

# ANTARCTIC ISOPOD CRUSTACEA. II. FAMILIES HAPLONISCIDAE, ACANTHASPIDIIDAE, AND JAEROPSIDAE, WITH DIAGNOSES OF NEW GENERA AND SPECIES<sup>1</sup>

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*Abstract.* This study has 3 parts. The first part contains the descriptions of 2 new species of *Antennuloniscus* that were collected by the research vessels *Eltanin* and *Vema* from the deep sea near the Antarctic Continent. The new genus *Aspidoniscus* has been described from a specimen from the deep sea of the Caribbean Sea where it was collected during a *Vema* expedition. These genera belong to the family Haploniscidae Menzies, 1956. The second part is concerned with the genera *Acanthaspidia*, *Iolanthe*, *Jaeropsis*, and the new genera *Exacanthaspidia* and *Paracanthaspidia*. These genera belong to the family Acanthaspidiidae. The third part concerns the monogeneric family Jaeropsidae.

## INTRODUCTION

In order to characterize, redefine, and establish the validity of the genus *Antennuloniscus*, it has been necessary for us to obtain material collected from the research vessel *Vema*. The specimens were kindly loaned to us by the American Museum of Natural History.

This paper is the second of a series on deep-sea antarctic isopod crustaceans. The initial paper contained an account of the first isopods found in photographs of the benthic region [Menzies and Schultz, 1966]. The study is based primarily on the isopods collected by the research vessel *Eltanin* that is engaged in a survey of the antarctic waters (United States Antarctic Research Program). The *Eltanin* specimens were collected in part by the personnel of the University of Southern California Antarctic Research Program, financed by the Antarctic Programs Office of the National Science Foundation.

Isopods from other collections are included, especially specimens from the Atlantic Ocean and the Peru-Chile Trench of the Pacific, that were collected during the *Vema* and *Eltanin* cruises to those waters.

Much of the work of early authors is reviewed.

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Hansen's work [1925] on crustacean appendages—antennae, mouth parts, peraeopods, and pleopods—is followed for the most part for the nomenclature of appendage segments. For instance, the segment with the scale on the peduncle of the second antenna is called segment three, although from examination of many isopods (dorsal view) it would appear to be segment two (compare the second antenna in Fig. 1A with the dissection of the same, Fig. 1H). A very small first segment is present—the precoxal segment of Hansen—but it is not visible in dorsal view, and in some species it is difficult to detect.

The following abbreviations appear in the text: AHF, Allan Hancock Foundation, University of California, Los Angeles; AMNH, American Museum of Natural History, New York; LGO, Lamont Geological Observatory, Columbia University, New York; SAM, South African Museum, Capetown Union of South Africa; USNM, United States National Museum, Smithsonian Institution, Washington, D. C.; USNS *Eltanin*, United States Naval Ship *Eltanin*; V, R/V *Vema*, Research Vessel *Vema*, Lamont Geological Observatory, Columbia University, New York.

## Family HAPLONISCIDAE

*Type genus: Haploniscus* Richardson

Genus *Antennuloniscus* Menzies, 1962

*Antennuloniscus* Menzies, 1962b, p. 107; *Haploniscus* Richardson, 1908, p. 75 [part]; Wolff, 1962, pp. 49-50.

*Type-species: Haploniscus dimeroceras* Barnard, 1920, pp. 406-408, pl. 17, fig. 4-7.

*Remarks:* In view of Wolff's statements invalidating this genus, and in view of our observations suggesting that the genus is indeed distinct, a revised diagnosis is given as well as a description of some topotypic specimens of the type species of the genus, *A. dimeroceras*.

If one measures the greatest width (inclusive of spine) of the third article of the peduncle of the first antenna, and compares it to the greatest length of the same article in the species of *Antennuloniscus*, the conclusion is reached that the third article of the peduncle of *Antennuloniscus* is much longer and proportionately less wide than that of *Haploniscus*. In other words, this article in the *Haploniscus* species is only slightly longer than wide and in *Antennuloniscus* it is greatly longer than wide. More important diagnostic characters for *Antennuloniscus* are also present. They are as follows:

1. The fifth and sixth peduncular articles of the second antenna are fused into a thick, elongate segment, from which the whiplike flagellum arises subapically.

2. The distal article of the fused pair of articles of the second antenna has a terminal (ventral) projection; it is usually spinelike and extends well beyond the base of the flagellum.

3. The third article of the second antenna has a longitudinal groove into which articles four to six inflex.

4. The dorsal (inside) surface of the first male pleopod (sympod) bears bilateral transverse rows of spines near the apex.

*Generic diagnosis:* Haploniscidae with third segment on second antennal peduncle much longer than wide and laterally grooved to contain distal segments of antenna when antenna is folded caudally. Length of spine, if present, on third segment of second antenna less than half diameter of segment. Fourth segment less than half length of third; fifth and sixth segments incompletely fused to form single stout article with proximal part tending to be shorter than distal part; fused they form longest part of antenna. Segment six (distal part of fused segments) apically extends beyond base of flagellum in a short pointed process. Whiplike flagellum of small diameter and of 8 to 10 articles originates subapically on distal part of fused peduncular segments. Males with 6, females with 4, intersexes with 5 articles in flagellum of first antenna. Large triangulate subrostral plate always present ventrally

on cephalon. Three coupling hooks on maxilliped. First male pleopod with spiniferous row of minute setae (modified scales?) subapically placed on ventral distal part of sympod. At least first 5 peraeonal somites distinct.

*Discussion:* We believe that *Antennuloniscus* is distinct from *Haploniscus* as indicated earlier. There is little question that *Antennuloniscus* and *Haploniscus* are closely related, however. They are more closely related to each other than either is related to *Hydrioniscus* or to *Aspidoniscus*, the new genus described here.

*Species composition:* *Antennuloniscus rostratus* Menzies, 1962, is hereby removed from *Antennuloniscus* and placed in *Haploniscus* because there is a large spine on the short third article of the second antenna and the fifth and sixth articles are not fused [see Menzies, 1962b, p. 108, fig. 14G-J]. Two new species are described here, bringing the total known species to 5. The species are:

1. *A. dimeroceras* (Barnard), 1920 (genotype)
2. *A. armatus* Menzies, 1962b
3. *A. ornatus* Menzies, 1962b
4. *A. subellipticus*, n. sp.
5. *A. quadratus*, n. sp.

*Affinities:* *Antennuloniscus* differs from *Haploniscus* in the structure of the second antenna. Species of *Antennuloniscus* have the fifth and sixth peduncular articles always fused. There are always 4 flagellar articles in the flagellum of the female first antenna and 6 in that of the male. There is little resemblance between *Aspidoniscus*, n. gen., and *Antennuloniscus* except for the common familial characteristics.

*Antennuloniscus* is most closely related to *Haploniscus*, from which it differs chiefly in the structure of the second antenna. The species of *Antennuloniscus* are so different among themselves that it is difficult to relate a species to any particular species or group of species. The 3 species *A. ornatus*, *subellipticus*, n. sp., and *armatus* are probably the most closely related species and form what is perhaps a subgroup. The type species of the genus, *A. dimeroceras*, is most probably also related to those 3 but not closely. The most distinct of the species is *A. quadratus*, which is not closely related to any of the other 4 species.

#### KEY TO THE SPECIES OF *ANTENNULONISCUS*

1. Posterolateral angles of pleotelson short, never projecting well beyond medial margin. . . . . 2
- Posterolateral angles of pleotelson long, projecting well beyond medial margin. . . . . 4

2. Posterolateral angles of pleotelson very short, not even projecting to medial margin. . . . . *A. subellipticus*, p. 147  
Posterolateral angles of pleotelson longer, extending at least to medial margin . . . . . 3
3. Second peduncular article of second antenna not visible in dorsal view; lateral edges of peraeon parallel for most of length; no rostral processes or convexities on frontal margin . . . . . *A. quadratus*, p. 147  
Second peduncular article of second antenna visible in dorsal view; lateral body edges convex for most of length; rostral processes present. . . . . *A. ornatus*, p. 147
4. Frontal margin of cephalon with rostral process long and pointed. . . . . *A. armatus*, p. 147  
Frontal margin of cephalon excised with slight medial convexity . . . . . *A. dimeroceras*, p. 143

***Antennuloniscus dimeroceras* (Barnard, 1920)**

Fig. 1, 2

*Haploniscus dimeroceras* Barnard, 1920, pp. 406-408, pl. 17, fig. 4-7.

*Antennuloniscus dimeroceras* Menzies, 1962b, pp. 107-108, fig. 14, A-B.

**Diagnosis:** The original description by Barnard [1920], based upon hand-lens examination, is lengthy and tends to be superficial regarding unobserved and hidden details.

Eyeless. Cephalon trapezoidal in outline, moderately arched dorsally, with lateral borders extending downward in the posterolateral part. Frontal border nearly straight, with slight medial convexity. First antenna with stout, ovate first peduncular article, a thin elongate second article longer than first; 4 flagellar articles in female, 6 in male. Second flagellar article shortest; others subequal in length. Second antenna with third article of peduncle grooved to receive the more distal segments when they are inflexed. Spine on third peduncular article varies from a blunt tubercle to a very sharp pointed structure located on proximal half of third article. Fourth article short, followed by fused articles five and six. Proximal part of the 2 fused articles less than  $\frac{1}{2}$  length of combined articles. Fused articles longer than third article and with a pointed terminal process. Flagellum whiplike, of 9 articles, subapically arising from sixth peduncular article.

All peraeonal somites smooth, moderately arched with recurved epimeral extensions which have square borders. Posterolateral angles of somites five and six acute. Pleotelson very slightly narrower than peraeon with lateral borders directed downward, posterolateral angles elongate. Two small tubercles located on dorsum in anterior  $\frac{1}{3}$  of pleotelson (the tubercles are absent from some specimens, especially those that are immature). Posterior border of pleotelson convex.

Incisor of left mandible with 5 teeth; lacinia mobilis with 4 teeth; setal row of 5 large setae; and molar process with several teeth and setae. Right mandible with 5 incisor teeth, 6 setae in setal row and molar process with teeth and setae. Exopod of first maxilla with at least 12 spines, some toothed; endopod simple lobe with many setae on margin. Inner lobe of second maxilla with at least 4 apical toothed setae; medial lobe with 2 large and 1 small setae; outer lobe with at least 4 toothed setae; all lobes fringed with many marginal setae. Maxillipedal palp of 5 articles, 3 coupling hooks on medial margin and few setae on sensory edge of endite; exopod with apex acutely rounded. Hypopharynx with many setae on apex and on inner edges of medial groove. Labrum truncate with setae on anterior margin. Peraeopod one about  $\frac{7}{10}$  length of peraeopod seven. Dactylus of peraeopod one with moderately long unguis and small inferior dactyl claw; dactylus of peraeopod seven with elongate unguis, without inferior claw.

Male first pleopod with 8 long apical marginal setae, 4 on each division of sympod. Sympod with rounded, roughly sinuate apical margin. Many small scalelike setae in row subapically located dorsally near posterior margin. Second male pleopod with many long setae on lateral margin. Female with many long setae on posterior margin of operculum. Male third pleopod with 3 long plumose setae on endopod and many fine setae interspersed with larger setae on margin of exopod. Fourth male pleopod with subtriangulate endopod, with exopod about  $\frac{1}{2}$  length of endopod, but very narrow, ending with a long apical plumose setae. Fifth pleopod subtriangulate, uniramous, without marginal setae.

Uropod uniramous ramus about  $2\frac{1}{2}$  times the length of basis.

**Measurements:** Male and female 2.5 mm long.

**Type-locality:** Off Cape Town, South Africa; Lat.  $34^{\circ}25'S$ , Long.  $17^{\circ}55'E$  at 1280 m (SAM, No. A4069). Our specimens, described above, were taken at Lat.  $34^{\circ}35'S$ , Long.  $17^{\circ}31'E$  at 1816 m and are here considered topotypes (LGO 54, V-14-32, Menzies, 1962b, p. 108).

**Affinities:** *A. dimeroceras*, the type of the genus, is unique in that the large triangulate frons is visible in the dorsal view. Other unique characters are that there are 2 tubercles bilaterally placed on the dorsal third of the pleotelson (sometimes not present) and that the posterolateral processes of the pleotelson are longer than those of any other species of *Antennuloniscus*.

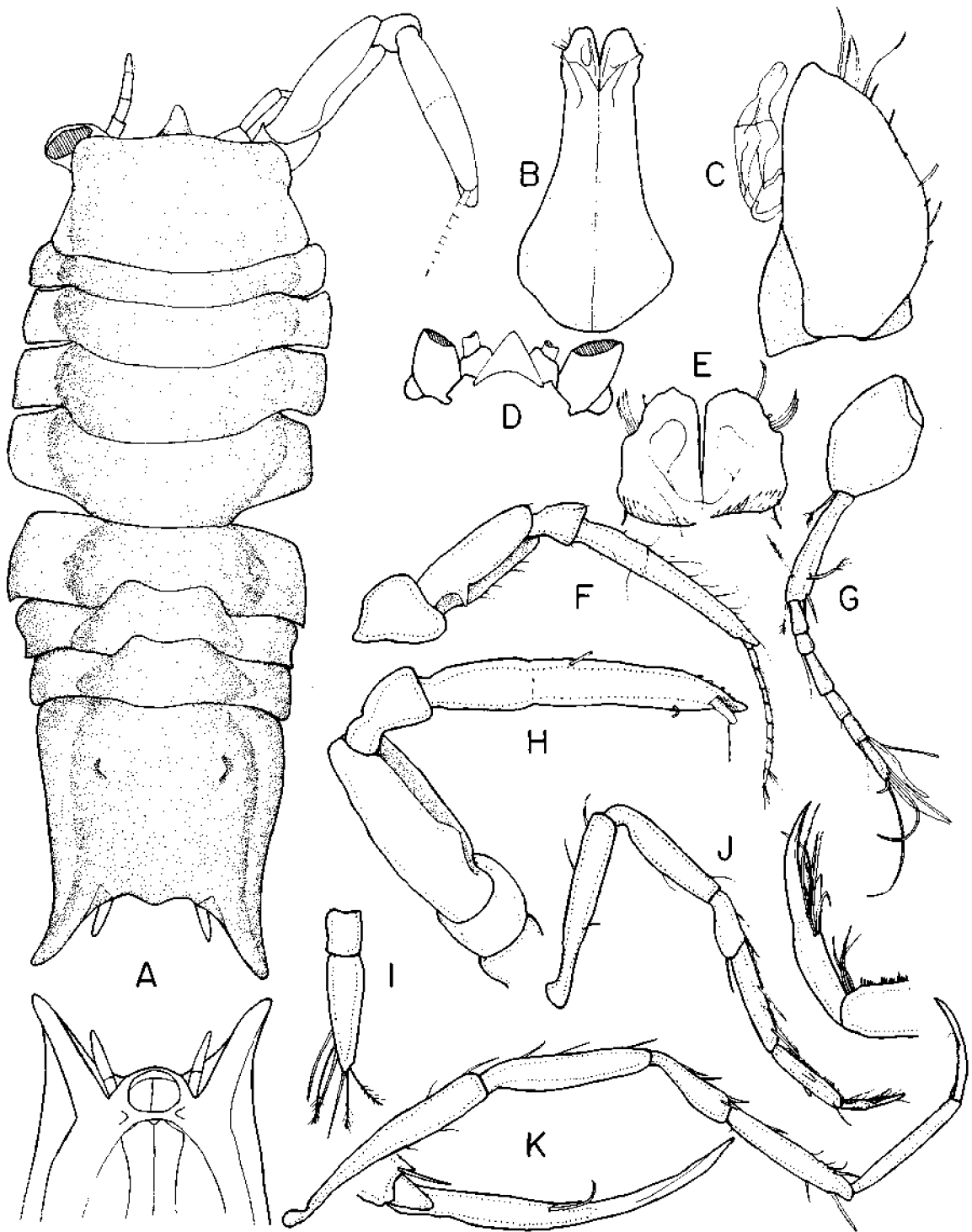


Fig. 1. *Antennuloniscus dimeroceras* (Barnard, 1920) (figures are of a male specimen 2.5 mm long, except F, female 2.5 mm long). A, dorsal view with details of anal plates; B, first pleopod; C, second pleopod; D, detail of ventral, anterior part of cephalon; E, detail of distal part of first pleopod; F, second antenna; G, first antenna; H, second antenna; I, uropod; J, first pereopod with detail of dactylus; K, seventh pereopod with detail of dactylus.

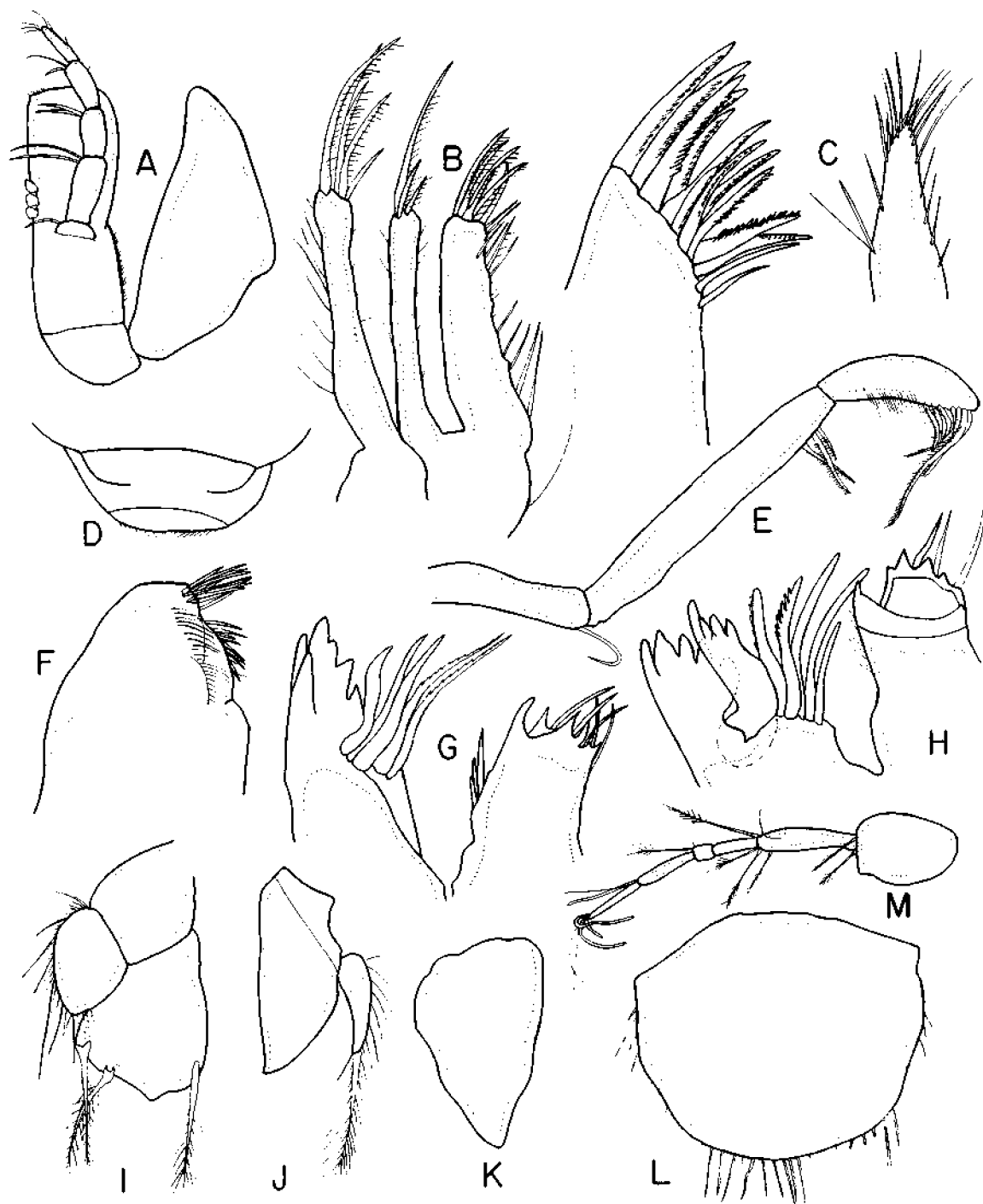


Fig. 2. *Antennuloniscus dimeroceras* (Barnard, 1920) (figures are of a male specimen 2.5 mm long, except L and M, female 2.5 mm long). A, maxilliped; B, second maxilla; C, first maxilla; D, labrum; E, maxillary palp; F, hypopharynx; G, right mandible; H, left mandible; I, third pleopod; J, fourth pleopod; K, fifth pleopod; L, second pleopod; M, first antenna.

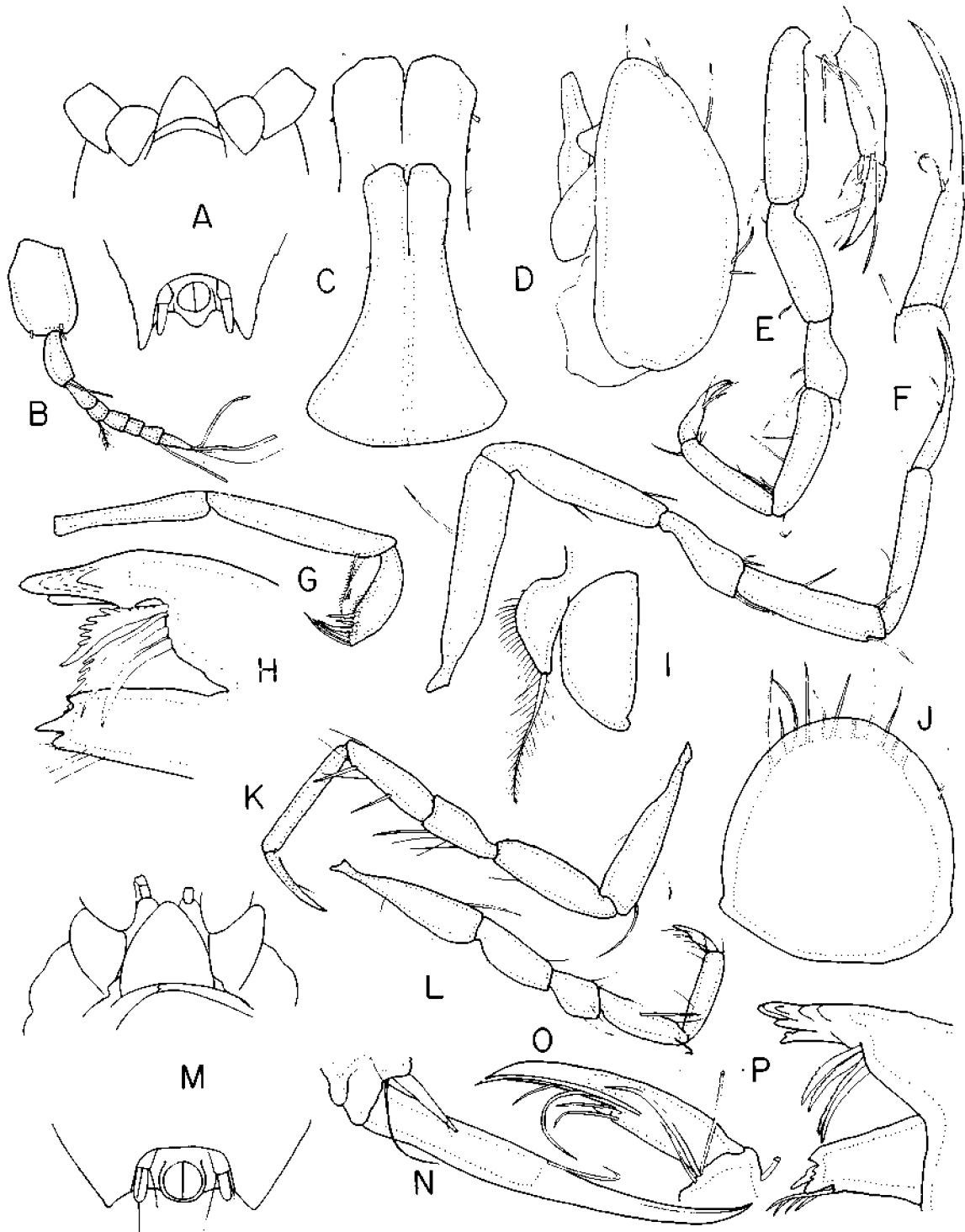


Fig. 3. *Antennuloniscus armatus* Menzies, 1962. A, ventral view of anterior cephalon and posterior pleon; B, first antenna male; C, male first pleopod; D, male second pleopod; E, first pereopod with detail of dactylus; F, seventh pereopod with detail of dactylus; G, mandibular palp; H, right mandible; I, male fourth pleopod; J, female operculate pleopod. *Antennuloniscus ornatus* Menzies, 1962. K, sixth pereopod; L, first pereopod; M, ventral view of anterior cephalon and posterior pleon; N, detail sixth dactylus; O, detail first dactylus; P, right mandible.

*Antennuloniscus armatus* Menzies, 1962

Fig. 3A-J

*Antennuloniscus armatus* Menzies, 1962b, pp. 108-109, fig. 14, C-F.

According to Menzies this species appears most closely related to *A. rostratus*, a species that has now been moved to the genus *Haploniscus*. The species *A. armatus* differs mainly from *H. rostratus* in having the lateral margins of the peraeon and pleotelson continuous. The species *Haploniscus rostratus* also has straight lateral borders of the pleotelson that are not present in *A. armatus*.

*Antennuloniscus armatus* and *A. subellipticus* have frontal processes rather than definite rostral spines; they both also have small, sawtoothlike projections on the margins of their pleotelsons. The segments of the first and second antennae of the females are proportionately about the same length in both species; however, the apex of the fused segments is more pointed in *A. armatus*. The second antennal peduncular articles are fused in *A. armatus*, the first part being shorter than the second. The first male pleopods of the 2 species have similar apices, *A. subellipticus* having at least 4 large marginal spines (Fig. 4D), *A. ornatus* having 5 spines [Menzies, 1962b, p. 108, fig. 14M]. Both species have definite, abruptly curving edges of the cephalon and peraeon. The 2 species *A. subellipticus* and *A. ornatus* are the most closely related species of *Antennuloniscus*. The species *A. ornatus* is also related to these two.

*Antennuloniscus ornatus* Menzies, 1962

Fig. 3K-P

*Antennuloniscus ornatus* Menzies, 1962b, p. 109, fig. 14, K-M.

In his diagnosis Menzies states that the flagellum of the first antenna has 6 articles. He observed only male specimens. Probably the female of this species, like the others in the genus, has 4 articles in the flagellum of the first antenna, thus, the characteristic of 6 articles is not diagnostic for the species. The nearest known relative of *A. ornatus*, according to Menzies [1962b] is *A. dimeroceras*, type of the genus. The pleotelsons of the 2 animals are quite different, however, because *Antennuloniscus ornatus* has very pronounced shelves on the lateral borders of its pleotelson whereas *A. dimeroceras* has evenly rounded borders with no shelf. (See also discussion under *A. armatus*.)

*Antennuloniscus subellipticus*, new species

Fig. 4, 5

**Diagnosis:** *Antennuloniscus* with anterior border of cephalon with obtusely rounded rostrumlike frontal margin. Peraeon with subparallel lateral margins. Pleotelson evenly rounded, laterally serrated, postero-lateral angles project less than uropods; medial posterior margin extends beyond uropods, as a convex lobe. Peraeopod one with seta on inner medial margin of dactylus; peraeopod seven apparently without such a seta. Male with 6, female with 4, and intersex with 5 flagellar articles on first antenna. All seven peraeonal somites separated dorsally. Dorsum of cephalon and of pleotelson with a very marked abrupt change in curvature along lateral margins.

**Measurements:** Holotype male 2.0 mm long; allotype female 2.1 mm; three paratype females each 2.1 mm; and one intersex 1.4 mm long.

**Type-locality:** Off Cape Horn, *Eltanin* Sta. 126; start, Lat. 57°12'S, Long. 62°45'W; finish, Lat. 57°14'S, Long. 62°50'W; July 29, 1962; 3733-3806 m. Holotype male and allotype female (AHF 625); 3 paratype females and 1 paratype intersex (paratypes also deposited in the Allan Hancock Foundation).

Photographs taken near the type locality show a uniform sandy bottom with ripple marks (Fig. 9-11).

**Distribution:** In addition to the type-locality, other nearby station collections contained *A. subellipticus* specimens, viz. *Eltanin* Stations 120, 1 male 2.0 mm long (deposited in the AHF); 155, 2 males 2.2 and 2.0 mm and 1 female 2.4 mm long (USNM 113325); and 394, 2 females 2.6 and 2.0 mm long (USNM 113326). All four stations, including the type-locality, are off the tip of South America.

**Affinities:** The new species differs from *A. armatus* in the shape of the rostrum and the shape of the posterior part of the pleotelson. The new species also differs from *A. armatus* in the shape of the posterior part of the pleotelson (which is similar in other respects also) and in the shape of the anterior margin of the cephalon. The regularly rounded convex lateral borders of the whole body set the species apart from other *Antennuloniscus* species.

*Antennuloniscus quadratus*, new species

Fig. 6

**Diagnosis:** *Antennuloniscus* with second peduncular article of second antenna not visible in dorsal view.

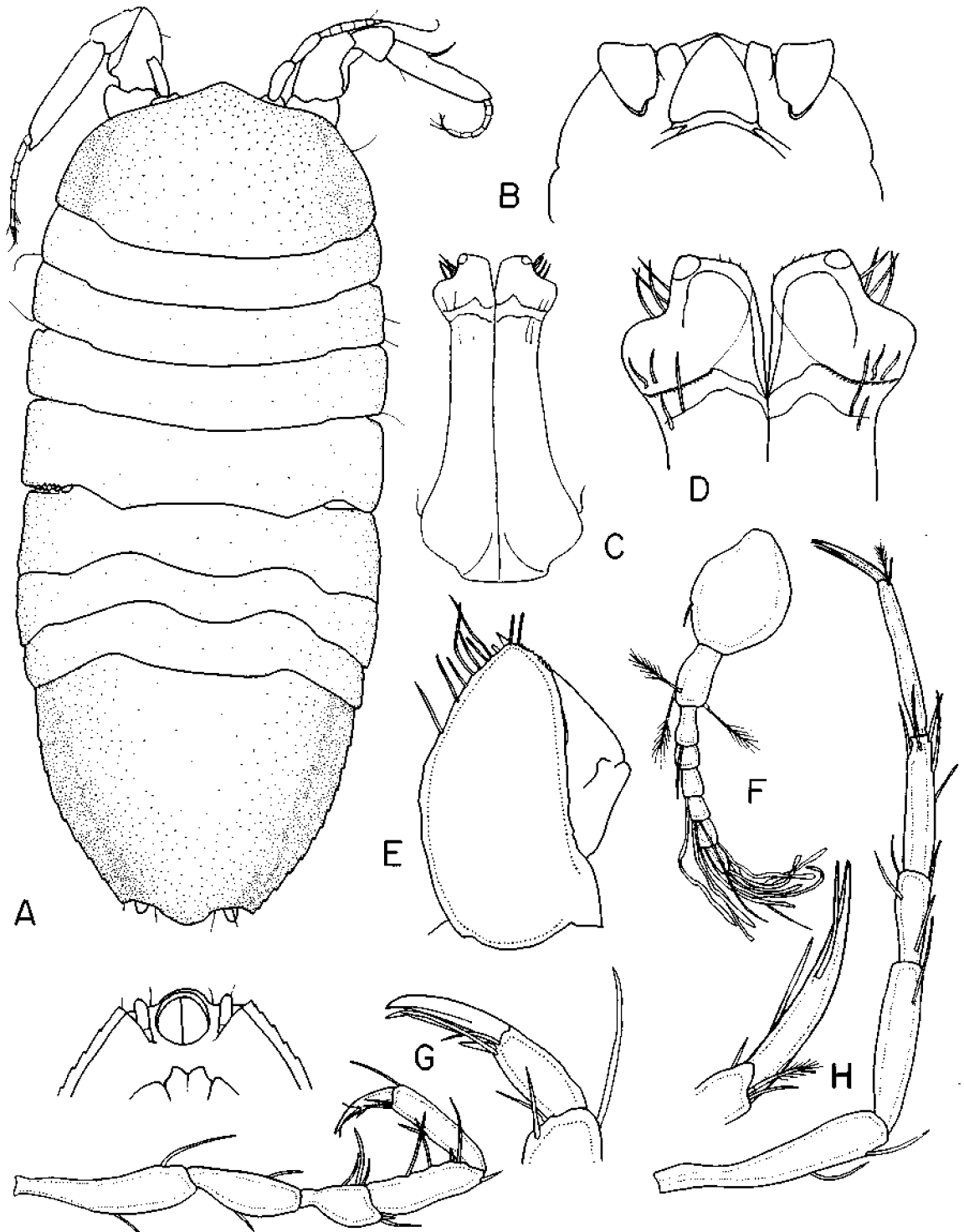


Fig. 4. *Antennuloniscus subellipticus*, new species. Holotype male (2 mm long). A, dorsal view with detail of anal plates; B, ventral view of cephalon; C, first pleopod; D, detail apex of first pleopod; E, second pleopod; F, first antenna; G, first pereopod with detail of dactylus; H, seventh pereopod with detail of dactylus.



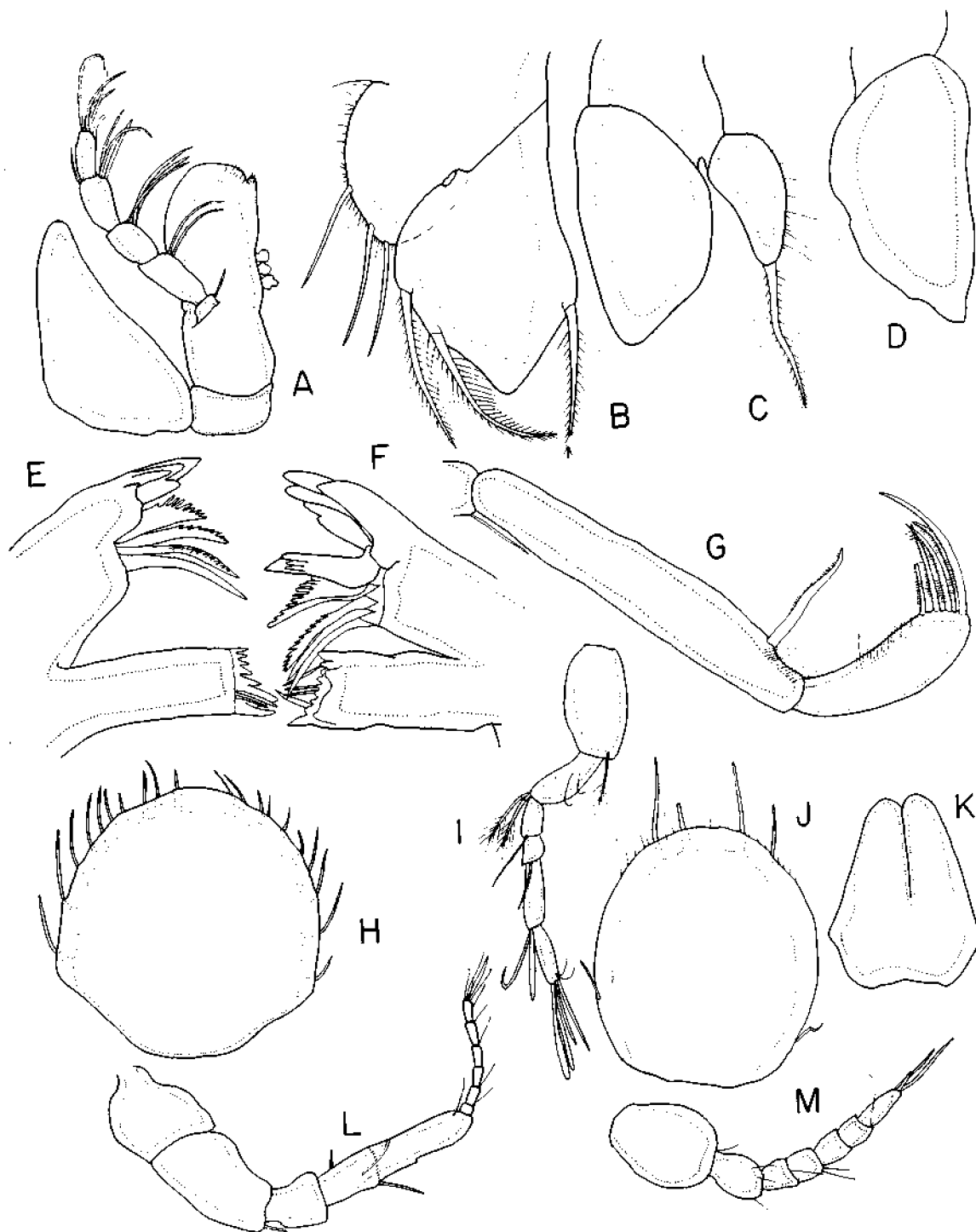


Fig. 5. *Antennuloniscus subellipticus*, new species (A-G, L, male holotype 2 mm long; H, I, female 2.1 mm long; J, K, M intersex 1.4 mm long). A, maxilliped; B, third pleopod; C, fourth pleopod; D, fifth pleopod; E, right mandible; F, left mandible; G, apical two articles of mandibular palp; H, second pleopod; I, first antenna; J, second pleopod; K, first pleopod; L, second antenna; M, first antenna.

Peduncle of first antenna also hardly visible. Anterior margin of cephalon straight or only slightly concave, lateral margins of entire body nearly parallel and dorsum evenly moderately arched. Posterior half of pleotelson with expanded lateral borders. Projection of posterolateral angles of pleotelson about equal to projection of convex posterior medial margin. Uropods shorter than both projections. At least 5 peraeonal somites fully indicated. Three coupling hooks on maxilliped. Three setae and lacinia mobilis on left mandible (right mandible missing); 4 setae on inner margin of mandibular palp; apical article of mandibular palp with 3 moderately long setae, plus a longer distal one, all setae on most distal part of palp.

*Measurements:* Holotype female 1.5 mm long.

*Type-locality:* About 250 miles south of Madagascar, LGO Sta. 58, V-14-36; Lat. 28°28'S, Long. 44°22'E; Apr. 29, 1958; about 2270 m; holotype female (AMNH 12581).

*Affinities:* Unique, the simple quadrate structure of the cephalon sets it apart from other species of *Antennuloniscus*. The posterolateral expansions of the pleotelson are also unique. The species is the most individual of the genus *Antennuloniscus*, sharing few structural similarities but that of the second antenna and large triangulate subrostral process with other species.

#### *Ecology*

Very little is known about the ecology of the species of *Antennuloniscus*, but it is probably similar to that of other Haploniscidae, because at most stations where *Antennuloniscus* was found, *Haploniscus* or *Hydroniscus* species were also found. Menzies [1962c] listed *A. dimeroceras* as a deposit feeder with selectivity for fine particles which included greenish-brown particles of clay size and Foraminifera.

Bottom photographs (*Eltanin* Cruise 4, camera station 6, July 29, 1962, frames 1 to 33) were made near *Eltanin* Station 126 where *A. subellipticus* was taken. All 33 photographs show ripples on a bottom composed of fine sand particles. A light colored sediment is found in the valleys of the dark colored ripples, and the light colored substance apparently was placed there by bottom currents. Three photographs (Fig. 9-11) are included here since they probably represent the habitat of *A. subellipticus* and demonstrate that that species, too, probably will be found to have a feeding selectivity for fine organic particles.

*Antennuloniscus subellipticus* was found at 2 stations about which we have some knowledge of sedi-

ment characteristics [Goodell, 1963]. Variations in the character of the sediment noted in Table 1 are those of *Eltanin* stations 126 and 394. From these data it would appear that the amount of silt or sand is not a significant factor influencing the distribution of *A. subellipticus*.

Hydrographic data are not available for the exact locations or exact depths of the *Eltanin* stations represented here. The 2 nearest hydrographic stations (Cruise 4, Hydrographic Station 6, July 29, 1962, nearest *Eltanin* Station 126 and Cruise 6, Hydrographic Station 14, Dec. 29, 1962, nearest *Eltanin* Station 394) showed temperatures between 0.07° and 0.89°C at 3400 m respectively. The oxygen was between 5.23 and 4.20 ml/l. The specimens of *A. subellipticus* were collected about 400 m deeper than the nearest hydrographic data collection sites. Hydrographic Station 4-6 was from Lat. 57°8'S, Long. 63°4'W and Station 6-14 was from Lat. 59°10'S, Long. 63°4'W. The species *A. subellipticus* was collected between 56° and 59°S, and 52° and 63°W on the bottom between 3720 and 5300 m deep.

Specimens of *Antennuloniscus* are eyeless and whitish in color. All the peraeopods are simple, short appendages without special modifications for swimming or burrowing. The antennae are shorter than those of the majority of abyssal isopods. The uropods are small and uniramous. The animals are much like the oniscoids, or terrestrial isopods, in general body form including legs and antennae, and perhaps play an ecological role similar to the terrestrial oniscoids in the marine benthic community.

#### Genus *Aspidoniscus*, new genus

*Type-species:* *Aspidoniscus perplexus*, new genus, new species.

*Discussion:* The uropoda are the most distinctive feature of the new genus. Unfortunately only 1 specimen was collected, but, even though damaged, it was distinct enough to warrant putting it in a new genus. Although the maxillipeds and several peraeopods were missing, the other structures are sufficiently developed so that the new genus could be placed unequivocally in the family Haploniscidae.

*Generic diagnosis:* Haploniscidae with lateral borders of cephalon, peraeon, and pleon strongly recurved. Cephalon with obtusely rounded rostrum and peraeon with anterolateral borders of peraeonal somites I to IV directed anteriorly. At least 5 anterior peraeonal somites distinct. Posterior border of pleon obtusely

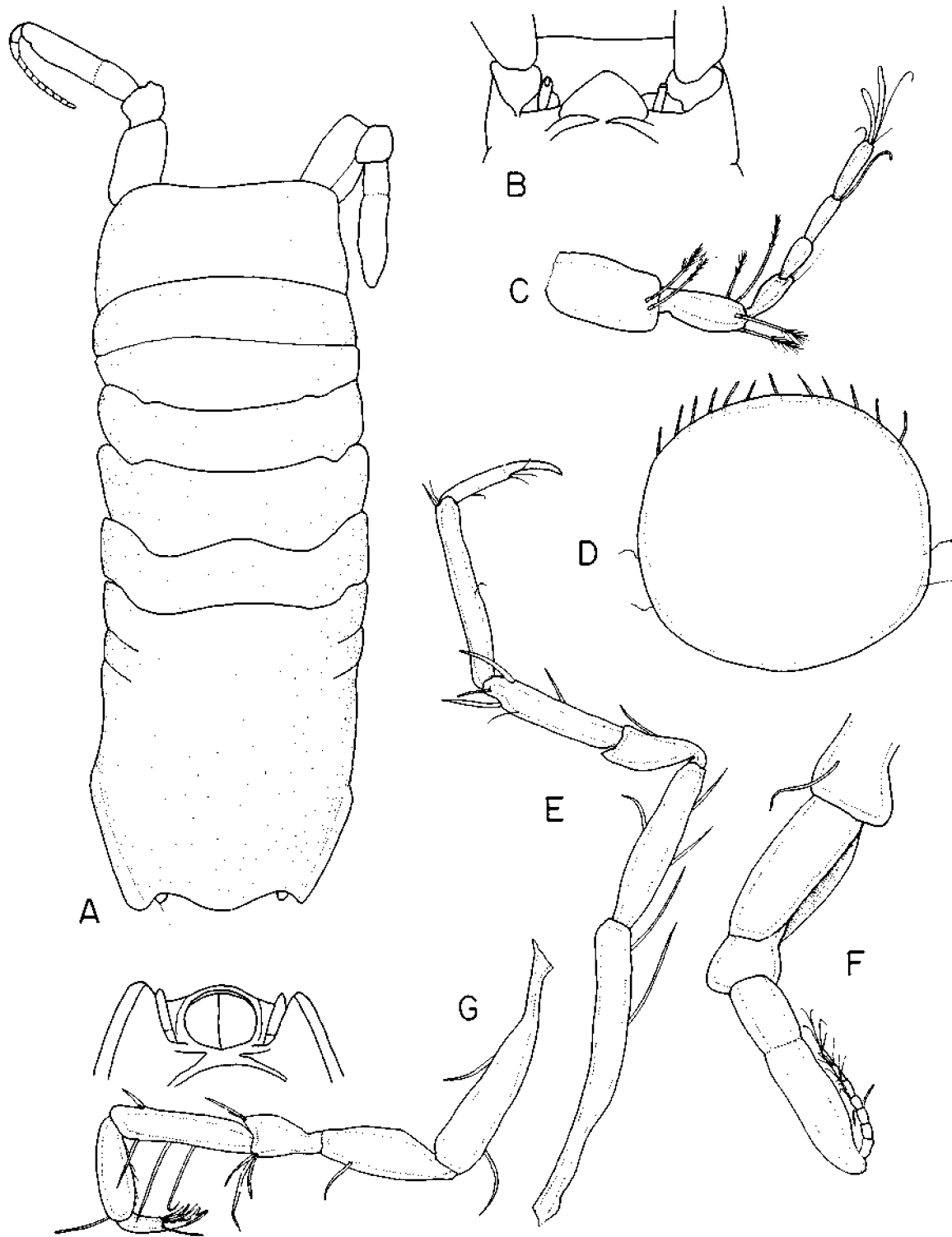


Fig. 6. *Antennuloniscus quadratus*, new species, female (1.5 mm long). A, dorsal view with detail of anal plates; B, ventral view of cephalon; C, antenna one; D, second pleopod; E, seventh peraeopod; F, second antenna; G, first peraeopod.

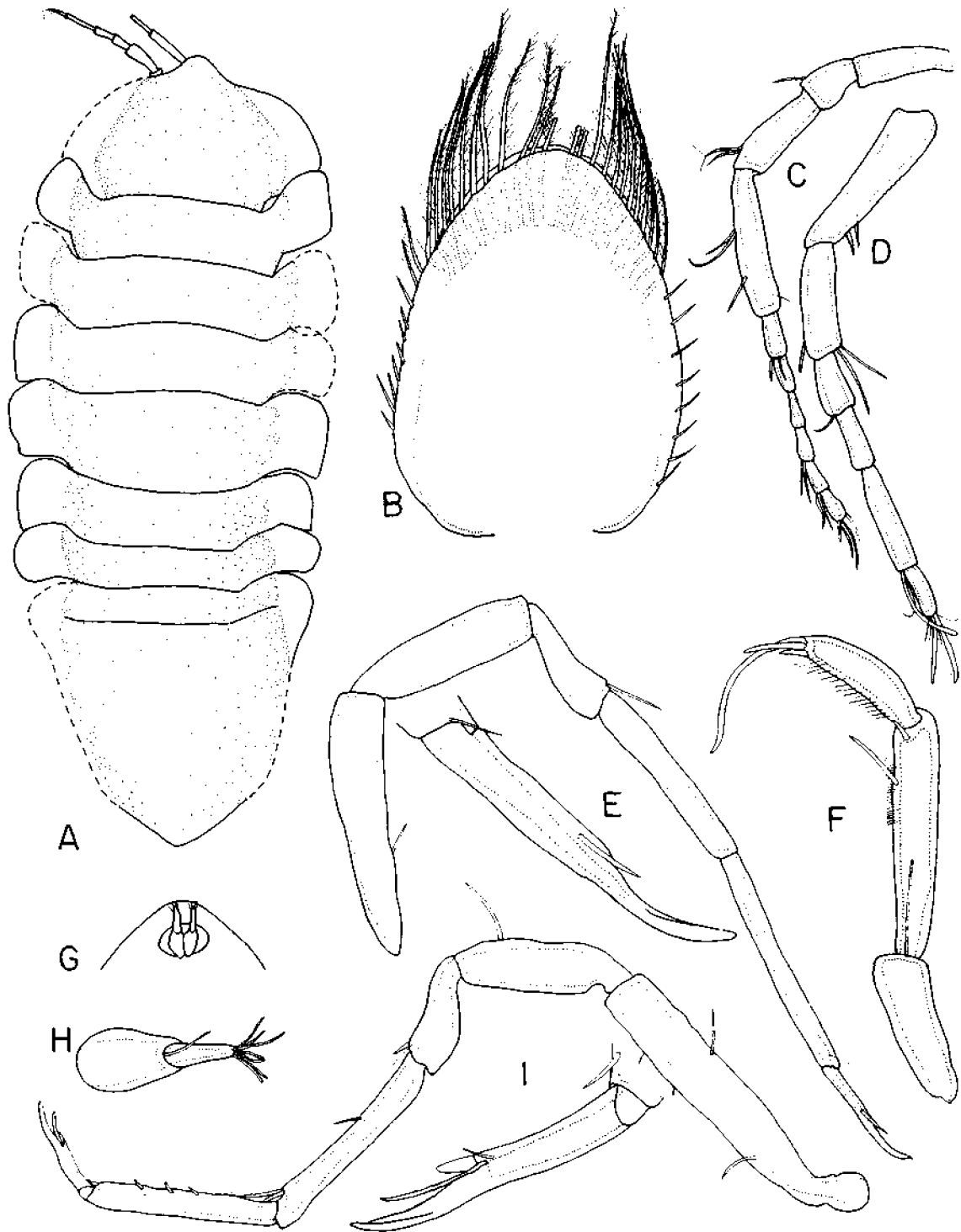


Fig. 7. *Aspioniscus perplexus*, new species (holotype female 2.1 mm long). A, dorsal view; B, second pleopod; C, second antenna; D, first antenna; E, seventh pereopod with detail of dactylus; F, mandibular palp; G, ventral view of posterior part of pleotelson; H, uropod; I, second pereopod with detail of dactylus.

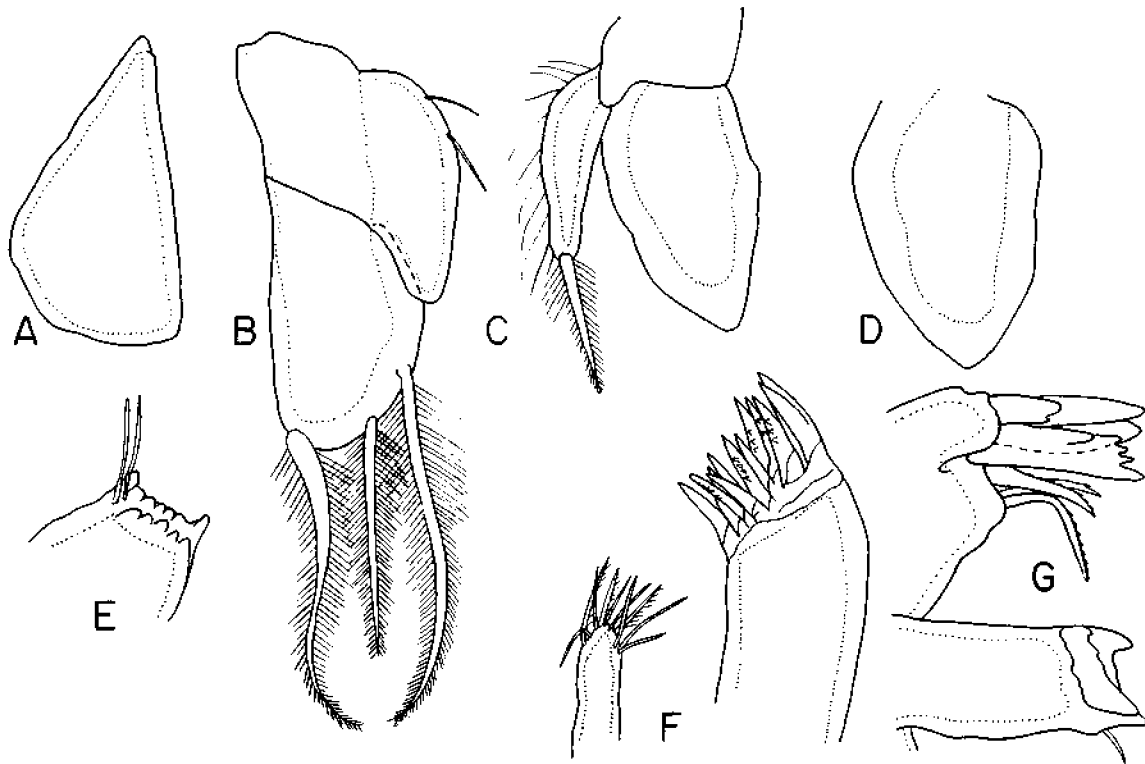


Fig. 8. *Aspidoniscus perplexus*, new species (holotype female 2.1 mm long). A, exopod of maxilliped; B, third pleopod; C, fourth pleopod; D, fifth pleopod; E, detail molar process right mandible; F, first maxilla; G, second maxilla; H, left mandible.

rounded. Uropoda clubshaped, attached below anal plates and not extending beyond posterior margin. Antenna one and two both without marked distinction between peduncle and flagellum. Long unguis on all dactyls. Peraeopod two with inferior dactyl claw present.

*Aspidoniscus perplexus*, new species

Fig. 7, 8

**Diagnosis:** *Aspidoniscus* with first antenna of 6 segments (female) but without marked distinction between peduncle and apparently 4 flagellar articles; first peduncular segment longest; second about  $\frac{2}{3}$  length of first. First and second flagellar articles about equal in length, together about as long as third; fourth about as long as either one or two. Second antenna with no marked distinction between peduncle and flagellar articles. First and second peduncular segments do not show. Third segment of small diameter without any sign of spine. Fourth segment shortest of peduncular segments three to six and of greatest diameter of any segment. Sixth peduncular segment of smaller diameter and longer than fifth segment. Six subequal articles comprise paucisetaceous flagellum.

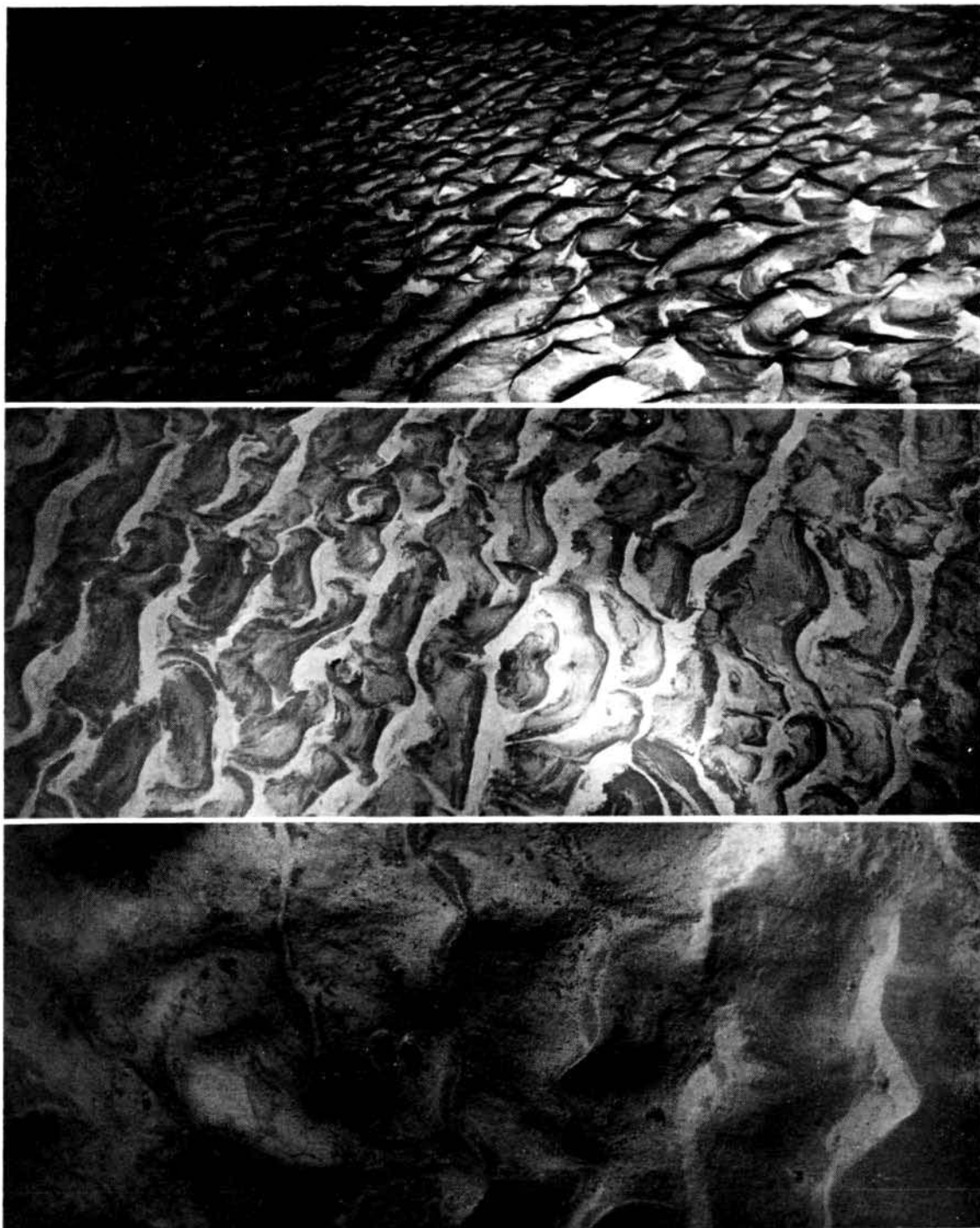
Mandible with well developed incisor process, lacinia mobilis, and 3 large setae in setal row on left mandible, 4 on right mandible; palp of 3 articles; first article about as long as third with 1 long apical setae; second with 1 large and many small setae on inner margin; inner margin of distal article with many setae and 3 long apical setae.

Endopod of maxilla one with at least 3 toothed apical setae; exopod with many notched toothlike setae. Endopod of maxilla two with usual 3 branches (outer one in poor condition); medial process with at least 3 long toothed setae on apex and large setae on inner border; medial process with at least 3 long toothed setae. Exopod of maxilliped triangulate with acutely pointed apex; endopod missing.

Peraeopod one missing. Peraeopods two and three with stout unguis and large inferior claw. Peraeopod seven with very elongate unguis and apparently without inferior claw.

Uropoda uniramous, clubshaped with basis slightly longer than ramus and not projecting beyond posterior margin. Uropods situated below anal plates with exact articulation unclear.

Female operculum much longer than broad with



Figs. 9-11. The three photographs (Frames 1 (top), 4 (center), and 32 (bottom)), show the bottom at approximately 3775 m at Eltanin Cruise 4, station 6, near the type locality of *A. subellipticus*.

TABLE 1. Sediment Characteristics of *Eltanin* Stations 126 and 394

	% Composition					C/N Ratio
	Sand	Silt	Clay	CaCO <sub>3</sub>	Organic Carbon	
Sta. 126	44.47	49.69	5.83	2.28	0.28	17.5
Sta. 394	5.37	93.17	1.46	1.51	0.46	6.2

many long setae on lateral margins and many long plumose setae on posterior margin. Third pleopod with 3 very long setae on apical and outer margins of endopod and few setae on margin of small exopod, no setae on endopod; fifth pleopod of single ramus without marginal setae.

*Measurements:* Holotype female 2.1 mm long.

*Type-locality:* Caribbean Sea, north margin of Colombian Basin, LGO Sta. 93, V-15-8; Lat. 15°51'N, Long. 75°11'W; Nov. 6, 1958; 3071 m; holotype female (AMNH 12580).

*Distribution:* Known only from type-locality.

*Affinities:* The structures of the uropod and of the female operculate pleopod are the characters that set the new genus apart from the other genera of Haploniscidae. The pleopoda, mandibles, and maxillae are, however, of the general form of other Haploniscidae species. The lack of marked distinction between the peduncle and the flagellum of the first and second antennae and the curvature of the frontal margin of the cephalon in *Aspidoniscus perplexus* are characters that are similar to those found in *Hydroniscus abyssii* Hansen, 1916, the type species of *Hydroniscus*. The new genus then is probably more closely related to *Hydroniscus* than any other genus in the family Haploniscidae.

#### Family ACANTHASPIDIIDAE

##### Genus *Acanthaspidia* Stebbing, 1893

*Acanthoniscus* G. O. Sars, 1879, p. 434; 1885, p. 119, pl. X.—Wolff, 1962, p. 35.

*Acanthaspidia* Stebbing, 1893, p. 378.—Menzies, 1962b, p. 177.

*Type-species:* *Acanthoniscus typhlops* G. O. Sars, 1879, p. 434.

*Discussion:* Sars in 1879 described a species from the North Atlantic which he named *Acanthoniscus typhlops*, thus establishing the genus with *A. typhlops*

as type. This genus was renamed by Stebbing, who noticed that *Acanthoniscus* was preoccupied: "*Acanthoniscus*, Sars, 1879, differs from *Janira* in having 'the first legs not sub-chelate, the rest with the seventh joint simple, and the uropods stiliform with very short branches'. The type-species, *Acanthoniscus typhlops*, is blind. Dr. Bovallius having pointed out that the name *Acanthoniscus* is preoccupied, it may be changed to *Acanthaspidia*." Stebbing listed the genus in the Asellidae, and the quote above is all he had to say about the genus.

*Species composition:* After Sars defined the genus on the species *A. typhlops*, Hansen [1895] described *A. decorata* from the mid-Atlantic Ocean. Vanhöffen [1914] added *A. drygalskii* from the Antarctic waters. It, however, does not belong to this genus, but instead represents a distinct new genus (see p. 171). Menzies [1962b] added another species, *A. bifurcata*, from near the southwestern coast of Africa, and Birstein [1963] added *A. hansenii* from the northwestern Pacific Ocean, the first species of *Acanthaspidia* from the Pacific. Two new species are added here from the antarctic, making a total of 6 species in the genus.

##### *Acanthaspidia porrecta*, new species

Fig. 13, 14

*Description:* Cephalon highly arched; broad, bifid rostrum long and upturned; anterolateral processes very long; posterolateral processes shorter and pointed. Cephalon broadly attached to first peraeonal somite. Second peduncular article of first antenna longer than first; third segment shortest; sensory setae present on one and two; 25 flagellar articles (14 on smaller female). Second antenna with first 3 articles about as long as subequal articles four and five. Spine on second article and scale on third article, both longer than articles on which they are located. First flagellar article longest, followed by 54 (32 in small female) articles.

Peraeonal somite I narrowest with single pointed lappet and single middorsal spine. Other somites, except IV, with single middorsal spine. Somite IV with 1 large anterior and 1 small posterior middorsal spines. Somites II to IV with 2 lateral lappets; anterior lappet longest. Somites V to VII with 1 lappet, but with small lobe on anterolateral edge.

Pleon with 2 somites, first small and concealed by posterior margin of peraeonite VII. Pleotelson longer than wide with 3 large and 1 small spinelike process on each lateral margin. Pleotelson with concave pos-

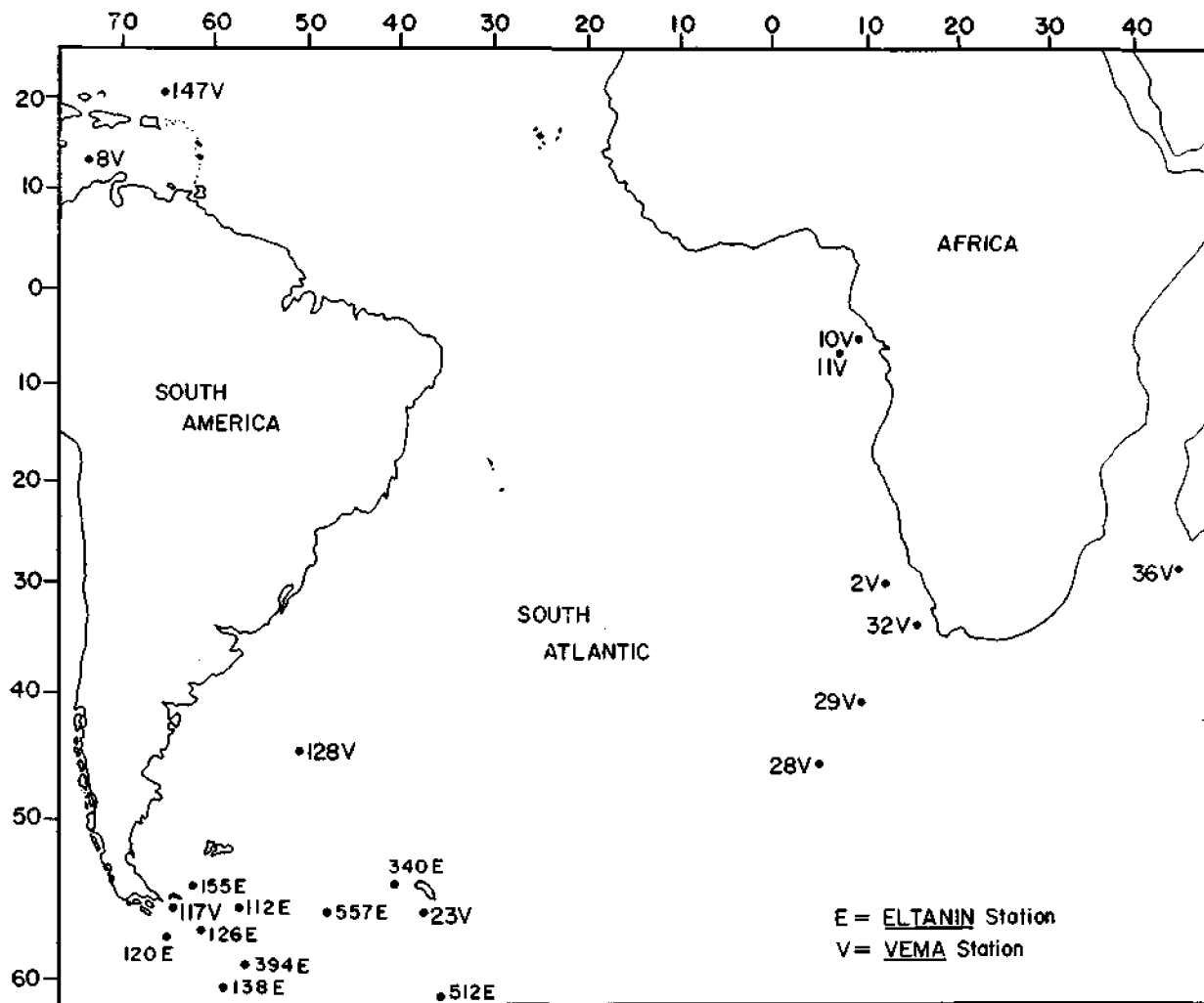


Fig. 12. Map showing location of the stations where the species described in this paper were found.

terior margin and evident terminal insertions for uropods. Incisor of mandible with 5 teeth on right and 4 on left; setal row well developed with at least 14 setae in right and 19 in left. Molar process tapering; with large pointed tooth and smaller setaceous tooth at apex, lacinia mobilis with 4 teeth. Article one of palp with at least 8 setae on inner margin; article two longest with 11 (only 2 on small female) setae on inner margin; third article of intermediate length with 8 apical setae. First maxilla with 9 stout setae on exopod; endopod with 1 stout serrated seta. Second maxilla with 6 double-toothed setae on inner and 3 large and 1 small toothed seta on medial and outer rami of exopod.

Female operculate pleopod shieldshaped, rounded posterior margin. Exopod of pleopod three 2-jointed, rounded apically, about half as wide and slightly

longer than obtusely pointed endopod; both with many plumose setae at apex. Endopod of pleopod four about  $\frac{2}{3}$  as large as unjointed exopod. Pleopod five uniramous, larger than exopod of pleopod four; neither fourth nor fifth pleopods fringed with setae.

Uropod more than half the length of pleotelson with minute exopod and slightly larger endopod; endopod about as long as basis is wide.

*Measurements:* One holotype, small female 10 mm long, width of pleotelson 3.4 mm. Two female paratypes, each 18 mm long.

*Type-locality:* Drake Passage off Cape Horn, *Eltanin* Sta. 394; Lat.  $59^{\circ}00'S$ , Long.  $56^{\circ}03.8'W$ ; Lat.  $58^{\circ}55.1'S$ , Long.  $56^{\circ}02'W$ ; Dec. 29, 1962; 3722–3822 m; holotype female and two paratype females (AHF 626).

*Distribution:* Known only from type-locality.



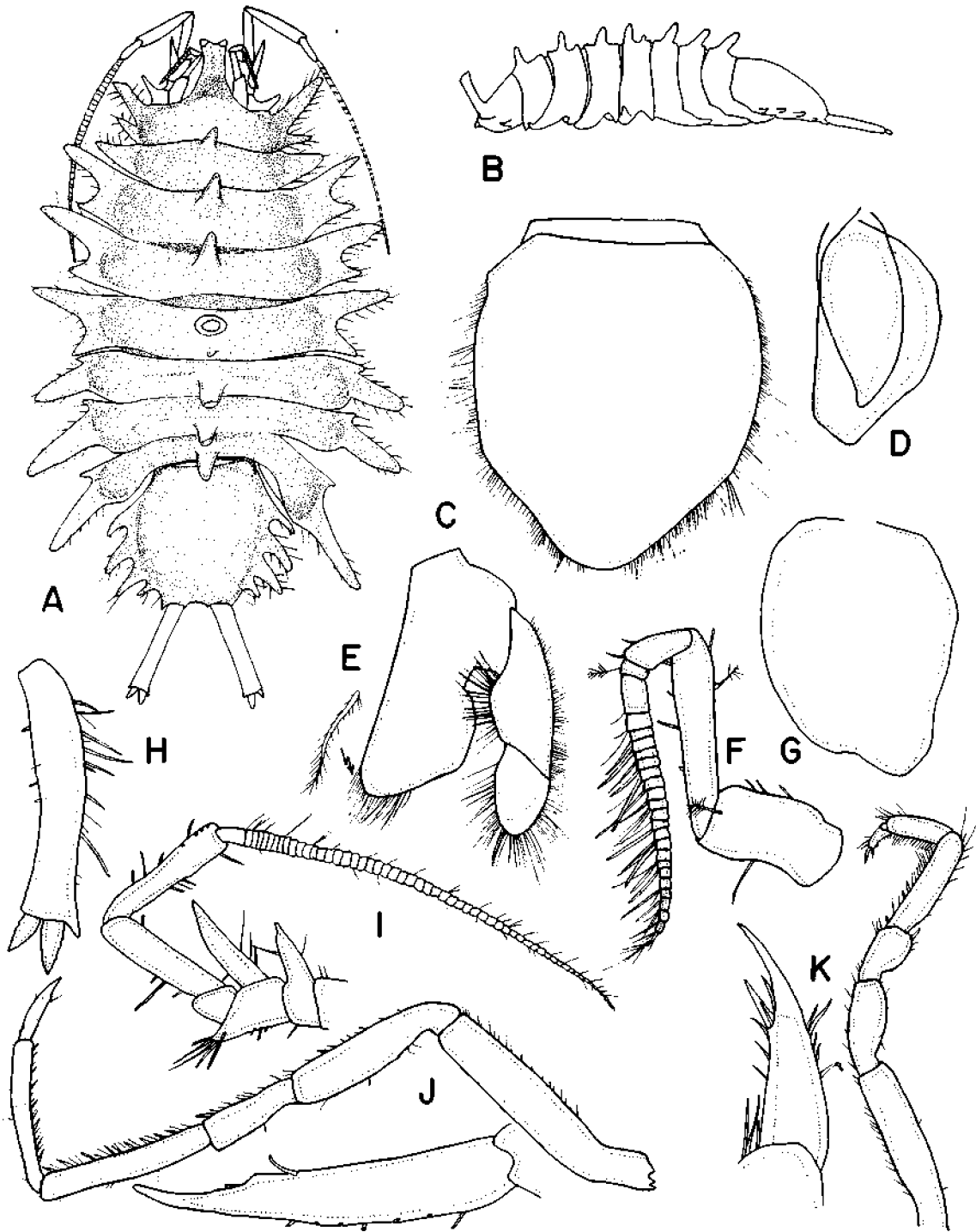


Fig. 13. *Acanthaspidia porrecta*, new species (holotype female 19 mm long). A, dorsal view; B, lateral view; C, second pleopod; D, fourth pleopod; E, third pleopod; F, first antenna; G, fifth pleopod; H, uropod; I, second antenna; J, seventh pereopod with detail of dactylus; K, first pereopod with detail of dactylus.

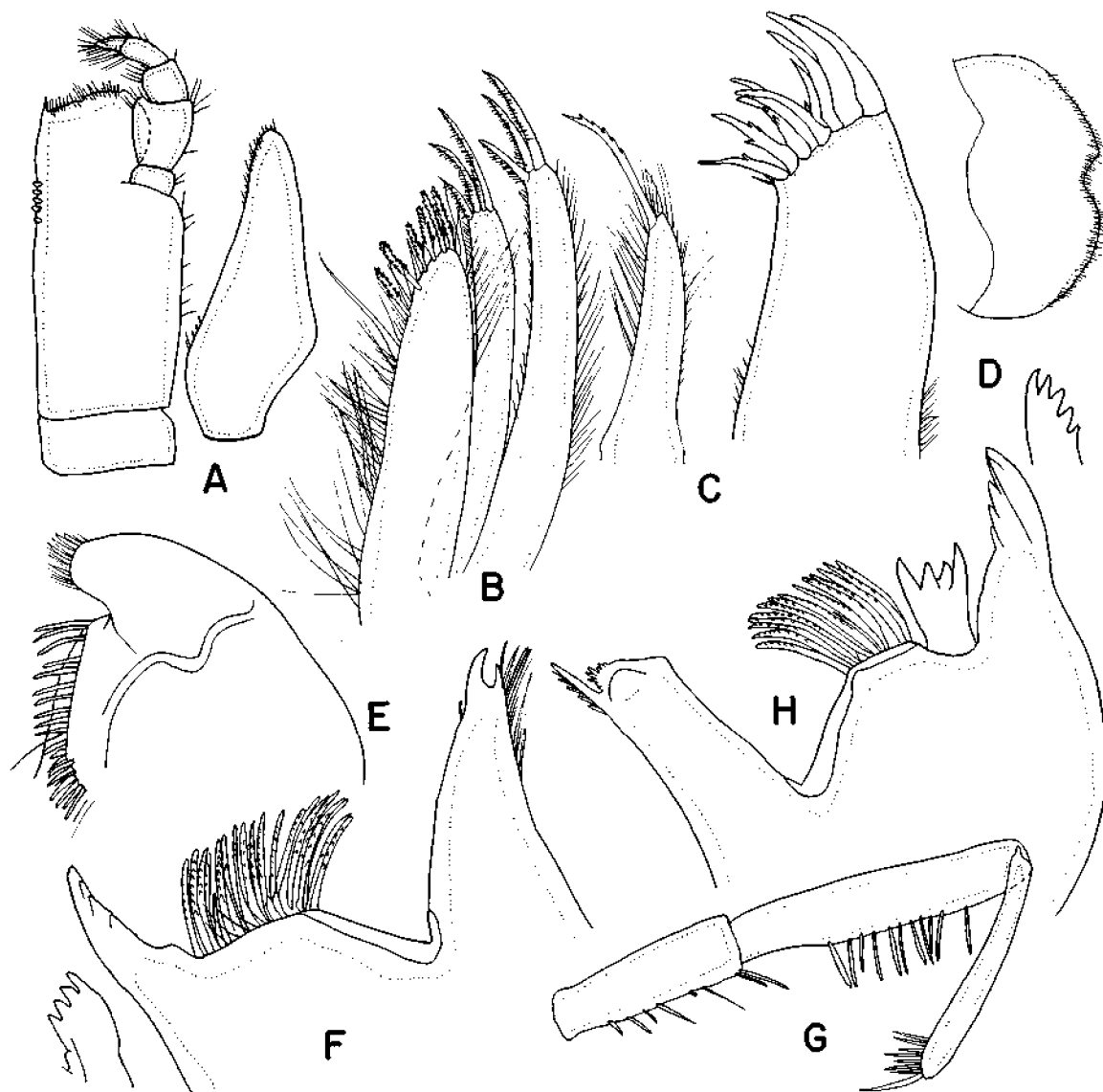


Fig. 14. *Acanthaspidia porrecta*, new species (holotype female 19 mm long). A, maxilliped; B, second maxilla; C, first maxilla; D, labrum; E, hypopharynx; F, right mandible with detail of incisor process; G, mandibular palp; H, right mandible with detail of incisor process.

*Affinities:* The new species appears to be very similar to *A. hanseni* Birstein, 1963, from which it differs mainly in having only 4 spinelike processes on the lateral margins of the pleotelson instead of 7 or 8. The female operculate pleopod has more angular posterior edges in the new species.

*Ecology:* This species was found at the same habitat as *Antennuloniscus subellipticus* but was found only at *Eltanin* Station 394. It appears more partial to silt in the environment (see Fig. 9-11 for the bottom type) than does *A. subellipticus*.

*Acanthaspidia sulatacornia*, new species

Fig. 15-16

*Description:* Eyeless. Body arched medially, 3 times as long as wide. Cephalon wider than long, rostral process bifid, with medial groove, shorter than cephalon; lateral borders with 2 major lobes and 1 accessory lobe caudad to the anterior one; length of cephalon 3 times length of first peraeonal somite. First antenna with basal 2 articles subequal in length; flagellum of 5 articles. First 4 articles of second antenna

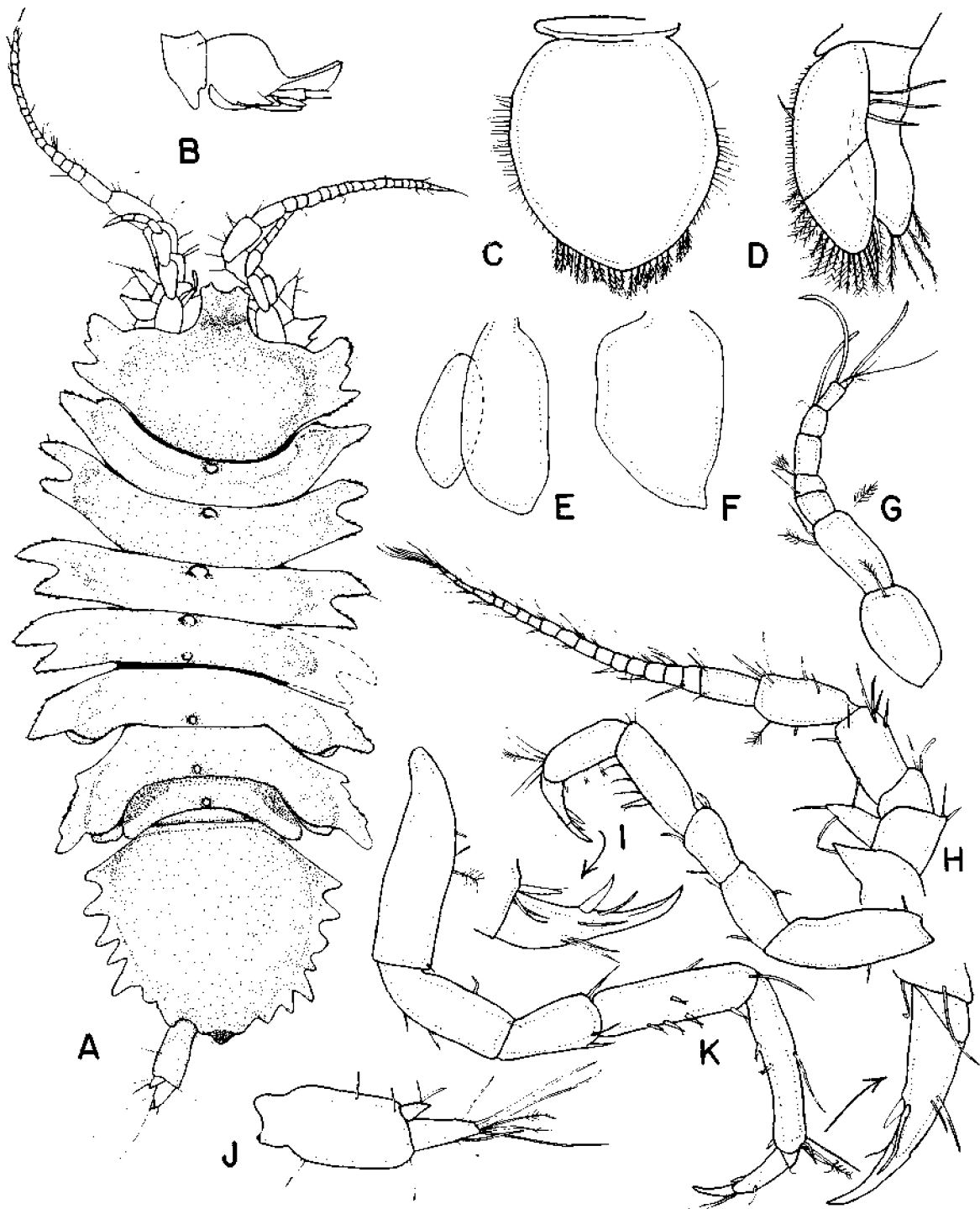


Fig. 15. *Acanthaspidia sulcaticornia*, new species (immature female holotype 4 mm long). A, dorsal view; B, lateral view of cephalon; C, operculate pleopod; D, third pleopod; E, fourth pleopod; F, fifth pleopod; G, first antenna; H, second antenna; I, first pereopod with detail of dactylus; J, uropod; K, sixth pereopod with detail of dactylus.

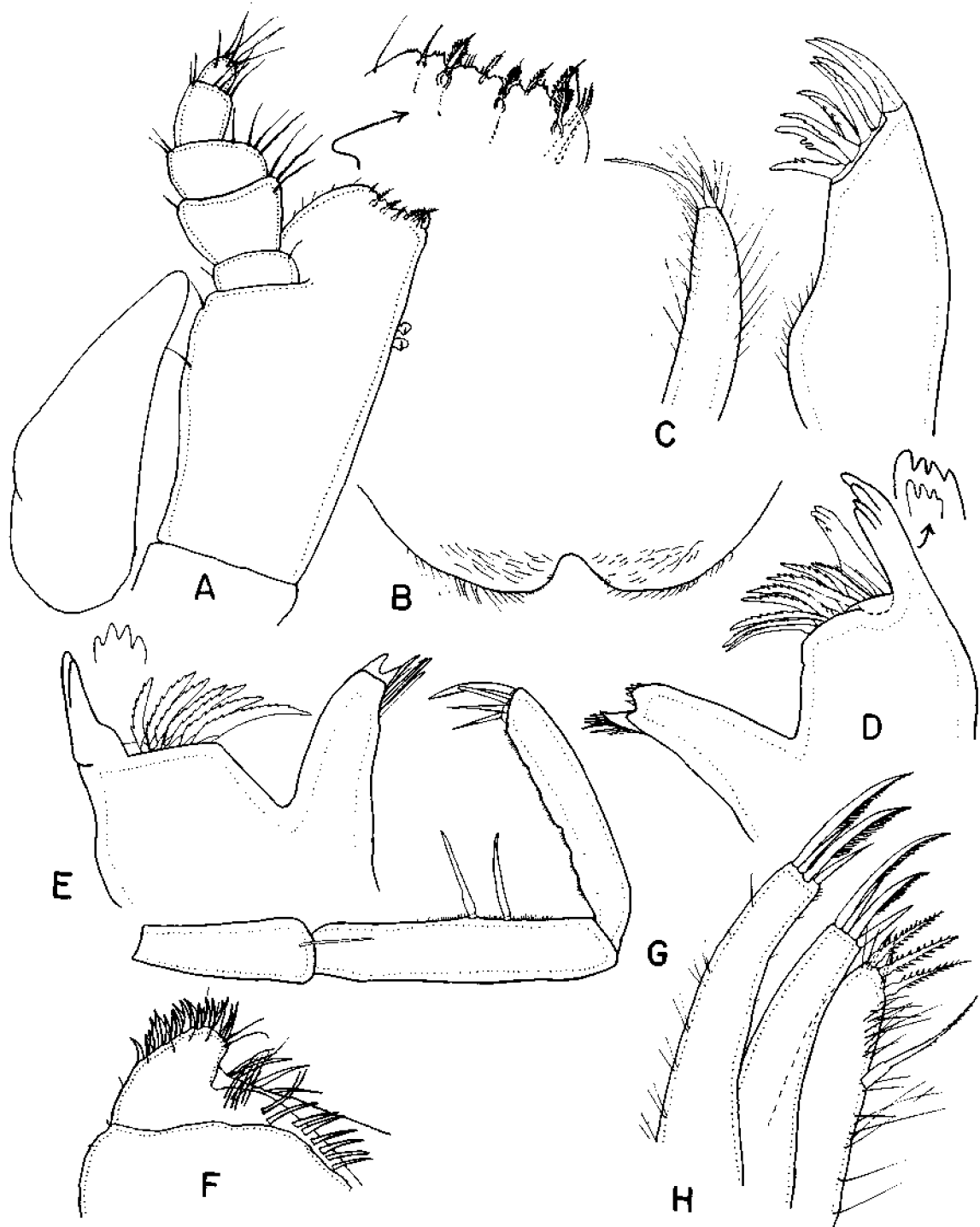


Fig. 16. *Acanthaspidia sulcatacornia*, new species (immature female holotype 4 mm long). A, maxilliped with detail of sensory edge; B, labrum; C, first maxilla; D, right mandible with detail of incisor process; E, left mandible with detail of incisor process; F, hypopharynx; G, mandibular palp; H, second maxilla.

slightly longer than remaining 2; flagellum of 18 articles.

Peraeonal somites all of equal length except for seventh, which has not fully developed. Anterior margin of peraeonal somites I to IV with medial spine; posterior margin of peraeonal somites IV to VII each with small medial spine. Lateral margin of peraeonal somite consists of single triangulate expansion, somites II to IV bifid; somites V to VI consist of single triangulate expansion and show coxal plates at postero-lateral margins.

Pleon consists of short anterior somite and shield-shaped pleotelson with 6 marginal spines. Apex of pleon recurved under pleotelson appears to be indented medially at apex but is in fact rounded at apex.

Mandibles with 4 teeth on incisor, well developed setal rows, and blunt but tapered toothed molar processes. At least 7 setae in right and 8 in left setal row. Palp with seta on proximal article, second with 2 long setae on inner edge, apical article with 4 setae on apex. First maxilla with 10 teeth on exopod; endopod with 1 large toothed apical seta and 1 smaller seta; edges of both fringed with narrow long hairs. Second maxilla with 3 large toothed setae on apex and 1 on inner margin of inner process; middle and outer processes with 3 large and 1 small toothed setae on each. Maxilliped with palp about half width of endite; apical 2 articles  $\frac{1}{2}$  the width of proximal 3 articles. Two coupling hooks on endite and exopod with small fringe of setae on inner margin of pointed tip. Hypopharynx with large setae on large apical lobe and on medial edge. Labrum medially notched.

Peraeopod one with 2 claws; all other peraeopods also with 2 claws.

Female operculate pleopod longer than broad, tapering to obtusely rounded posterior edge with lateral and posterior margins fringed with setae. Third pleopod biramous, exopod spatulate, 2-jointed, wider than endopod; both rami with plumose setae. Endopod of fourth pleopod about half length of exopod, each ramus unjointed, lacking setae. Fifth pleopod with single ramus larger than four and without marginal setae.

Length of uropodal basis slightly more than twice width, exopod minute and endopod about as long as basis is wide; all 3 parts with many setae.

*Measurements:* Holotype female, length 4 mm, width of pleotelson 1.3 mm.

*Type-locality:* West Scotia Basin, *Eltanin* Sta. 112, Lat.  $56^{\circ}02'S$ , Long.  $61^{\circ}56'W$ ; Lat.  $56^{\circ}01'S$ , Long.

$61^{\circ}54.5'W$ ; July 20, 1962; 4008–4031 m; holotype female (AHF 627).

*Distribution:* Known only from type-locality.

#### Genus *Paracanthaspidia*, new genus

*Type-species:* *Paracanthaspidia mucronata*, new genus, new species.

This genus shows a considerable mixture of characteristics between *Janthopsis* and *Acanthaspidia*. The diagnosis has been written parallel to that given for *Acanthaspidia* and *Iolanthe* in order to expedite the comparisons.

*Diagnosis:* Peraeopods all ambulatory, with 2 claws. Cephalon with simple pointed rostrum and lateral borders with single anteriorly directed spinelike process. Lateral borders of peraeon I also with single spinelike process. Lateral borders of peraeonal somites II to IV bifid. Lateral borders of peraeonal somites V to VII with 1 spinelike process on each. Coxal plates visible in dorsal view on posterior margins of peraeonal somites V to VII inclusive. Pleon with narrow first somite and shieldshaped pleotelson. Uropods missing (structure unknown, but large insertion regions suggest that the uropods were massive). Mandible molar slightly tapered with sharp teeth. Anus exposed, not opening into branchial chamber. Second and third articles of maxillipedal palp expanded; width about  $\frac{1}{2}$  that of endite. Second antenna as long as body.

#### *Paracanthaspidia mucronata*, new species

Fig. 17–20

*Description:* Body width of adult  $\frac{7}{10}$  length (including lateral spines and rostrum). Cephalon highly arched with single rostral process. Frontal margin between anterolateral processes straight; anterolateral margins pointed, produced forward with 1 large and 1 small point. First peduncular segment of antenna one shorter than second, third segment shorter than either; sensory setae on first and second peduncular segment and first of 8 flagellar articles. Second antenna with first 3 articles slightly longer than fourth but shorter than fifth. First of 36 flagellar article longest. Many moderately long setae on second antenna. Antennal scale acutely triangulate with many setae.

Edges of peraeonal somites smoothly rounded, first with 1 lateral lappet. Coxal plate visible (dorsal view) on anterior edge of somite I. Somites II to IV with 2 lappets; anterior lappet with more rounded end than that of posterior one. Somites V and VI longest with

1 lappet; many notches in anterior lateral borders of somites. Somite VII shortest, similar to V and VI. Somite VII about width of somites III and IV.

First pleonal somite concealed by posterior margin of peraeonal somite VII, followed by shieldshaped

pleotelson. Pleotelson longer than width, exclusive of spinelike fringe; 8 spinelike lateral processes and rounded posterior margin present.

Incisors of mandibles with 5 teeth, well developed setal rows and blunt toothed, setiferous molar proc-

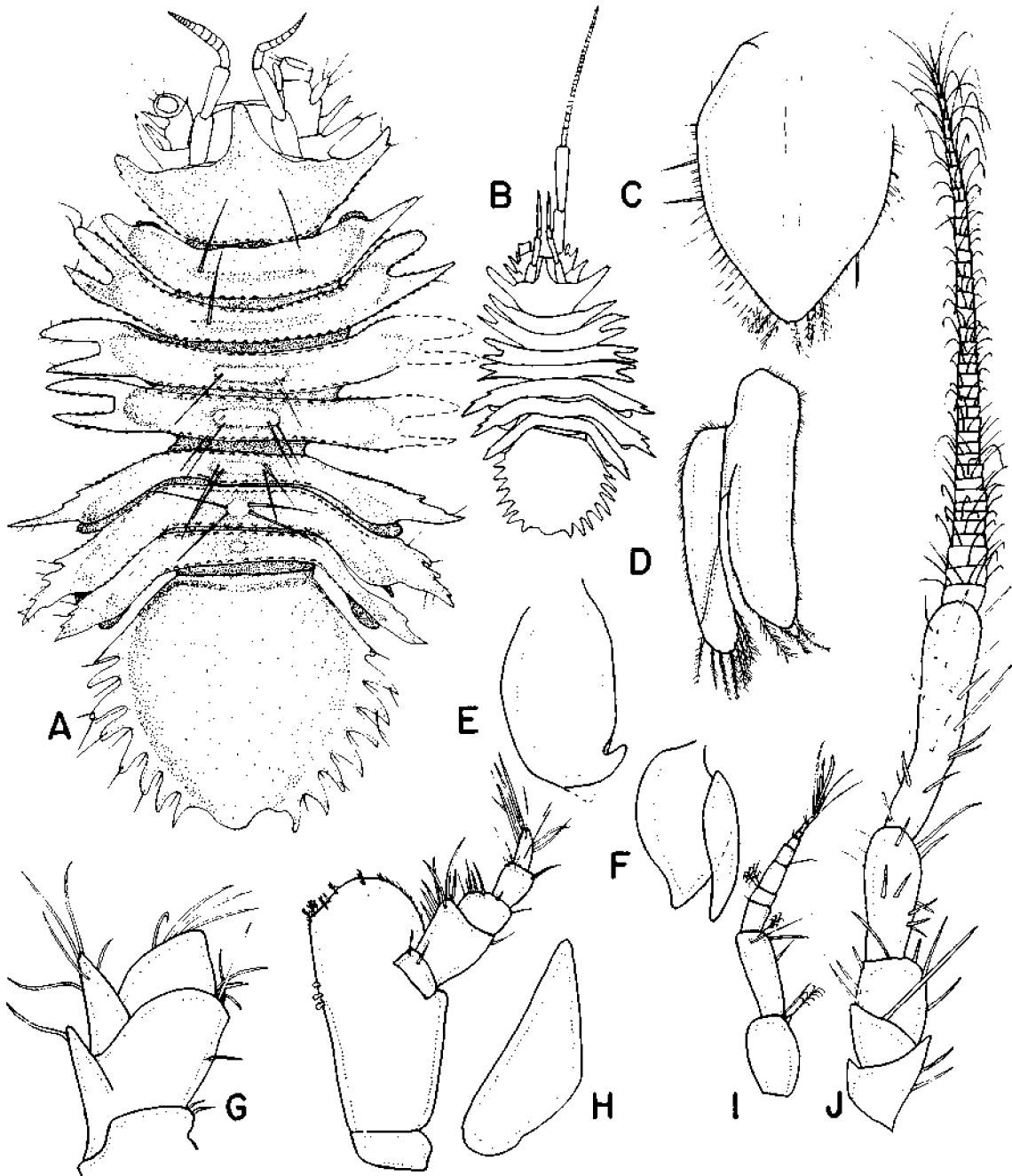


Fig. 17. *Paracanthaspidia mucronata*, new species (holotype female 6 mm long). A, dorsal view; B, dorsal view including antenna; C, operculate pleopod; D, third pleopod; E, fifth pleopod; F, fourth pleopod; G, antennal scale; H, maxilliped; I, first antenna; J, second antenna.

esses. At least 10 toothed setae in right and 11 in left mandibular setal row; molar processes tapering and with teeth and setae. Proximal article of mandibular palp shortest; medial article longest with 2 large and fringe of short setae on inner margin; at least 4 apical setae on third article. Second maxilla with 4 toothed setae on outer 2 processes; at least 4 setae with at least

1 large on inner process. First maxilla with at least 12 teeth on exopod; endopod with 2 large toothed spines. Hypopharynx with large setiferous apical lobe; many large setae on medial margin. Maxillipedal palp slightly less than half width of endite, second segment widest, apical 2 segments narrowest, and exopod about half as narrow as endite, tapering to acutely rounded

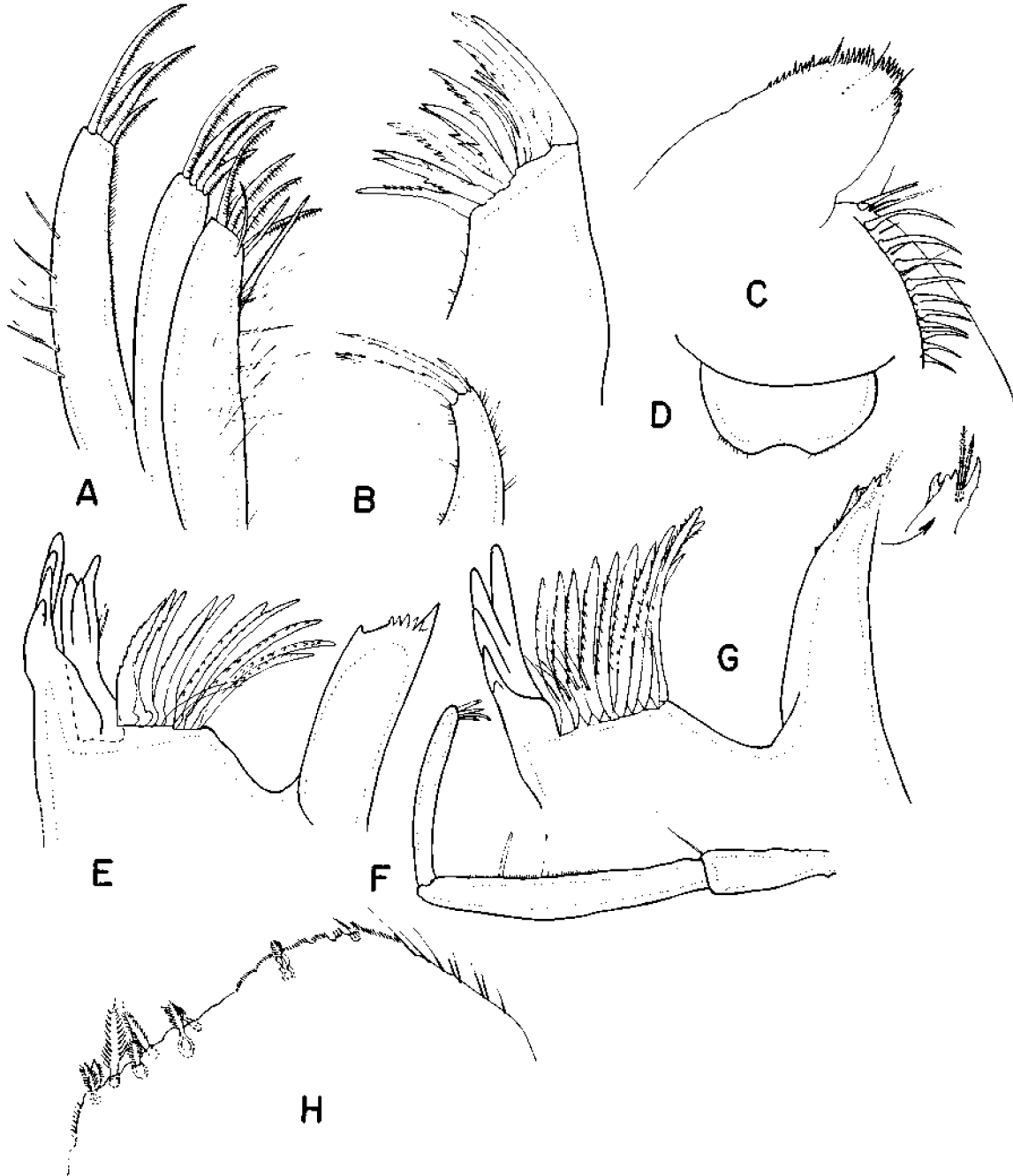


Fig. 18. *Paracanthaspidia mucronata*, new species (holotype female 6 mm long). A, second maxilla; B, first maxilla; C, hypopharynx; D, labrum; E, left mandible; F, mandibular palp; G, right mandible; H, endite of maxilliped.

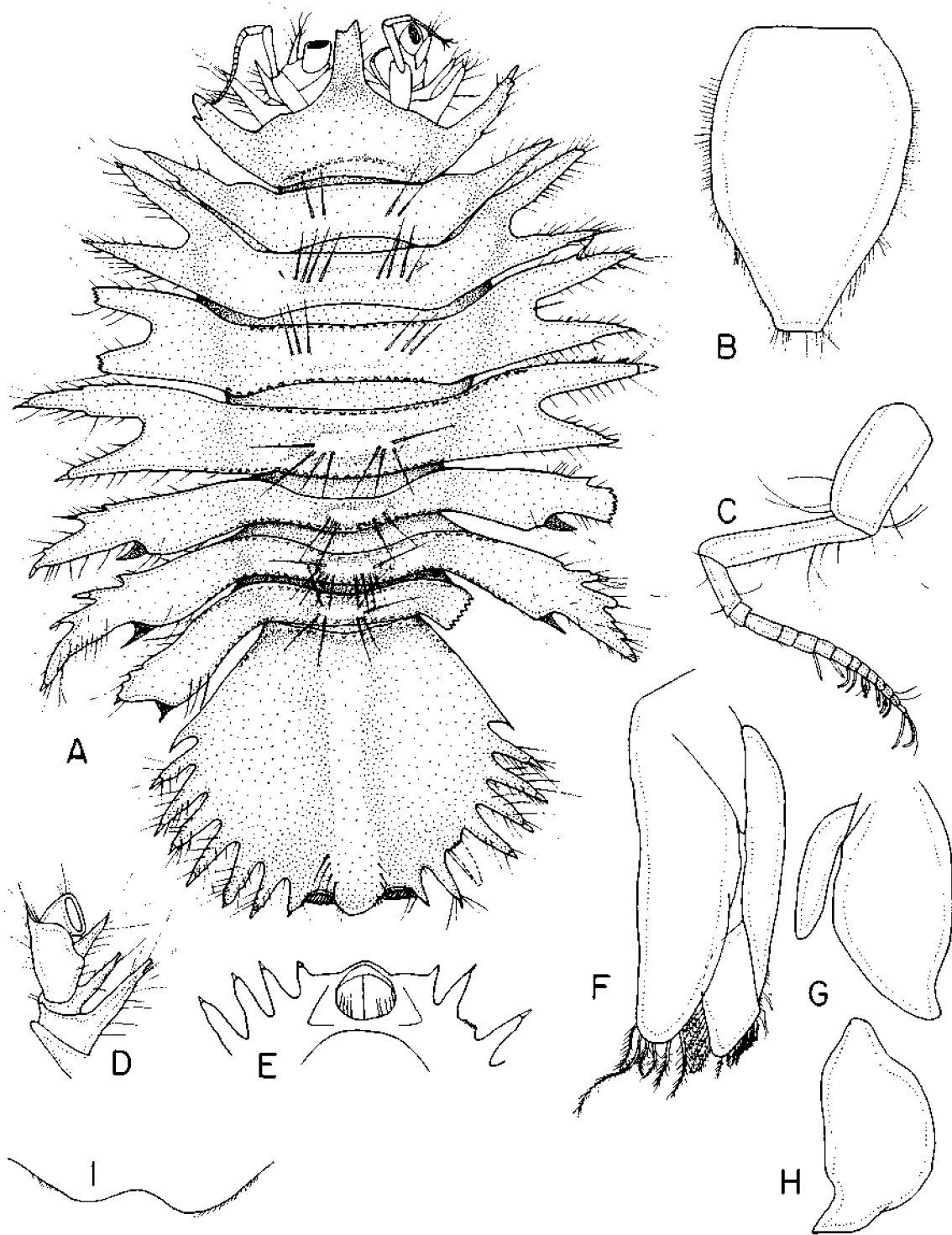


Fig. 19. *Paracanthaspidia mucronata*, new species (large female 13 mm long). A, dorsal view; B, operculate pleopod; C, first antenna; D, antennal scale; E, ventral view apex of pleotelson; F, third pleopod; G, fourth pleopod; H, fifth pleopod; I, labrum.



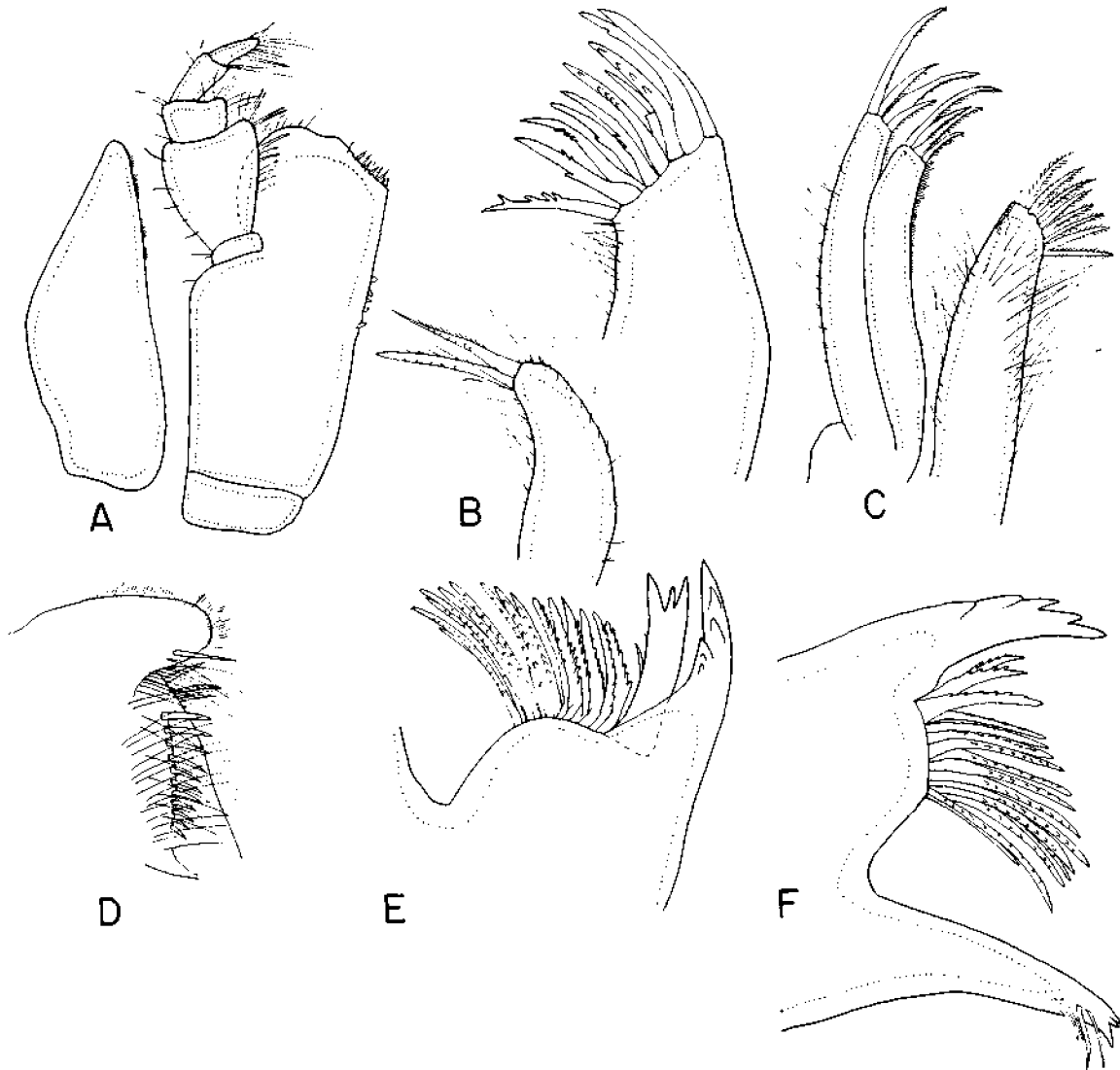


Fig. 20. *Paracanthaspidia mucronata*, new species (paratype female 13 mm long). A, maxilliped; B, first maxilla; C, second maxilla; D, labrum; E, left mandible; F, right mandible.

apex. Sensory edge with setae and 3 coupling hooks on medial edge of endite.

All pereopods missing.

Female operculate pleopod about  $\frac{2}{3}$  as wide as long, tapering to rounded posterior margin. Lateral and posterior margins with plumose setae. Third pleopod with very narrow exopod; at least 8 marginal setae on rounded apical segment; endopod more pointed, with 3 to 4 plumose setae; many short setae on margins of both exopod and endopod. Fourth exopod and endopod spoonshaped; endopod very narrow when compared to exopod. Large fifth pleopod spoonshaped. Neither fourth nor fifth pleopods with marginal setae.

Uropods missing.

*Measurements:* Four paratype females measured as in Table 2.

One paratype female from *Eltanin* Station 557 measured 13.0 mm in length and 5.5 mm in width.

*Type-locality:* Between Burdwood Bank and Falkland Is., *Eltanin* Sta. 340; Lat.  $53^{\circ}07.6'S$ , Long.  $59^{\circ}23.2'W$ ; Lat.  $53^{\circ}06.7'S$ , Long.  $59^{\circ}21.1'W$ ; Dec. 3, 1962; 578–567 m; 5 female specimens, holotype (AHF 628a).

*Distribution:* In addition to the type locality, 1 large female was found at *Eltanin* Station 557, North

TABLE 2. Measurements of Four Paratype Females of *Paracanthaspidia mucronata*, n. gen., n. sp.

Specimen No.	Length, including rostrum, mm	Width of pleotelson at widest part, mm
1	...	2.0*
2	4.0	1.7
3	...	2.1*
4	...	2.0*

\* Posterior of specimen only.

of Falkland Is.; Start, Lat. 51°55.5'S, Long. 56°38.5'W; Finish, Lat. 51°57.4'S, Long. 56°38'W; Mar. 14, 1963; 864–854 m.

*Affinities:* The species that constitute this genus differ from species of *Acanthaspidia* in that the rostral spine is single, not bifid. Only 1 large anterolateral spine is present on the lateral margin of the cephalon. There are no dorsal spines on any of the peraeonal somites, and also the lappets of the peraeonal somites have secondary serrations or points, especially somites V, VI, and VII.

#### Genus *Iolanthe* Beddard, 1886

*Type-species:* *Iolanthe acanthonotus* Beddard, 1886a, p. 104; 1886b, p. 16, pl. IV, fig 9–14; pl. V, fig. 1–4.

This genus was originally established by Beddard in 1886. Nordenstam [1933] considered it a synonym of *Janthopsis*. This was followed by Wolff [1962] but not by Menzies [1962b, c]. There are several very good reasons not to unite *Janthopsis* and *Iolanthe*. In the first place, the molar process of *Janthopsis* is expanded at the apex but tapering in *Iolanthe*. The anus is within the branchial chamber in *Janthopsis* and exterior to it and terminal in *Iolanthe*. The cephalon, peraeonal somite I, and the other peraeons are different in the 2 genera.

*Diagnosis:* Cephalon with rostrum, lateral borders with long anterolateral lappet and shorter posterolateral lappet. Lateral border of peraeon I pointed and directed forward. Lateral borders of peraeonal somites II to IV with 1 anterior and 1 posterior lappet. Anterolateral borders of peraeonal somites V to VII with single lappets. Peraeopods all ambulatory and biunguiculate. Coxal plates visible in dorsal view on peraeonal somites VI and VII (and perhaps in V). Pleon with short anterior free somite and shieldshaped pleotelson. Basis of uropods longer than wide; rami minute or small. Exopod of third pleopod about as wide

throughout its length and rounded at apex. Mandibular molar tapering, but blunt at apex. Anus exposed, opening outside of branchial chamber. Articles of maxillipedal palp expanded at second and third articles.

#### *Iolanthe pleuronotus*, new species

Fig. 21–24

*Description:* Eyeless. Color cream, body 3 times as long as broad. Spines lacking from dorsum. Setae scarce on body. All peraeonal somites wider than long, seventh slightly shorter than sixth. Anterolateral spines of somites II to V directed forward, those of somites VI to VII directed toward rear, that of seventh projecting beyond posterior margin of pleon. Somites II to IV with short posterolateral spine at margin. Coxal plates visible in dorsal view on peraeonal somites V to VI (and present on VII).

Cephalon wider than long (exclusive of rostrum); anterolateral spine acute; rostrum larger than cephalon, upturned. First antenna shorter than second; first article over ½ length of second; second longest; third ½ length of second; fourth, small, about ½ length of third. First flagellar article long and narrow, about ½ the length of 8 remaining articles. Second antenna with pronounced scale; antenna extending to posterior margin of peraeonal somite II. Last 2 peduncular articles long and narrow, last one longest. Flagellum of 49 articles. Pleotelson with narrow free first somite and shieldshaped pleotelson. Lateral borders of pleotelson each with 3 stout spines. Slightly developed (short) lateral spine between second and third and between third and origin of the uropods. Posteromedial margin of pleotelson incised.

Incisor of right mandible with 5 teeth, setal row with 25 setae, molar tapering with blunt apex, showing 2 sharp teeth and 10 setae. First 2 articles of mandibular palp subequal in length; third ½ length of second with inferior margin, provided with many setae. First maxilla with 1 stout setae at apex of endopod and many hairlike setae; exopod with 12 stout setae. Second maxillar endopod with 7 stout setae; outer lobes with 4 stout setae at apex. Maxilliped with 7 coupling hooks; palp about ½ width of endite, second and third palp articles expanded, second longest. Peraeopods ambulatory, seventh longest, all with biunguiculate dactyls.

First male pleopod bilobed at apex of each branch, setiferous. Second male pleopod with long coiled endopod 6 times length of exopod. Apex of rami of third pleopod provided with plumose setae, 36 on en-

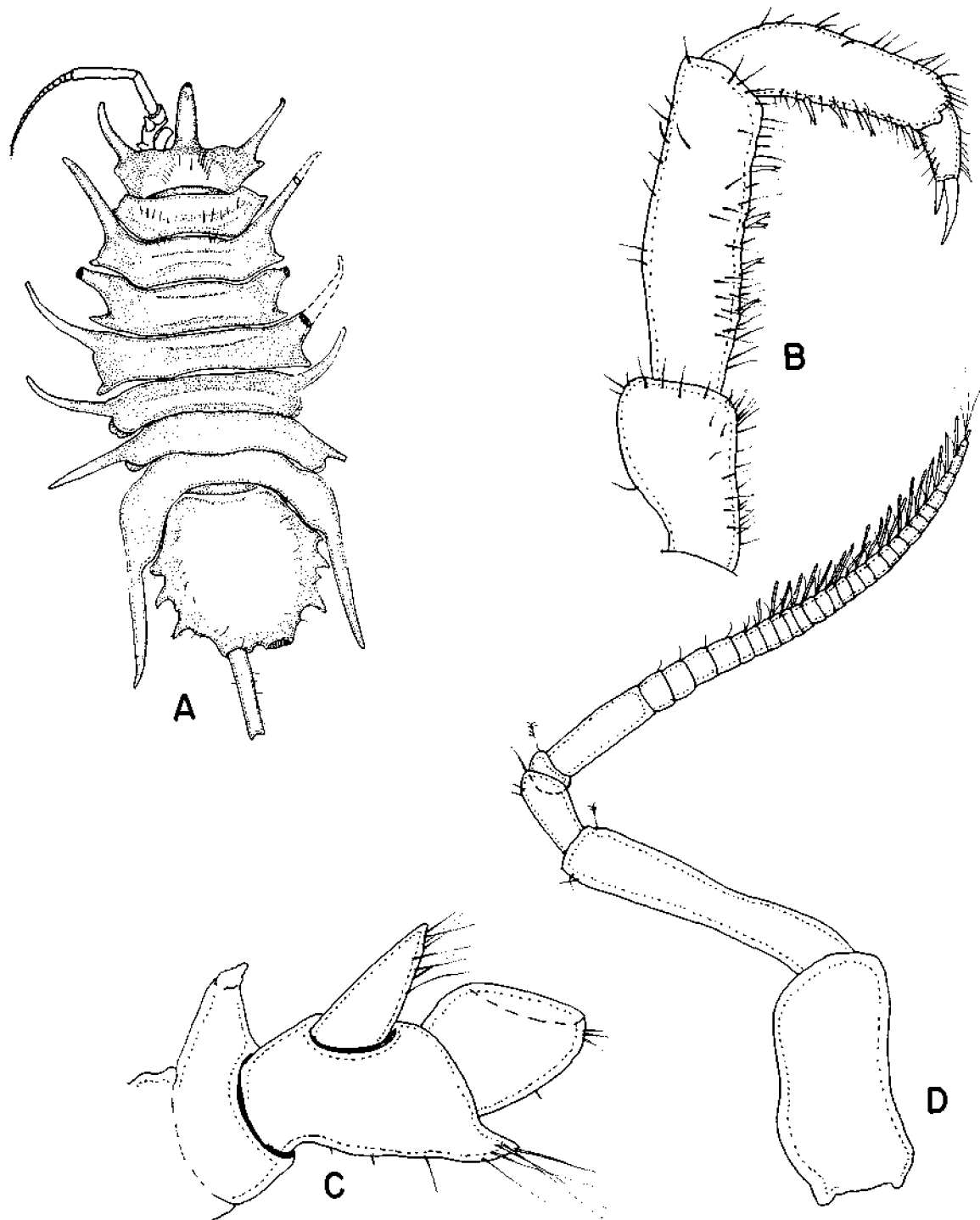


Fig. 21. *Iolanthe pleuronotus*, new species (holotype male 25 mm long). A, dorsal view; B, first peracopod; C, second antennal peduncle; D, first antenna.

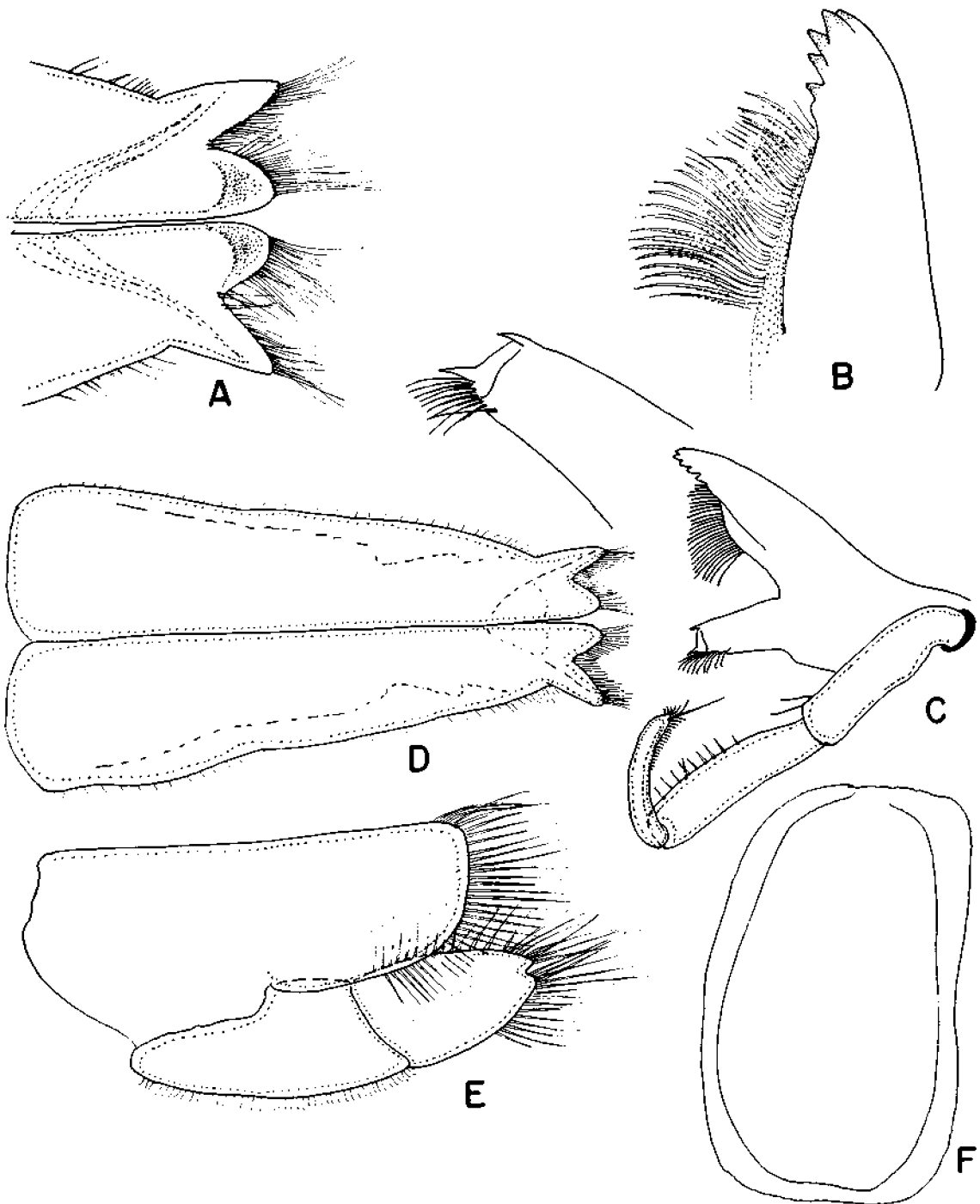


Fig. 22. *Iolanthe pleuronotus*, new species (holotype male 25 mm long). A, detail apex first pleopod; B, incisor and setal row of mandible; C, mandible, with detail of molar; D, first pleopod; E, third pleopod; F, fourth pleopod.

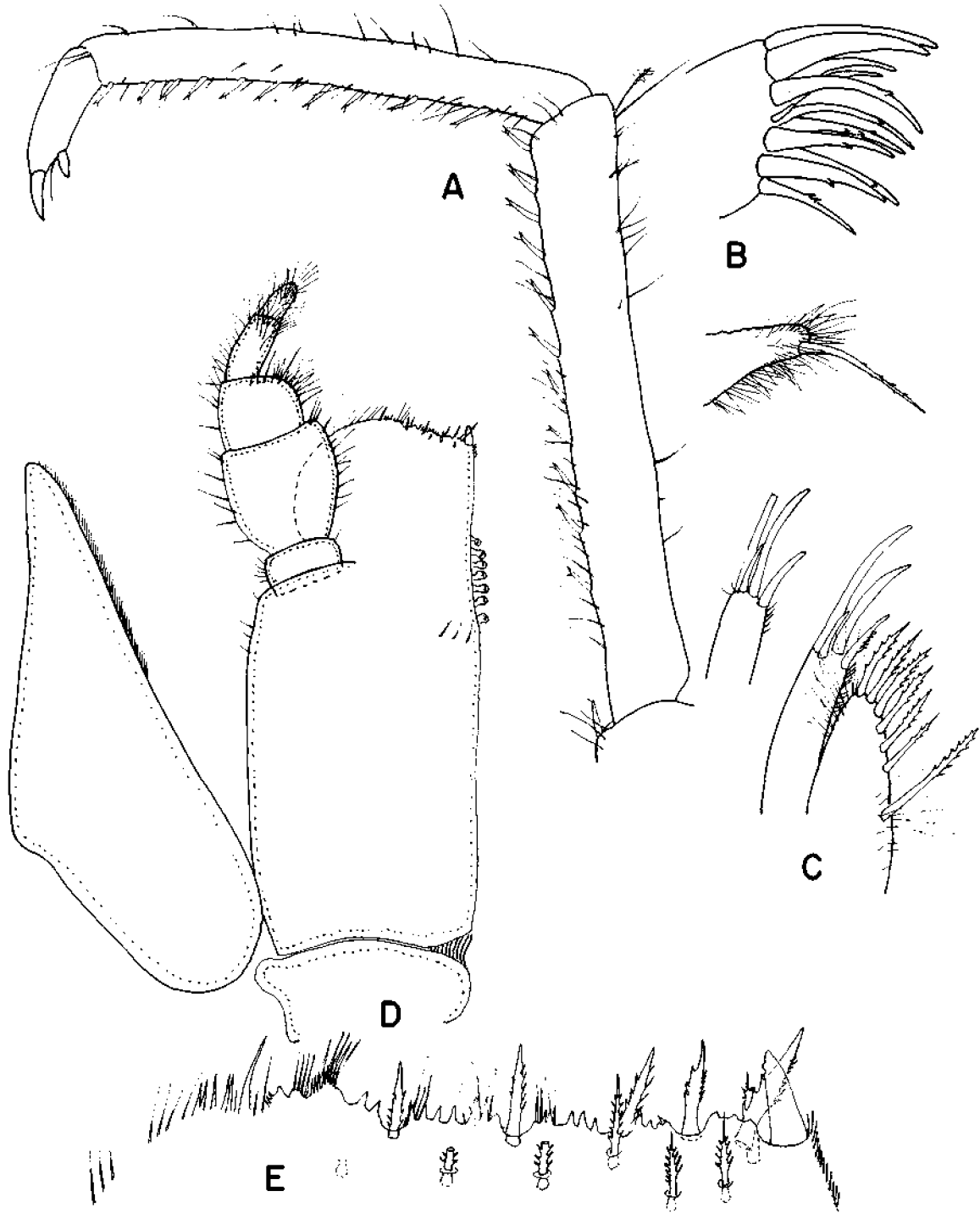


Fig. 23. *Iolanthe pleuronotus*, new species (holotype male 25 mm long). A, seventh pereopod; B, endopod and exopod of first maxilla; C, second maxilla; D, maxilliped; E, detail sensory edge of maxilliped.

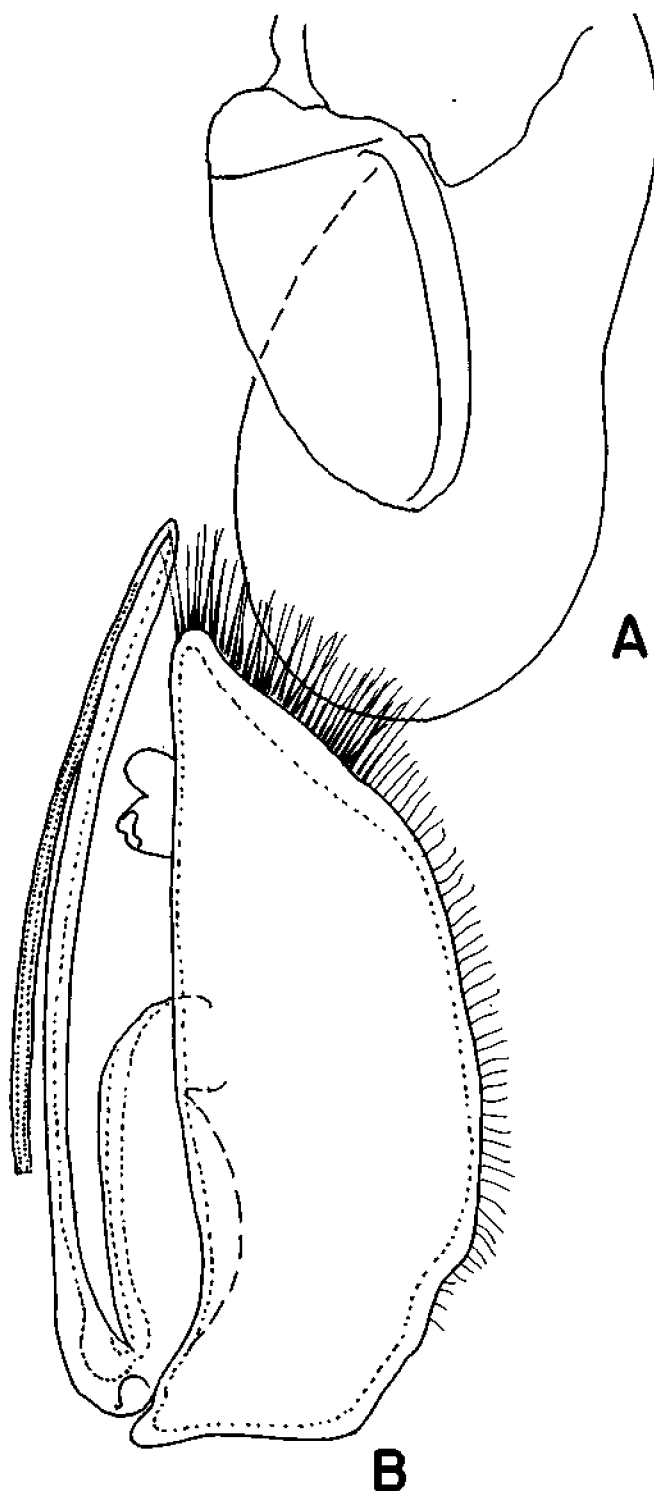


Fig. 24. *Iolanthe pleuronotus*, new species (holotype male 25 mm long). A, fifth pleopod; B, second pleopod.

dopod, 77 on exopod; apex of exopod notched, first article only slightly larger than second article. Fourth pleopod fleshy, rami subequal in length and width, both lacking plumose setae. Exopod of fifth pleopod about  $\frac{1}{2}$  size of endopod, both rami fleshy and lacking plumose setae. Basis of uropod 4 times longer than wide.

*Measurements:* Holotype male, length 25 mm, width (pleotelson) 8 mm.

*Type-locality:* Weddell Sea, *Eltanin* Station 512; Lat.  $63^{\circ}15'S$ , Long.  $44^{\circ}56'W$ ; Lat.  $63^{\circ}18'S$ , Long.  $44^{\circ}52.5'W$ ; Feb. 24, 1963; 3784–3788 m; holotype male (AHF 634).

*Distribution:* Known only from type-locality.

*Affinities:* The species is distinct in having the lateral parts of the seventh peraeonal somite extend beyond the apex of the pleotelson.

#### Genus *Exacanthaspidia*, new genus

*Type-species:* *Exacanthaspidia rostratus* new genus, new species.

This genus is related to *Acanthaspidia*, *Ianthopsis*, and *Iolanthe* in many respects.

*Diagnosis:* Styliform molar process. Anus opens outside of branchial chamber. Hypopharynx with abruptly produced apical lobe. Two rows of dorsal spines. Lateral margins of cephalon subparallel. Only few large spines on tips of lobes of second maxilla (3 on the outer and middle lobes figured here). Very narrow palp and exopod when compared to width of endite of maxilliped.

*Species composition:* The type-species and also *Acanthaspidia drygalskii* Vanhöffen, 1914 [1914, p. 537] are the only 2 species known at present.

*Diagnosis:* Peraeopods all ambulatory, with 2 claws. Cephalon with stout, pointed rostrum; lateral borders straight, but with serrations. Lateral borders of peraeon I with single pointed lappet; II to V with 2 lappets and V to VII with single, pointed lappets with serrated anterior margins. Coxal plates visible in dorsal view on somites V to VII. Pleon with short, free anterior somite and shieldshaped pleotelson. Uropods missing, but large insertion regions are present. (The uropods are massive in *Exacanthaspidia drygalskii* (Vanhöffen), consisting of a long basis, longer endopod, and very short exopod.) Mandibular molar tapering to sharp point. Second and third articles of maxillipedal palp expanded to about  $\frac{1}{3}$  width of endite.

#### *Exacanthaspidia rostratus*, new species

Fig. 25, 26

*Description:* Cephalon wider than medial length of cephalon without rostrum. Cephalon with angular anterolateral corners and subparallel toothed lateral margins. Antenna one with first visible segment half as long as second; third segment shortest; flagellum of 14 articles. Second antenna with stout antennal scale on third peduncular article.

All peraeonal somites with 2 mediolateral dorsal spines arranged in parallel rows on peraeon. First peraeonal somite with single anterolateral lappet pointed, with small notches on posterior border. Somites II, III, and IV with 2 lappets separated by notch that is about as deep as peraeonal somite is long. Peraeonal somites V to VII with single posterior pointing lappets; coxal plates visible on posterior margins. First somite longest medially; next 3 shorter; V shortest; VI and VII shorter than II to IV. First somite narrowest; somites III to VI about equal in width; others not as wide.

Pleotelson about as long as wide with concealed short pleonal segment; lateral margins notched in general sawtooth pattern. Posterior margin obtusely rounded, notched at exit of uropodal bases.

Mandibular incisors with 4 teeth; with setal row well developed, with 3 articles on palps and with acutely pointed paucisetiferous molar process. At least 11 setae in right, and at least 12 on left mandible in setal row. Second article of palp longest, with at least 4 setae on inner margin; apical article about as long as proximal article with at least 14 setae on inner margin extending to clump of setae on apex. Setae of palp distinctive in being long and slightly expanded at apex.

First maxilla with at least 10 teeth on exopod; endopod blade-like, rounded, with at least 3 small apical setae and many long hairlike setae at apex and margin. Second maxilla with outer ramus longest; 3 toothed setae on outer lobes; inner ramus shortest, with at least 6 specialized sensory setae. All 3 rami with many fine marginal and apical setae.

Dactylus of peraeopod one (others missing) with stout unguis and smaller second apical claw.

Female operculate pleopod longer than wide, third pleopod exopod straplike, not tapering, apex with 21 plumose setae; endopod with 4 plumose apical setae. Fourth pleopod with large endopod and small exopod; fifth with 1 ramus only. No plumose setae apparent on margins on pleopods four and five.

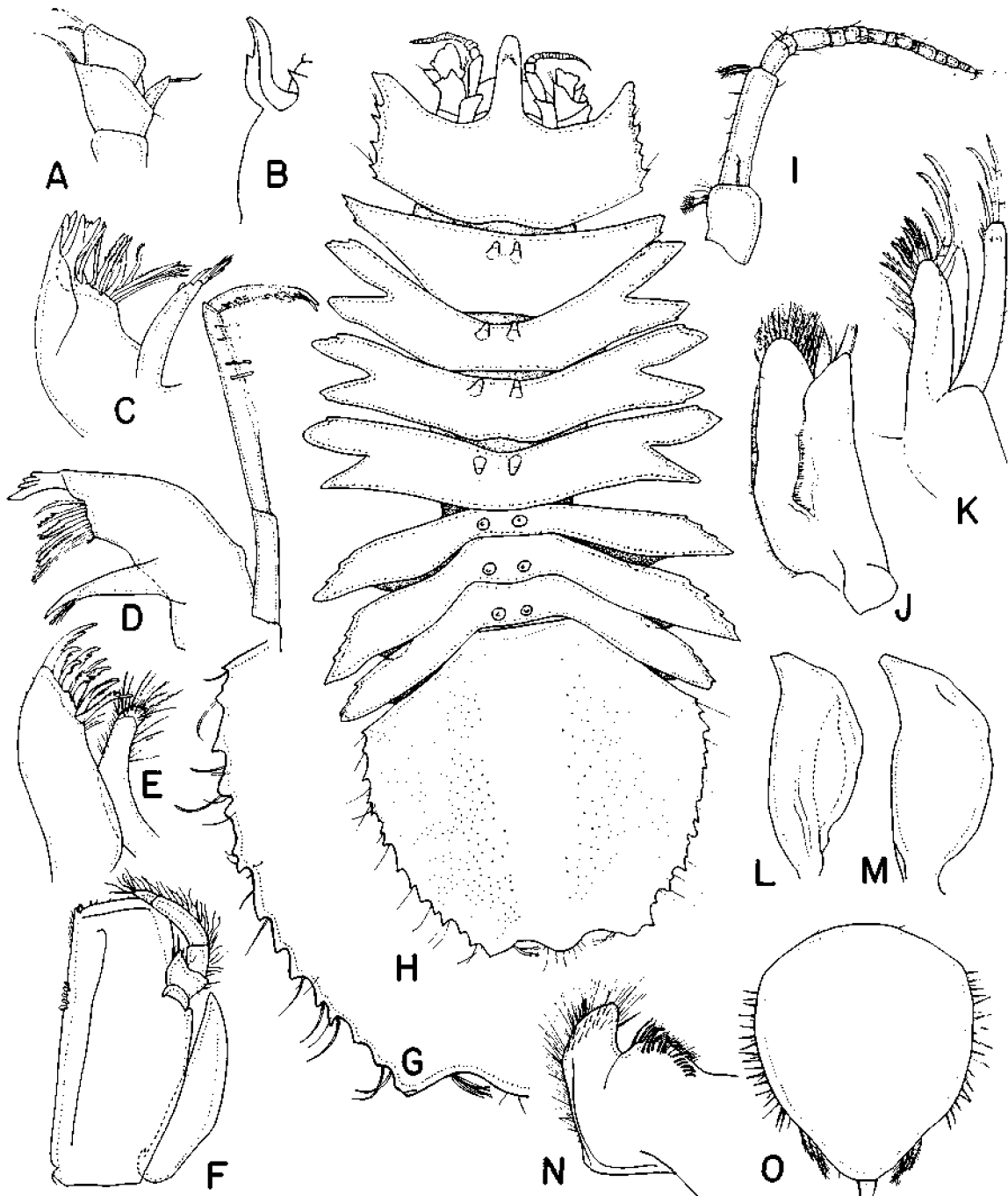


Fig. 25. *Exacanthaspidia rostratus*, new species (holotype female 9 mm). A, antennal scale; B, rostrum, lateral view; C, left mandible; D, right mandible; E, first maxilla; F, maxilliped; G, lateral border pleotelson; H, dorsal view; I, first antenna; J, third pleopod; K, second maxilla; L, fifth pleopod; M, fourth pleopod; N, hypopharynx; O, operculate pleopod.



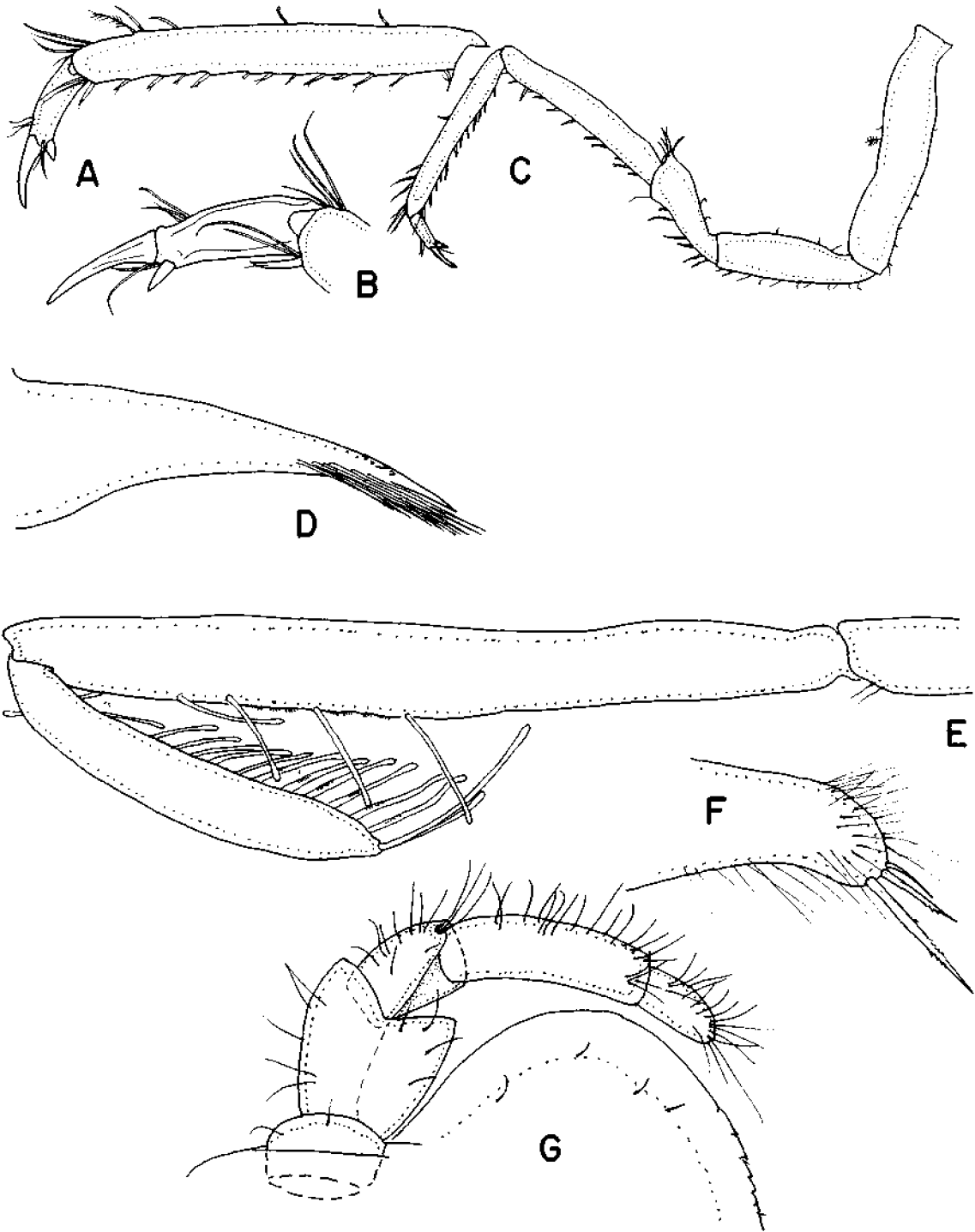


Fig. 26. *Exacanthaspidia rostratus*, new species (holotype female 9 mm long). A, seventh pereopod; B, detail of dactylus seventh pereopod; C, seventh pereopod; D, apex of molar process of mandible; E, mandibular palp; F, detail endopod of first maxilla; G, detail palp and sensory edge maxilliped.

Uropods missing.

*Measurements:* Holotype female, length 9.0 mm, width (pleotelson) 3.3 mm.

*Type-locality:* Drake Passage, *Eltanin* Station 138; Lat. 62°02'S, Long. 61°08.5'W; Lat. 62°04.5'S, Long. 61°07.5'W; Aug. 8, 1962; 1455–1290 m; holotype female (AHF 629).

*Distribution:* Known only from type-locality.

*Affinities:* The new species differs from *E. drygalskii* in that the rostral process is longer in the latter. The spinelike processes on the pleotelson and peraeon are longer in *E. drygalskii*, also. Assuming that the peraeopod figured by *Vanhöffen* [1914] is the first, there is a larger distal inner spine on the propodus of the new species than is present in *E. drygalskii*. Unfortunately *Vanhöffen* did not depict details of other subparts, but his illustration (a dorsal view) leaves no question that the 2 animals are congeneric.

#### Family JAEROPSIDAE

Genus *Jaeropsis* Koehler, 1885

*Type-species:* *Jaeropsis brevicornis* Koehler, 1885.

*Type-locality:* Sark, Channel Islands, North Atlantic.

#### *Jaeropsis curvicornis* (Nicolet, 1849)

Fig. 27, 28, 31H–P

*Jaera curvicornis* Nicolet, 1849, p. 263, fig. 10 (Atlas, No. 3).

*Jaeropsis curvicornis* Richardson, 1905, p. 479.—Nierstrasz, 1941, p. 288.—Menzies, 1962a, p. 66. Not *J. curvicornis* Barnard, 1914, p. 224–225, pl. XX.—Hurley, 1961, p. 262.

*Jaeropsis patagoniensis* Richardson, 1909, pp. 421–422, one fig.—Nordenstam, 1933, p. 191, fig. 45 a–f.

*Jaeropsis patagoniensis* Hale, 1937, pp. 32–34, figs. 11, 12.

(?) *Jaeropsis neo-zelanica* Hurley, 1957, p. 19 (a possible synonym according to Hurley).

The New Zealand and South African citations for this species as recorded in literature may well be incorrect. Without illustrations it is impossible to tell. Accordingly the above synonymy is probably incomplete.

*Diagnosis:* Cephalon with rostrum wider than long, medially with a small but distinct point, lateral borders of cephalon entire, smooth, lacking stout setae or spines. Lateral borders of pleotelson each with an abrupt incision and accompanying stout seta. Basis of uropoda of adults elongated much longer than wide, extending beyond the posterior contour of the pleotelson.

*Measurements:* Illustrated male length 5.0 mm.

*Type-locality:* Nicolet's specimen was taken from Chile.

*Distribution:* Falkland Is. [*Nordenstam*, 1933], Patagonia [*Richardson*, 1909], Macquarie I. [*Hale*, 1937], Chile [*Nicolet*, 1849].

*Vema* STATIONS (all between Lat. 44°S–54°S, Long. 59°53'W–60°50'W): V-15-93, 82 m, 8 females; V-15-102, 108 m, 1 female; V-15-106, 79 m, 1 female; V-15-107, 101 m, 2 females; V-17-19, 90 m, 1 specimen; V-17-99, 150–154 m, 1 male; V-17-100, 166 m, 1 male.

*Eltanin* STATIONS (all between Lat. 52°44'S–55°47'S, Long. 65°W–67°W): 219, 63–115 m, 1 female; 337, 91 m, 1 female; 340, 310–578 m, 1 gravid female; 453, 31 m, 2 females; 958, 91–101 m, 15 specimens; 960, 63 m, 29 specimens; 966, 81 m, 322 specimens; 967, 81 m, 88 specimens; 969, 229–641 m, 65 specimens; 980, 82 m, 68 specimens; 981, 40–49 m, 3 specimens. This species was taken between 31 to 641 m depth; the maximum was at Station 969 in a haul made between 229 to 641 m. Though the maximum depth may be somewhat less than 641 m, the depth range nevertheless is considerable—31 to 310 m.

#### *Jaeropsis intermedius* Nordenstam, 1933

Fig. 29, 30, 31A–G

*Jaeropsis intermedius* Nordenstam 1933, p. 194, fig. 46 a–g; Menzies, 1962a, p. 66, fig. 17 A–D.

*Diagnosis:* Cephalon with rostrum spear point-shaped, with crenulate border. Lateral borders of cephalon with 6 spines. Lateral borders of pleotelson with 8 stout setae. Basis of uropod with large recurved hook, medially; basis not greatly elongated and produced beyond posterior margin of pleotelson.

*Measurements:* Males and female up to 4.4 mm long.

*Type-locality:* Coast of northern Argentina, Lat. 37°50'S, Long. 56°11'W; 100 m; Dec. 20, 1901; bottom, gravel mixed with sand [*Nordenstam*, 1933].

*Distribution:* The species is distributed from Argentina to southern Chile [*Menzies*, 1962a] including Burdwood Bank [*Nordenstam*, 1933] and the Falkland Is. [*Nordenstam*, 1933]. In many locations it was found with *J. curvicornis*. The range in depth for the species is from near shore to moderate depth. It shares both geographic and depth ranges with *J. curvicornis*. It was encountered both in the *Eltanin* and the *Vema* collections as follows:

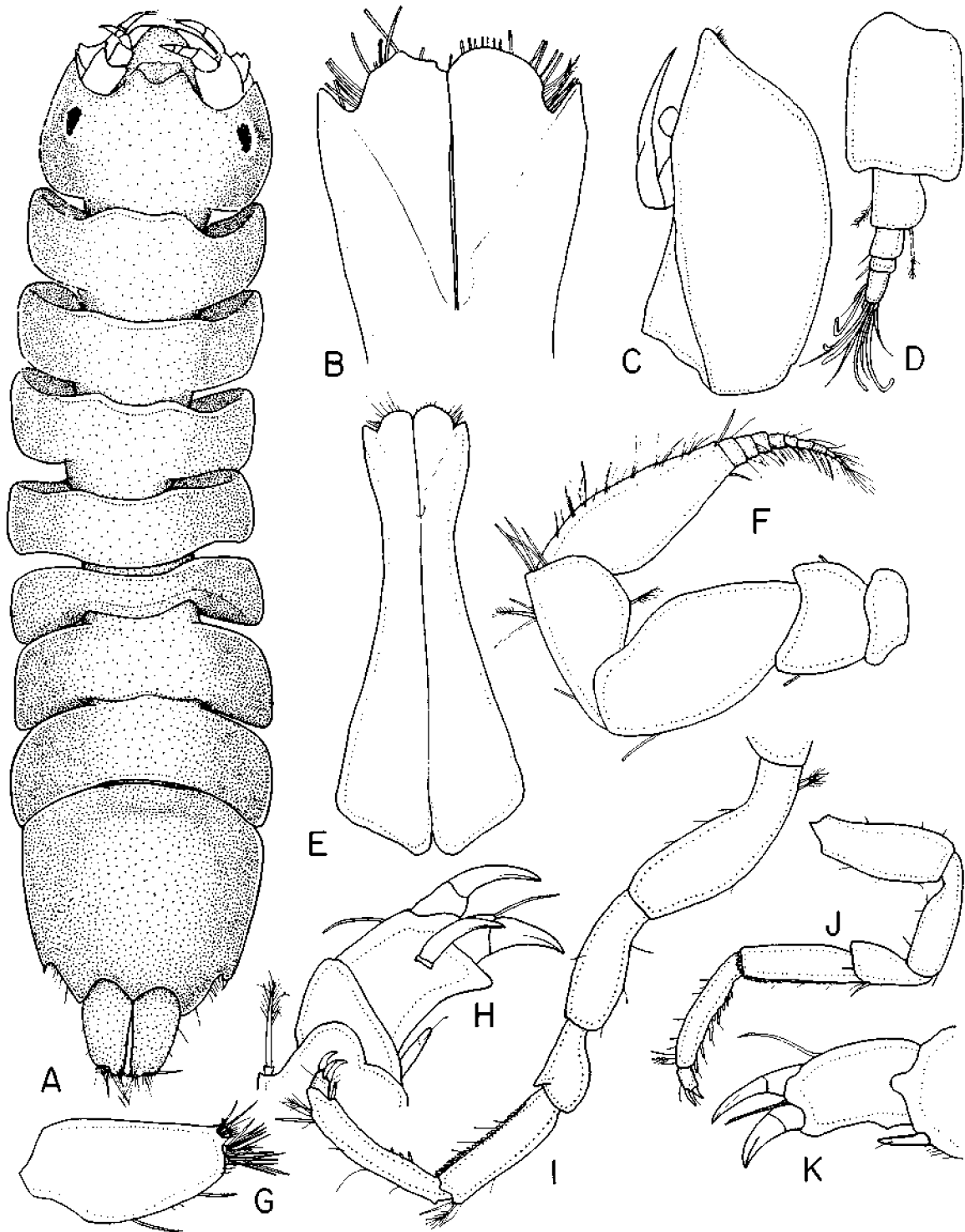


Fig. 27. *Jaeropsis curvicornis* (Nicolet) (male 5 mm long). A, dorsal view; B, detail apex first pleopod; C, second pleopod; D, first antenna; E, first pleopod; F, second antenna; G, uropod; H, detail seventh pereopod; I, seventh pereopod; J, first pereopod; K, detail first pereopod.

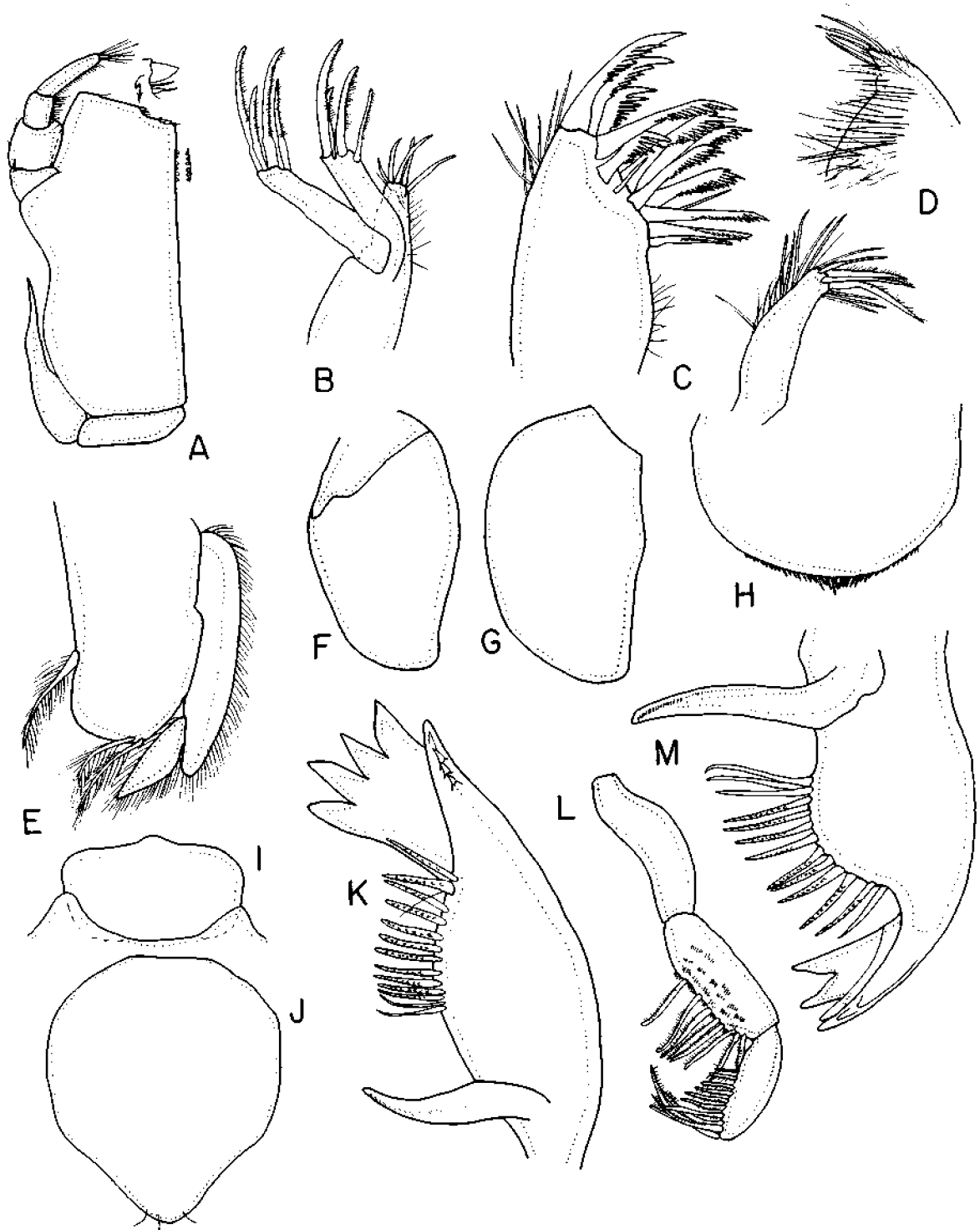


Fig. 28. *Jaeropsis curvicornis* (Nicolet) (male 5 mm long). A, maxilliped; B, second maxilla; C, first maxilla; D, hypopharynx; E, third pleopod; F, fourth pleopod; G, fifth pleopod; H, labrum; I, detail rostral plate; J, female operculate pleopod; K, left mandible; L, left mandibular palp; M, right mandible.

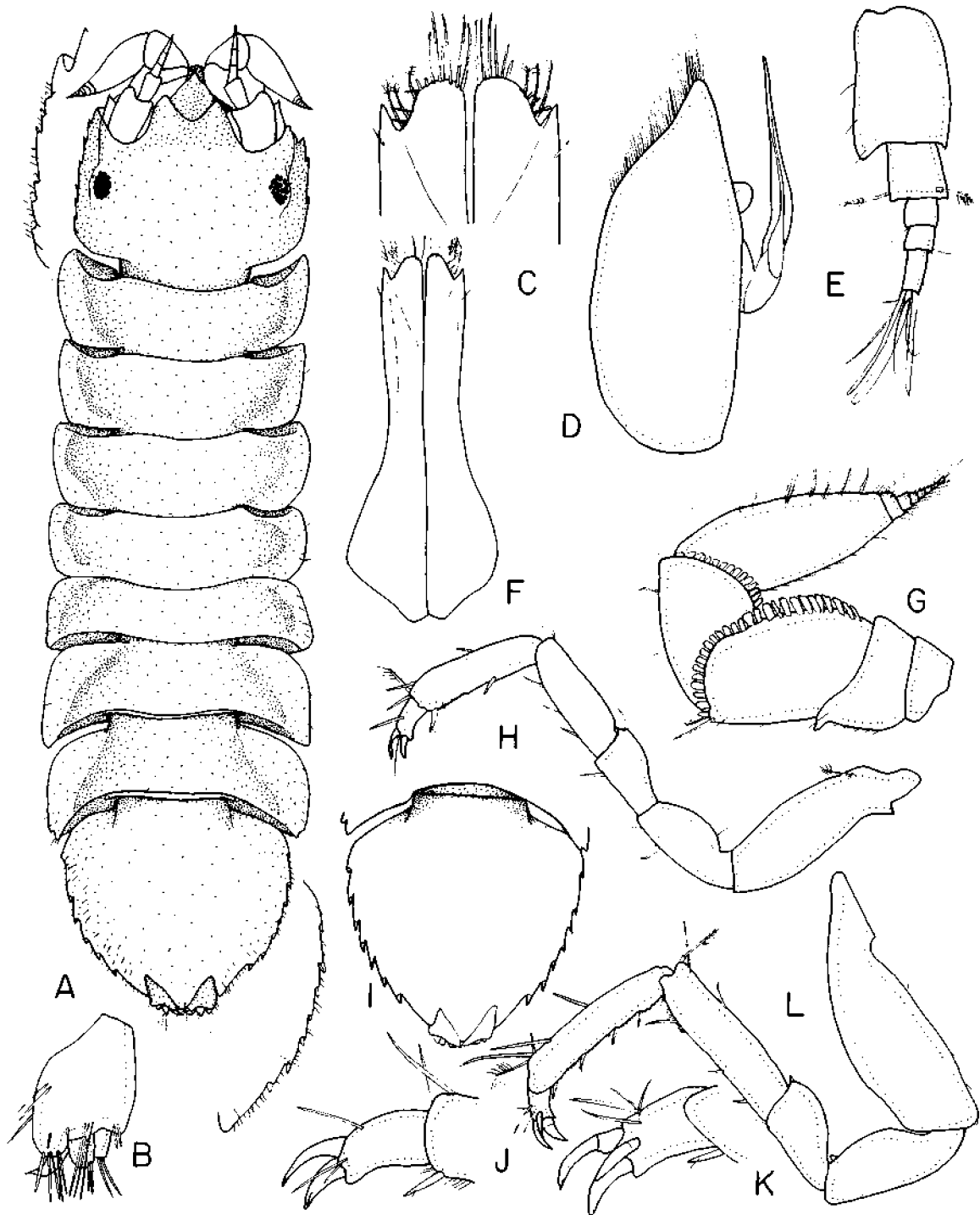


Fig. 29. *Jaeropsis intermedius* Nordenstam (3 mm long) male. A, dorsal view with detail edges of cephalon and pleon; B, uropod; C, detail apex first pleopod(?); D, second pleopod; E, first antenna; F, first pleopod; G, second antenna; H, first pereopod; I, pleon female; J, detail dactylus first pereopod; K, detail dactylus seventh pereopod; L, seventh pereopod.

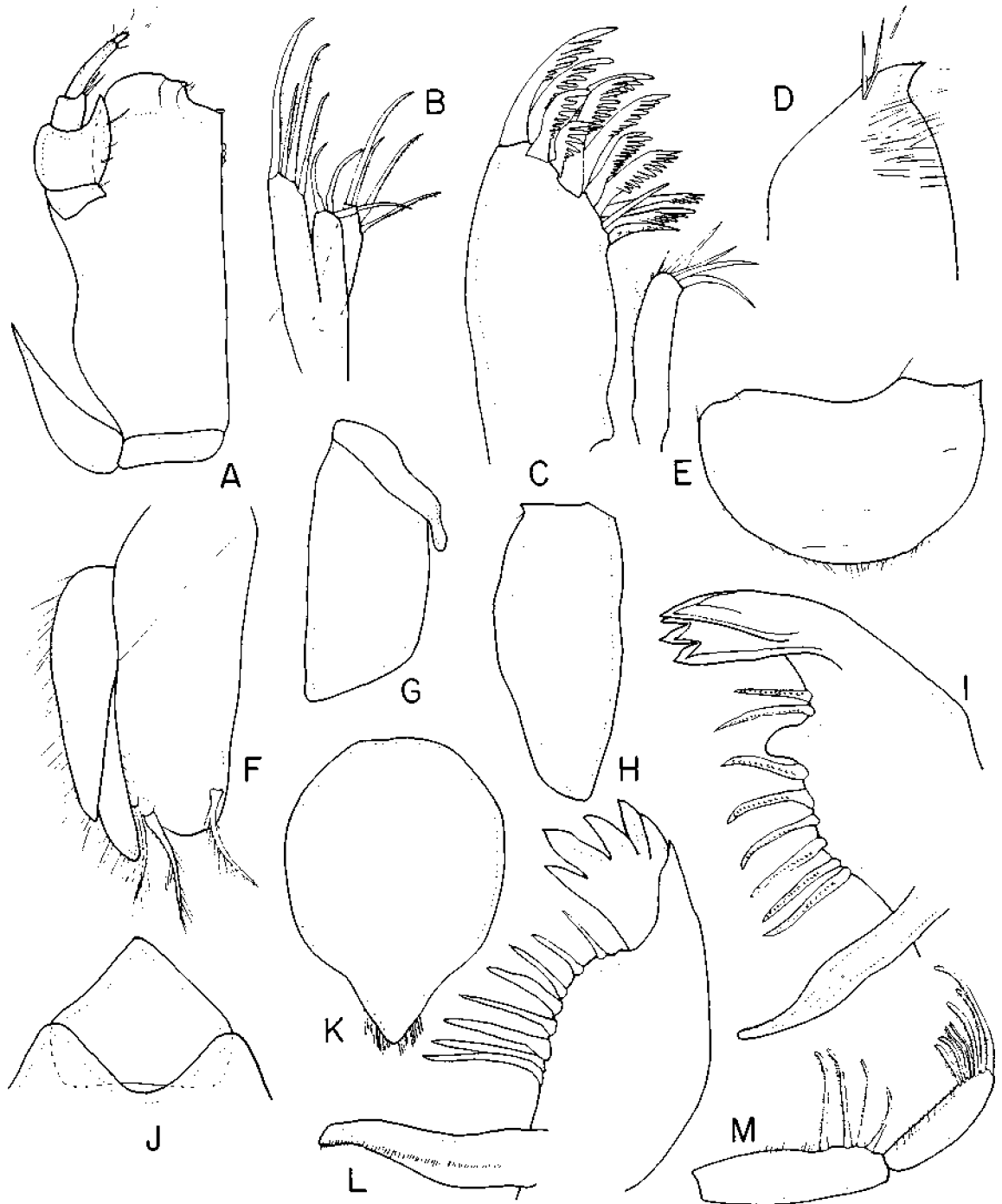


Fig. 30. *Jaeropsis intermedius* Nordenstam, 3 mm long. A, maxilliped; B, second maxilla; C, first maxilla; D, hypopharynx; E, labrum; F, third pleopod; G, fourth pleopod; H, fifth pleopod; I, left mandible; J, detail rostral plate; K, female operculate pleopod; L, right mandible; mandibular palp. From male except where indicated.

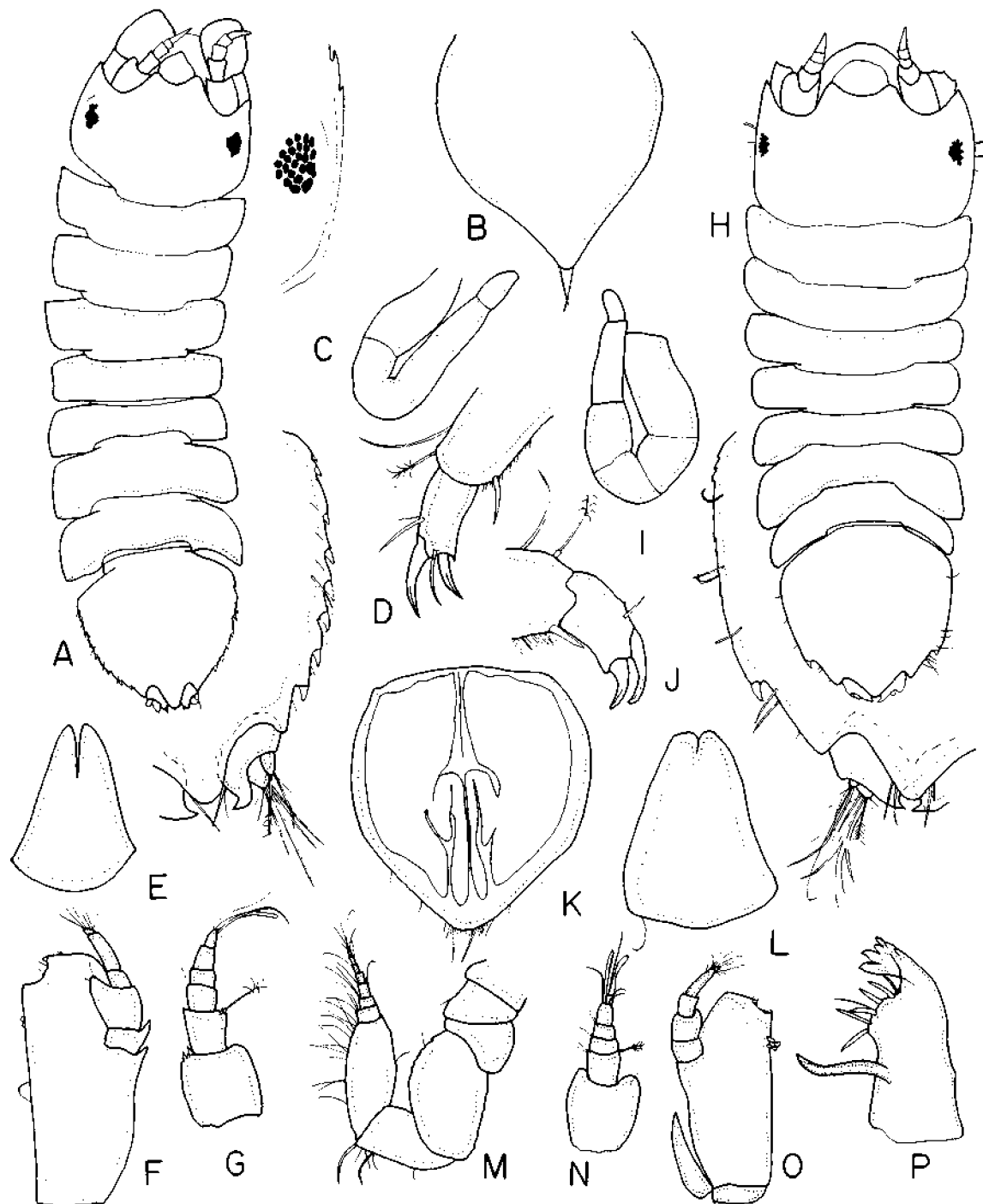


Fig. 31. *Jaeropsis intermedius* Nordenstam, Young. A, dorsal view with details of cephalon and pleotelson margin; B, operculate second pleopod; C, seventh immature appendage; D, first peraeopod; E, first pleopod; F, maxilliped; G, first antenna. *Jaeropsis curvicornis* (Nicolet), Young. H, dorsal view with detail of pleotelson margin; I, seventh immature pleopod; J, first peraeopod; K, operculate second immature male pleopod with premolt indications of mature male pleopods; L, first pleopod; M, second antenna; N, first antenna; O, maxilliped; P, right mandible.

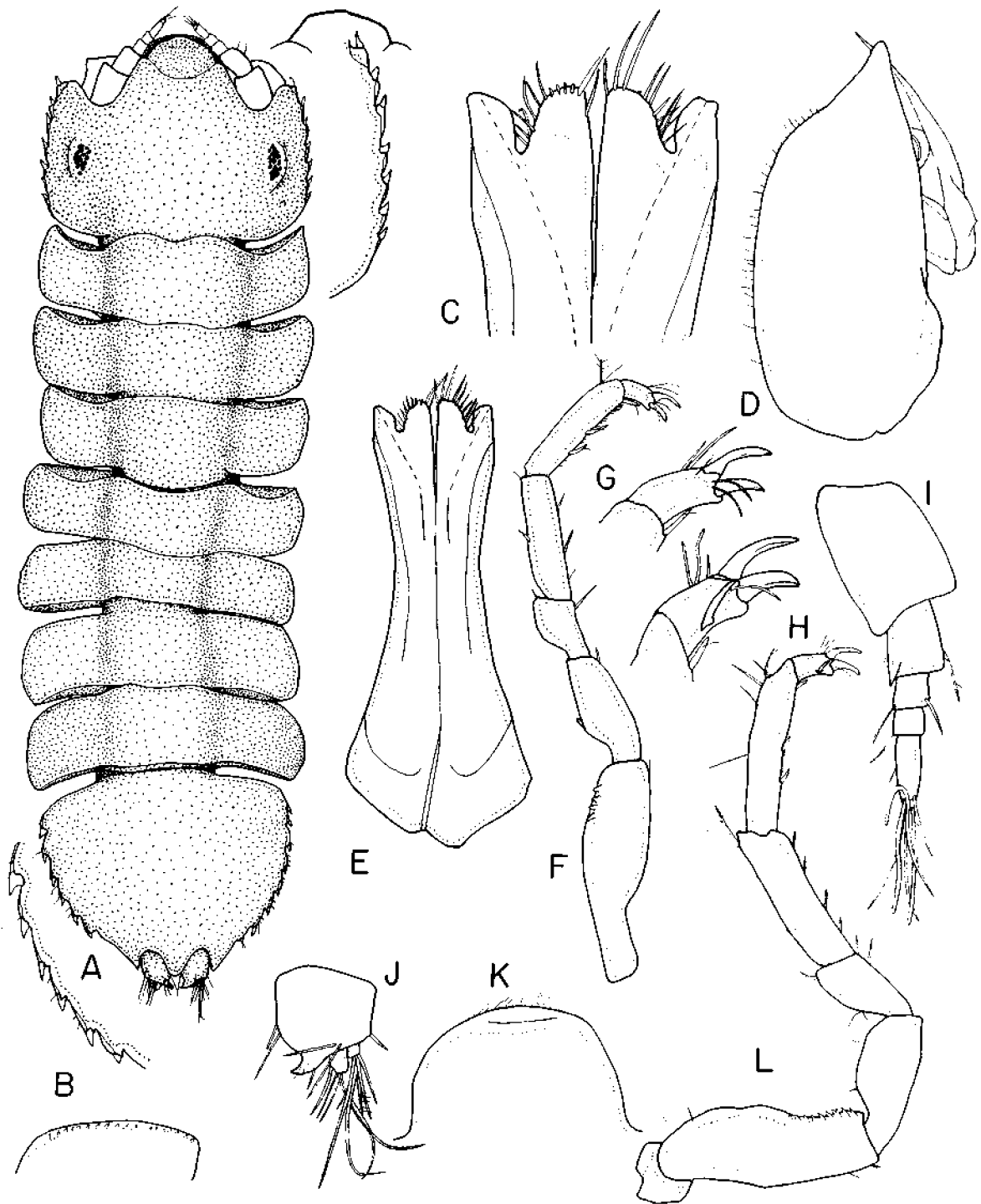


Fig. 32. *Jaeropsis antarctica*, new species (holotype male 3.5 mm long). A, dorsal view with detail edges of cephalon and pleon; B, edge sixth pereopod; C, detail apex first pleopod; D, second pleopod; E, first pleopod; F, first pereopod; G, detail dactylus first pereopod; H, detail dactylus sixth pereopod; I, first antenna; J, uropod; K, labrum; L, sixth pereopod.



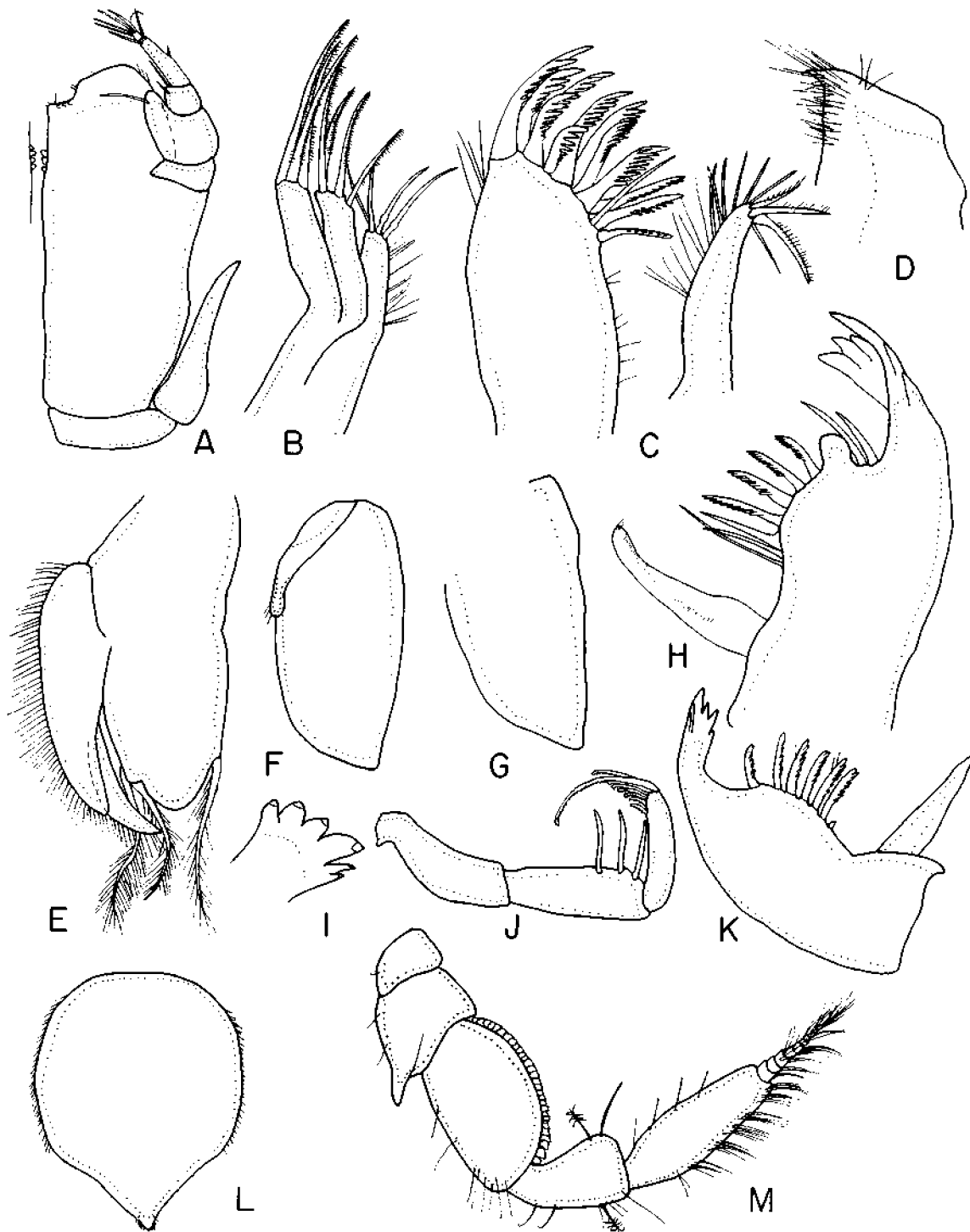


Fig. 33. *Jaeropsis antarctica*, new species (figures are of holotype male 3.5 mm long), except L, female operculum. A, maxilliped; B, second maxilla; C, first maxilla; D, hypopharynx; E, third pleopod; F, fourth pleopod; G, fifth pleopod; H, left mandible; I, detail incisor process right mandible; J, mandibular palp; K, right mandible; L, operculate pleopod; M, second antenna.

*Vema* STATIONS (all between Lat.  $50^{\circ}17'$ – $55^{\circ}10'S$ , Long.  $65^{\circ}35'$ – $66^{\circ}50'W$ ): V-15-93, 82 m, 4 specimens; V-15-102, 108 m, 1 female; V-15-107, 101 m, 5 specimens; V-17-48, 150 m, 11 specimens.

*Eltanin* STATIONS (all taken between Lat.  $52^{\circ}31'$ – $56^{\circ}06.5'S$ , Long.  $65^{\circ}03.2'$ – $75^{\circ}00.2'W$ ): 740, 385–494 m, 22 specimens; 958, 91–101 m, 17 specimens; 960, 63 m, 12 specimens; 966, 81 m, 286 specimens; 967, 81 m, 18 specimens; 969, 229–641 m, 10 specimens; 970, 586–641 m, 1 female; 980, 81 m, 82 specimens; 981, 40–49 m, 3 specimens.

*Sympatric locations:* The species of *J. curvicornis* and *J. intermedius* were found in the same trawl sample from each of the following stations: *Eltanin* 958, 960, 966, 967, 969, and 980; and *Vema* V-15-93, V-15-102, and V-15-107.

*Affinities:* Both the species *J. intermedius* and *J. antarctica* from the Antarctic Peninsula have stout setae on both the lateral borders of the cephalon and the pleotelson. The species *J. antarctica*, however, has 7 rather than 6 spines on the cephalon and the spines are each on a process rather than arising from the border. *J. antarctica* is wider in proportion to its length than *J. intermedius*. The rostrum of *J. intermedius* is longer than wide and pointed, whereas, that of *J. antarctica* is wider than long and blunt.

*Postembryonic changes:* Comparison of the illustrations of the adults of *Jaeropsis curvicornis* (Nicolet) (Fig. 27, 28, 31H–P) and *Jaeropsis intermedius* Nordenstam (Fig. 29, 30, 31A–G) with the illustrations of young specimens (Fig. 31) reveals that the configuration and spination of the pleotelson remains rather constant. The uropoda, however, show changes in becoming more elongate in *J. curvicornis* as the specimens grow. Of course the seventh pair of peraeopods developed setae and claws. Generally the ap-

pendages and mouth parts add setae as size increases. Identity of young specimens is assured by the configuration and spination of the pleotelson.

### *Jaeropsis antarctica*, new species

Fig. 32, 33

*Diagnosis:* Cephalon with rostrum rounded, medially entire, lateral borders of cephalon with 7 stout setae. Lateral borders of pleotelson without any abrupt incision, with around 8 stout setae. Basis of uropoda not longer than wide, not extending much beyond the posterior contour of the pleotelson.

*Measurements:* Illustrated male length 3.5 mm.

*Type-locality:* North of King George I., South Shetland Is., *Eltanin* Sta. 430; Lat.  $62^{\circ}38.4'S$ , Long.  $59^{\circ}36.5'W$ ; Lat.  $62^{\circ}40.8'S$ , Long.  $59^{\circ}23.1'W$ ; Jan. 7, 1963, 681–1408 m; holotype male.

*Distribution:* This species was found at 4 other *Eltanin* Stations between  $61^{\circ}24'S$  and  $62^{\circ}40'S$  as follows: 992, 403 m, 1 female; 993, 300 m, 3 specimens; 1002, 265 m, 4 specimens; 1003, 210–220 m, 21 specimens.

*Affinities:* The absence of serrations from the lateral border of the peraeonites possibly distinguishes this species from *Jaeropsis marionis* Beddard, but because Beddard's illustrations are unreliable, this is not certain. The presence of stout setae on the lateral borders of the cephalon relates this species to *J. curvicornis* (Nicolet) but the rounded rostrum is distinctive for this species. This appears to be a genuine Antarctic species and if Beddard's species is based on erroneous illustrative material we suspect these may be identical.

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## LIST OF STATIONS AND SPECIES COLLECTED

*Vema* Stations, Cruises 12, 14, 15, and 17, 1957–1961 (the Menzies Trawl was the gear used at each *Vema* station):

- V-12-2; off South Africa; Lat.  $30^{\circ}14.9'S$ , Long.  $13^{\circ}03'E$ ; April 30, 1957; 3049 m. *Antennuloniscus dimeroceras*.
- V-12-10; off mid-Africa, Lat.  $05^{\circ}53.5'S$ , Long.  $09^{\circ}51.5'E$ ; May 21, 1957; 2997 m. *Antennuloniscus dimeroceras*.
- V-12-11; off mid-Africa; Lat.  $06^{\circ}19.3'S$ , Long.  $08^{\circ}18.5'E$ ; May 23, 1957; 3921 m. *Antennuloniscus dimeroceras*.
- V-14-23; south of South Georgia; Lat.  $55^{\circ}29'S$ , Long.  $37^{\circ}57'W$ ; Mar. 6, 1958; 3756 m. *Antennuloniscus ornatus*.
- V-14-28; south of tip of Africa; Lat.  $45^{\circ}34'S$ , Long.  $06^{\circ}02'E$ ; Mar. 28, 1958; 4588 m. *Antennuloniscus armatus*.

- V-14-29; south of tip of Africa; Lat.  $41^{\circ}03'S$ , Long.  $07^{\circ}49'E$ ; Mar. 30, 1958; 4960 m. *Antennuloniscus armatus*.
- V-14-32; Mid-Atlantic Ridge, northwest of Cape Town, South Africa; Lat.  $34^{\circ}35'S$ , Long.  $17^{\circ}31'E$ ; Apr. 6, 1958; 1816 m. *Antennuloniscus dimeroceras*.
- V-14-36; about 250 miles south of Madagascar; Lat.  $28^{\circ}28'S$ , Long.  $44^{\circ}22'E$ ; Apr. 29, 1958; about 2270 m. *Antennuloniscus quadratus*.
- V-15-18; north margin of Colombian Basin; Lat.  $15^{\circ}51'N$ , Long.  $75^{\circ}11'W$ ; Nov. 6, 1958; 2071 m. *Aspidoniscus perplexus*.
- V-15-93; North of Falkland Is.; Lat.  $50^{\circ}S$ , Long.  $60^{\circ}50'W$ ; Jan. 1, 1959; 82 m. *Jaeropsis curvicornis*; *J. intermedius*.

- V-15-102; Magellan, Strait of, off Argentina; Lat. 52°53.3'S, Long. 65°35'W; Mar. 5, 1959; 108 m. *Jaeropsis curvicornis*; *J. intermedius*.
- V-15-106; off Tierra del Fuego; Lat. 54°10.2'S, Long. 65°00.44'W; Mar. 6, 1959; 79 m. *Jaeropsis curvicornis*.
- V-15-107; off Tierra del Fuego; Lat. 54°10.2'S, Long. 65°57.5'W; Mar. 6, 1959; 101 m. *Jaeropsis curvicornis*; *J. intermedius*.
- V-15-117; off Cape Horn, Lat. 55°31.2'S, Long. 64°07.5'W; Mar. 15, 1959; 3839 m. *Antennuloniscus ornatus*.
- V-15-128; north of Falkland Is.; Lat. 44°53.3'S, Long. 51°26.5'W; Mar. 31, 1959; 5843 m. *Antennuloniscus dimeroceras*.
- V-15-147; northwest of San Juan, Puerto Rico; Lat. 21°18.7'N, Long. 65°13.4'W; June 4, 1959; 5440 m. *Antennuloniscus dimeroceras*.
- V-17-19; Argentine Basin, northeast of Golfo San Matias; Lat. 44°25'S, Long. 59°54'W; Mar. 29, 1961; 150 m. *Jaeropsis curvicornis*.
- V-17-48; northeast of Cape Horn; Lat. 55°10'S, Long. 66°23'W; June 12, 1961; 150 m. *Jaeropsis intermedius*.
- V-17-99; Argentine Basin, northeast of Golfo San Matias; Lat. 44°25'S, Long. 59°54'W; June 13, 1961; 150-154 m. *Jaeropsis curvicornis*.
- V-17-100; Argentine Basin, northeast of Golfo San Matias; Lat. 44°23'S, Long. 59°53'W; June 13, 1961; 166 m. *Jaeropsis curvicornis*.
- Eltanin* Stations, Cruises 4-12, 1962-1963<sup>4</sup>
- Sta. 112; West Scotia Basin; Lat. 56°02'S, Long. 61°56'W; Lat. 56°01'S, Long. 61°54.5'W; July 20, 1962; 4008-4031 m; Menzies Trawl. *Acanthaspida sulcatocornia*.
- Sta. 120; off Cape Horn; Lat. 57°05'S, Long. 63°21'W; Lat. 53°03'S, Long. 63°18'W; July 28, 1962; 5300-3986 m; Menzies Trawl. *Antennuloniscus subellipticus*.
- Sta. 126; off Cape Horn; Lat. 57°12'S, Long. 62°45'W; Lat. 57°14'S, Long. 62°50'W; July 29, 1962; 3806-3733 m; Menzies Trawl. *Antennuloniscus subellipticus*. (See Fig. 9-11 for bottom type.) Photographs and hydrographic observations were made at approximately this position, *Eltanin* Camera Sta. 6, Cruise 4, Lat. 57°05'S, 63°20'W, and Hydro Sta. 6, Cruise 4, Lat. 57°05'S, Long. 63°20'W, July 29, 1962.
- Sta. 138; Drake Passage; Lat. 62°02'S, Long. 61°08.5'W; Lat. 62°04.5'S, Long. 61°07.5'W; Aug. 8, 1962; 1455-1290 m; Menzies Trawl. *Exacanthaspida rostratus*.
- Sta. 155; off Cape Horn; Lat. 56°34'S, Long. 63°18'W; Lat. 56°29'S, Long. 63°12.5'W; Aug. 17, 1962; 3425-3966 m; Menzies Trawl. *Antennuloniscus subellipticus*.
- Sta. 219; Drake Passage, about 20 nautical miles east of Islas Barnevelt; Lat. 55°47'S, Long. 66°16.5'W; Sept. 23, 1962; 63-115 m; Peterson Grab. *Jaeropsis curvicornis*.
- Sta. 337; shelf, east of Tierra del Fuego; Lat. 52°44.8'S, Long. 66°33.6'W; Lat. 52°46.2'S, Long. 66°29.3'W; Dec. 2, 1962; 91 m; 40-ft Otter Trawl. *Jaeropsis curvicornis*.
- Sta. 340; between Burdwood Bank and Falkland Is.; Lat. 53°07.6'S, Long. 59°23.2'W; Lat. 53°06.7'S, Long. 59°21.1'W; Dec. 3, 1962; 578-567 m. Menzies Trawl. *Paracanthaspida mucronata*; *Jaeropsis curvicornis*.
- Sta. 394; Drake Passage off Cape Horn; Lat. 59°00'S; Long. 56°03.8'W; Lat. 58°55.1'S, Long. 56°02'W; Dec. 29, 1962; 3722-3822 m; Menzies Trawl. *Antennuloniscus subellipticus*; *Acanthaspida porrecta*. At approximately this position photographs of the bottom were taken, *Eltanin* Camera Sta. 14, Cruise 6, Lat. 59°11'S, Long. 56°08'W, Dec. 29, 1962.
- Sta. 430; north of King George I., So. Shetland Is.; Lat. 62°38.4'S, Long. 59°36.5'W; Lat. 62°40.8'S, Long. 59°23.1'W; Jan. 7, 1963; 681-1408 m, 5-ft Blake Trawl. *Jaeropsis antarctica*.
- Sta. 453; shelf, east of Tierra del Fuego; Lat. 54°20'S, Long. 66°24'W; Jan. 21, 1963; 31 m; Peterson Grab. *Jaeropsis curvicornis*.
- Sta. 512; Weddell Sea; Lat. 63°15'S, Long. 44°56'W; Lat. 63°18'S, Long. 44°52.5'W; Feb. 24, 1963; 3784-3788 m; Menzies Trawl. *Iolanthe pleuronotus*.
- Sta. 557; north of Falkland Is.; Lat. 51°55.5'S, Long. 56°38.5'W; Lat. 51°57.4'S, Long. 56°38'W; Mar. 14, 1963; 864-854 m; Menzies Trawl. *Acanthaspida mucronata*.
- Sta. 740; Drake Passage, south of Cape Horn; Lat. 56°06.2'S, Long. 66°19'W; Lat. 56°06.5'S, Long. 66°30'W; Sept. 18, 1963; 494-384 m; 5-ft Blake Trawl. *Jaeropsis intermedius*.
- Sta. 958; off southern Chile; Lat. 52°56.4'S, Long. 75°00.2'W; Lat. 52°55.6'S, Long. 74°59.5'W; Feb. 5, 1964; 91-101 m; 5-ft Blake Trawl. *J. curvicornis*; *Jaeropsis intermedius*.
- Sta. 960; western entrance to Strait of Magellan; Lat. 52°40.4'S, Long. 74°58'W; Lat. 52°35.5'S, Long. 74°54.6'W; Feb. 6, 1964; 106-99 m; 5-ft Blake Trawl. *Jaeropsis curvicornis*; *J. intermedius*.
- Sta. 966; East Strait of Magellan; Lat. 53°40.2'S, Long. 66°19.5'W; Lat. 53°41'S, Long. 66°19.3'W; Feb. 10, 1964; 81 m; 5-ft Blake Trawl. *Jaeropsis curvicornis*; *J. intermedius*.
- Sta. 967; Strait of Magellan, off Tierra del Fuego; Lat. 53°42'S, Long. 66°19.1'W; Lat. 53°46.3'S, Long. 60°12.5'W; Feb. 10, 1964; 81 m; 5-ft Blake Trawl. *Jaeropsis curvicornis*; *J. intermedius*.
- Sta. 969; Burdwood Bank, off Tierra del Fuego; Lat. 54°55.7'S, Long. 65°03.2'W; Lat. 54°59'S, Long. 65°05.5'W; Feb. 10-11, 1964; 229-641 m; 5-ft Blake Trawl. *Jaeropsis curvicornis*; *J. intermedius*.
- Sta. 970; Burdwood Bank, off Tierra del Fuego; Lat. 54°59'S, Long. 64°53.2'W; Lat. 55°03'S; Long. 64°50'W; Feb. 11, 1964; 586-ca. 641; 5-ft Blake Trawl. *Jaeropsis intermedius*.
- Sta. 980; near east entrance to Strait of Magellan; Lat. 52°30.1'S, Long. 67°14'W; Lat. 52°31'S, Long. 67°14'W; Feb. 14, 1964; 82-40 m; 10-ft Blake Trawl. *Jaeropsis curvicornis*, *J. intermedius*.
- Sta. 981; near east entrance to Strait of Magellan; Lat. 52°44'S, Long. 67°42'W; Lat. 52°46.4'S, Long. 67°47'W; Feb. 14, 1964; 49-40 m; 10-ft Blake Trawl. *Jaeropsis curvicornis*; *J. intermedius*.
- Sta. 992; north northeast of Gibbs Island; Lat. 61°19.0'S,

<sup>4</sup> Positions given are those noted at the start and finish of each haul.

- Long. 56°28'W; Lat. 61°20.5'S, Long. 56°26.5'W; Mar. 13, 1964; 403 m; 5-ft Blake Trawl. *Jaeropsis antarctica*.
- Sta. 993; north northeast of Gibbs Island; Lat. 61°24.9'S, Long. 56°30.1'W; Lat. 61°24.9'S, Long. 56°32'W; Mar. 13, 1964; 300 m, 10-ft Blake Trawl. *Jaeropsis antarctica*.
- Sta. 1002; North Weddell Sea, northeast of Joinville I.; Lat. 62°40.2'S, Long. 54°44.9'W; Lat. 62°40.5'S, Long. 54°43.3'W; Mar. 15, 1964; 265 m; 10-ft Blake Trawl. *Jaeropsis antarctica*.
- Sta. 1003; Northwest Weddell Sea, northeast of Joinville I.; Lat. 62°40.5'S, Long. 54°43.3'W; Lat. 62°40.9'S, Long. 54°42.5'W; Mar. 15, 1964; 220-210 m; 10-ft Blake Trawl. *Jaeropsis antarctica*.
- Pieter Faure, South African Research Vessel, 1903:
- Station off Cape Town, Cape Point N. 89°E., distant 36 miles, Aug. 20, 1903, 700 fathoms; green mud (Barnard); Lat. 34°25'S. Long. 17°55'E; 1280 m (Menzies). *Antennulonicus dimeroceras* (type locality).
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