



# JOURNAL OF THE ROYAL SOCIETY OF WESTERN AUSTRALIA.

VOLUME XXIX.

## 1.—MARINE COPEPODA FROM WESTERN AUSTRALIA.

### III.—LITTORAL HARPACTICIDS FROM PORT DENISON.

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Read 11th August, 1942.

The Copepods described below were taken from the reef fringing Leander Point, at the southern end of the bay at Port Denison (near Dongarra), in March 1940. The reef is part of the coastal limestone formation found along much of the south-western coast-line of Western Australia and is continuously submerged by from one to three feet of water. It supports a rich flora of small red and green algae among which live large numbers of copepods, mainly Harpacticoids.

Several new species and one new genus are described from this locality and the copepod fauna as a whole shows close affinity with those of the Mediterranean and Bermuda Is., as has already been shown for the more southerly regions of the Australian coast (Nicholls, 1941). Of particular interest in this connection is the occurrence of the genus *Cletopsyllus*, described from Bermuda by Willey and here represented by a second species, the description of which is based on a single ovigerous female as was also the case with Willey's species. This female was found, along with a *Nebalia*, in a discarded brown glass bottle lying on the surface of the reef, and a thorough search of the same area during March of the following year failed to locate any further specimens, from which it may be deduced that this is not a true dweller among algae but more probably lives in crevices in the reef and had entered the bottle at night, while swimming in the upper layers, and failed to find its way out through the narrow neck.

The following abbreviations have been used in the figures:—**a.1.**, **a.2.**, first and second antenna; **c.r.**, caudal rami; **g.a.**, genital area; **md.**, mandible; **mxl.**, maxillule; **mx.**, maxilla; **mxp.**, maxilliped; **p.1.-p.6.**, legs 1-6; **R.**, rostrum; **U.**, (**Ur.**), urosome.

Fam. **THALESTRIDAE** Sars, 1905.

Lang, 1936.

#### **Dactylopusia tisboides** (Claus).

*Dactylopus tisboides* Claus, 1863.

*Dactylopusia tisboides* (Claus) Sars, 1905, p. 126, pl. lxxvii, lxxviii.

Occurrence: Ten females (five ovigerous), two juveniles.

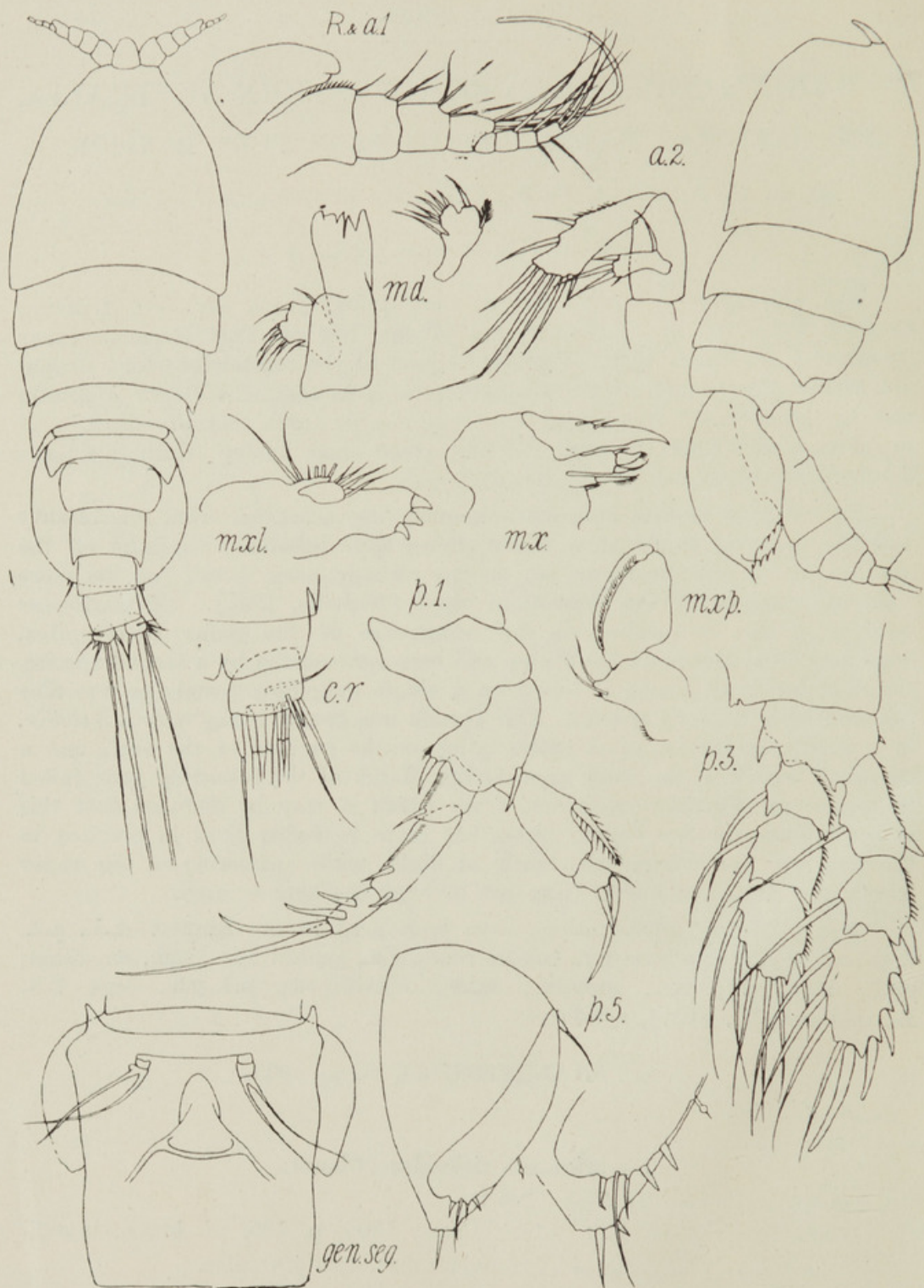
Distribution: North Sea, North Atlantic, Mediterranean, Red Sea, Kerguelen.



***Neodactylopus cyclopoides* gen. et sp. nov.**

(Text fig. 1.)

This copepod is one of those Thalestrids related to *Eudactylopus*, from which it differs more particularly in the shape of the body and structure of the mouth parts. These differences are sufficiently marked to warrant the creation of a new genus. Since there is only the single species no generic diagnosis is given.



Text fig. 1. *Neodactylopus cyclopoides* gen. et sp. nov., female; whole animal  $\times 80$ , fifth leg  $\times 140$ , remainder  $\times 235$ .



Occurrence: A single female, with the remains of an egg-sac in the "brood-pouch."

Female: Length of anterior body 0.59 mm., of urosome 0.31 mm., total length 0.90 mm.; depth of body in head region 0.24 mm.; width in head region 0.31 mm., at genital segment 0.17 mm., at anal segment 0.09 mm.

Body wide anteriorly, tapering posteriorly; head fused with first segment; third and fourth segments with lateral upturned processes on their hinder margins; fifth segment very short, without lateral processes, narrower than genital segment which is partially divided and wider than long; the remaining three urosome segments are subequal in length and slightly wider than long; caudal rami short, wider than long, terminal setae almost as long as body. The rostrum is articulated with the head, rounded, and as long as the first segment of the antennule. The first antennae are 8-segmented, with 4 segments in the basal portion, which is twice as long as the distal part. The exopod of the second antenna appears to be 1-segmented, but this could not be made out clearly in the preparation; judging from the position of the proximal seta it is possible that this ramus is 2-segmented. The mandible has a strong biting edge and a 1-segmented palp; the maxillule is of similar appearance to the mandible, having a well developed gnathobase bearing three coarse teeth, and a small palp; the maxilla has a well developed terminal lobe and two inner lobes, strongly armed, with a rudiment of a third inner lobe; the maxilliped is very like that of *Eudactylopus*. The first legs differ from those of that species in that the endopod is shorter than the exopod, which has an enlarged middle segment; in its shape this endopod bears a certain resemblance to that of *Ialysus*. The swimming legs resemble those of other Thalestrids, particularly *Eudactylopus*, in which the seta formula is the same:

			endopod	exopod
p. 2	..	..	1 2 221	1 1 223
p. 3	..	..	1 2 321	1 1 323
p. 4	..	..	1 1 221	1 1 323

and the setae are all finely plumose. The fifth legs are like those of *Eudactylopus*, and together with the broad genital segment serve as a brood-pouch for the protection of the egg-sac. The genital segment, which is divided only on the dorsal surface, bears lateral wing-like expansions dorsally on the anterior portion.

This copepod, which is undoubtedly a Thalestrid, resembles *Eudactylopus* in the enlarged fifth legs, structure of legs 2-4, and the first antennae, but differs in the mouth parts, first legs and shape of body. In the last feature it resembles *Dactylopodella* but differs from this genus in the reduced mouth parts and better developed swimming legs. (See Addendum.)

#### ***Parastenhelia forficula* (Claus).**

(Text fig. 2A.)

*Thalestris forficula* Claus, 1863.

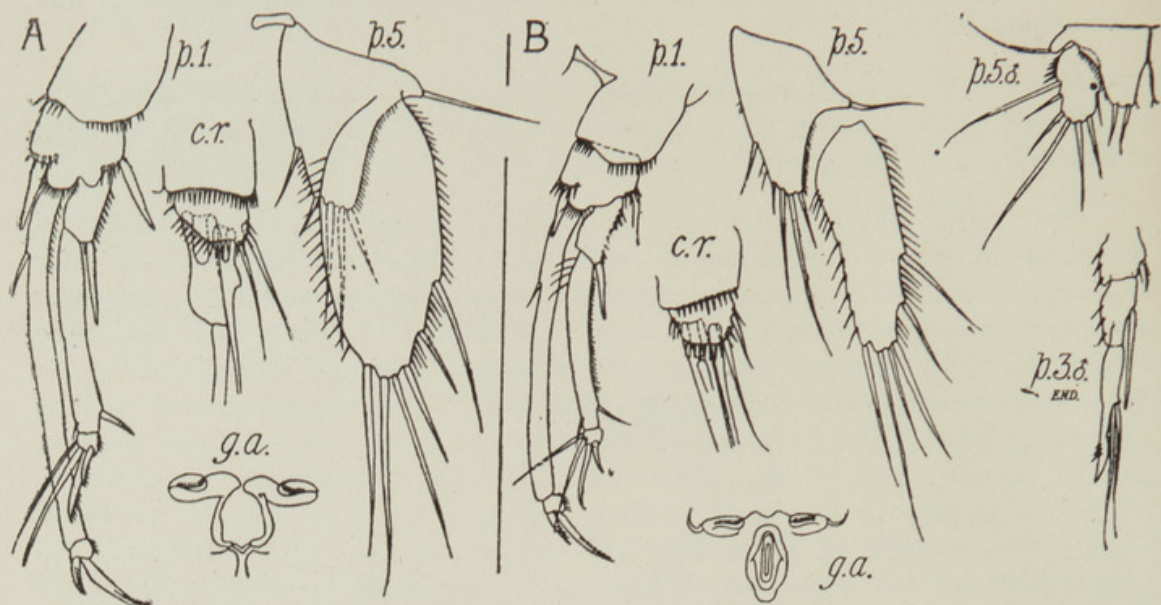
*Microthalestris forficula* (Claus) Sars, 1905, p. 123, pl. lxxvi.

*Parastenhelia forficula* (Claus) Lang, 1934, p. 22 et seq.

Occurrence: Three females (two ovigerous), 0.72 mm.

Distribution: Norway, British Isles, Woods Hole, Mediterranean.





Text fig. 2. A. *Parastenhelia forficula* (Claus), female; B. *P. forficula* (Claus) *littoralis* (Sars), male and female; all  $\times 200$ .

***Parastenhelia forficula* var. *littoralis* (Sars).**

(Text fig. 2B.)

*Thalestris forficula* Thomson, 1883.

*T. forficula* T. Scott, 1894.

*Microthalestris littoralis* Sars, 1911, p. 369, Supp. pl. 11, fig. 1.

*P. forficula* v| *littoralis* (Sars) Lang, 1934, p. 25, fig. 49-56.

Occurrence: Seven females (four ovigerous), 0.63—0.67 mm., one male, 0.54 mm.

Distribution: Mediterranean, Norway, Gulf of Guinea, New Zealand, Woods Hole, Bermuda.

Lang (loc. cit. and 1936, p. 52) shows that *Microthalestris* and *Parastenhelia* are synonymous, and further expresses the opinion that Sars' species *littoralis* is no more than a variety of *forficula* (Claus). He points out that the species is very variable and quotes Monard (1928, p. 348) to the same effect. In view of these opinions I have identified specimens found here with the species and its variety, and while there is little doubt about the identification of the variety, that of the former is open to question. The genital area of *littoralis* found here is very similar to the figure given by Lang (1934, fig. 51) though it does not show the full structure indicated by him. The first legs in both cases are much longer and more slender than has previously been described for either, and, in the case of the specimens identified as *forficula*, the genital area is of a quite different structure; the fifth legs also differ in that the end segment is ovate. It is possible that this represents a new species but for the present it is accepted as a variation. It should also be noted that the distal segment of the fifth leg of the male here identified as *littoralis* does not exhibit the segmentation shown both by Sars and by Lang, although the arrangement of the setae is the same.



Fam. **DIOSACCIDAE** Sars, 1906.

Nicholls, 1941a.

**Amphiascopsis hirsutus** (Thomp. & Scott).*Dactylop(h)usia hirsutus* Thompson & Scott, 1903, p. 269, pl. ix, fig. 19-24.*Amphiascopsis hirsutus* Nicholls, 1941a, p. 75.

This form has already been recorded from this coast (Nicholls, 1943) and was found here abundantly in both sexes and young stages, the adult size varying from 1.0 to 1.3 mm.

**Amphiascopsis tenuiculus** (Monard).*Amphiascus tenuiculus* Monard, 1928, p. 382, fig. xxix.*Amphiascopsis tenuiculus* Nicholls, 1941a, p. 75.

Two ovigerous females (0.50 mm.) of this form were found; it has previously been recorded only from Banyuls, on the Mediterranean coast of France. These specimens departed slightly from the description given by Monard, but I have little hesitation in identifying them with his species.

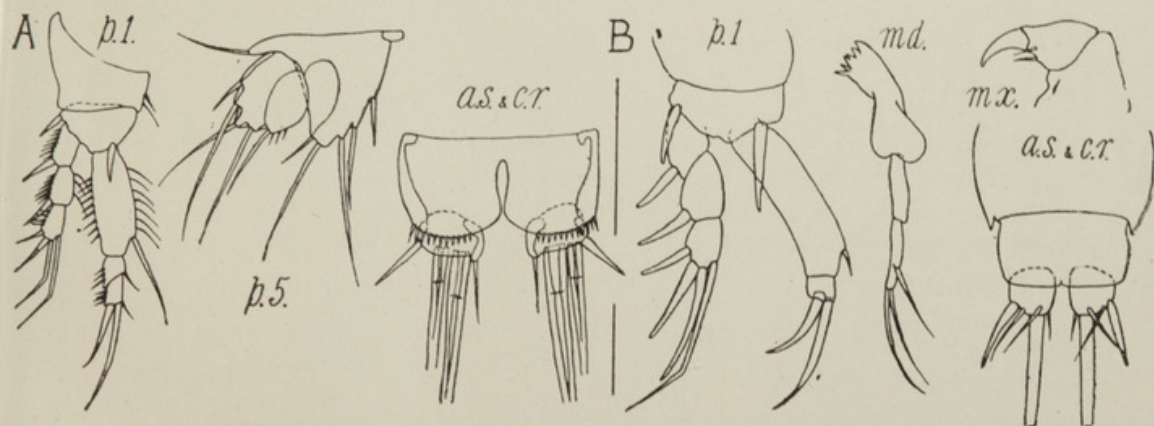
**Amphiascoides vararensis** (T. Scott).

(Text fig. 3A.)

*Amphiascus vararensis* T. Scott, 1903.*A. affinis* Sars, 1906, p. 168, pl. cix.*Amphiascoides vararensis* Nicholls 1941a, p. 81.

Occurrence: Seven ovigerous females, 0.67 mm.

Distribution: Scotland, Norway, Mediterranean.



Text fig. 3. A. *Amphiascoides vararensis* (T. Scott), female;  $\times 210$ ; B. *Parialysus robustus* (Nicholls), female; caudal remi  $\times 125$ ; others  $\times 210$ .

The specimens found here should almost certainly be identified with this species although there are small differences, chief of which is the proportions of the first leg, which resembles that of *hispidus*; the rostrum and fifth legs agree exactly with those of *vararensis*.

**Robertsonia paramonardi** sp. nov.

(Text fig. 4.)

Occurrence: Nine females (five ovigerous), two males.

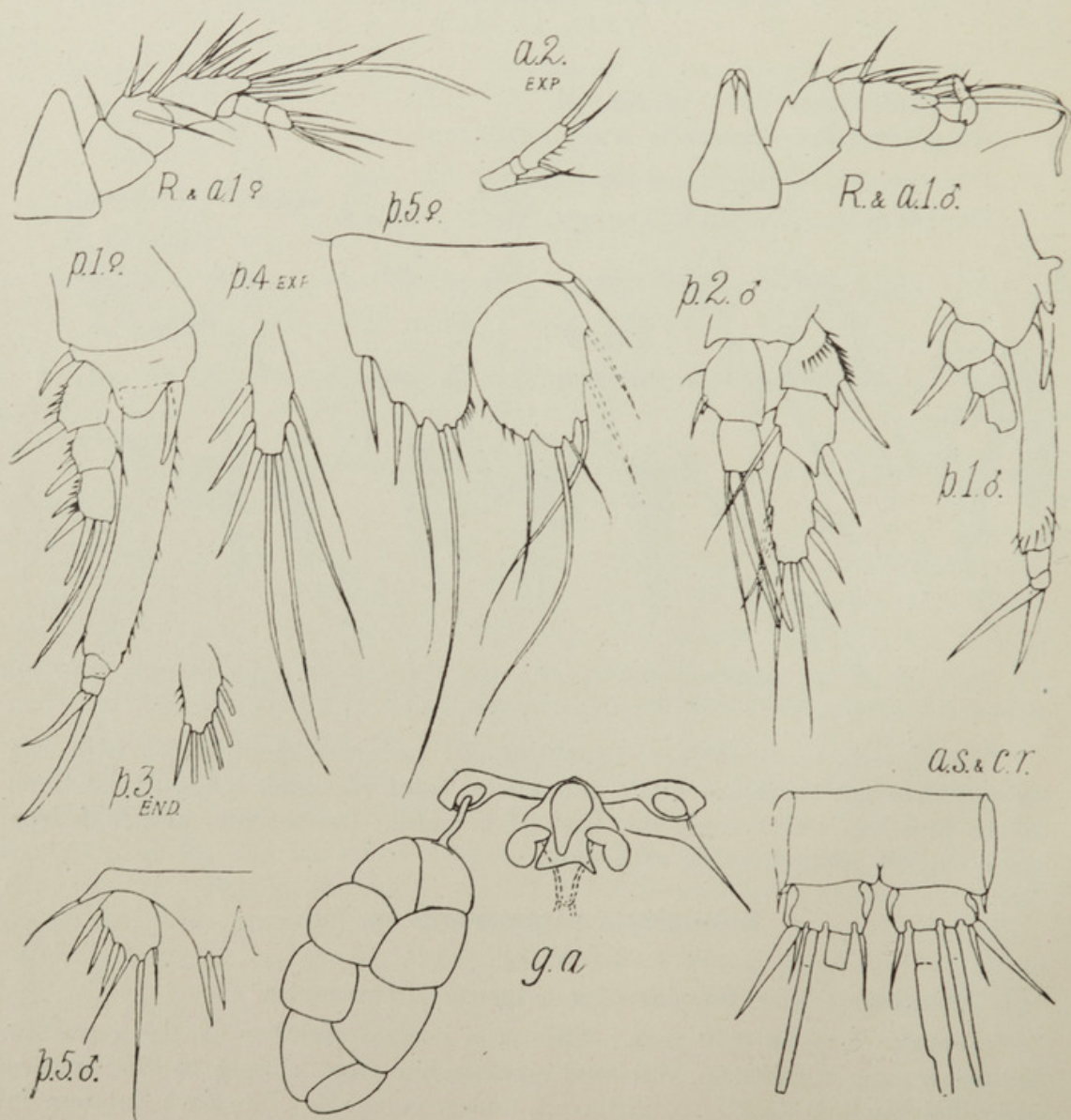
Female: Length 0.70 mm. This is a typical member of the genus as defined by me (1941a, p. 86) and approaches most closely to the species described by Klie (1937, p. 25) as *Varnaia monardi*. The first antenna is 6-segmented, with three in the basal portion; the rostrum is rounded and



unarmed. The second antenna has a 3-segmented exopod and the middle segment is without a seta; the remaining mouth parts are typical. The first legs resemble those of *monardi* but differ in the absence of the inner seta on the endopod, which is relatively longer when compared with the exopod than is the case in *monardi*; there is no break in the chitin on the inner margin to indicate that any of the fine hairs should be regarded as a small seta (cf. description of male). Legs 2-4 have the usual seta formula for the genus:

				endopod		exopod
p. 2.	..	..	1.	1.	121	0. 1. 223
p. 3.	..	..	1.	1.	321	0. 1. 123
p. 4.	..	..	1.	1.	221	0. 1. 223

and resemble those of *monardi* except that the third endopod clearly has three inner setae on the end segment, and the fourth exopod has the distal inner seta enlarged. The fifth legs are very like those of *monardi*. Two egg-sacs were present in all the ovigerous females. The genital area is similar to those of *tenuis* (Lang, 1935, fig. 5) and *monardi* (Klie, 1937, fig. 53)



Text fig. 4. *Robertsonia paramonardi* sp. nov., male and female;  $\times 300$ .



Male: Length 0.56 mm. The first antenna is 6-segmented as in the female; the rostrum tapers more than that of the female, is rounded, and shows a marginal chitinous thickening similar to that shown for *monardi*. The first legs in the specimen figured lacked the inner seta on the endopod and the inner seta on the middle segment of the exopod, but this leg was damaged during dissection and both of these setae were found on the second specimen, exactly as described and figured for *monardi* by Klie (op. cit., fig. 67). The armature of the swimming legs is like that of the female except for the modified second endopod, which is 2-segmented, the distal segment armed with two equal terminal spines and a seta, as in *monardi*. The fifth legs are like those of *monardi*.

Lang (1935, p. 4) refers to his inability to find any specimens of *Robertsonia tenuis* with egg-sacs, but Klie (op. cit., pp. 25, 28) found these paired in *monardi*, as is also the case with the present species. Except for a few minor points the male of this species cannot be distinguished from that of Klie's species. Klie's material was taken from the brackish water of the Varna Estuary whereas this material is truly marine. The genus is typically euryhaline.

***Parialysus robustus* (Nicholls).**

(Text fig. 3B.)

*Tydemanella robusta* Nicholls, 1941, p. 416, fig. 19.

*Parialysus robusta* Nicholls, 1941a, p. 91.

Occurrence: One ovigerous female, 1.1 mm.

Distribution: Sellick Beach and Spencer Gulf, South Australia.

This copepod, originally assigned to the genus *Tydemanella* was later transferred to a new genus for the reasons set out on page 90 (Nicholls, 1941a). Slight differences from the original description were observed and are shown in the accompanying figure, which includes a drawing of the maxilla, previously unobserved. The differences are an extra spine on the end segment of the first exopod, the arrangement of setae on the mandible palp, and additional small setae on the caudal rami. The maxilla is without secondary lobes. With reference to the footnote (Nicholls 1941, p. 418) it can here be stated that the middle segment of the second endopod has only one inner seta as figured. (See Addendum.)

Fam. **LAOPHONTIDAE** T. Scott, 1905.

Sars, 1907.

Nicholls, 1941a.

***Laophonte (Laophonte) cornuta* Philippi.**

*L. cornuta* Philippi, 1840.

*L. cornuta* Sars, 1907, p. 235, pl. clvii, clviii.

*L. (L.) cornuta* Nicholls, 1941a, p. 99.

Occurrence: One female (0.91 mm.), two males (0.74 mm.), one immature female (0.70 m.m.).

This species is of world-wide distribution and it is not surprising to find it on this coast. It has already been recorded from South Australia (Nicholls, 1941).



**Laophonte (Laophonte) adduensis** Sewell, 1940.

(Text fig. 5.)

Occurrence: Two females, one male.

Female: Length 1.1 mm. The body bears a strong resemblance to that of *cornuta*, except that there are two dorsal grooves in the head, the posterior median spine on the anal segment is less pronounced, the caudal rami are longer and more slender, and the fifth legs are relatively longer, extending back to the anterior margin of the pre-anal segment. The first antennae are 4-segmented and slender, the spur on the first segment is short and the second segment is without a spur. The second antennae have a small



Text fig. 5. *Laophonte (L.) adduensis* Sewell, male and female; whole animal  $\times 75$ , rest of female and antennule of male  $\times 160$ , rest of male  $\times 270$ .



one-segmented exopod, bearing two terminal setae. The mouth parts are typical. The first legs are like those of *cornuta* but are more slender, and the seta formula for legs 2-4 differs from that of *cornuta* in the second exopod.

			endopod		exopod
p. 2.	..	..	1. 220	0.	1. 122
p. 3.	..	..	1. 321	0.	1. 223
p. 4.	..	..	1. 221	0.	1. 223

Here the second exopod has only two outer spines on the end segment. The fifth legs bear a very strong resemblance to those of *cornuta*, but are relatively longer and more slender; the number and arrangement of the setae on these legs are also similar, but they are much shorter. The caudal rami are relatively longer and more slender, being twice as long as the anal segment, but are widened basally so that they do not appear to be widely separated as they are in the type species. The armature is very similar but one of the small distal setae is absent.

Male: Length 0.93 mm. The body resembles that of the female; the rostrum is very small and fused with the head. The first antennae are 6-segmented, the first segment bears a small spur while there is none on the second, the fourth segment is only slightly swollen and bears a long, strong spine on the anterior margin; in *cornuta* this segment is greatly enlarged and there is a relatively short spur in place of the spine. The exopod of the second antenna bears two long subequal setae and a short one terminally, and one lateral seta. The swimming legs are like those of the female except for the endopod of the third leg. This is 3-segmented, the middle segment is prolonged in the form of a spine, as in *cornuta*, but the shape of this spine is markedly different from that of the type. The fifth legs again are more slender and the basal expansion is well developed, extending to a little more than half way along the distal segment; the latter bears an inner seta not found in *cornuta*.

This species clearly belongs to the *cornuta*-group (Nicholls, 1941a) and is closely related to the type species, particularly in the structure of the fifth legs of the female. It differs from the other members of this group in several respects, notably in the seta formula and in the shape of the fifth leg. In general the male resembles those of *cornuta* and *hirsuta*; the projection on the middle segment of the third endopod is simple in *cornuta* and truncate in *hirsuta*, in this species it is specially modified; in both *cornuta* and *hirsuta* the fifth leg is without a basal expansion, which is well developed here; the fourth segment of the first antenna is smaller in this species than in either of the others and has a relatively long spine in place of the spur. (See Addendum.)

#### **Laophonte (Laophonte) congenera Sars.**

(Text fig. 6B.)

*L. congenera* Sars, 1908, p. 257, pl. clxxvii.

*L. (L.) congenera* Nicholls, 1941a, p. 99.

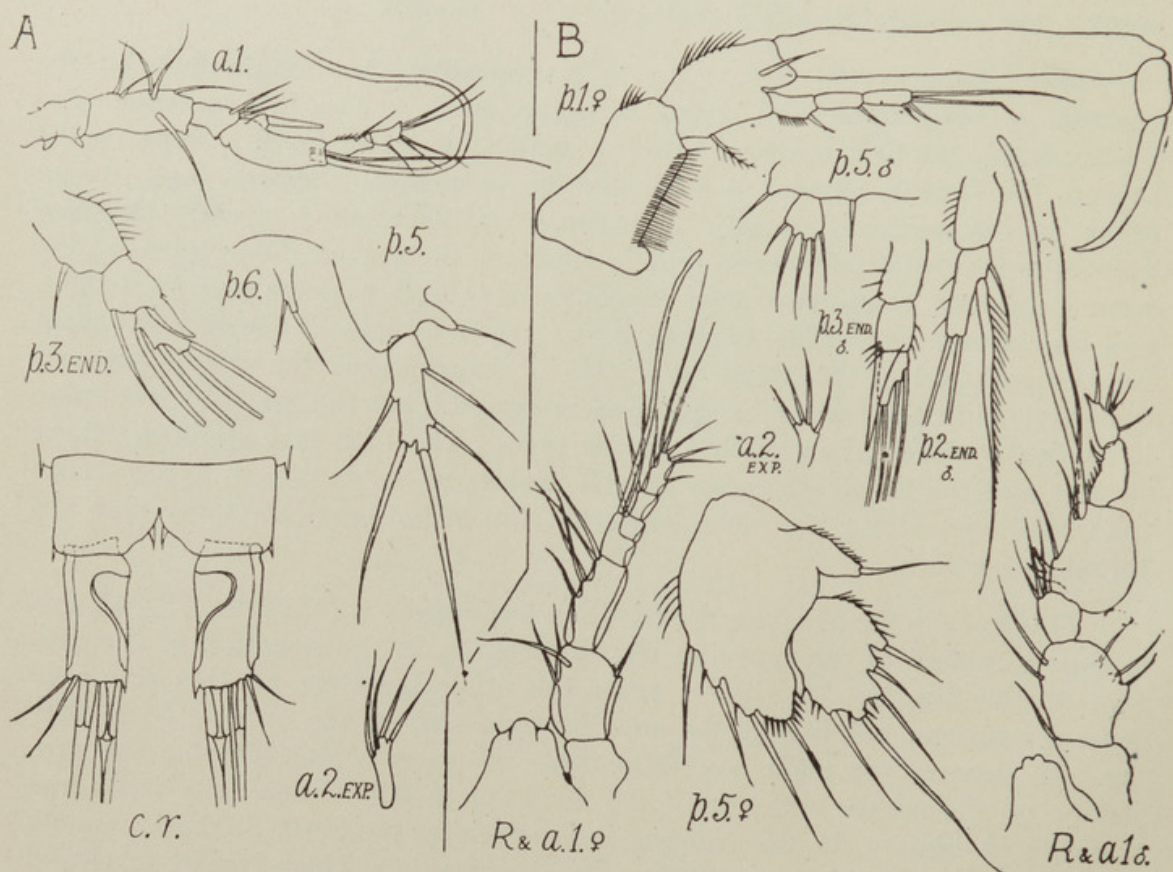
Occurrence: Ten females (three ovigerous) 0.50—0.56 mm.; one male, 0.50 mm.

Distribution: Norway, Mediterranean, Bermuda.



This species closely resembles *brevirostris* (Claus) as pointed out by Willey (1935, p. 76). He finds that the segmentation of the first antenna is the only tangible difference, and that the rostral condition described by Sars for *congenera* was associated with those specimens which he identified as *brevirostris*. In the material taken here the female has the rostrum with an entire margin and a first antenna which is clearly 7-segmented, while the male has a bilobed tip to the rostrum and a 6-segmented antenna. As was found also by Willey the male fifth leg has only a single seta representing the basal expansion.

In the female there is no trace of a spur on the second segment of the antenna whereas this is small but clearly defined in the male. Other male characters are clearly those of *congenera* rather than *brevirostris*, particularly the position of the inner seta on the second endopod. The caudal rami in both sexes are distinctly shorter than the anal segment; in both *brevirostris* as described by Sars and *congenera* there is little difference in the relative lengths of these parts.



Text fig. 6. A. *Laophonte rhodiaca* Brian, male; antennule  $\times 250$ , other parts  $\times 345$ . B. *Laophonte* (L.) *congenera* Sars, male and female; all  $\times 345$ .

### *Laophonte rhodiaca* Brian.

(Text fig. 6A.)

*L. rhodiaca* Brian, 1928.

Occurrence: One immature female, 0.54 mm.; one male 0.46 mm.

Distribution: Mediterranean.

In an earlier paper (1941, p. 423) I suggested that this species, known only from the male, might in reality be synonymous with *bulbifera* Norman, of which only the female has been described. *L. bulbifera* has not yet been



recorded from this region, but the male taken in this collection can clearly be identified with Brian's species. It is unfortunate that the female taken with this male was immature, so that this question is still open.

***Echinolaophonte armiger* (Gurney).**

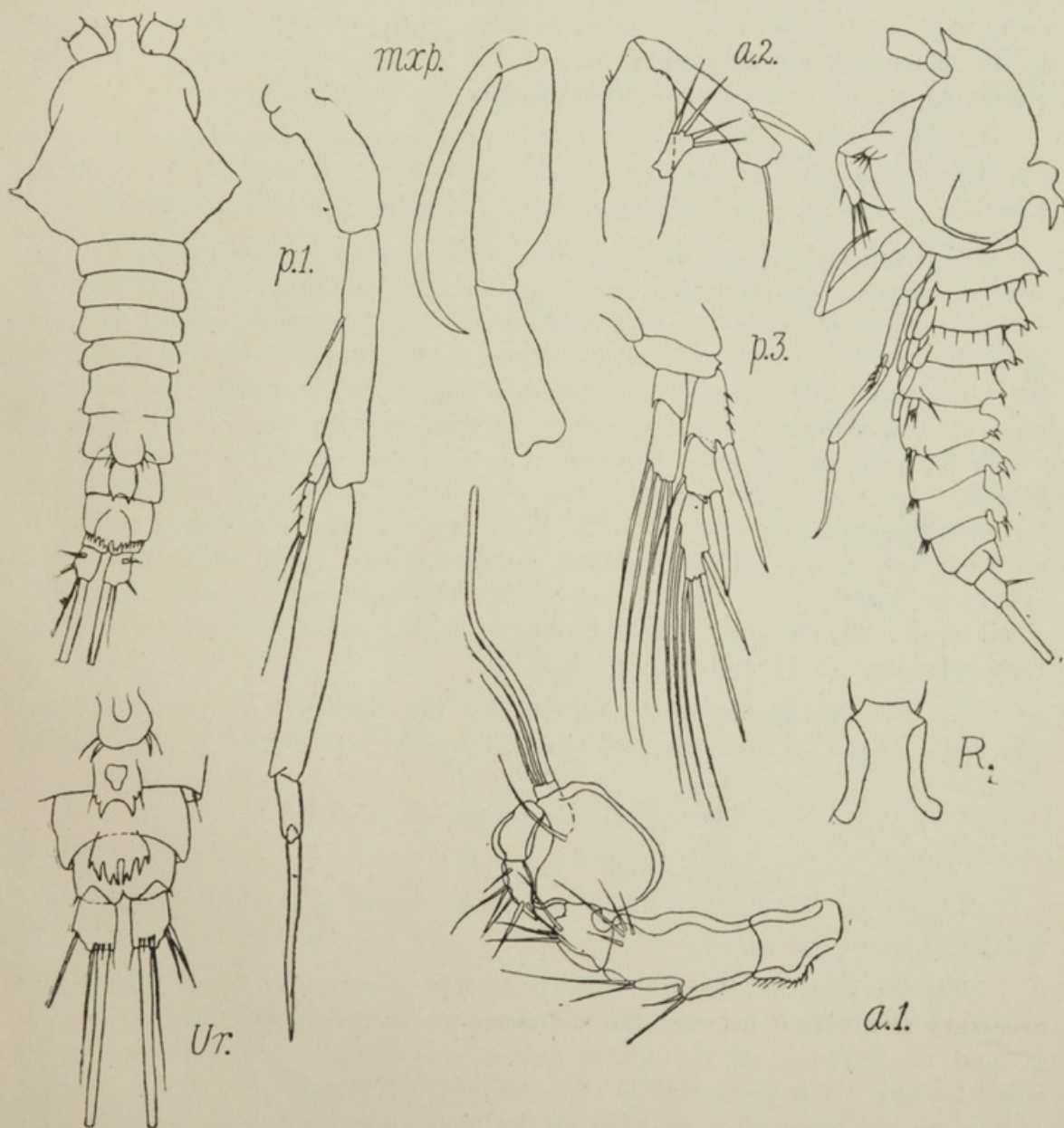
(Text fig. 7.)

*Laophonte armiger* Gurney, 1927, p. 554, fig. 159.

*E. armiger* Nicholls, 1941a, p. 95.

Occurrence: One male, 0.46 mm.

Distribution: Gulf of Suez, Suez Canal, Mediterranean, Bermuda.



Text fig. 7. *Echinolaophonte armiger* (Gurney), male; whole animal  $\times 140$ , urosome  $\times 230$ , appendages  $\times 385$ .

The male of this species has been described by Brian (1928, *hystrix*) and by Willey (1930). The specimen found here differs in a few minor points, in particular the narrower rostrum, the shape of the third endopod and, to a certain extent, in the dorsal body spines. The first antennae differ from Willey's description but in the single specimen available to me this



appendage was closely folded so that it was difficult to make out the structure of the terminal part clearly; the basal part agrees with Willey's figure. Until the female is found it is difficult to be certain that this is correctly identified, but in view of the close relationship already established between the Mediterranean, Bermudan and Australian regions, it is at least probable that it is the same species.

Fam. **NORMANELLIDAE** nov.

The question whether *Normanella* should be included in the Laophontidae has already been discussed (Nicholls, 1941a, pp. 92-93). It was concluded that this genus departs in every important feature from typical members of that family, and it was, therefore, temporarily removed to the Canthocamptidae. A review (as yet unpublished) of the genera hitherto included in the latter indicates equally clearly that it cannot remain there. The only remaining course is to create a new family for its reception.

Willey (1935, p. 72) has pointed out a certain resemblance between his genus *Cletopsyllus* and *Normanella*, and I find that these two genera together constitute a well defined family, with the following diagnosis:

Body tapering, more or less deeply constricted intersegmentally; rostrum triangular or truncate, broad at the base, articulated; first antenna 4- to 7-segmented, with three segments in the basal portion; second antenna with the basal segment undivided, exopod 1-segmented or absent; mandible palp biramous, each ramus 1-segmented, the proximal ramus may be reduced to a seta; maxillule with exopodal lobe; maxilla with three inner lobes of which the proximal may be reduced to a seta; maxilliped 3-segmented, prehensile. Legs with 2-segmented endopods and 3-segmented exopods; first leg with the exopod shorter than the basal segment of the endopod and with an inner seta on the middle segment, endopod with a spine and a geniculate seta terminally; fifth legs 2-segmented, both segments usually elongate; caudal rami slender and widely separated. Male with first antenna *chirocerate* (Lang, 1935) and legs unmodified.

The two genera are distinguished by the presence of postero-lateral processes on the urosome segments in *Cletopsyllus*, not found in *Normanella*.

**Cletopsyllus secundus** sp. nov.

(Text fig. 8.)

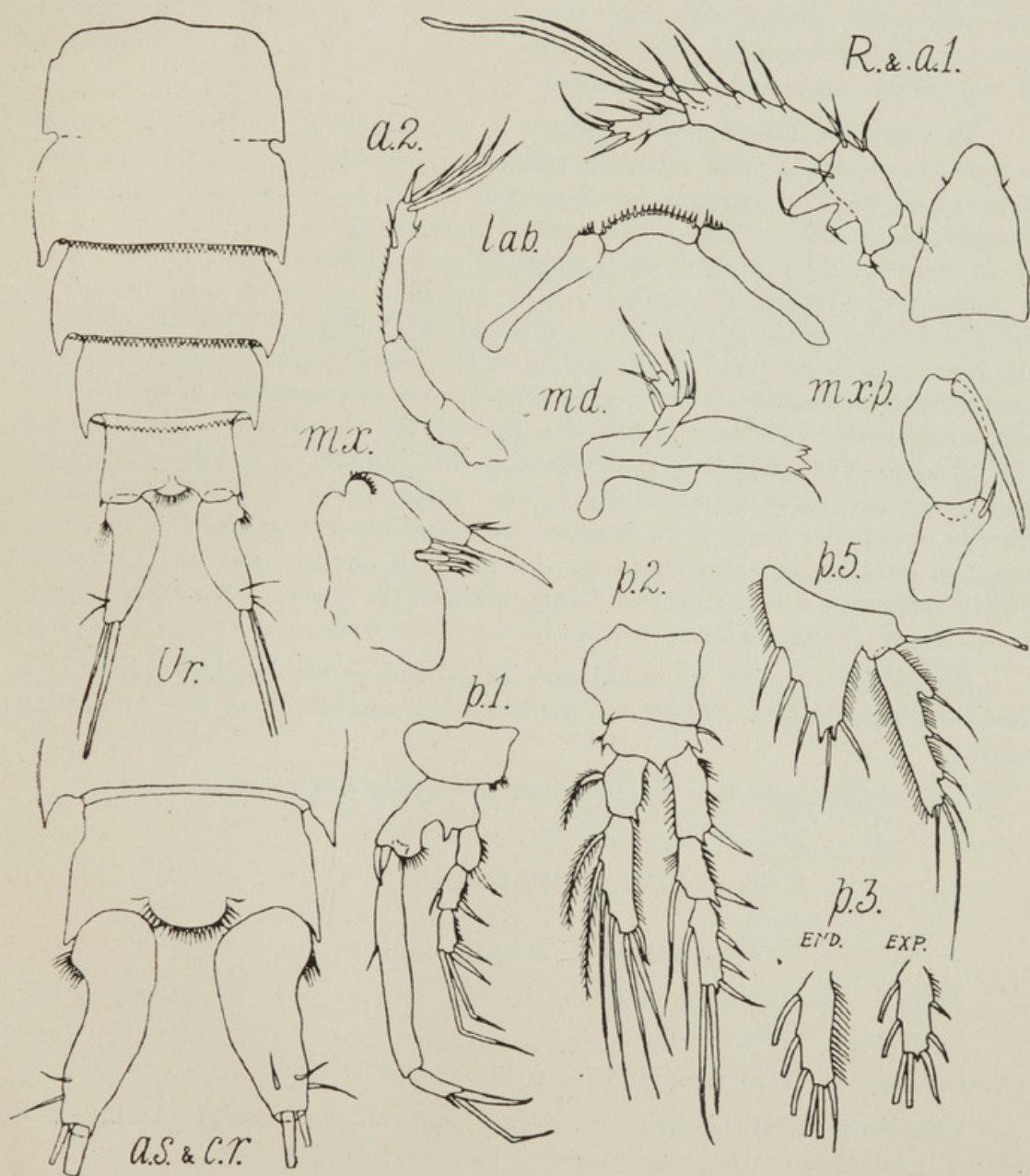
Occurrence: A single ovigerous female, found in a dark brown glass bottle lying on the surface of the reef.

Female: Length 0.98 mm. The body was so strongly flexed that it was necessary to divide it between the metasome and urosome in order to measure it, and no drawing of the whole animal was made. The greatest width was 0.24 mm. The metasome is of equal width throughout and the urosome at the genital segment is as wide as the metasome, gradually tapering to a width of 0.15 mm. at the anal segment. The posterior region of the urosome showed intersegmental constriction, whereas the outline of the metasome was entire. The whole body was thickly encrusted with epizoonts and detritus.

The rostrum is prominent, rounded, armed with small lateral setae. The first antenna is 4-segmented, the three basal segments well developed and bearing spiny or nodular outgrowths; the distal segments are fused into



one short segment and the whole appendage is very similar to that of the type species, *C. papillifer* Willey (1935, p. 70, fig. 75-85). The second antenna has the basal segment partially divided and is without an exopod. The mandible palp is biramous, the outer ramus rudimentary. The maxillules were both overlain by the maxillae in the preparation and were thus difficult to make out. The latter are stoutly constructed, with a well developed terminal lobe and three small inner lobes. The maxilliped shows no unusual



Text fig. 8. *Cletopsyllus secundus* sp. nov., female; urosome, in ventral view,  $\times 100$ , antennae, legs and caudal rami  $\times 185$ , mouth parts  $\times 305$ .

feature. The swimming legs are slender and hirsute. The endopods are 2-segmented and the exopods 3-segmented in each leg; the basal segment of the endopod of the first leg is elongate, the whole ramus about twice as long as the exopod, and bears an inner seta slightly proximal to the middle; the end segment bears terminally a curved spine, a long geniculate seta and a small seta.



The seta formula for legs 2-4 is:

			endopod		exopod
p. 2.	..	..	1. 421	0.	1. 123
p. 3.	..	..	1. 321	1.	1. 223
p. 4.	..	..	1. 321	1.	1. 223

The fifth legs have a conical basal expansion, bearing five setae and an elongate distal segment with six setae. The caudal rami are widely separated and outwardly curved, and bear terminally one long seta, as long as the urosome, and one shorter seta, and three short setae distally. The structure of the genital area could not be made out.

This species differs from Willey's in the shape of the rostrum, which is much more slender and rounded, whereas in *papillifer* it is bifid; the third segment of the first antenna has only four outer setae and a smooth inner margin; the basal segment of the second antenna is partially divided, there is no exopod and the whole appendage is more slender; the mandible palp is biramous, whereas in *papillifer* it is described as uniramous, though in fig. 78 there appears to be a very rudimentary exopod; in the first endopod the inner seta is proximal to the middle of the segment and the distal segment lacks the lateral setae found in *papillifer*; the end segment of the fourth exopod has only two inner setae, like that of the third leg; in the fifth leg the basal expansion is larger, reaching to the middle of the distal segment and bears two short terminal spurs; the caudal rami are not hirsute marginally except for the tuft of hairs on the basal projection and the anal segment is only slightly produced at the point of articulation of the caudal rami; lastly the urosome segments are without the prominent lateral expansions found in *papillifer*.

The occurrence of a second species of the genus in this region is a further link between the fauna of Bermuda and that of the Australian region.

It is unfortunate that the males of this genus are as yet unknown.

#### Fam. CEYLONIELLIDAE A. Scott.

##### *Ceyloniella armata* (Claus).

*Jurinia armata* Claus, 1863.

*C. armata* Willey, 1930, p. 111.

Occurrence: Two females (one ovigerous) 0.93 mm.

Distribution: Mediterranean, Suez Canal, Ceylon, Malay Archipelago, South Australia.

#### Fam. METIDAE Sars.

##### *Metis jousseaumei* (Richard).

*Ilyopsyllus jousseaumei* Richard, 1892.

Occurrence: Many specimens in all stages of development.

This copepod has already been recorded from this coast (Nicholls, 1941b, 1943).



There occurred in this collection in addition to those copepods described above a species of *Harpacticus* and one of *Tisbe*, both probably new. The descriptions of these are withheld until conditions for obtaining certain literature have improved. The males of two different species of *Laophonte* were also found, and these await the discovery of their respective females. They were not identifiable with any of the known males.

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#### ADDENDUM.

Since this account was sent to press I have seen Sewell's work on the Harpacticoids of the John Murray Expedition (Vol. VII (2), pp. 117-382, British Museum (N.H.), London, 1940). In this (p. 219) he described a species "*? Eudactylopus anomala*" from the male only. Comparison shows that this is undoubtedly a member of the new genus, *Neodactylopus*, described above. That *E. anomala* is probably not the male of *N. cyclopoides* is suggested by the structure of the first legs which, though similar in general, differ in important detail. This and the exopod of the second antenna are the only points of difference, excluding sexual differences, that can be made out.

On pages 229-236 Sewell described two new species of *Ialysus*. The second of these, *I. proximus*, at first sight would appear to be congeneric with *Parialysus*. The chief objection to accepting complete identity between his *Ialysus* species and *Parialysus* lies in the apparent difference in the seta formula. That given by Sewell (p. 232) compared with that given by me (1941, p. 418) for *Parialysus* shows his second leg identical with my third; his third with my fourth; and his fourth with my second.

On pages 314-317 Sewell described *Laophonte adduensis* from the Maldivé Archipelago. It is clear that the species found here and described above is identical with that described by Sewell, who had only females at his disposal. Both sexes were found here.

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#### REFERENCES.

- Brian, A., 1928: *Boll. Mus. Zool. Anat. comp. Univ. Genova*, 7 (18).  
Claus, C.—  
1863: *Die freilebenden Copepoden*. Leipzig.  
1866: *Die Copepoden Fauna von Nizza*. Marburg u. Leipzig.  
Douwe, C. van, 1929: *Zool. Anz.*, 83, pp. 283-294.  
Gurney, R., 1927: *Trans. Zool. Soc. Lond.*, 22, pp. 451-577.  
Klie, W., 1937: *Mitt. König. Naturwiss. Inst. Sofia*, 10, pp. 1-42.



Lang, K.—

1934: *Kungl. Fysiogr. Sällsk. Handl.*, N.F., 45 (14), pp. 1-56.

1935: *Kungl. Fysiogr. Sällsk. Lund Forh.*, 5 (21), pp. 1-8.

1936: Copepoda Harpacticoida. *Further Zoological Results of the Swedish Antarctic Expedition*, 3 (3), pp. 1-68.

Monard, A.—

1926: *Arch. zool. exp. gen.*, 65, pp. 39-54.

1928: *Ibid.*, 67, pp. 259-443.

1935: *Stat. Oceanogr. Salammbo*, Bull. 34, pp. 1-94.

1937: *Bull. Trav. Stat. Aquic., Castiglione*, pp. 1-85.

Nicholls, A. G.—

1941: *Rec. S. Aust. Mus.*, 6, pp. 381-427.

1941a. *Ibid.*, 7, pp. 65-110.

1941b.: *Ann. Mag. Nat. Hist.*, (11) 7, pp. 317-328.

1943: *Jour. Roy. Soc. West. Aust.*, 27, pp. 135-141.

Richard, J., 1892: *Bull. Soc. Zool. France*, 17.

Sars, G. O., 1905-1911 (1911): *An Account of the Crustacea of Norway. Vol. V., Copepoda Harpacticoida.* Bergen.

Scott, T.—

1894: *Trans. Linn. Soc. Lond.*, 2nd ser., 6, pp. 1-161.

1903: 21st. *Ann. Rep. Fish. Board Scot.*, (3), pp. 109-135.

Thompson, I. C., and Scott, A., 1903: Report on the Copepoda. *Ceylon Pearl Oyster Fisheries*, Supp. Rep., Pt. I., (7), pp. 227-307. Royal Society, London.

Thomson, G. M., 1883: *Trans. New Zealand Inst.*, 15, pp. 93-116.

Willey, A.—

1930: *Ann. Mag. Nat. Hist.*, (10) 6, pp. 81-114

1935: *Ibid.*, (10) 15, pp. 50-100.





Nicholls, A G. 1945. "Marine Copepoda from Western Australia. III. Littoral Harpacticoids from Port Denison." *Journal of the Royal Society of Western Australia* 29, 1–16.

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