

REDESCRIPTION OF TWO SPECIES OF  
*PSEUDIPHIMEDIELLA* FROM THE SOUTHERN OCEAN  
(AMPHIPODA: IPHIMEDIIDAE)

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*Abstract.* — *Pseudiphimediella nodosa* and *P. glabra* are redescribed from previously unreported materials and compared together taxonomically. Variability is discussed.

A review of *Pseudiphimediella*, with new diagnosis, and redescription of the two known species of the genus, is based on newly examined specimens in the collections of Smithsonian Institution.

Iphimediidae

*Pseudiphimediella* Schellenberg

*Pseudiphimediella* Schellenberg, 1931: 119 (*Amphitoe nodosa* Dana, 1853, original designation). — Watling & Holman, 1980: 639.

*Diagnosis.* — Body covered with teeth or processes. Antenna 1: peduncular article 2 shorter than 1. Mouthparts projecting quadrately. Labrum incised, not very broad. Mandibular incisor broad, cutting frontally, weakly toothed; raker row absent; molar absent. Lower lip: inner lobes absent. Maxilla 1: palp 2-articulate, article 2 ordinary. Maxilla 2: inner plate without facial row of setae. Maxillipeds: inner plate as long but not as broad as outer plate, palp article 2 broad and apicomediaally unproduced; palp article 4 obsolescent. Coxae ordinary. Gnathopods scarcely diverse, of slightly different sizes, articles 5-6 elongate, narrow; both gnathopods chelate; gnathopod 2 more strongly setose than 1. Telson scarcely incised.

*Relationship.* — Like *Iphimediella* but mandible cutting in frontal plane; thus mouthparts projecting quadrately.

Differing from *Echiniphimedia* in the ab-

sence of surficial cusps, all teeth emerging from margins of segments and coxae.

*Species.* — (Geographic codes in brackets are explained in Barnard & Barnard, 1983: 181); *P. glabra* (Schellenberg, 1931), bathyal Falkland-Magellan region [866 + B]; *nodosa* (Dana, 1853) (Barnard, 1932), Falkland-Magellan region [866].

*Distribution.* — Marine, Magellanic region and Falkland Islands, 0-494 m, 2 species.

*Pseudiphimediella nodosa* (Dana, 1853)  
Figs. 1-5

*Iphimedia nodosa* Dana, 1853:928, pl. 63, fig. 3A, B. — ?Stebbing, 1906:216.

*Pseudiphimediella nodosa*: Schellenberg, 1931:119, fig. 64, pl. 1, fig. A.

?*Iphimediella nodosa*: K. H. Barnard, 1932: 119, fig. 67; non K.H. Barnard, 1930:361 (= *Echiniphimedia echinata*).

*Pseudiphimediella nodosa*: Watling & Holman, 1980:641, fig. 21.

*Material.* — Ovigerous female (32 eggs), 10.5 mm, # 76 (W.L.S[chmitt].); Punta Arenas, Chile; 4 Feb 1927.

*Description.* — Body (Fig. 1a, d): Robust, pereon increasing in width to fifth pereonite; pereonite 2 shortest; pereonite 5 with pair of blunt teeth posteromarginally, on pereonite 6 longer and acute teeth; pereonite 7 with 4 posteromarginal teeth, middorsal pair longer and stout, posteroventral corner of pereonite 7 pointed; metasomites 1-2 with

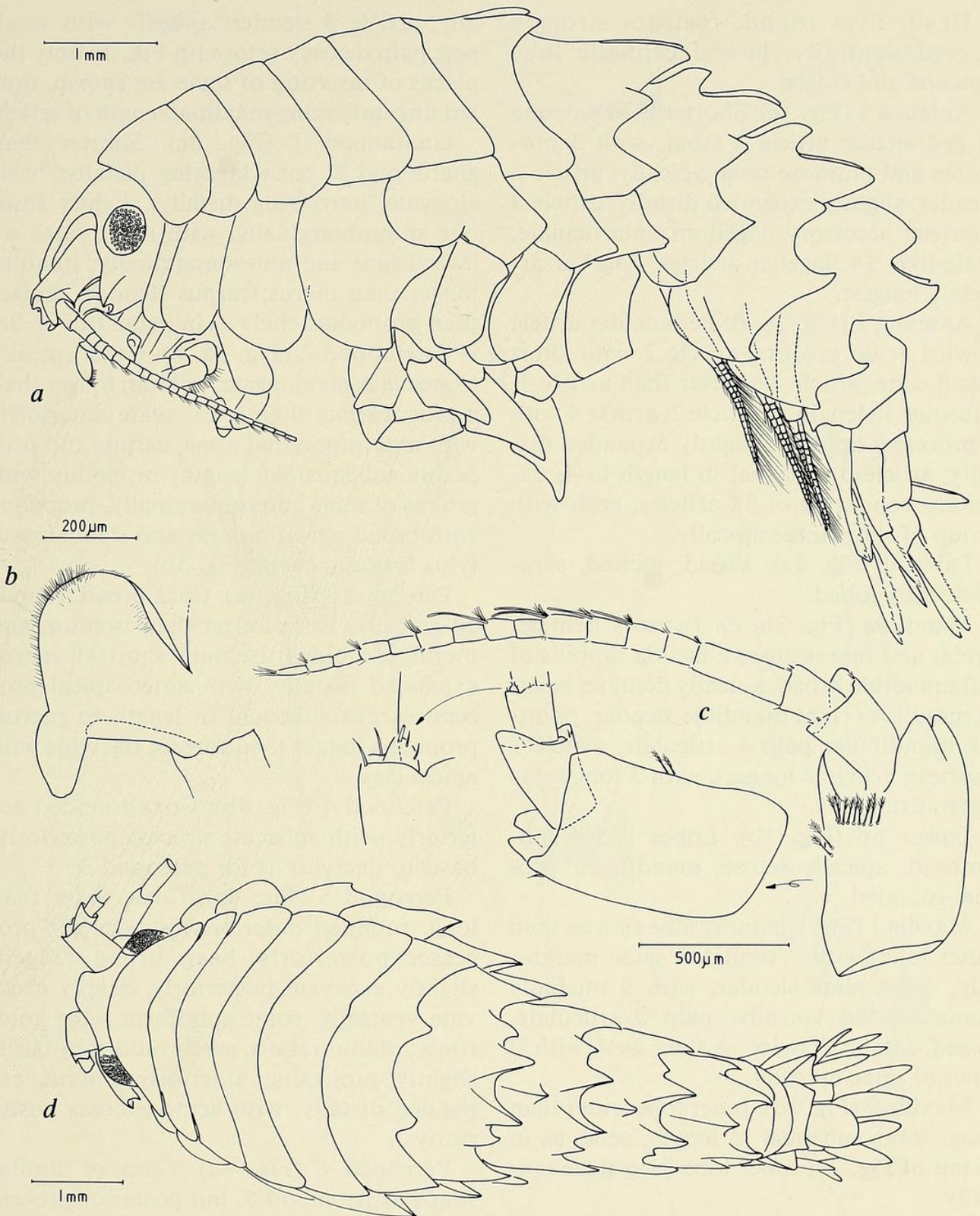


Fig. 1. a–d, *Pseudiphimediella nodosa* female. a, lateral view of habitus. b, labium (lower lip). c, antenna 1. d, dorsal view of habitus.

similar posteromarginal teeth and middorsal tooth; epimeron 1 shorter than 2 and 3; metasomite 3 with elongate middorsal tooth and 2 stout teeth posteromarginally; all

metasomites with acute processes latero-posteromarginally; posteroventral angles of epimera 2 and 3 acute; urosomite 1 with dorsal hump; urosomite 2 shortest.

Head: Eyes round, rostrum strongly curved ventrally; lateral cephalic lobe notched and ridged.

Antenna 1 (Fig. 1c): Shorter than antenna 2; peduncular article 1 stout, with 3 processes and plumose setae apically; article 2 slender, slightly expanded distally; article 3 shortest; accessory flagellum uniarticulate, scale-like; 14 flagellar articles, flagellar article 1 longest.

Antenna 2 (Fig. 2c, f): Peduncular article 1 with acute process; article 2 with short gland cone; article 3 shorter than article 1, subequal in length to article 2; article 4 with 2 processes apically, slightly expanded distally; article 5 subequal in length to 4; flagellum consisting of 32 articles, each with group of short setae apically.

Labrum (Fig. 2a): Broad, incised, symmetrically lobed.

Mandible (Fig. 2b, e): Incisors dentate, molar and rakers absent; lacinia mobilis of left mandible broad, apically dentate; lacinia mobilis of right mandible slender, pointed; mandibular palp 3-articulate, article 1 shortest; article 2 longest, with 3 long setae laterodistally.

Lower lip (Fig. 1b): Lobes broad, unnotched, apically setose; mandibular process rounded.

Maxilla 1 (Fig. 2g): Inner lobe shorter than outer lobe, with 7 setulated setae marginally; outer plate slender, with 9 medially dentate setae apically; palp 2-articulate, broad, article 2 twice as long as 1 with 2 rows of setae apically.

Maxilla 2 (Fig. 2d): Inner lobe wider than outer lobe, subequal in length, setae as in detail of Fig. 2d; inner lobe long setae apically.

Maxilliped (Fig. 3d-g): Inner lobes long, apically truncate, with setulated setae mediomarginally and apically; outer plate broad, rounded, with long setulated setae lateromarginally and shorter setae mediomarginally; palp 3-articulate, articles 1 and 2 broad, article 2 slightly produced medi-

ally, article 3 slender, apically with small peg; palp densely setose (in Fig. 3e only the places of insertion of setae are shown, dotted line indicating maximal length of setae).

Gnathopod 1 (Fig. 3c): Shorter than gnathopod 2; coxa tapering distally; basis elongate, narrowing distally, slightly sinuous anteromarginally, with some setae on lateral face and anteromarginally; ischium longer than merus; carpus slender, shorter than propodus; chela as in detail of Fig. 3c.

Gnathopod 2 (Fig. 3a, b): Coxa apically truncate; basis elongate; ischium longer than merus; carpus slightly excavate anteriorly, with anteromarginal setae; carpus and propodus subequal in length; propodus with groups of setae anteromarginally, propodus with broad apical process and slender dactylus forming chela (Fig. 3b).

Pereopod 3 (Fig. 4a): Coxa broad, rounded apically; basis longer than ischium and merus combined; ischium shortest; merus expanded distally, with anteroapical process; carpus subequal in length to merus; propodus longer than carpus; dactylus with apical claw.

Pereopod 4 (Fig. 4b): Coxa rounded anteriorly, with subacute process posteriorly; basis to dactylus as for pereopod 3.

Pereopod 5 (Fig. 4c): Coxa wider than long, rounded anteriorly, subacutely processed posteriorly; basis broad, ridged, slightly excavate posteriorly, deeply excavate ventrally; some spiniform setae anteriorly; ischium short, partly hidden by basis, slightly projecting anteriorly; merus expanded distally, with acute process posteriorly.

Pereopod 6 (Fig. 4d): Coxa of similar shape as pereopod 5, but posterior process pointed acutely; basis subequal to pereopod 5, but slightly longer and with more spiniform setae anteromarginally; ischium and merus subequal to pereopod 5, but posterodistal process longer.

Pereopod 7 (Fig. 5a): Coxa smallest, subacutely produced posteriorly; basis longer

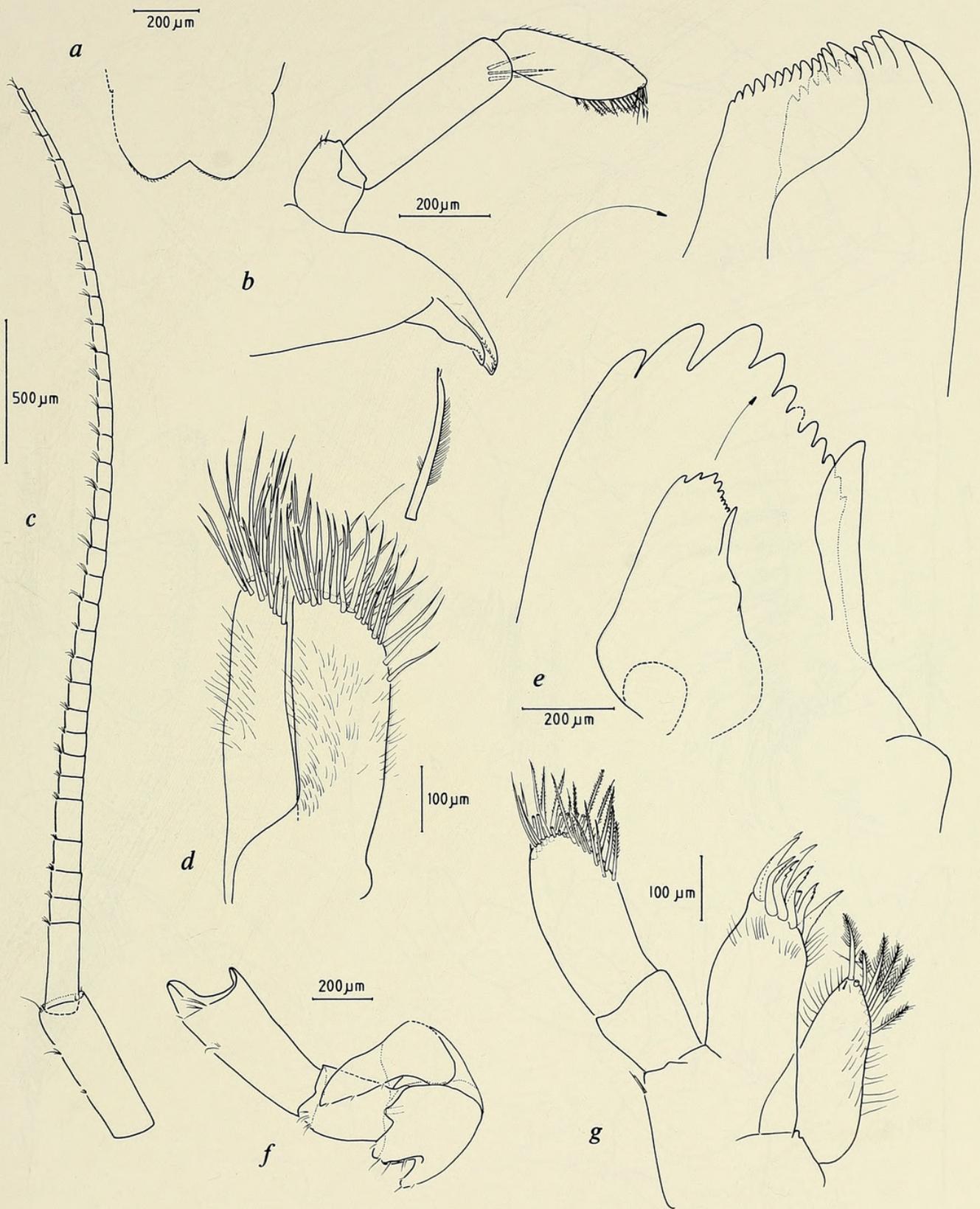


Fig. 2. a-g, *Pseudiphimediella nodosa* female. a, labrum (upper lip). b, left mandible, detail showing medial view of incisor region and lacinia mobilis. c, peduncular article 5 and flagellum of antenna 2. d, maxilla 2. e, right mandible, detail showing incisor and lacinia mobilis. f, peduncular articles 1-4 of antenna 2. g, maxilla 1.

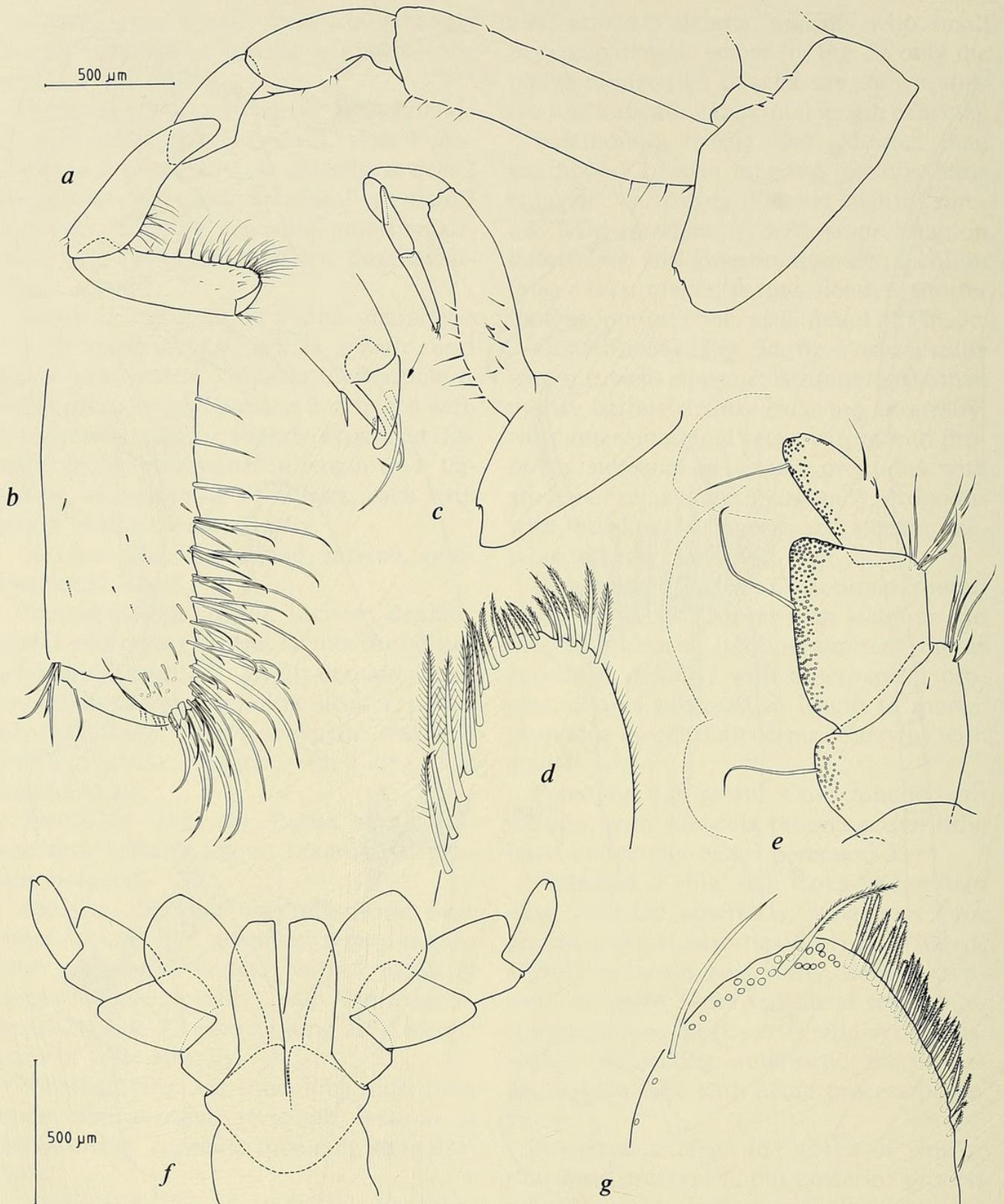


Fig. 3. a-g, *Pseudiphimediella nodosa* female. a, gnathopod 2. b, chela of pereopod 2. c, gnathopod 1, detail showing chela. d, inner plate of maxilliped. e, maxillipedal palp, setae partly omitted, place of insertion shown, dotted line indicating length of setae. f, maxilliped seen from oral side, setae omitted. g, outer plate of maxilliped, setae partly omitted with places of insertion of lateromarginal setae shown.

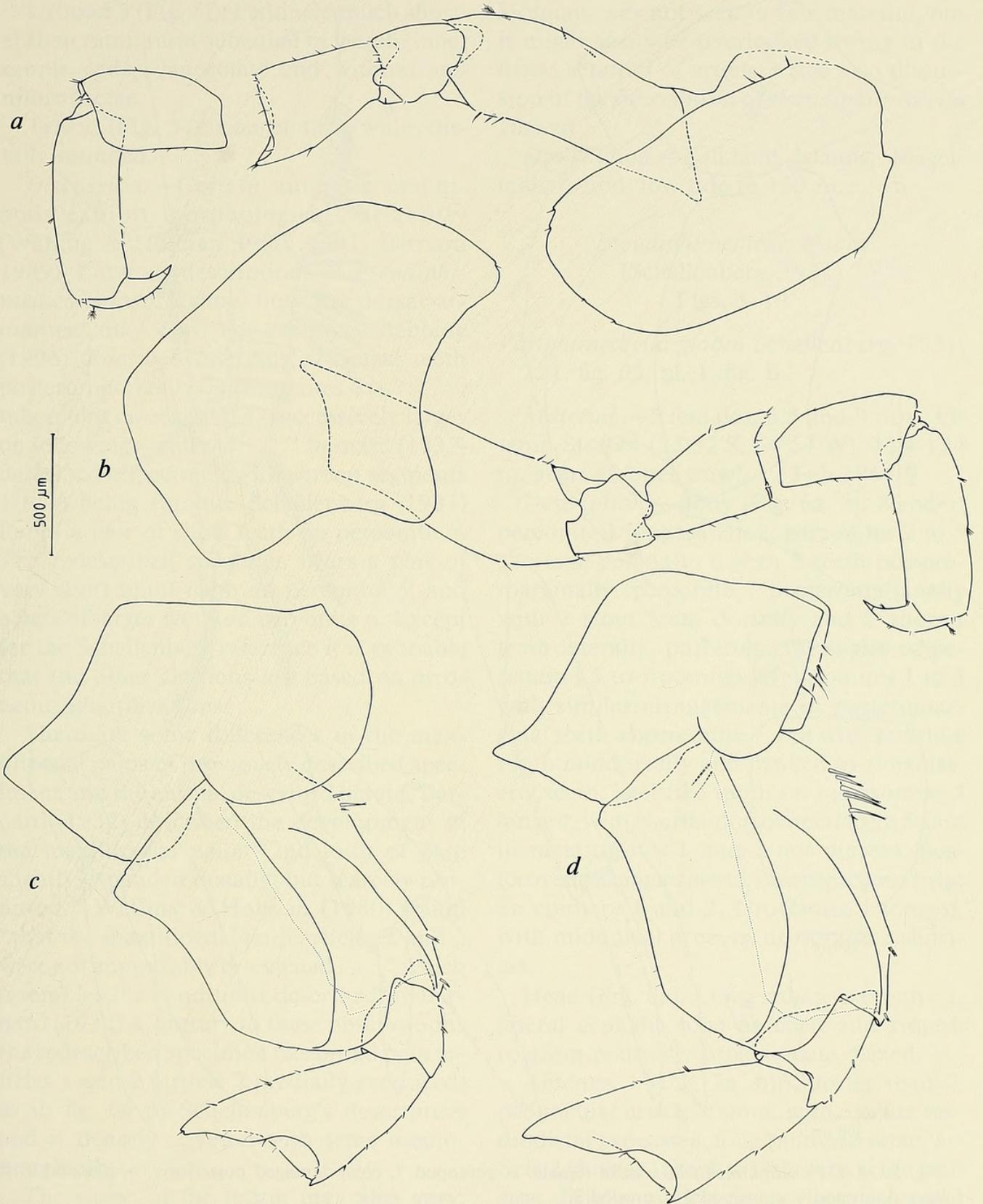


Fig. 4. a–d, *Pseudiphimediella nodosa* female. a, pereopod 3. b, pereopod 4. c, pereopod 5. d, pereopod 6.

and wider compared to pereopod 6, slightly excavate postermarginally, forming 2 short processes; ischium and merus as for pereopod 6.

Pleopod 1 (Fig. 5b): Peduncle relatively broad, with lateral setulated setae; inner ramus slightly longer; 2 coupling hooks as in detail of Fig. 5b.

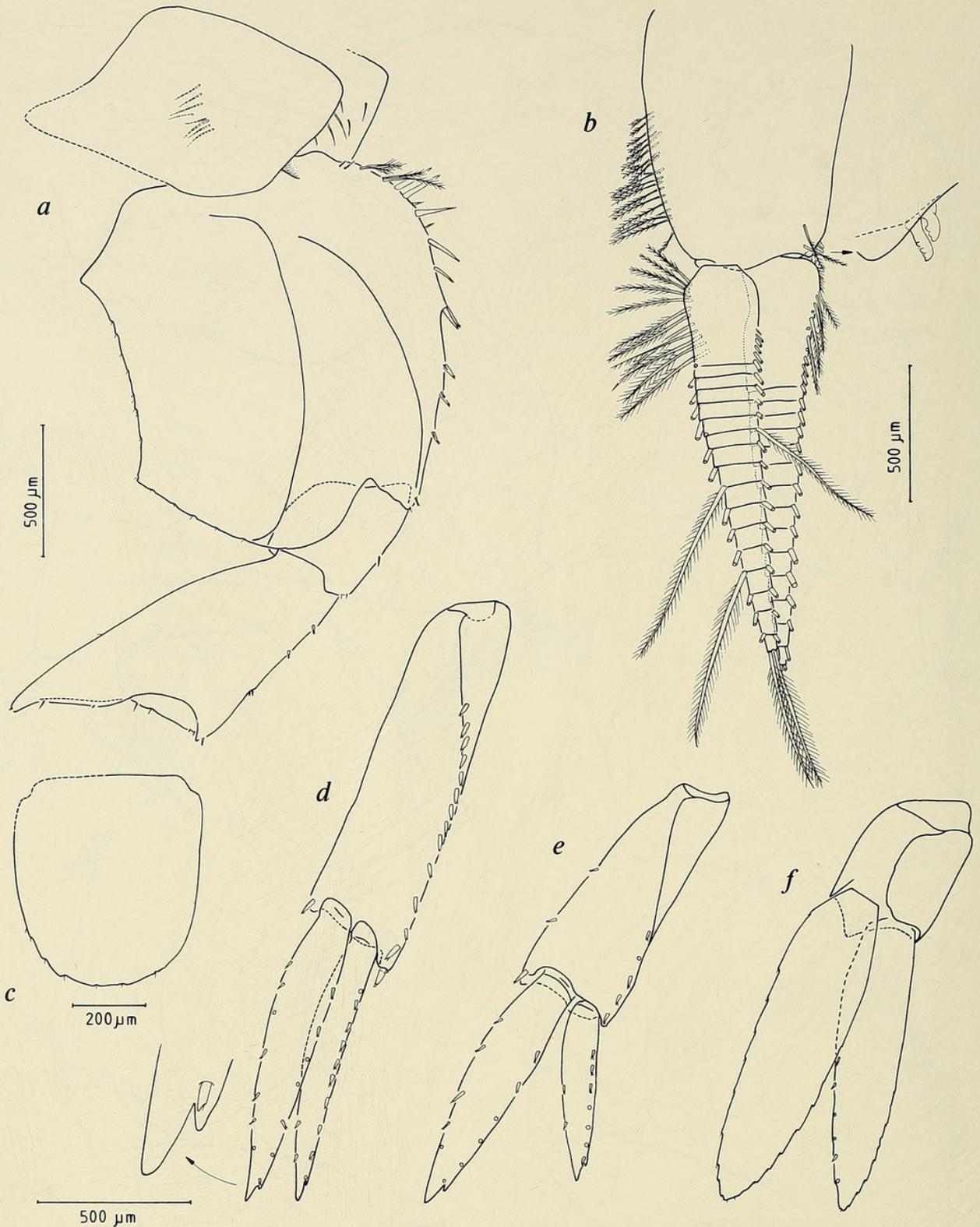


Fig. 5. a-f, *Pseudiphimediella nodosa* female. a, pereopod 7, coxa damaged posteriorly. b, pleopod 1. c, telson. d, uropod 1. e, uropod 2. f, uropod 3.

Uropod 1 (Fig. 5d): Peduncle longer than rami; rami subequal in length, apically bifid asymmetrically as in detail of Fig. 5d.

Uropod 2 (Fig. 5e): Shorter than uropod

1; peduncle slightly shorter than inner ramus; outer ramus shorter than inner ramus; in lateral view tips of rami not reaching apices of uropods 1 and 3.

Uropod 3 (Fig. 5f): Peduncle much shorter than rami; rami subequal in length, inner ramus wider, lanceolate and without spiniform setae.

Telson (Fig. 5c): Longer than wide, distally rounded.

*Discussion.*—Certain antarctic amphipods exhibit morphological variability (Watling & Holman 1980, 1981; Barnard 1989). Previous descriptions of *Pseudiphimediella nodosa* show how the dorsal armament may vary. For example, Stebbing (1906) described one pair of dorsal teeth posteromarginally on pereonites 4 to 7: “. . . tubercular on segment 4, successively larger on following segments . . .” Barnard (1932) described a specimen with pereon segments 1 to 6 being smooth. Schellenberg (1931) found a pair of short teeth on pereonite 5. The redescribed specimen bears a pair of very short blunt teeth on pereonite 5, and a pair of larger teeth on pereonite 6. Except for the Schellenberg reference it is probable that the other citations are based on erroneous identifications.

There are some differences in the maxillipedal palps of previously described specimens and the animal described herein. Barnard (1932) described the development of the maxillipedal palp: “2nd joint of palp slightly expanded distally, but scarcely produced.” Watling & Holman (1980) found “that the maxillipedal palp articles 1 and 2 were not appreciably broadened . . .,” which resembles the conditions described by Barnard (1932). Contrary to these observations the redescribed specimen has broad palp articles 1 and 2 (article 2 medially produced) as in fig. 64 of Schellenberg’s description and is densely covered with setae medio-marginally.

The shape of the telson may also vary. Barnard (1932) found that the telson of his specimen was apically slightly incised, but according to Schellenberg’s figure the telson is apically truncate, whereas our specimen bears a rounded telson. The fourth maxillipedal palp article, observed by Watling and

Holman, was not seen in this material, but it might easily be overlooked owing to the dense setation of article 3 (see also discussion of the description of *Pseudiphimediella glabra*).

*Distribution.*—Falkland Islands, Magellanic region, low tide to 150 m.

*Pseudiphimediella glabra*  
(Schellenberg, 1931)  
Figs. 5–10

*Pariphimediella glabra* Schellenberg, 1931: 121, fig. 65, pl. 1, fig. B.

*Material.*—2 females, 8.5 and 9 mm, Eltanin St. 974 (53°32’S, 64°57’W), 119–124 m, gear: 40’ otter trawl, 12 Feb 1964.

*Description.*—Body (Fig. 6a, b): Slender; pereonite 1 longer than 2; pereonites 2 to 5 shortest; pereonite 6 with 2 teeth posteromarginally; pereonite 7 posteromarginally with 2 stout teeth dorsally and 2 shorter teeth laterally, posterolateral angles of pereonites 5 to 7 pointed. Metasomites 1 to 3 with similar arrangements of posteromarginal teeth as pereonite 7, but with keel-like tooth middorsally and flanked by dorsolateral teeth; keel-like tooth on metasomite 3 longest, with shorter dorsolateral teeth found in metasomites 1 and 2 not present; posteroventral angles acute, inconspicuous ridge on epimera 1 and 2. Urosomite 1 longest, with middorsal process, urosomite 2 shortest.

Head (Fig. 6a): Longer than pereonite 1, lateral cephalic lobe notched and ridged; rostrum relatively broad, acute, flexed.

Antenna 1 (Fig. 7a, b): Shorter than 2; peduncular article 1 stout, with 3 acute mediobasal processes, long plumose setae; article 3 shorter than 1 (58%), with acute process distally, article 3 shortest; accessory flagellum uniaarticulate, inconspicuous (see detail of Fig. 7a); flagellar articles slender, every second article of second half with 1–2 aesthetascs and group of setae (as in detail of Fig. 6a).

Antenna 2 (Fig. 7c, e): Peduncular article

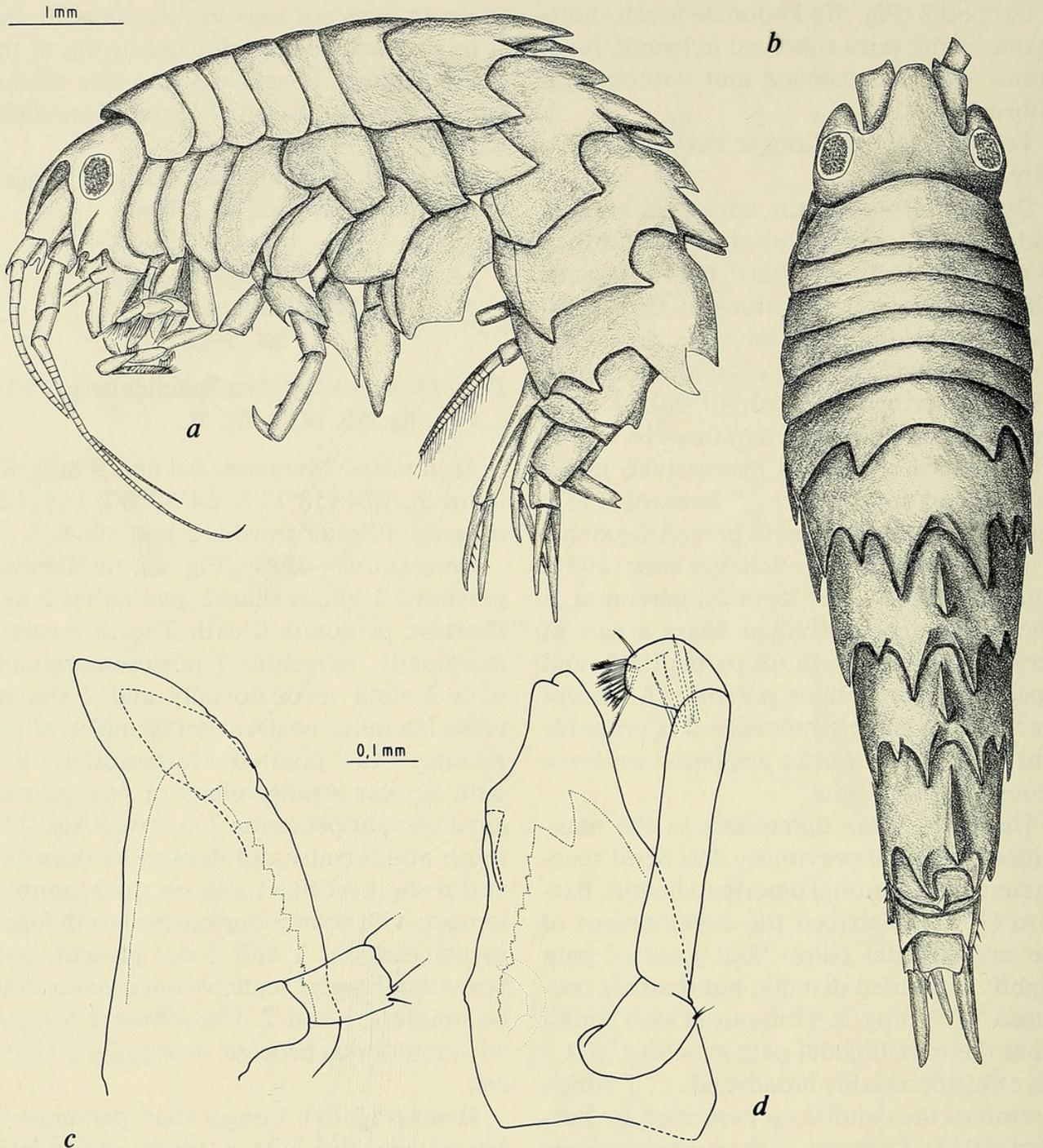


Fig. 6. a–d, *Pseudiphimediella glabra* female. a, left lateral view of habitus. b, dorsal view of habitus. c, left mandible. d, right mandible.

1 with long acute process; article 2 with 2 acute processes and short gland cone; article 3 short; article 4 slightly longer than article 5, with 2 processes distally, flagellum with 41 articles, each with group of short setae distally.

Labrum (Fig. 7f): Broad, rounded distally.

Mandible (Fig. 6c, d): Dentition of inci-

sors abraded (but specimens are in premolt condition), preformed incisors and laciniae mobiles with sharp toothed cutting edges; lacinia mobiles on right mandible slender, on left mandible broad; palp 3-articulate, article 2 longest, distally with 4 long setae; article 3 strongly curved laterally with group of setae ventromarginally.

Lower lip (Fig. 7d): (Taken from other

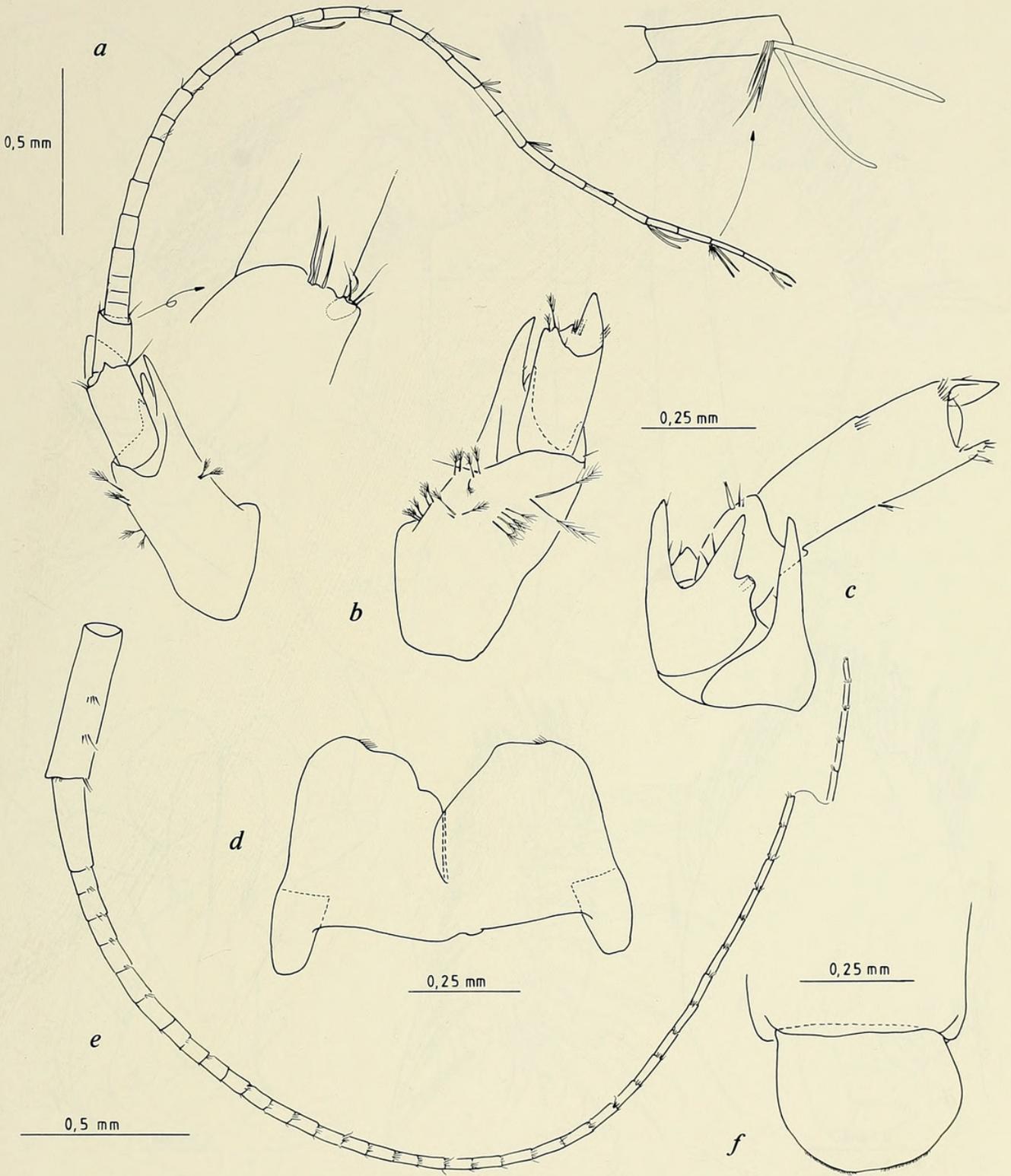


Fig. 7. a-f, *Pseudiphimediella glabra* female. a, antenna 1, details showing accessory flagellum and aesthetascs on flagellum. b, peduncular articles 1 and 2 of antenna 1. c, peduncular articles 1 to 4 of antenna 2. d, labium (lower lip), taken from other female. e, peduncular article 5 and flagellum of antenna 2. f, labrum (upper lip).

specimen) lobes broad, apices apically slightly sinuoid; mandibular projections short and rounded.

Maxilla 1 (Fig. 8b): Inner plate slightly shorter than outer plate, with 10 setae me-

diomarginally; outer plate with 11 spini-form setae, dentition abraded, preformed setae with sharp dentition; palp biarticulate, longer than outer plate with 7 setae distally.

Maxilla 2 (Fig. 8a): Inner plate wider than

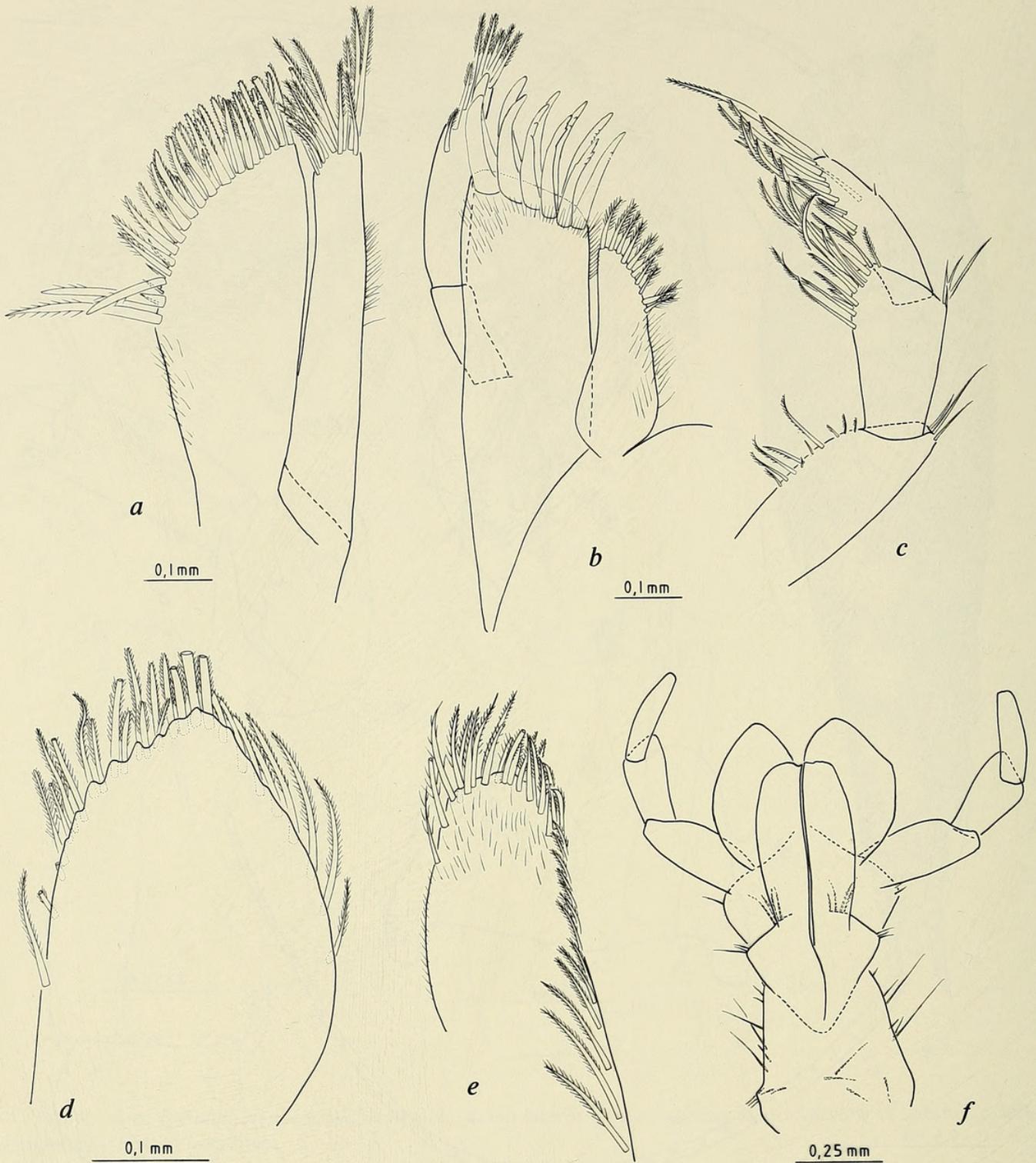


Fig. 8. a-f, *Pseudiphimediella glabra* female. a, maxilla 2. b, maxilla 1. c, maxillipedal palp, seen from ventral. d, outer plate of maxilliped, ventral view. e, inner plate of maxilliped seen from oral side. f, maxilliped seen from oral side, setae of plates and palps omitted.

outer plate, slightly expanded distally, with stout, relatively short, setulated setae distally; outer plate, slender, with longer setae distally.

Maxilliped (Fig. 8c-f): Inner plate shorter than outer (ca. 80%), with setulated setae mediomarginally and distally; outer plate broad with setulated setae marginally; palp

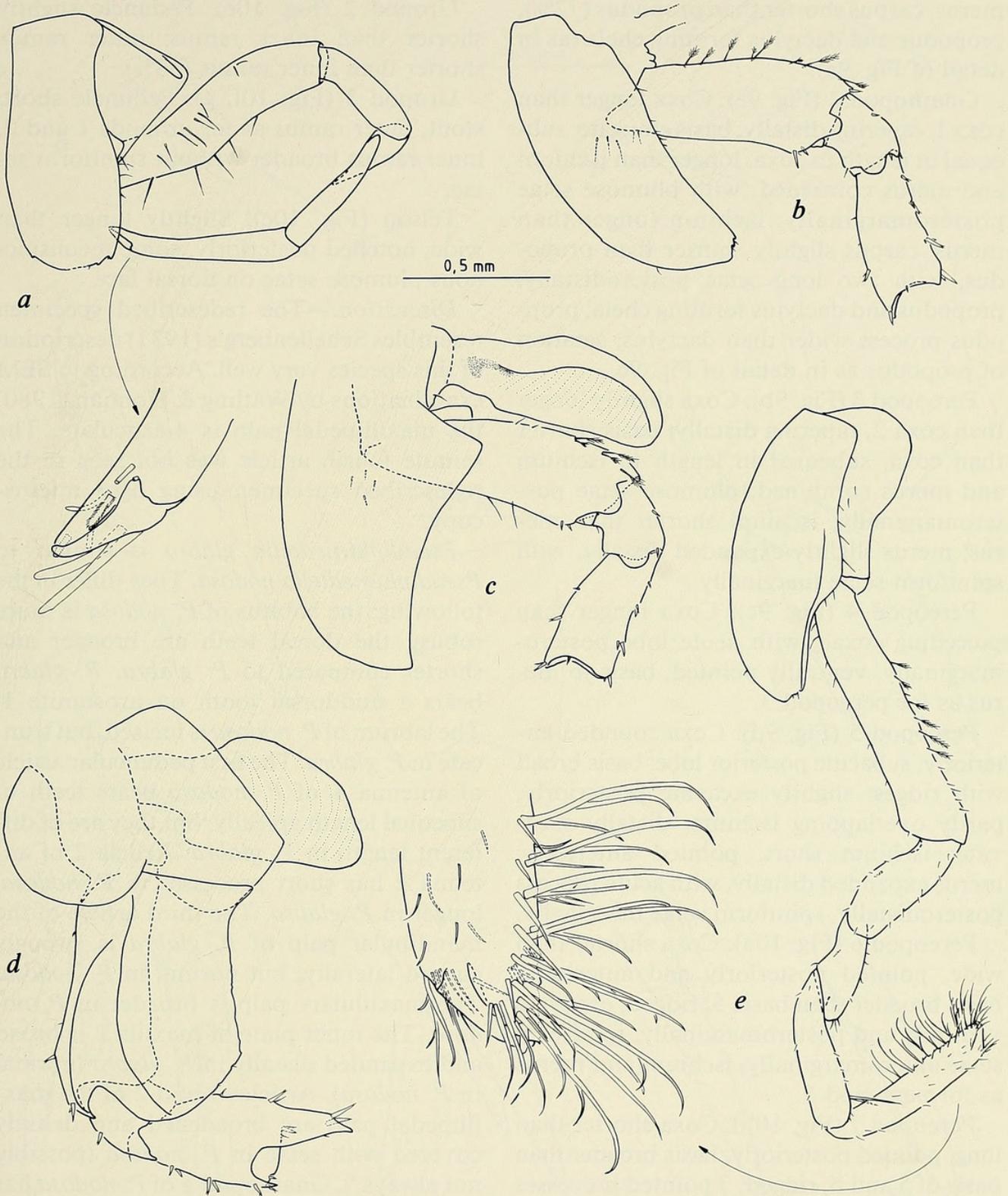


Fig. 9. a-e, *Pseudiphimediella glabra* female. a, gnathopod 1, detail showing chela. b, pereopod 3. c, pereopod 4. d, pereopod 5. e, gnathopod 2, detail showing chela.

4-articulate (fourth minute article may easily be overlooked using light-microscopy, see discussion), article 2 expanded distally, article 3 slender, setation as in Fig. 7c.

Gnathopod 1 (Fig. 9a): Coxa slightly expanded distally, truncate apically; basis elongated, shorter than coxa, slightly sinuoid; ischium elongate, just longer than

merus; carpus shorter than propodus (72%); propodus and dactylus forming chela (as in detail of Fig. 9a).

Gnathopod 2 (Fig. 9e): Coxa longer than coxa 1, tapering distally; basis elongate, subequal in length to coxa, longer than ischium and merus combined, with plumose setae posteromarginally; ischium longer than merus; carpus slightly shorter than propodus, with two long setae posterodistally; propodus and dactylus forming chela, propodus process wider than dactylus; setation of propodus as in detail of Fig. 9e.

Pereopod 3 (Fig. 9b): Coxa slightly longer than coxa 2, tapering distally; basis shorter than coxa, subequal in length to ischium and merus combined; plumose setae posteromarginally; ischium shorter than merus; merus slightly expanded distally, with spiniform setae marginally.

Pereopod 4 (Fig. 9c): Coxa longer than preceding coxae, with acute lobe posteromarginally, ventrally pointed; basis to merus as for pereopod 3.

Pereopod 5 (Fig. 9d): Coxa rounded anteriorly, subacute posterior lobe; basis broad with ridges; slightly excavate posteriorly, partly overlapping ischium, distally excavate; ischium short, pointed anteriorly; merus expanded distally, with acute process posterodistally, spiniform setae marginally.

Pereopod 6 (Fig. 10a): Coxa shorter than wide, pointed posteriorly and anteriorly; basis broader than basis 5, ridged, excavate ventrally and posteromarginally, spiniform setae anteromarginally; ischium and merus as for pereopod 5.

Pereopod 7 (Fig. 10b): Coxa shorter than long, pointed posteriorly; basis broader than basis of 5 and 6, ridged; 3 pointed processes posteromarginally, ventrally excavate, anteriorly with spiniform setae; ischium and merus as for pereopod 5.

Uropod 1 (Fig. 10d): Peduncle longer than rami, with spiniform setae marginally; rami slender, subequal in length, with spiniform setae marginally, slightly bifid apically.

Uropod 2 (Fig. 10e): Peduncle slightly shorter than inner ramus; outer ramus shorter than inner ramus (63%).

Uropod 3 (Fig. 10f, g): Peduncle short, stout, outer ramus as for uropods 1 and 2, inner ramus broader without spiniform setae.

Telson (Fig. 10c): Slightly longer than wide, notched posteriorly, some inconspicuous plumose setae on dorsal face.

*Discussion.*—The redescribed specimen resembles Schellenberg's (1931) description of this species very well. According to SEM examinations by Watling & Holman (1980) the maxillipedal palp is 4-articulate. The minute fourth article was not seen in the redescribed specimen using light microscopy.

*Pseudiphimediella glabra* is similar to *Pseudiphimediella nodosa*. They differ in the following: the habitus of *P. nodosa* is more robust, the dorsal teeth are broader and shorter compared to *P. glabra*. *P. glabra* bears a middorsal tooth on urosomite 1. The labrum of *P. nodosa* is incised, but truncate in *P. glabra*. The first peduncular article of antenna 1 of *P. nodosa* bears teeth of subequal length apically, but they are of different length in *P. glabra*. Article 2 of antenna 2 has short processes in *P. nodosa*, longer in *P. glabra*. The third article of the mandibular palp of *P. glabra* is strongly curved laterally, but normal in *P. nodosa*. The maxillary palp is broader in *P. nodosa*. The inner plate of maxilla 2 is broad and expanded distally in *P. glabra* (normal in *P. nodosa*). Articles 1 and 2 of the maxillipedal palp are broadened and densely covered with setae in *P. nodosa* (possibly not always?). Gnathopod 1 of *P. nodosa* has a shorter merus, carpus and propodus than in *P. glabra*. Coxae 3 and 4 are wider in *P. nodosa*. The basis and ischium of pereopods 5 to 7 bear a conspicuous acute distal process in *P. nodosa* (short in *P. glabra*). The basis of pereopod 7 of *P. nodosa* is slightly excavate, forming two short processes, but

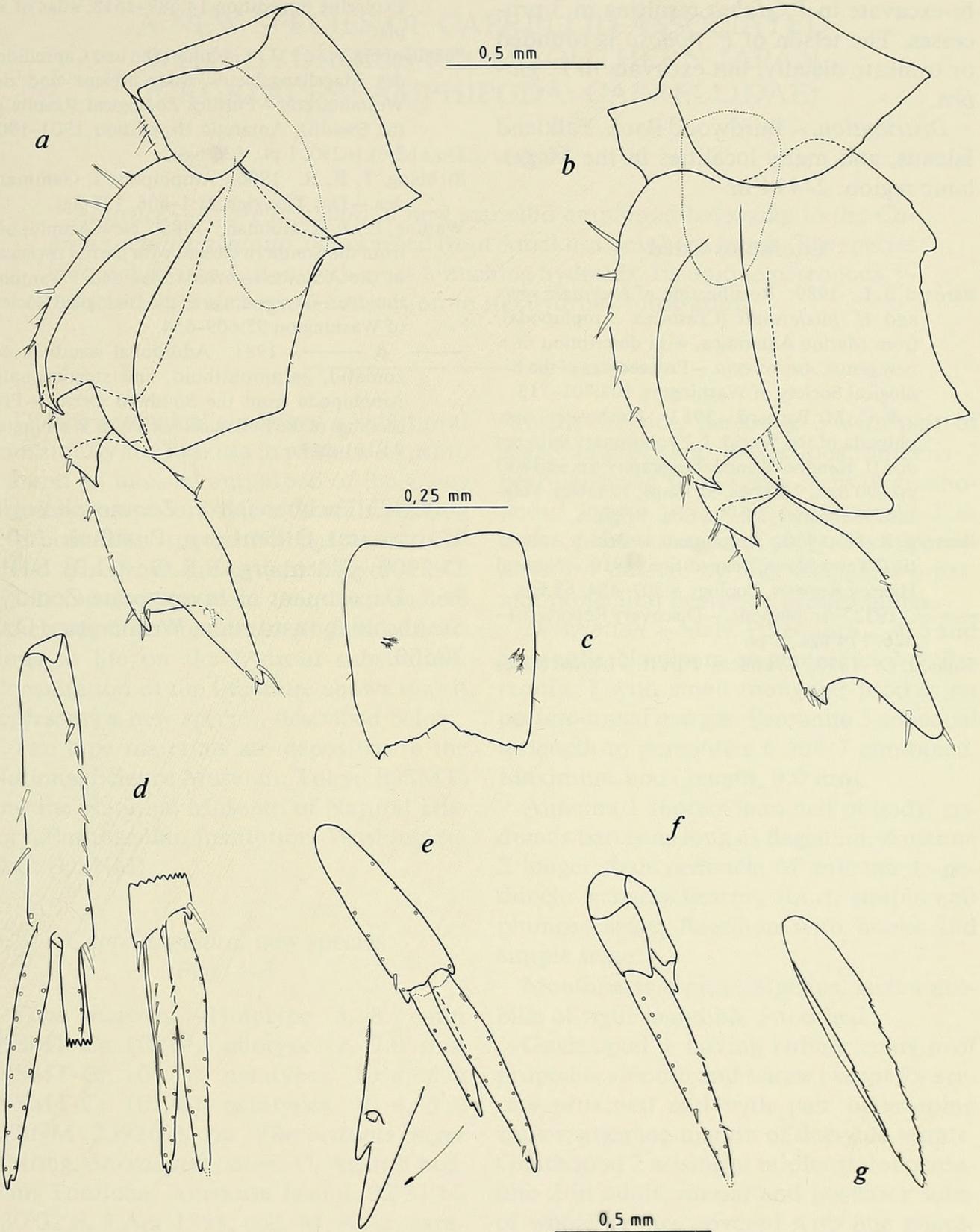


Fig. 10. a-g, *Pseudiphimediella glabra* female. a, pereopod 6, dotted line showing gill. b, pereopod 7, dotted line showing gill. c, telson. d, uropod 1. e, uropod 2, detail showing terminal cleft region. f, uropod 3, peduncle slightly damaged. g, inner ramus of uropod 3.

bi-excavate in *P. glabra* resulting in 3 processes. The telson of *P. nodosa* is rounded or truncate distally, but excavate in *P. glabra*.

*Distribution.*—Burdwood Bank, Falkland Islands, and many localities in the Magellanic region, 2–494 m.

#### Literature Cited

- Barnard, J. L. 1989. Rectification of *Halirages regis* and *H. huxleyanus* (Crustacea: Amphipoda), from Marine Antarctica, with description of a new genus, *Austroregia*.—Proceedings of the Biological Society of Washington 102:701–715.
- , & C. M. Barnard. 1983. Freshwater Amphipoda of the World, I. Evolutionary patterns and II. Handbook and bibliography, xix and 830 pp., 50 figs., 7 graphs, 98 maps, 12 tables. Hayfield Associates, Mt. Vernon, Virginia.
- Barnard, K. H. 1930. Amphipoda.—British Antarctic (“Terra Nova”) expedition, 1910.—Natural History Reports, Zoology 8:307–454, 63 figs.
- . 1932. Amphipoda.—Discovery Reports 5:1–326, 174 figs., 1 pl.
- Dana, J. D. 1853. Crustacea. Part II.—United States Exploring Expedition 14:689–1618, atlas of 96 pls.
- Schellenberg, A. 1931. Gammariden und Caprelliden des Magellangebietes, Sudgeorgiens und der Westantarktis.—Further Zoological Results of the Swedish Antarctic Expedition 1901–1903 2(6):1–290, 1 pl., 136 figs.
- Stebbing, T. R. R. 1906. Amphipoda I. Gammaridea.—Das Tierreich 21:1–806, 127 figs.
- Watling, L., & H. Holman, 1980. New Amphipoda from the Southern Ocean, with partial revisions of the Acanthonotozomatidae and Paramphithoidae.—Proceedings of the Biological Society of Washington 93:609–654.
- , & ———. 1981. Additional acanthonotozomatid, paramphithoid, and stegocephalid Amphipoda from the Southern Ocean.—Proceedings of the Biological Society of Washington 94:181–227.

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