

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.