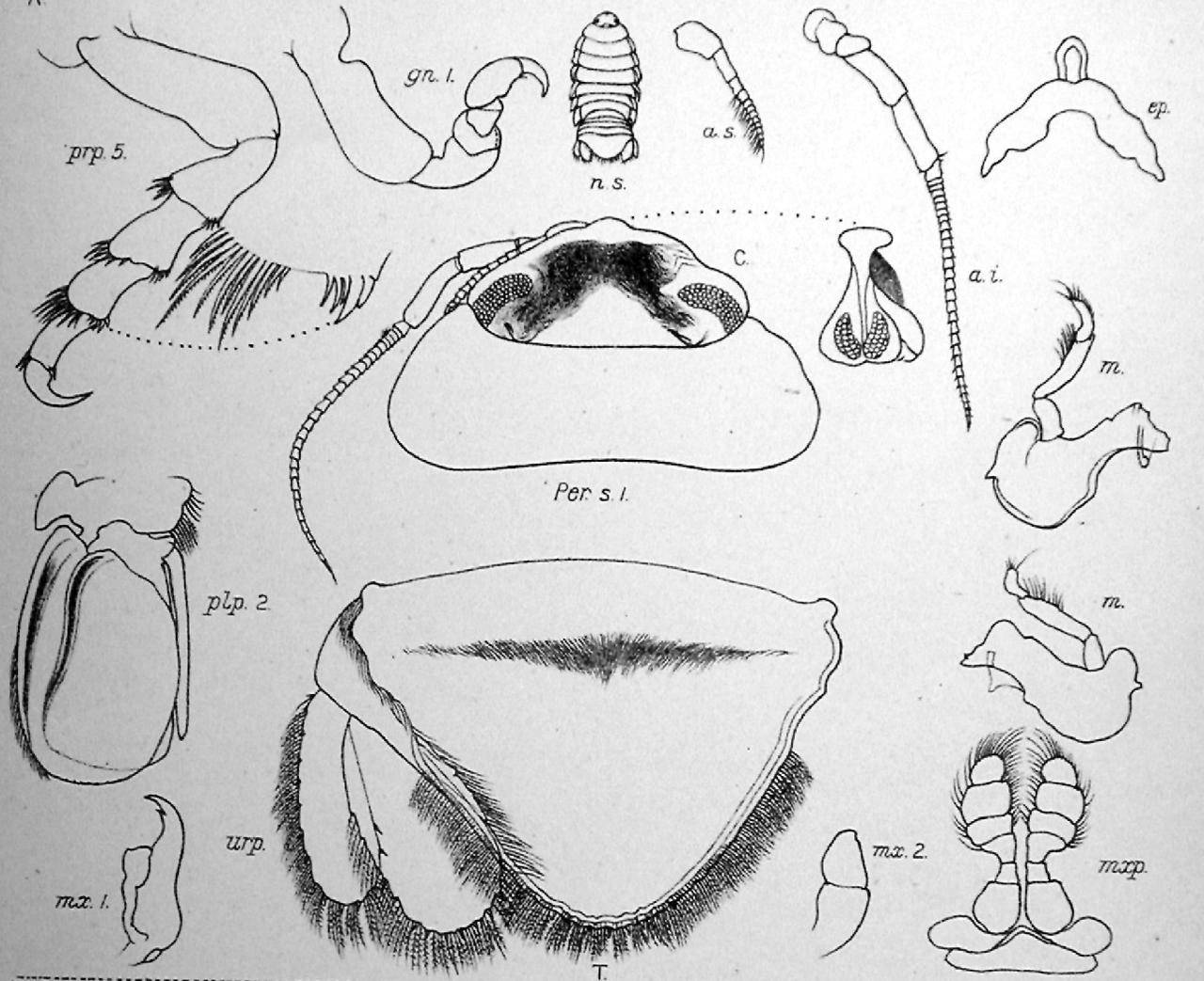


T. R. STEBBING DEL.

J. T. PENNIE REED LITH. EDIN.

A. EURYDICE HUMILIS n. sp.

B. PONTOGELOS ASELGOKEROS n. sp.



T. R. R. Stebbing, Del.

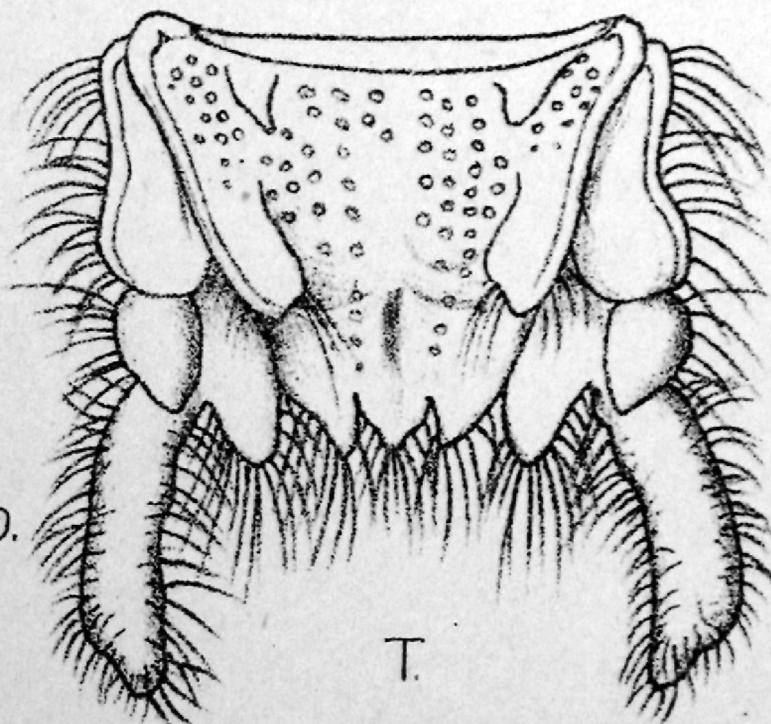
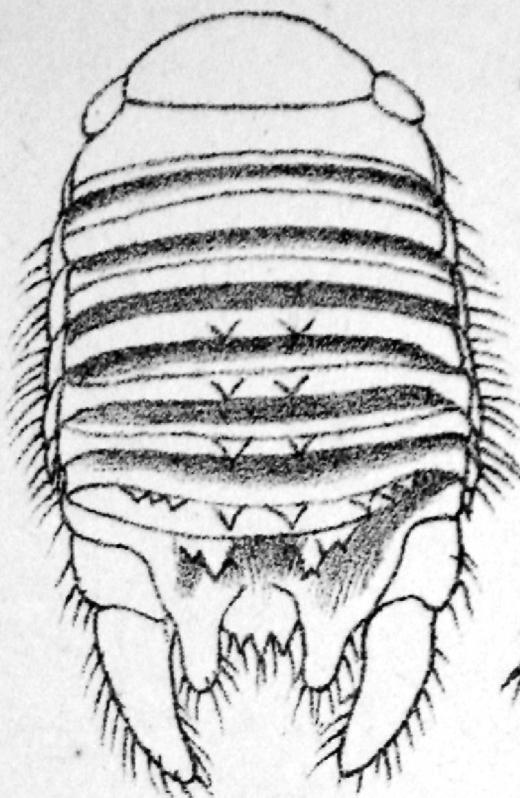
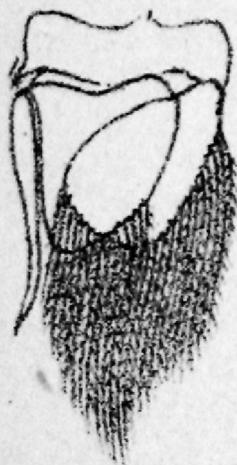
J. T. Rennie Reid, Lith. Edin^r

A. ARGATHONA REIDI n. sp. B. ÆGA OMMATOPHYLAX, Stebbing.
C. PARACILICÆA HANSENI n. sp. D. CYMODOCE ZANZIBARENSIS, n. sp.

C. 
n.s.


l.s.

plp. 2.



urp.

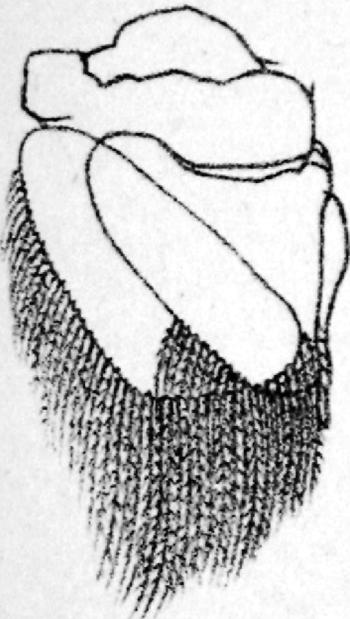
T.

m.a.

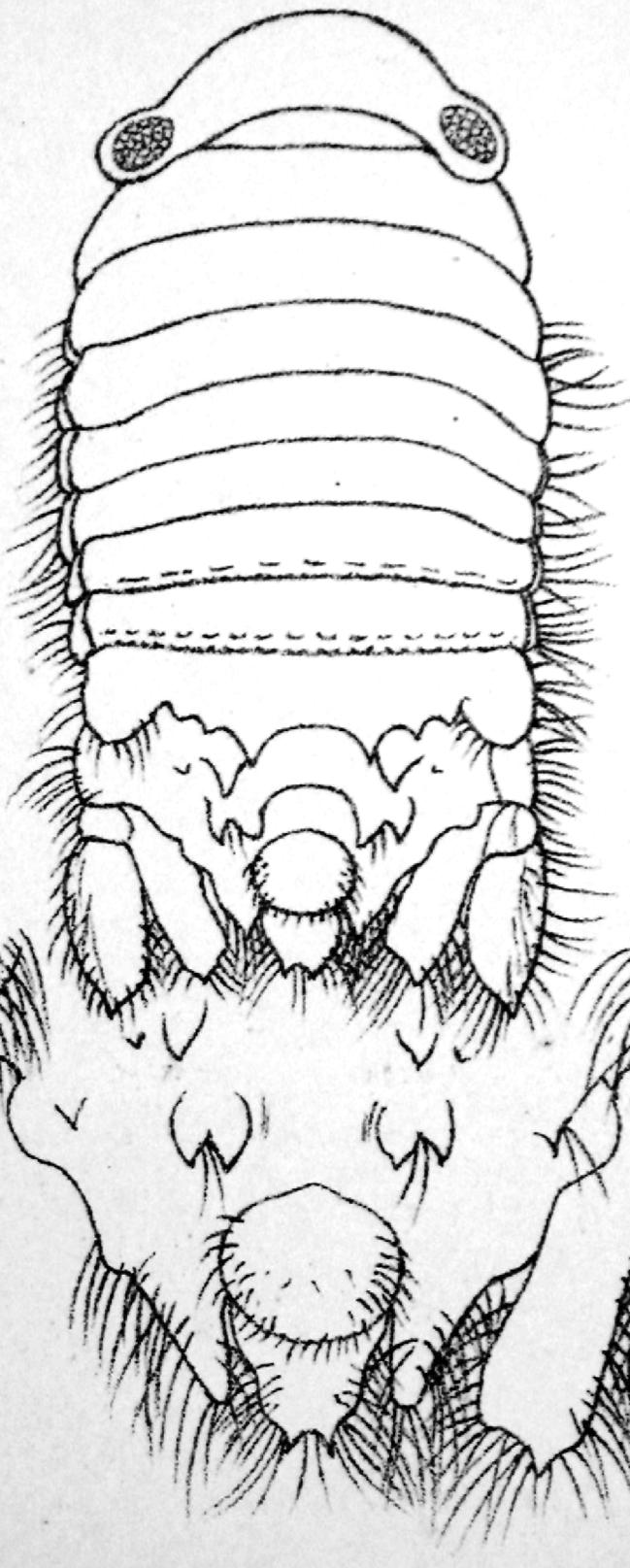
T. R. R. Stebbing, Del.

A. ARGATHONA

n. s.



plp. 2.



T.

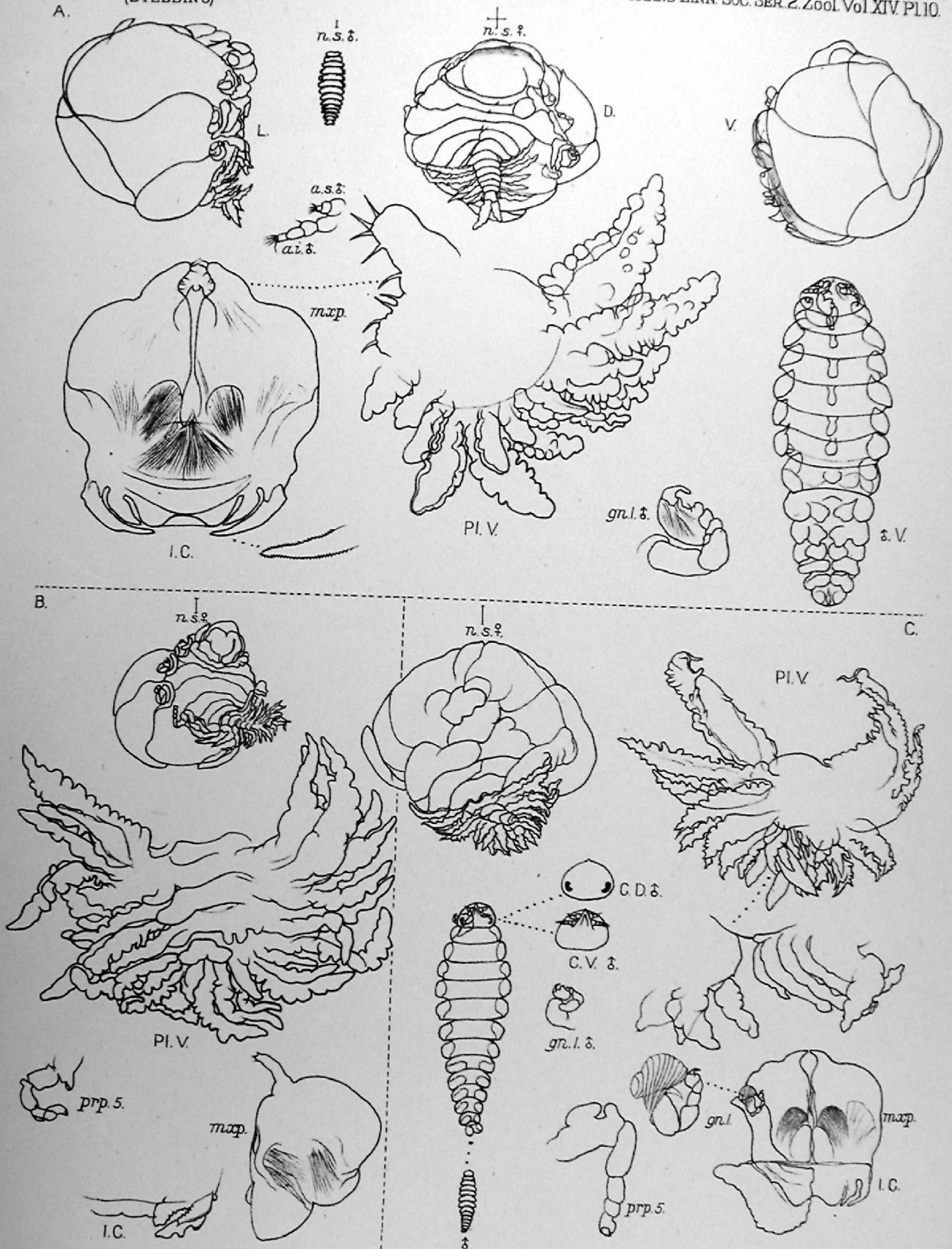


m.a.

urp.

J. T. Rennie Reid, Lith. Edin.

MATOPHYLAX, Stebbing.

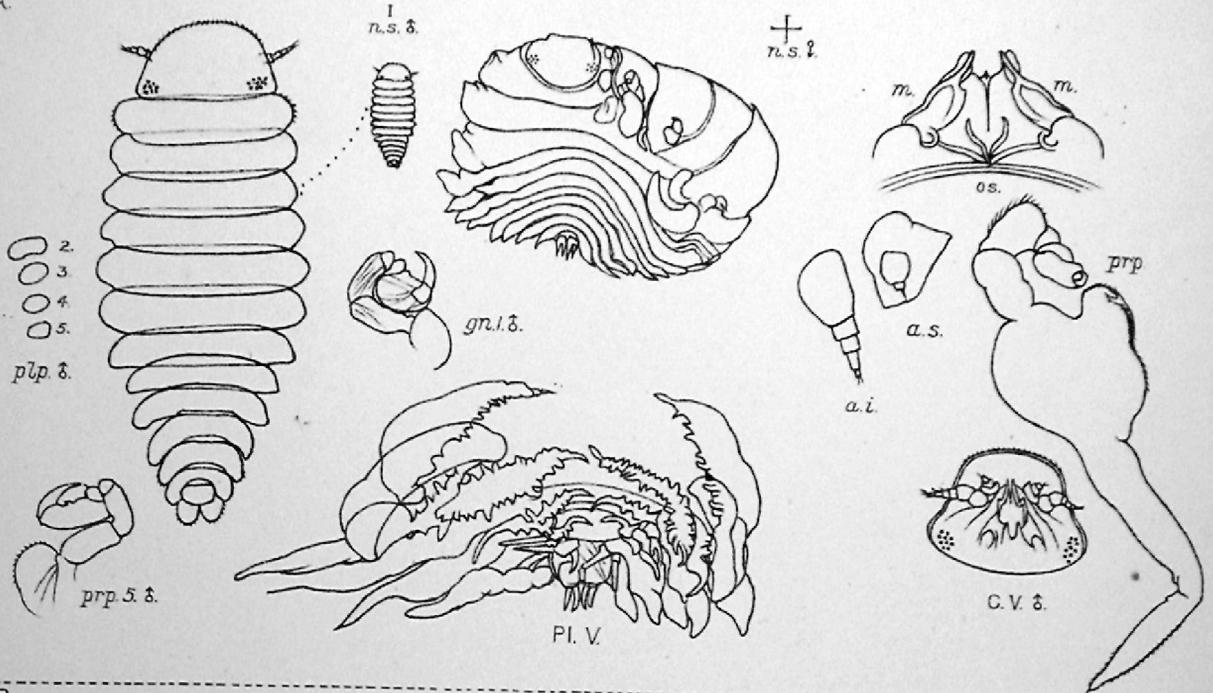


T.R.R. Stebbing, Del.

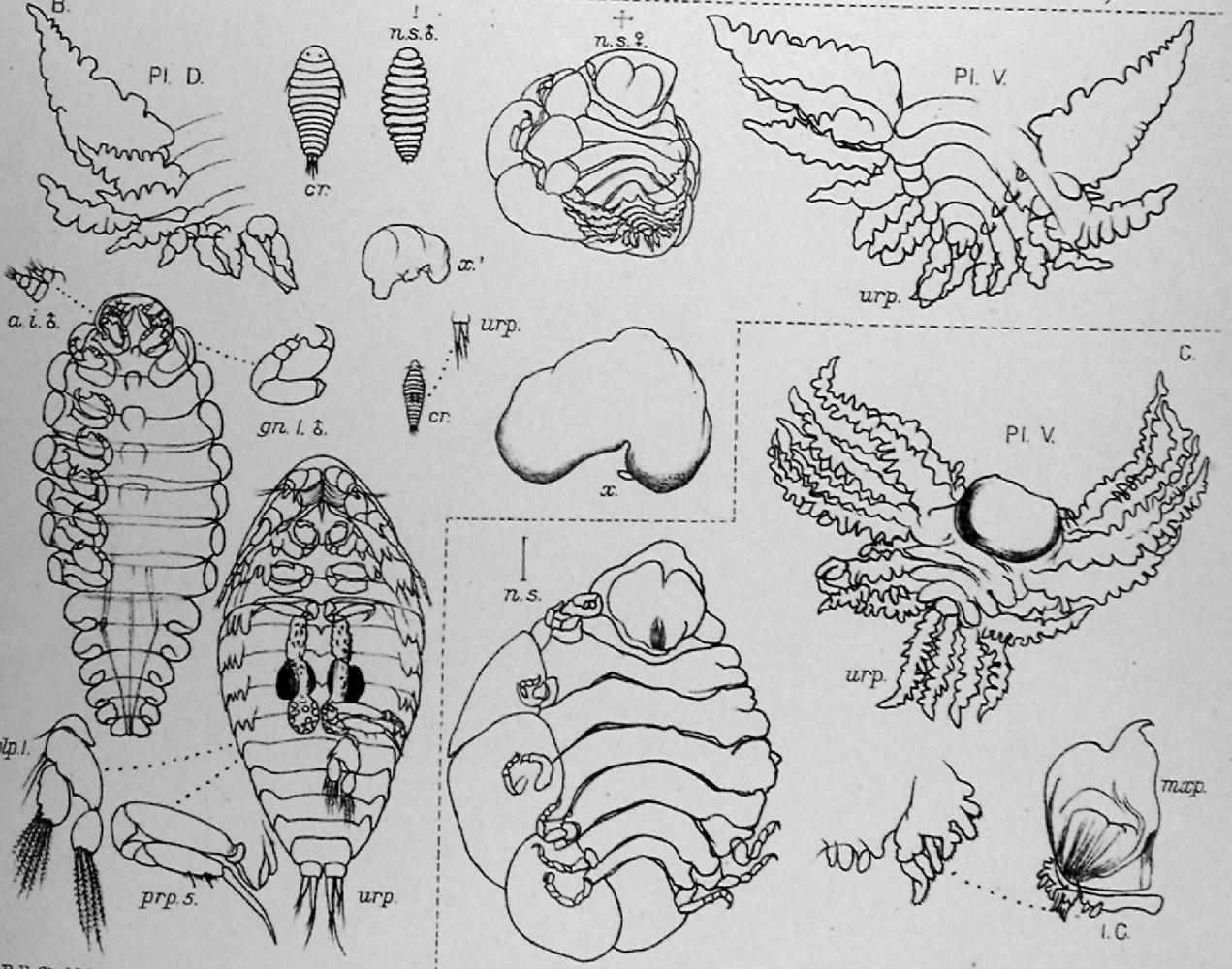
J.T. Rennie Reid, Lith. Edin^r

A. *ERYGNE SAVIGNYI*, n. sp. B. *DACTYLOKEPON CATOPTRI*, n. sp. C. *KEPON HALIMI*, n. sp.

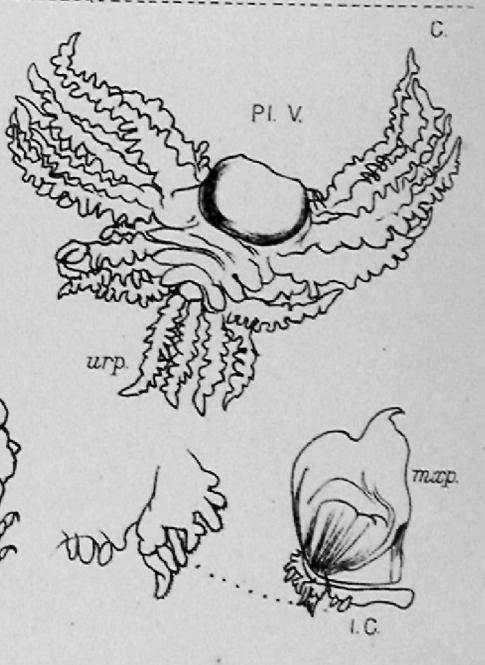
A.



B.



C.



T.R.R. Stebbing, Del.

J. T. Rennie Reid, Lith. Edin^r

A. GIGANTIONE RATHBUNÆ, n. sp.
B. TRAPEZICEPON AMICORUM (G. & B) C. DACTYLOKEPON RICHARDSONÆ, n. sp.