

# New Nicothoid copepods (Copepoda: Siphonostomatoida) from an amphipod and from deep-sea isopods

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## Summary

One new genus, *Cephalorhiza*, and eight new species of parasitic copepods of the family Nicothoidae are described. One new species, *Sphaeronella australis*, is parasitic in the brood pouch of a lyssianasoid amphipod from southern Australia. All the other new taxa are parasites of deep-sea asellote isopods, from the North Atlantic and Indian Oceans. Two new species belong to the genus *Rhizorhina*, 4 belong to *Diexanthema* and one, *Cephalorhiza flaccida*, to the new genus.

## Introduction

The family Nicothoidae contains eighteen genera of small, highly transformed copepods, all of which are parasitic on other crustaceans. Several of these genera are known either from amphipods (*Stenothocheres* Hansen) or from isopods (*Diexanthema* Ritchie, *Choniorhiza* Boxshall & Lincoln, *Nicorhiza* Lincoln & Boxshall), or from both amphipods and isopods (*Rhizorhina* Hansen, *Sphaeronella* Salensky). The present account describes a new species of *Sphaeronella* found in the marsupium of an amphipod from Australia and several new taxa from deep-sea asellote isopods collected in the North Atlantic and Indian Oceans. During an ecological study of the asellotes of the Rockall Trough, off the west coast of Scotland, about 15,500 asellote isopods were examined. Only four specimens harboured nicothoid parasites, which were found to represent four new species. Examination of additional material from the Porcupine Seabight and from the collections of the Centre National de Tri d'Océanographie Biologique (CENTOB, Brest) made off the island of Réunion in the Indian Ocean, revealed another three new species, one belonging in a new genus.

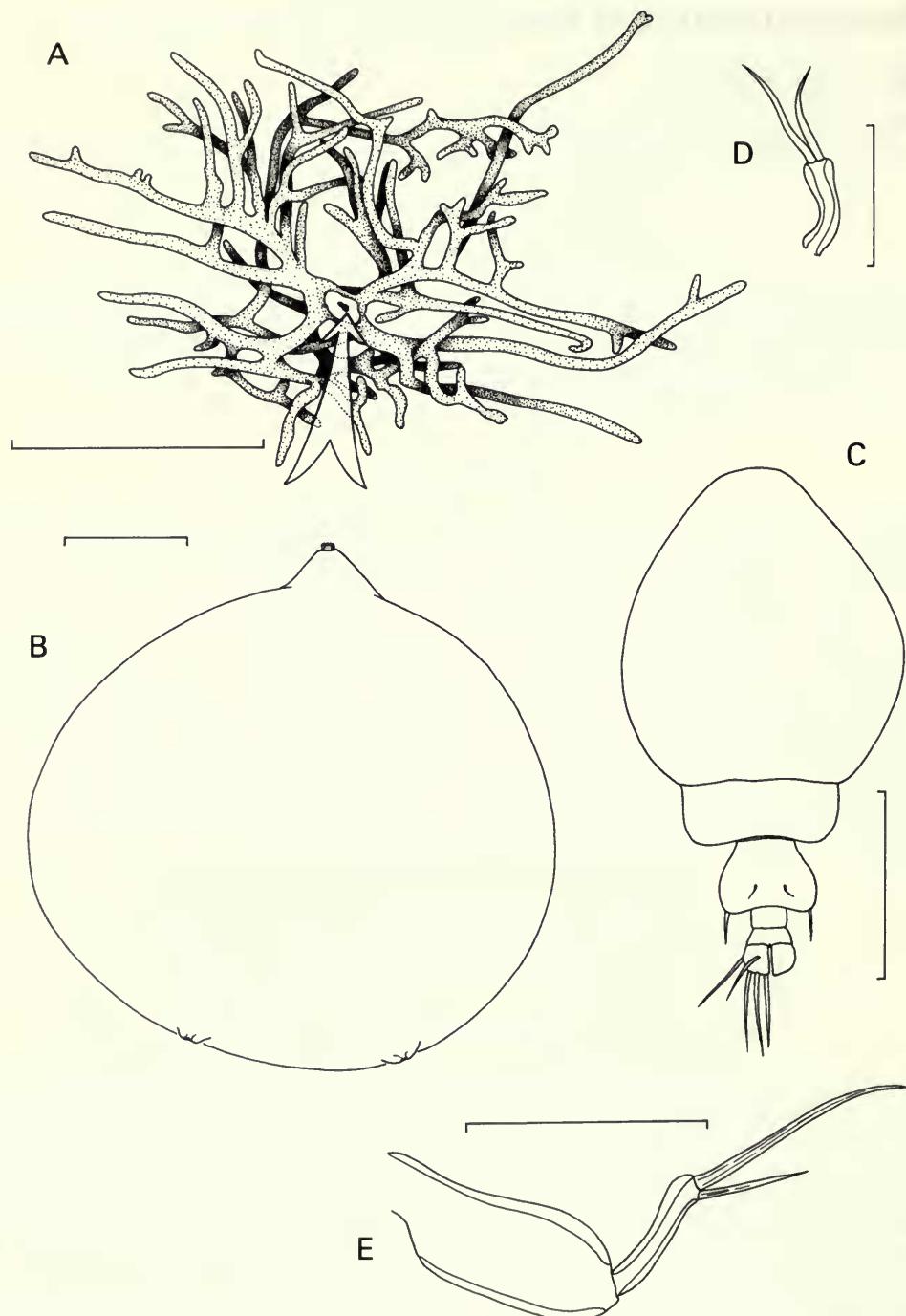
## Descriptions

### Family NICOTHOIDAE

#### *Rhizorhina hystrix* sp. n.

POSTMETAMORPHOSIS FEMALE. Body highly transformed, simplified to a globular, almost spherical, trunk portion (Fig. 1B) and an intricate branching holdfast (Fig. 1A). Maximum width of globular trunk 859 µm, maximum length 788 µm; trunk featureless except for raised gonopores located about 353 µm apart on posterior surface. Small anterior swelling tapers towards branching holdfast. Holdfast 4-branched at origin, processes branching irregularly along length. Maximum extent of holdfast within host about 680 µm from origin. Arrangement of holdfast branches more or less 2-dimensional within host.

MATERIAL EXAMINED. Holotype ♀, parasitic on a preparatory female of *Eurycope complanata* Bonnier (*sensu* Wilson, 1982). Locality: Discovery Stn 50602 # 2 in the Porcupine Seabight (51°1'0"N 13°7'2"W), depth 1955–1980 m, 07.vii.1979. Parasite located on arthrodial membrane between tergites of pereon segments 3 and 4. Holotype stored in BM(NH), Reg. No. 1987.435.



**Fig. 1** *Rhizorhina hystrix* sp. n., Holotype female. A, Posterodorsal view of oral rootlet system; B, Trunk sac, showing point of attachment to rootlet system. *Rhizorhina aesthetes* sp. n., Holotype copepodid. C, Dorsal; D, Maxillule, lateral; E, Maxilla, posterior. Scale bars 200 µm, unless otherwise stated: C = 50 µm, D = 10 µm, E = 20 µm.

**ETYMOLOGY.** The species is named after the Porcupine seabight where it was collected.

**REMARKS.** It is difficult to characterise parasites that have undergone such a metamorphic reduction as *Rhizorhina* species. Four species of *Rhizorhina* have been described: *R. ampeliscae* Hansen from the amphipods *Ampelisca diadema* (Costa) and *A. brevicornis* (Costa), *R. serolis* Green from the isopod *Serolis bromleyana* Suhm, *R. leptostracae* Gotto from the leptostracan *Nebaliella caboti* Clark and *R. tanaidaceae* Gotto from the tanaid *Leviapseudes hansenii* (Lang). Small differences in size and shape of the trunk are given in Table 1. The new species is much smaller than *R. serolis* and also differs from this species in shape (Green, 1959). It is considerably larger than both *R. leptostracae* and *R. tanaidaceae*, which also differ in shape, the former being somewhat flattened dorsoventrally and the latter subquadrate in dorsal aspect (Gotto, 1984) in comparison with the

**Table 1.** Morphometrics of the adult females of *Rhizorhina* species.

	MAX. WIDTH	MAX. LENGTH	SHAPE	GONOPORES	
				POSITION	SEPARATION
<i>R. ampeliscae</i>	1.05 mm	0.96 mm	subspherical	posterior	187 µm
<i>R. serolis</i>	2.5 mm	2.0 mm	subrectangular	posterior	1.2 mm
<i>R. leptostracae</i>	552 µm	521 µm	discoid	posterior	205 µm
<i>R. tanaidaceae</i>	594 µm	500 µm	subquadrate	posterior	258 µm
<i>R. hystrix</i>	859 µm	788 µm	subspherical	posterior	353 µm
<i>R. aesthetes</i>	282 µm	304 µm	subspherical	ventral	132 µm

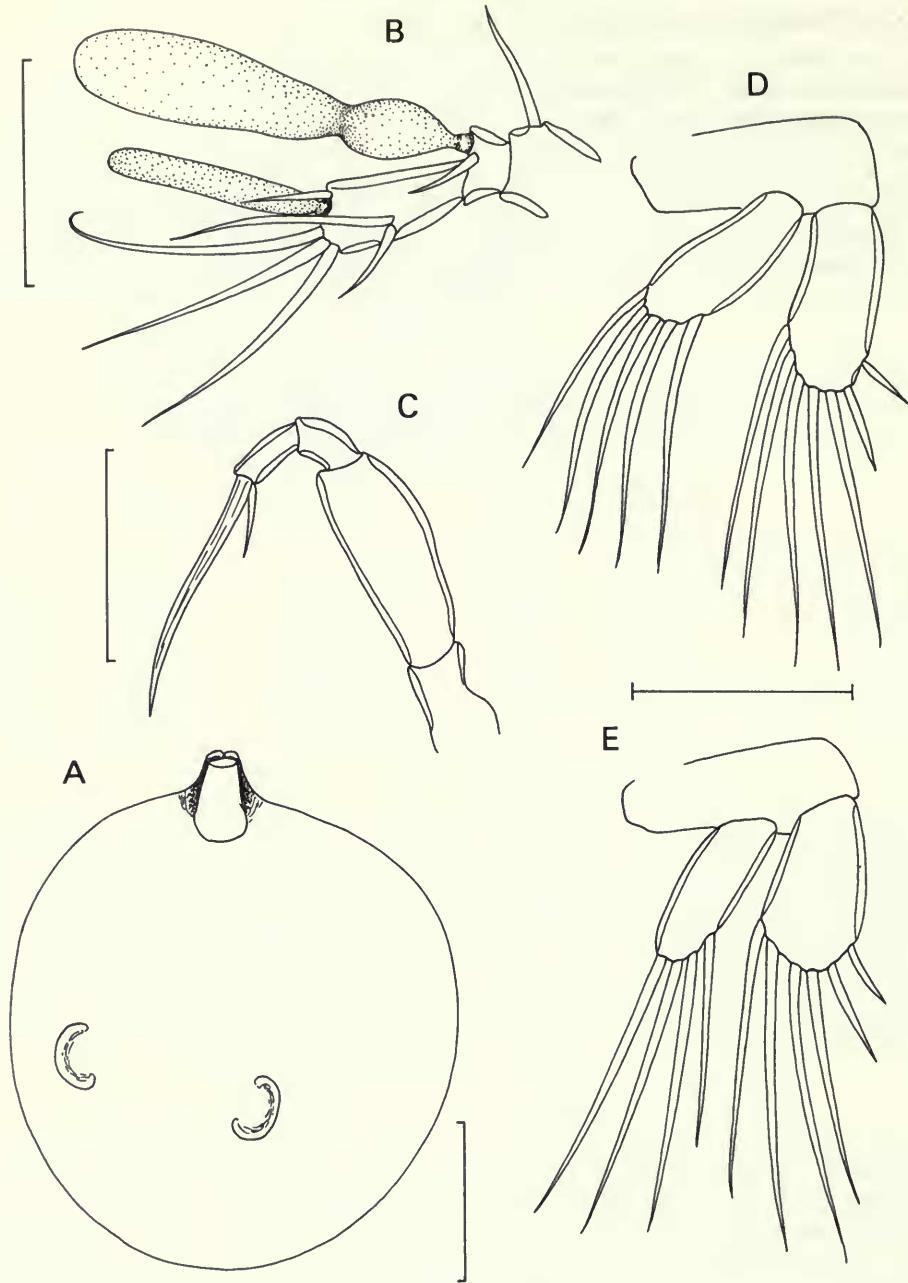
almost spherical shape of *R. hystrix*. In size and shape the new species most closely resembles *R. ampeliscae* (Hansen, 1892). They can be distinguished on the basis of the much wider separation of the gonopores in *R. hystrix*. The branching holdfast system is probably not a good taxonomic character. It has rarely been described and may well vary according to position in the host, as has been described for the holdfasts of other mesoparasitic copepods (Fryer, 1961; Boxshall, 1989). It is noteworthy that the holdfast is basically 4-branched in both the new species and in *R. serolis* according to Green (1959). These branches are probably derived from the divided labrum and labium as found by Lincoln & Boxshall (1983) in the closely related *Nicorhiza*.

#### *Rhizorhina aesthetes* sp. n.

**POSTMETAMORPHOSIS FEMALE.** Body highly transformed, comprising globular trunk and branching holdfast. Trunk (Fig. 2A) subspherical, longer than wide; maximum width 282 µm, maximum length 304 µm. Trunk lacking appendages, featureless except for gonopores located 132 µm apart on ventral surface, just posterior to midlevel. Holdfast broken off in host.

**COPEPODID STAGE.** Body comprising 2-segmented prosome and 3-segmented urosome (Fig. 1C). Total body length 136 µm, maximum width 75 µm. First urosome somite bearing pair of setules dorsally and pair of setae posterolaterally representing the third swimming legs. Caudal rami about as long as wide; armed with a dorsal seta, lateral seta and 3 distal margin setae, all naked.

Antennules 3-segmented (Fig. 2B); armature as follows: I-1, II-1+1 aesthete, III-6+1 aesthete. Aesthete on second segment inflated proximally and distally, with mid-level constriction. All setae naked. Antenna absent. Mandible stylet-like, without apical teeth, palp absent. Maxillule (Fig. 1D) reduced to simple lobe bearing 2 apical naked setae. Maxilla (Fig. 1E) 2-segmented; basal segment unarmed, second segment bearing a terminal claw 19 µm long and seta 9 µm long. Maxilliped (Fig. 2C) 5-segmented, including terminal claw. Fourth segment bearing seta 7 µm long and the terminal claw 24 µm in length.



**Fig. 2** *Rhizorhina aesthetes* sp. n. A, Paratype female trunk, ventral; B, Holotype copepodid antennule, ventral; C, Maxilliped, posterior; D, leg 1, anterior; E, leg 2, anterior. Scale bars 20 µm, unless otherwise stated: A = 100 µm.

Swimming legs 1 and 2 biramous, with 1-segmented rami. Leg 1 (Fig. 2D) exopod bearing 2 spines and 5 setae; endopod with 5 setae. Leg 2 (Fig. 2E) exopod bearing 2 spines and 4 setae, endopod with 4 setae. Leg 3 represented by posterolateral setae on surface of first urosomal somite.

**MATERIAL EXAMINED.** Holotype copepodid, 1♀ paratype. Parasitic on an unidentified ischnomesid (a fragment only). Locality: the Scottish Marine Biological Association's (SMBA) 'Permanent

Stn', sample ES172, in the southern Rockall Trough (54°39'N 12°17'W), depth about 2910 m, 27.v.1980. Adult female attached dorsolaterally to tergite of second pereon somite. Types stored in BM(NH), Reg. Nos 1987.436 (Holotype) and 1987.437 (paratype).

**ETYMOLOGY.** The species name refers to the large aesthete present on the second antennular segment.

**REMARKS.** The new species is the only *Rhizorhina* described in which the adult female is longer than broad (see Table 1). This difference in shape, together with the small size of the trunk and the ventral position of the gonopores are sufficient to distinguish the female from other known species. The copepodid larva has 3-segmented antennules as in other species of *Rhizorhina* but, in addition to the usual apical aesthete, there is a conspicuous aesthete on the second segment.

#### *Dixanthema nudum* sp. n.

**POSTMETAMORPHOSIS FEMALE.** Body highly transformed, comprising a swollen, slightly dorsoventrally flattened prosome and an unsegmented urosome (Figs 3A, B). Total body length in ventral view 302 µm, maximum width 267 µm. Urosome length 75 µm, maximum width 86 µm. Prosome bearing well developed mouth cone anteroventrally containing stylet-like mandibles. Paired irregular lobes just anterior to base of mouth cone may represent modified antennae. Other mouth-parts and legs 1–3 absent. Leg 4 represented by pair of minute papillae on ventral body surface.

Urosome bearing leg 5 ventrolaterally. Leg 5 comprising a simple unsegmented lobe armed with 3 distal spines (Fig. 3B). Gonopores large and unarmed, opening on posterior surface of urosome. Postgenital abdominal segments reduced to small, median lobe on posterior surface of urosome. Caudal setae lacking.

**MATERIAL EXAMINED.** Holotype ♀, parasitic on a species of the desmosomatid *Mirabilicoxa*, probably *M. acuminata* Hessler. Locality: SMBA Stn ES10 in the central Rockall Trough (56°37'N 11°04'W), depth about 2540 m, 04.vii.1973. Only one host specimen was infected out of a total of 61 examined from the Rockall Trough. Holotype stored in BM(NH), Reg. No. 1987.438.

**ETYMOLOGY.** The species name refers to the absence of cuticular hairs from the surface of the prosome.

**REMARKS.** The new species is closely related to *D. bathydiaita* Ritchie, a parasite of a species of *Nannoniscus* found in deep water off the western coast of Africa (Ritchie, 1975). The postmetamorphosis female of both species have the same gross morphology and both possess a mouth cone containing mandibles, an irregular branching structure derived from the antennae and a lobate fifth leg armed with 3 spines. The species differ in the presence of caudal setae and of a covering of minute hairs over the cuticle of the prosome in *D. bathydiaita* (Ritchie, 1975). The tiny papillae representing the fourth legs of the new species are not figured for *D. bathydiaita* but they may have been overlooked.

The host isopod is probably referable to *M. acuminata* described from the Gay Head-Bermuda transect off the eastern coast of the U.S.A. at depths of 3834 to 4800 m (Hessler, 1970). It differs only in having a lower pereopodal setal count in the preparatory female.

#### *Dixanthema corrugatum* sp. n.

**POSTMETAMORPHOSIS FEMALE.** Body highly transformed, comprising a swollen, globular prosome and a small unsegmented urosome (Fig. 3C). Total body length in ventral view 536 µm, maximum width 507 µm. Urosome length 107 µm, maximum width 134 µm. Oral area of holotype damaged, mouth cone not observed. Irregular branching structure present in a semicircle around oral area probably representing modified antennae. Other mouthparts absent. Leg 1 represented by pair of minute papillae on ventral surface of prosome posterior to oral region. Leg 3 represented by pair of naked setae located ventrolaterally. Leg 4 a free segment bearing 2 apical setae. Leg 5 absent. Gonopores unarmed, opening on posterolateral surface of urosome. Caudal setae lacking.

MATERIAL EXAMINED. Holotype ♀, parasitic on an as yet undescribed new species of the eurycopid *Acanthocope*. Locality: SMBA 'Permanent Stn' in the southern Rockall Trough ( $54^{\circ}39'N 12^{\circ}17'W$ ), depth about 2900 m, 07.iv.1977. Only one host specimen was infected out of a total of 111 examined from the Rockall Trough (84 from the Permanent Stn). Holotype stored in BM(NH), Reg. No. 1987.439.

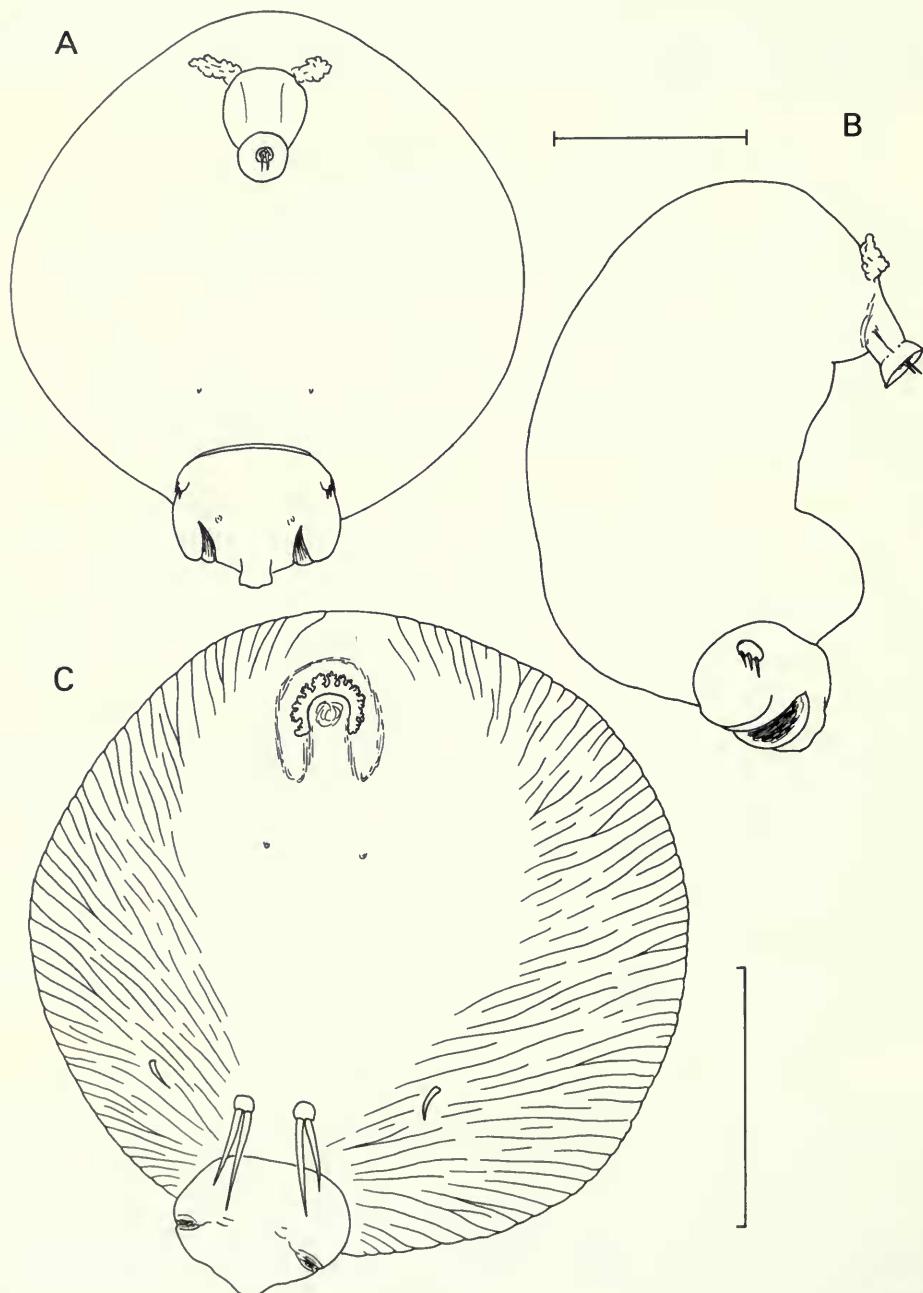
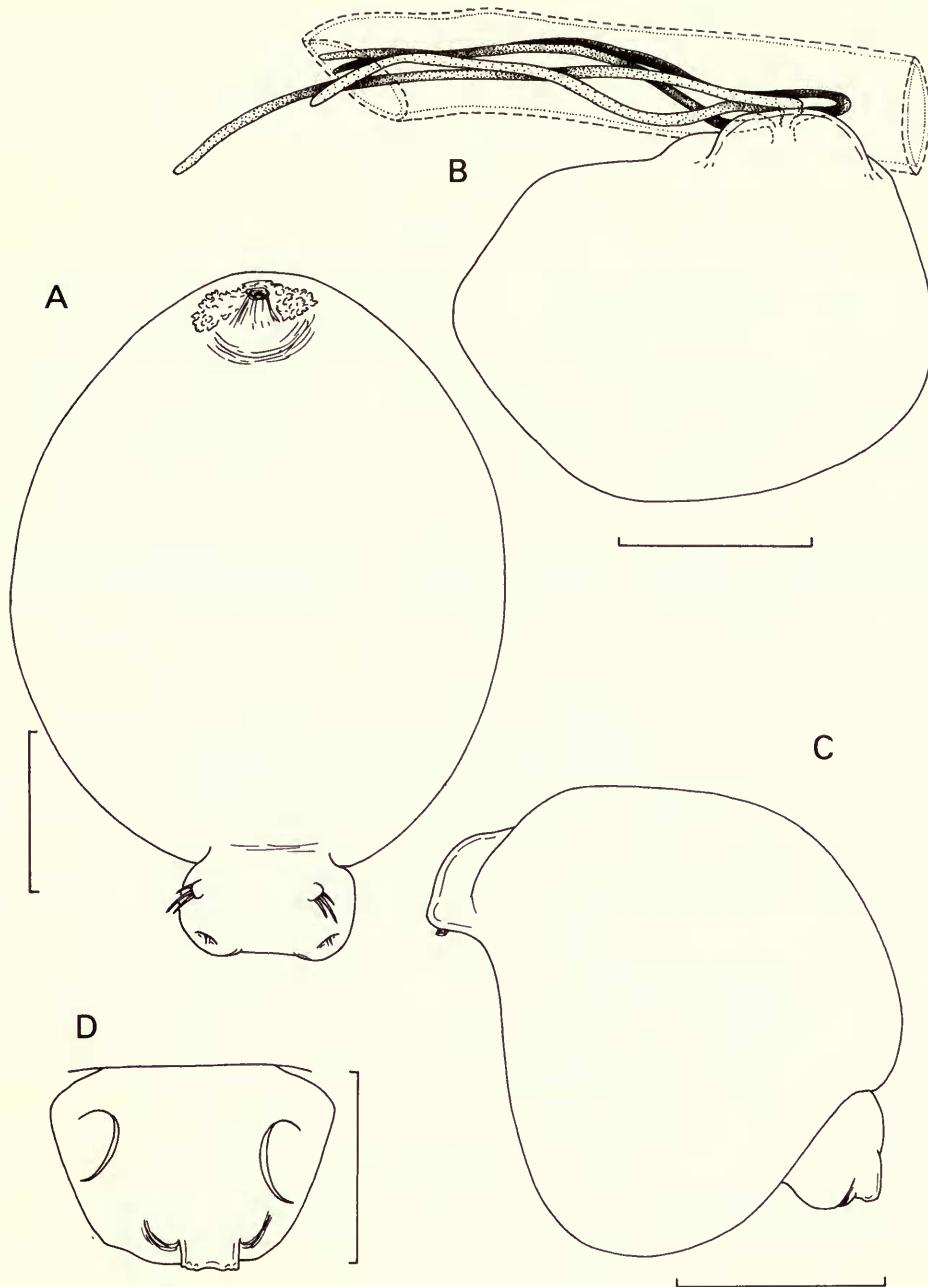


Fig. 3 *Diexanthema nudum* sp. n., Holotype female. A, Ventral view; B, Lateral view. *Diexanthema corrugatum* sp. n., Holotype female. C, Ventral view. Scale bars A, B = 100 µm, C = 200 µm.



**Fig. 4** *Diexanthema ritchiei* sp. n., Holotype female. A, Ventral view. *Diexanthema apoda* sp. n., Holotype female. B, Dorsal view of female attached to pereopod of host, showing 4 oral rootlets inside limb; C, Lateral view; D, Urosome, ventral. Scale bars A, D = 100 µm, B, C = 200 µm.

**ETYMOLOGY.** The species name refers to the highly furrowed cuticle of the prosome.

**REMARKS.** The new species is placed in *Diexanthema* because it possesses a globular prosome and an unsegmented urosome as in the preceding species. It differs from the three described species of *Diexanthema* in the structure of the third and fourth legs of the adult female. These legs are absent

from *D. desistoma* Ritchie and *D. bathydiaita* (Ritchie, 1975) and absent (leg 3) or reduced to minute papillae (leg 4) in *D. nudum*. The third and fourth legs strongly resemble those of *Nicorhiza* species but the new species cannot be placed in this genus because of its truncated urosome. *Nicorhiza* species have a long, 4-segmented urosome (Lincoln & Boxshall, 1983).

The host occurs widely in the southern Rockall Trough between 2076 and 2925 m. It is clearly distinguishable from other described species of *Acanthocope*.

#### *Diexanthema ritchiei* sp. n.

**POSTMETAMORPHOSIS FEMALE.** Body highly transformed, comprising a swollen, globular prosome and an unsegmented, slightly dorsoventrally flattened urosome (Fig. 4A). Total body length in ventral view 426 µm, maximum width 307 µm. Urosome length 61 µm, maximum width 108 µm. Prosome without recognisable mouthparts or legs. Irregular branching structure present anterior to oral area may represent antennae as in other species of *Diexanthema*. Conical structure present in oral region interpreted as broken base of oral rootlets. Urosome bearing leg 5 anteroventrally. Leg 5 a simple lobe bearing 3 spines distally. Gonopores on posterolateral surface, each armed with 2 tiny setules. Posterior margin of urosome slightly concave, without trace of postgenital segments or caudal setae.

**MATERIAL EXAMINED.** Holotype ♀, parasitic on juvenile female of the ischnomesid *Haplomesus tenuispinus* Vanhöffen. Locality: Discovery Stn 50604 # 1 in the Porcupine Seabight ( $50^{\circ}6.2'N$   $13^{\circ}52'W$ ), depth 3490–3550 m, 04.vii. 1979. Holotype stored in BM(NH). Reg. No. 1987.440.

**ETYMOLOGY.** The species is named after the late Larry Ritchie, who established the genus *Diexanthema*.

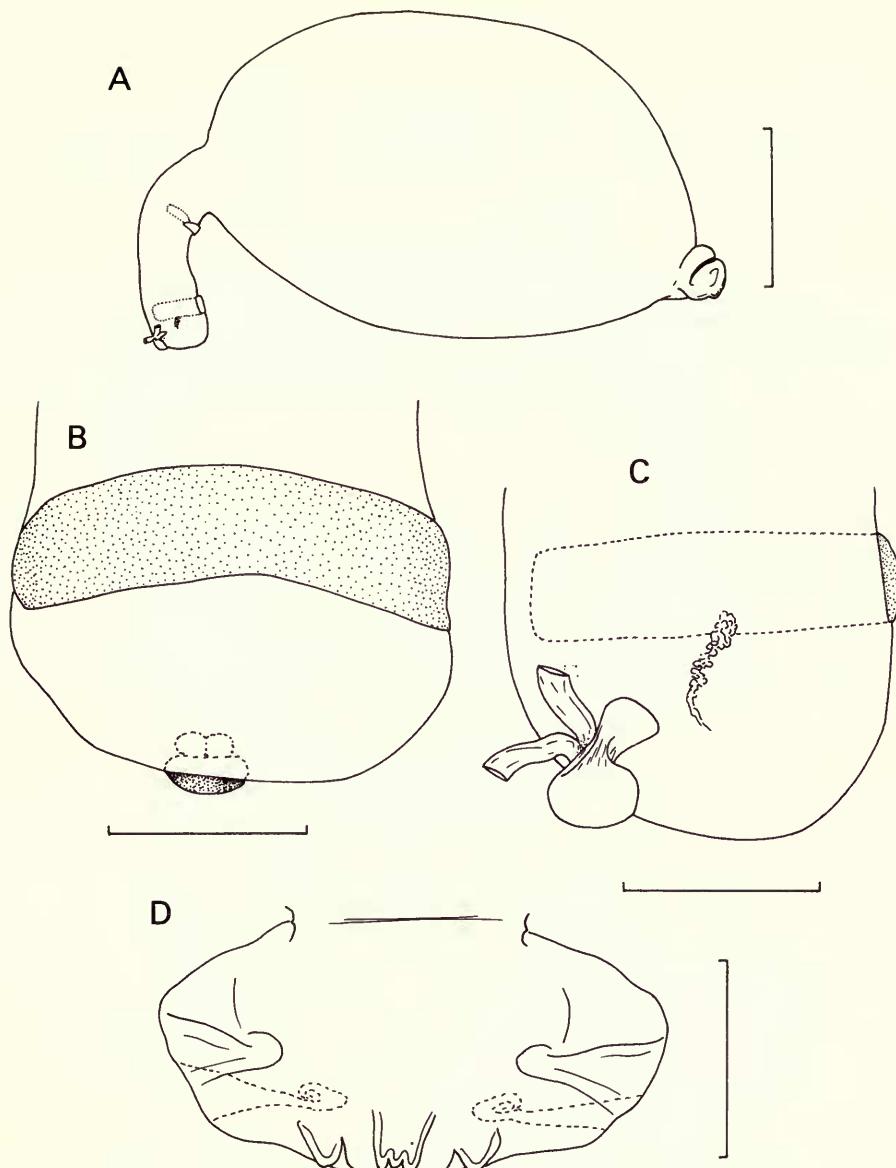
**REMARKS.** The new species is placed in *Diexanthema* because of the gross body form, a swollen prosome and an unsegmented urosome. It possesses no obvious appendages on the prosome. The irregular branching structure anterior to the oral area is found in all other *Diexanthema* species except *D. desistoma*. *D. ritchiei* differs from other species in the structure of the feeding apparatus. *D. desistoma*, *D. bathydiaita*, and *D. nudum* all possess a typical nicothoid mouth cone containing stylet-like mandibles. The oral region of *D. corrugatum* was obscured (see above). The conical structure in the oral region of this species was not a typical oral cone. It appeared to be the broken stump of a rootlet system, as found in genera such as *Rhizorhina*, *Choniorhiza* and *Nicorhiza*. No rootlets were found in the host although this was in poor condition. The generic concept of *Diexanthema* is considerably broadened by the inclusion of this species as it now contains species with an oral cone and species with oral rootlets. The evolution of a rootlet system appears to have occurred independently several times within the Nicothoidae and, in our opinion, the presence of rootlets alone is insufficient to justify generic separation when the gross body morphology is the same.

The host, *H. tenuispinus*, was first described from the Davis Strait and from off the south coast of Greenland (Hansen, 1916). In the present study 228 specimens were examined from depths of 1993 to 2925 m in the southern Rockall Trough. None was infected. Only the specimen taken in the Porcupine Seabight was infected.

#### *Diexanthema apoda* sp. n.

**POSTMETAMORPHOSIS FEMALE.** Body highly transformed, comprising a swollen prosome and a small unsegmented urosome (Fig. 4B). Total body length in lateral view (Fig. 4C) 529 µm, maximum width 495 µm. Prosome extended anteriorly into a subrectangular 'hood'. Four oral rootlets originating on midventral surface of 'hood'. Rootlets unbranched, between 486 and 659 µm in length and about 12 µm in diameter. No other appendages or attachment structures present externally on prosome. Urosome (Fig. 4D) bearing unarmed gonopores ventrolaterally and small abdominal process posteromedially. Leg 5 absent. Caudal setae absent.

**MATERIAL EXAMINED.** Holotype ♀, parasitic on a preparatory male of the ilyarachnid *Bathybadistes spinosissima* (Hansen). Locality: SMBA 'Permanent Stn' in the southern Rockall Trough ( $54^{\circ}39'N$



**Fig. 5** *Cephalorhiza flaccida* gen. et sp. n., Holotype female. A, Lateral view; B, Tip of head process, dorsal; C, Tip of head process, ventrolateral; D, Urosome, ventral. Scale bars 100 µm, unless otherwise stated: A = 500 µm.

12°17'W), depth about 2910 m, 27.v.1980. A total of 839 specimens of *B. spinosissima* was examined from the entire Rockall Trough (783 from the 'Permanent Stn'), only 1 was infected. Holotype stored in BM(NH), Reg. No. 1987.441.

**ETYMOLOGY.** The species name refers to the complete absence of any recognisable limbs.

**REMARKS.** This species, like *D. ritchiei*, has rootlets instead of a typical siphonostomatoid mouth cone. It is even more reduced than *D. ritchiei* as it has lost the fifth legs but the general configuration of the urosome is the same as in other *Diexanthema* species. The fifth legs have also been lost in *D.*

*corrugatum*. *D. apoda* differs from all of its congeners in the presence of an anterior 'hood' distinct from the prosome.

The host, *B. spinosissima*, was first described from deep water (2702–3521 m) in and around the Davis Strait (Hansen, 1916). Chardy (1979) also recorded this species (as *Ilyarachna spinosissima*) from the Bay of Biscay. It occurred widely in the southern Rockall Trough between 1993 and 2925 m and at the 'Permanent Stn' it was the commonest of the 79 species of asellotes recorded, accounting for 14.7% of the asellote population.

### *Cephalorhiza* gen. n.

**DIAGNOSIS.** Nicothoidae. Postmetamorphosis female highly transformed, comprising swollen prosome and small, unsegmented urosome. Prosome bearing stout, somewhat twisted, head process. Head process ornamented with 2 transverse chitinous lamellae dorsally. Oral apparatus carried distally on head process, apparently consisting of rootlets. No recognisable limbs present on prosome or urosome. Urosome unsegmented, bearing gonopores posterolaterally. Median abdominal process present but lacking caudal setae.

**TYPE SPECIES:** *Cephalorhiza flaccida* gen. et sp. n.

**REMARKS.** The new genus is the nineteenth in the family. It differs from all other genera in the possession of the stout head process which is embedded in the host up to the level of its base. It can be placed in the *Rhizorhina* group of genera identified by Boxshall & Lincoln (1983). This group now comprises five genera. *Rhizorhina*, *Choniorhiza*, *Nicorhiza*, *Diexanthema* and *Cephalorhiza*, and 14 species including those taxa described in the present account. Members of this group have highly transformed adult females and they exhibit the tendency to lose all cephalic appendages and develop oral rootlets. The structure of the urosome of the new genus is similar to that of some *Diexanthema* species and this is probably its closest relative within the group.

### *Cephalorhiza flaccida* gen. et sp. n.

**POSTMETAMORPHOSIS FEMALE.** Body highly transformed, comprising swollen prosome and small, unsegmented urosome (Fig. 5A). Body length 2.34 mm, measured in lateral view round curve from tip of head process to end of urosome. Prosome globular with maximum diameter of 1.01 mm, bearing at its anterior extremity a stout, somewhat twisted, head process. Head process ornamented with 2 transverse chitinous lamellae dorsally (Fig. 5B). Oral apparatus carried distally on head process, apparently consisting of rootlets (Fig. 5C), but broken off in holotype. No recognisable limbs present on prosome or urosome. Irregular branching structure present near oral rootlets similar to the modified antennae of *Diexanthema* species but located posteriorly to oral region and unlikely to be homologous. Urosome unsegmented; maximum length 129 µm, maximum width 260 µm. Gonopores unarmed, opening on posterolateral surface (Fig. 5D). Median abdominal process present but lacking caudal setae.

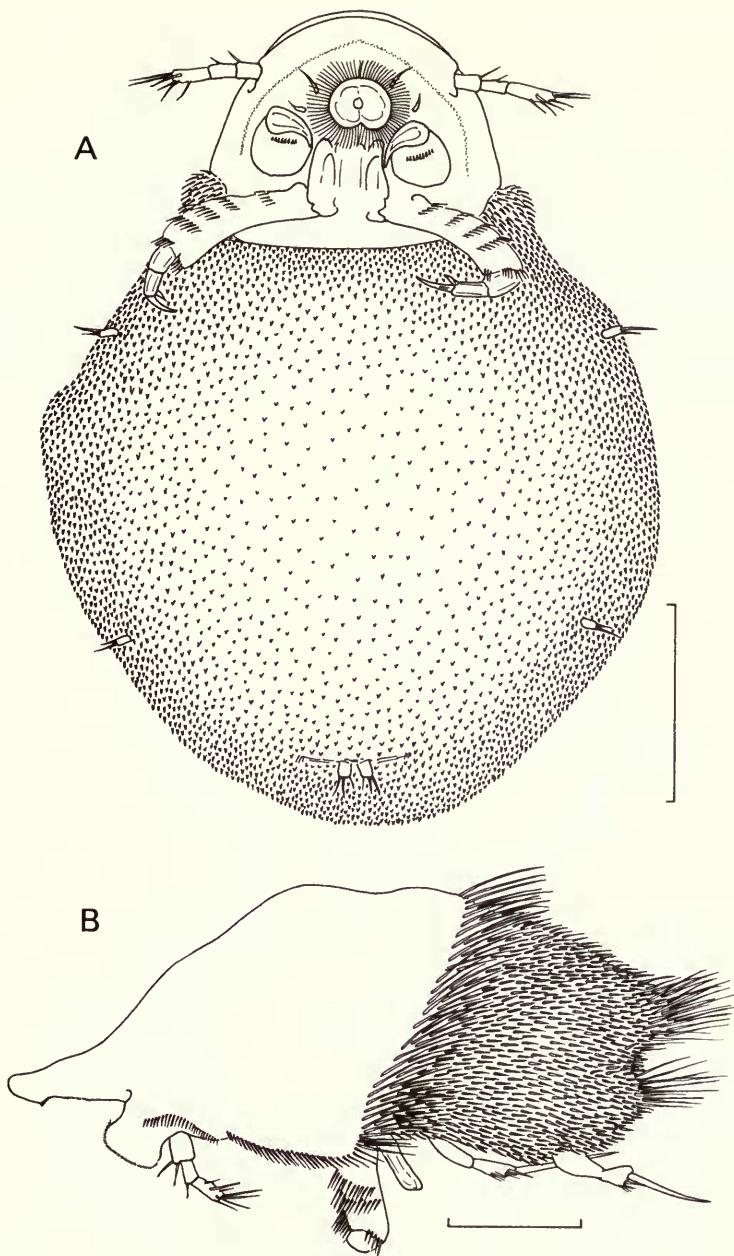
**MATERIAL EXAMINED.** Holotype ♀, parasitic on preparatory female of *Ilyarachna antarctica* Vanhoffen; collected during the MD 32 cruise organised by the Terres Australes et Antarctiques Françaises (TAAF, Paris); chef de Mission Alain Guille and sorted by CENTOB, Brest. Locality: Marion-Dufresne Stn DS 106, off Réunion Island (20°47'S 55°04'E), depth 1710–1730 m. Holotype stored in Muséum National d'Histoire Naturelle, Paris, No. MNHN Cp39.

**ETYMOLOGY.** The genus name is derived from the Greek *kephale*, meaning a head, and *rhiza*, meaning root. The species name, derived from the Latin *flaccidus* meaning flaccid, refers to the posture of the head process.

**REMARKS.** The host has the form of *Ilyarachna bicornis* as described by Hansen (1916). *I. bicornis* was synonymised with *I. antarctica* by Thistle (1980).

### *Sphaeronella australis* sp. n.

**ADULT FEMALE HOLOTYPE.** Body subspherical (Fig. 6A) consisting of a small, somewhat dorsoventrally flattened head and a swollen, almost spherical trunk. Total body length 831 µm, maximum



**Fig. 6** *Sphaeronella australis* sp. n., A, Holotype female, ventral view; B, Paratype male, lateral view.  
Scale bars A = 200 µm, B = 100 µm.

width 623 µm. Size variable according to reproductive condition, trunk often much larger when fully gravid. Head dorsoventrally flattened, slightly concave ventrally. Anterior rim of head provided with fine marginal strip of hyaline membrane. Trunk covered with dense coat of tiny denticles.

Antennules, mandibles, maxillules and maxillae as for male (see below). Isolated seta present anterior to mouth cone may represent the antenna, absent in male. Ornamentation on surface of

maxilliped arranged into rows on female, rather than irregular as in male. Legs 1–2 comprising a single free segment bearing 2 unequal setae apically. Caudal rami slightly longer than wide, bearing 3 distal setae.

**ADULT MALE.** Body highly transformed (Figs 6B, 7), dorsoventrally flattened, divided into head and small trunk. Body length 477 µm, maximum width 311 µm. Head naked dorsally and dorsolaterally, trunk covered with a dense coat of fine setules. Setules longer at junction between head and trunk, and at posterior extremity of trunk (Fig. 6B). Anterior margin of head (Fig. 7) complex, with deep indentations separating the median pseudorostrum from the lateral cephalic processes on either side. Margin of lateral cephalic processes armed with fine setules. Lateral margins of dorsal cephalic shield deflected ventrally, armed with row of submarginal setules.

Antennule (Fig. 8A) 3-segmented; first segment with 2 setae, second with 1, third segment with 9 simple setae and a double seta at the apex. Antenna absent. Mandible (Fig. 8B) a simple stylet armed with a marginal membrane distally; palp absent. Maxillule (Fig. 8C) comprising a simple

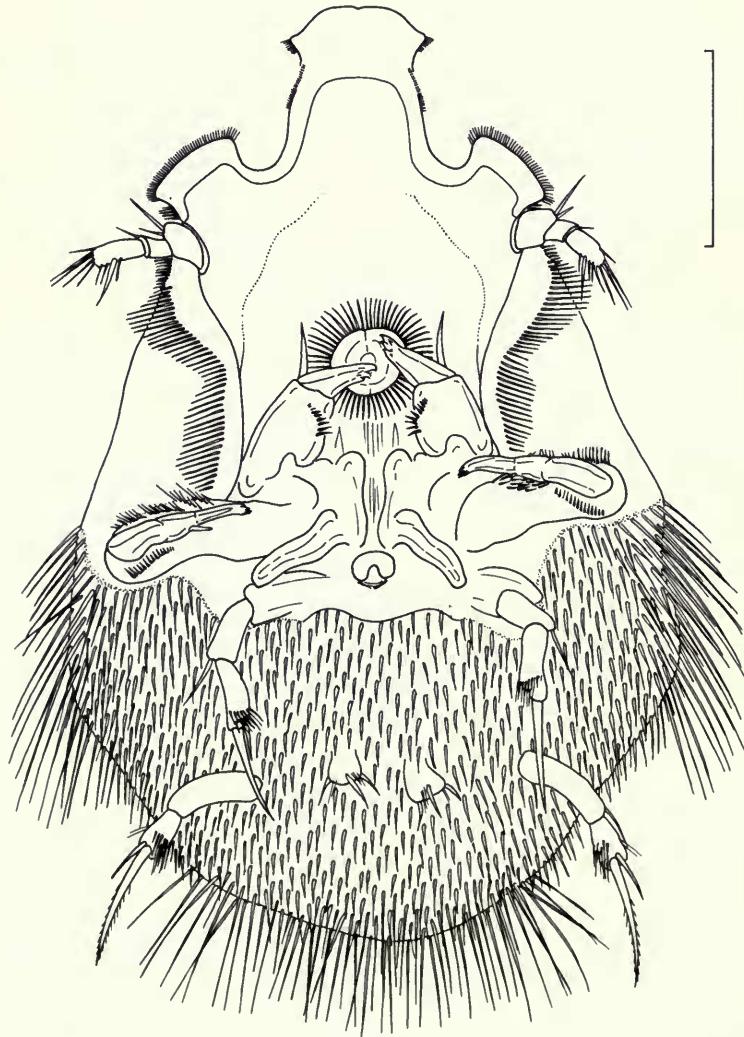
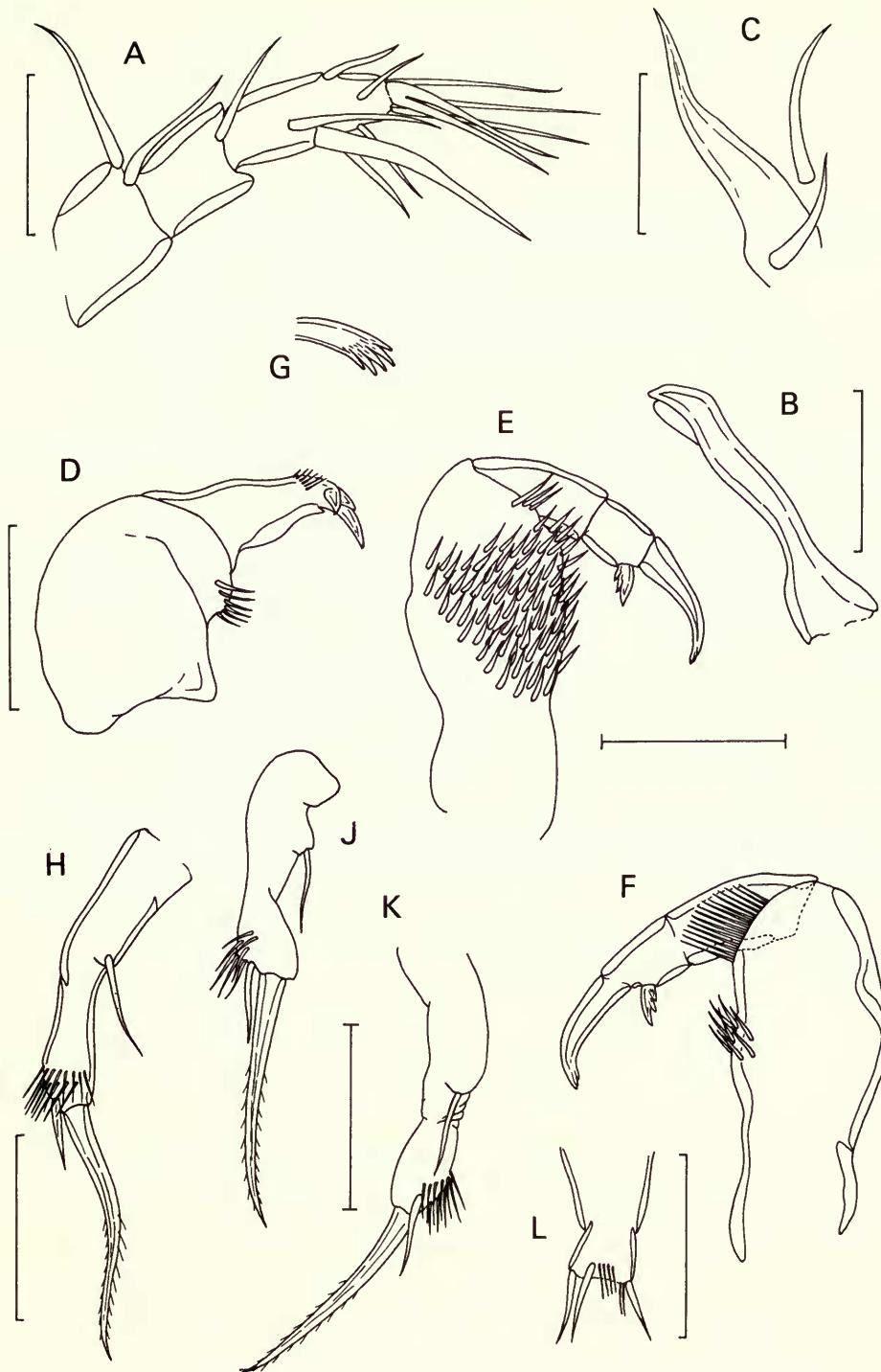


Fig. 7 *Sphaeronella australis* sp. n., Paratype male, ventral view. Scale bar 100 µm.



**Fig. 8** *Sphaeronella australis* sp. n., Paratype male. A, Antennule, ventral; B, Mandible, posterior; C, Maxillule, ventral; D, Maxilla, posterior; E, Maxilliped, anterior; F, Maxilliped, posterior; G, Tip of maxillipedal claw, ventral; H, Leg 1, ventral; J, Leg 2, lateral; K, Leg 2, ventral; L, Caudal ramus, ventral. Scale bars 50 µm, unless otherwise stated: A-C = 25 µm.

tapering process, bearing a naked seta proximally, and an isolated seta situated on ventral surface of head near base of maxillular process. Maxilla (Fig. 8D) 2-segmented; syncoxa robust, armed with single row of stout spinules, basis claw-like, bearing 3 teeth distally and a row of fine setules. Maxilliped (Figs 8E, F) 4-segmented, including the terminal claw; first segment robust armed with many stout spinules on anterior and medial surfaces, and a row of slender setules distally on posterior surface. Second segment unarmed, third bearing the terminal claw and a subapical tricuspid spine. Terminal claw 33 µm long, with complex quindentate tip.

Two pairs of uniramous swimming legs present. Leg 1 (Fig. 8H) slender, comprising 2 incompletely fused segments with the indentation at midlevel marking the line of fusion. Proximal segment bearing a naked seta, distal segment armed with 2 transverse rows of fine setules, a short (20 µm) subapical spine and a long (70 µm), sparsely pinnate, apical spine. Leg 2 (Fig. 8J, K) indistinctly 2-segmented, with deep indentation most apparent in lateral view (Fig. 8J). Proximal part bearing a single seta on a small ventral swelling, distal part with a patch of fine setules, a subapical seta (22 µm) and a long (68 µm), sparsely pinnate, apical spine. Caudal rami (Fig. 8L) bearing 3 naked setae and a few setules distally.

A large female paratype (Museum of Victoria J11809) had produced 19 egg sacs with a mean size of 795 × 681 µm (range 699 to 883 µm × 589 to 810 µm based on 19 measurements). Typical sac measuring 810 × 681 µm contained 216 eggs.

**MATERIAL EXAMINED.** Holotype ♀, 3♀♂ and 1♂ paratypes all parasitic in brood chamber of a species of the lysianassoid genus *Amaryllis*. Locality: Holotype ♀, Port Arthur, Tasmania (43°09'S 147°51'E), 29 vii. 1909, Australian Museum (AM) No. P35852. Paratypes: 1♀ (AM No. P35853) off end of South Mole, Arthur Head, Freemantle, Western Australia, depth 6 m, 25.xii.1983, coll. J. K. Lowry; 1♀, 1♂ (Victoria Museum (VM) No. J11809), and 1♀ (J11810), FV 'Sarda', Bass Strait Stn 112 (40°22'2"S 145°17"E), depth 40 m, 3.xi.1980, coll. G. C. B. Poore.

**REMARKS.** *Sphaeronella* contains 76 species, the majority (42 species) parasitic on amphipod hosts. The new species belongs to the *S. leuckartii* group which Hansen (1897) recognised for the following 9 species, *S. antillensis* Hansen, *S. atyli* Hansen, *S. chinensis* Hansen, *S. danica* Hansen, *S. leptocheiri* Hansen, *S. leuckartii* Salensky, *S. elegantula* Hansen, *S. messinensis* Hansen, and *S. vestita* Hansen. This number was increased by the description of *S. aorae* by Scott (1905) and of *S. devosae* and *S. ecaudata* by Stock (in Stock & De Vos, 1960). Green (1958) regarded *S. elegantula* and *S. aorae* as synonymous with *S. leuckartii*. This group is characterised by the presence in the male of a conspicuous rectangular projection in the middle of the frontal margin of the head (here referred to as the pseudorostrum), by the rudimentary or absent antenna, and by the presence of a tuft of hairs at the base of the maxillule. Within the group the new species is most closely related to *S. chinensis* Hansen, which is known from the marsupium of *Corophium bonelli* Milne-Edwards from Hong Kong. The morphology of the males is very similar, especially in the configuration of the frontal margin of the head. However, the ventral sternal processes in the maxillipedal region of the male are better developed and more widely divergent in *S. australis* than in *S. chinensis*. Also the terminal seta on the apex of leg 2 is longer than the limb itself in *S. chinensis* but shorter than the limb in *S. australis*.

The oral area of the male of the new species had collapsed inwards, thereby retracting the mouth cone so that it is less visible in ventral view. In life it would protrude more, as in the lateral view of *S. chinensis* given by Hansen (1897).

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