PARATANAIDAE COLLECTED IN CHILE BAY, GREENWICH ISLAND BY THE XXII CHILEAN ANTARCTIC EXPEDITION, WITH AN APSEUDES FROM PORVENIR POINT, TIERRA DEL FUEGO ISLAND

SUEO M. SHIINO

Director, Shima Marineland, Kashikojima, Sgo-cho, Shima-gun, Mie Prefecture, Japón.

Santiago - Chile

1 9 7 0

INACH. Ser. Cient. Vol. I, Nº 2, 77-122, Santiago 1970
(Contribución Nº 21 del Instituto Antártico Chileno)

I N D I C E

PARATANAIDAE COLLECTED IN CHILE BAY, GREENWICH ISLAND BY THE XXII CHILEAN ANTARCTIC EXPEDITION, WITH AN *APSEUDES* FROM PORVENIR POINT, TIERRA DEL FUEGO ISLAND

Sueo M. Shiino*

ABSTRACT

Seven species of Paratanaidae collected from the bottom of Chile Bay, Greenwich Island by the 22nd. Chilean Antarctic Expedition, and an apseudid obtained in the waters of Tierra del Fuego Island have been described and figured. Three of the Paratanaidae are known species: *Nototanais antarcticus* HODGSON, *N. dimorphus* BEDDARD, y *Leptognathia gracilis* (*KROYER*) which gives a beautiful example of bipolar distribution. Four are new to science, these being *Typhlotanais longidactylus* n. sp., *T. greenwichensis* n. sp., *Leptognathia gallardoi* n. sp. and *L. elongata* n. sp. The apseudid belongs to *LANG's* species, *Apseudes hermaphroditicus,* which is to be sunk in a lower rank, a forma of *Apseudes nipponicus*. Forma typica and the new forma give another case of bipolar distribution.

RESUMEN

En el presente trabajo se describen e ilustran siete especies de Paratanaidae colectados en los fondos de Bahía Chile, Isla Greenwich por la 22ª Expedición Antártica Chilena, y un apséudido obtenido en las aguas de Tierra del Fuego. De las especies de Paratanaidae tres son conocidas: *Nototanais antarcticus* HODGSON, *N. dimorphus* BEDDARD, *y Leptognathia gracilis* (KROYER), esta última especie es un buen ejemplo de distribución bipolar. Cuatro especies son nuevas para la ciencia: *Typhlotanais longidactylus* n. sp., *T. greenwichensis* n. sp., *Leptognathia gallardoi* n. sp. y *L. elongata* n. sp. El apséudido pertenece a la especie de LANG *Apseudes hermaphroditicus,* la cual debe incluirse en un rango inferior, como una forma de *Apseudes nipponicus*. La forma típica y la nueva forma constituyen otro caso de distribución bipolar.

INTRODUTION

In January 1968, when Dr. V. A. Gallardo, Assistant Professor in the Department of Zoology, University of Concepción, got a chance of participating in the 22nd Chile an Antarctic Expedition, he made an extensive survey of the bottom fauna in Chile Bay, Greenwich Island. The materials of Tanaidacea which had been assorted by himself from the other bottom animals and deposited in the Museum of that University were sent to me for identification. Examination of more than one hundred specimens preserved in twenty vials according to the stations revealed that they all belong to Paratanaidae and comprise seven species. They are very interesting including not only four new species, but also two antarctic species, *Nototanais antarcticus* and *N. dimorphus*, both of

* Dirección actual: Director, Shima Marineland, Kashikojima, Sgo-cho, Shima-gun, Mie Prefecture, Japón.

which are remarkable for the bizarre appearance of the male chelae. Another noteworthy fact is that the collection comprises *Leptognathia gracilis,* which is one of the most popular arctic species. Since this species has not yet been obtained from the tropical or subtropical waters, the present collection appears to indicate its bipolar distribution.

Together with Chile Bay materials, apseudid specimens collected in the waters of Tierra del Fuego Island, at Porvenir Point were sent to me. The specimens, all belonging to a single species, appear to represent another example of bipolar distribution, since the species is almost a counterpart of *Apseudes nipponicus* which has been recorded from Japanese waters.

In sorting the specimens, the structure of cheliped and pereopods and the armatures on them afforded great facilities for the recognition of species. In Paratanaidae, sexual dimorphisms are observed in the proportional lengths of somites, two pairs of antennae, and mouth parts. Besides these, configuration of carapace and structure of cheliped are at times strikingly different between the sexes. On the other hand, pereopods, pleopods and uropods show constant agreement between them, though these appendages are usually more strongly developed in the male. Coincidence in the structure of these appendages between the sexes is available for identifying the male.

All the species comprised in the collection are described and figured in this report. Stations with necessary particulars, and species and numbers of specimens obtained at each station are listed at the end of this report.

The main part of the collection and holotypes are deposited in the *Museo Nacional de Historia Natural, Santiago;* a second collection of paratypes and other specimens are in the *Departamento de Zoología, Universidad de Concepción, Chile.*

DESCRIPTIONS OF THE SPECIES

Nototanais antarcticus HODGSON

(Figs. 1-5)

Paratanais antarctica HODGSON, 1902. Crustacea, "Southern Cross" Expedition, 1902: 240-241, pl. XXI.
Nototanais antarcticus, RICHARDSON, 1906, Bull. Mus. Nat. Hist., 1906: 187.
RICHARDSON, 1907. Isopodes, Expédition Antarctique Française (1903-1905): 2-3, figs. 1-7.
HODGSON, 1910. Crustacea, National Antarctic Expedition, 1901-1904: 6-8.
STEPHENSEN, 1947. Scientific Results of the Norwegian Antarctic Expedition, 1927-1928, etc. Nº 27: 6.
KUSSAKIN, 1967. Biological Results of the Soviet Antarctic Expedition (1955-1958), 3: 325.

Materials: St. 19, 1 male, 2 females; st. 27, 3 females; st. 40, 1 male; st. 47, 1 female; st. 56, 1 male.

Female: St. 27. 3.25 mm x 0.63 mm at pereonite I. Body linear, insensibly tapering backwards. Carapace a quarter as long as entire length, longer than wide, narrower anteriorly than posteriorly; two sides very slightly curved; anterior border V-shaped. Eye lobe distinct, pigmented. Pereon a little longer than twice the length of carapace. Pereonite I short; II, III and VI a little longer than I, subequal to one another in length; IV longest of all; V somewhat shorter than IV, yet longer than VI. All pereonites widely round on sides, and with a pair of short lateral hairs. Pleon subequal to last two pereonites in length. Five pleonites equal to one another in length, gradually and slightly narrowing backwards.

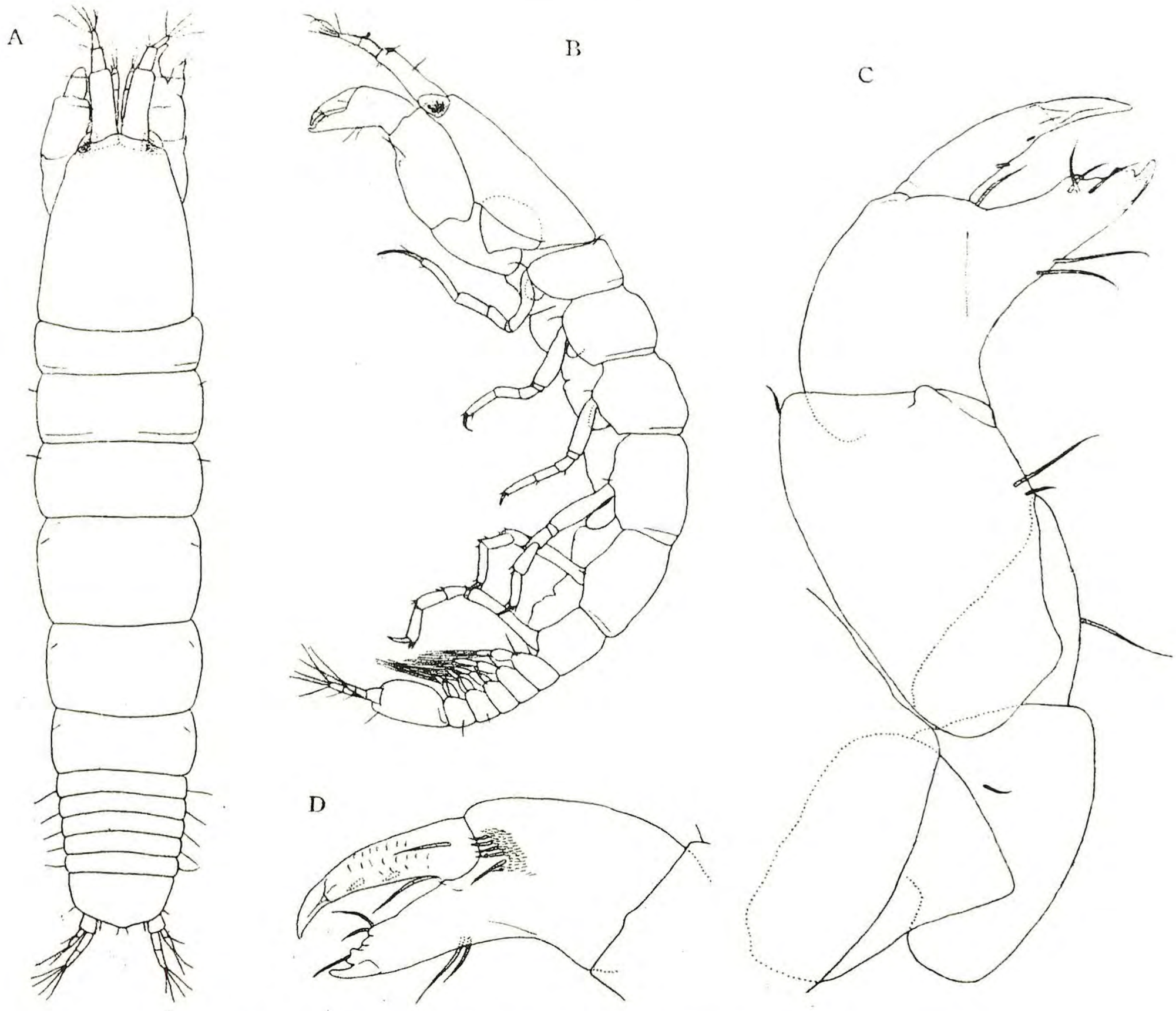


Fig. 1. *Nototanais antarcticus* (HODGSON), female.
A, dorsal view. B, lateral view. C, cheliped, outer view. D, chela, inner view. A, C. D, st. 40. B, st. 27. A, B x 30; C, D x 115.

Pleotelson a little more than half the length of five pleonites, widely round on posterior margin, though with a slight median point.

Antenna I shorter than carapace, 3-segmented; basal segment longer than remaining segments. Antenna II shorter than antenna I; fourth segment longest of all, terminal segment tiny. Labrum with apical part flattened in oval plate and ciliated on margin. Labium with a V-shaped median insinuation; the margin widely curved, non-setose. Molar process of mandible broad, columnar, truncate on distal end, non-tuberculated. Incisor process curved at right angle; cutting edge notched in right mandible, and fore margin finely serrated. Same process of left mandible triangular, serrated on fore margin and accompanied by lacinia mobilis which is similarly shaped and serrated on same margin. Maxilla I narrower than in *dimorphus*, curved near the tip; epipodite ending in three hairs. Maxilla II rudimentary, elongate oval. Maxillipeds of two sides fused at the base into a triangular segment, but the endites leaving a median line of fusion; palp 4-segmented. Epipodite band-like.

Cheliped relatively stout. Chela narrower than carpus; immovable finger ending in a claw, irregularly serrated and with a few spinules in subterminal part of inner border. Movable finger entire on inner border, but with two tiny spinules. Palm with a short row of a few

spinules associated with a small basal area of tinier spinules. Dactylus of first three pereopods elongated, slender, attenuating to a point; that of pereopod I longest. Spines on these limbs feeble. Dactylus of remaining pereopods thicker, but much shorter and curved like a claw; spines stouter than in preceding pereopods. Pereopods IV and V with a single spine at dorso-distal angle of propus, whereas last pereopod with six spines at the same angle. Rudiments of oostegites present at the bases of pereopods I-IV. Pleopods biramous; endopodite smaller than exopodite; the former fringed by a few plumose spines, while the latter by more numerous spines. Uropod short, biramous; both rami 2-segmented, exopodite as long as basal segment of endopodite.

Fig. 2 *Nototanais antarcticus* (HODGSON), female.
A, maxilliped and maxilla II. B, maxilla I. C, labrum. D, same, inner side. E, tip of maxilla II. F, labium. G, left mandible. H, right mandible. I, maxillipeds. J, pleopod I, right. K, incisor process of right mandible. L, same of left mandible. M, same of right mandible another view. St. 40. A-D, F-J x 160; E x 470; K-M x 320.

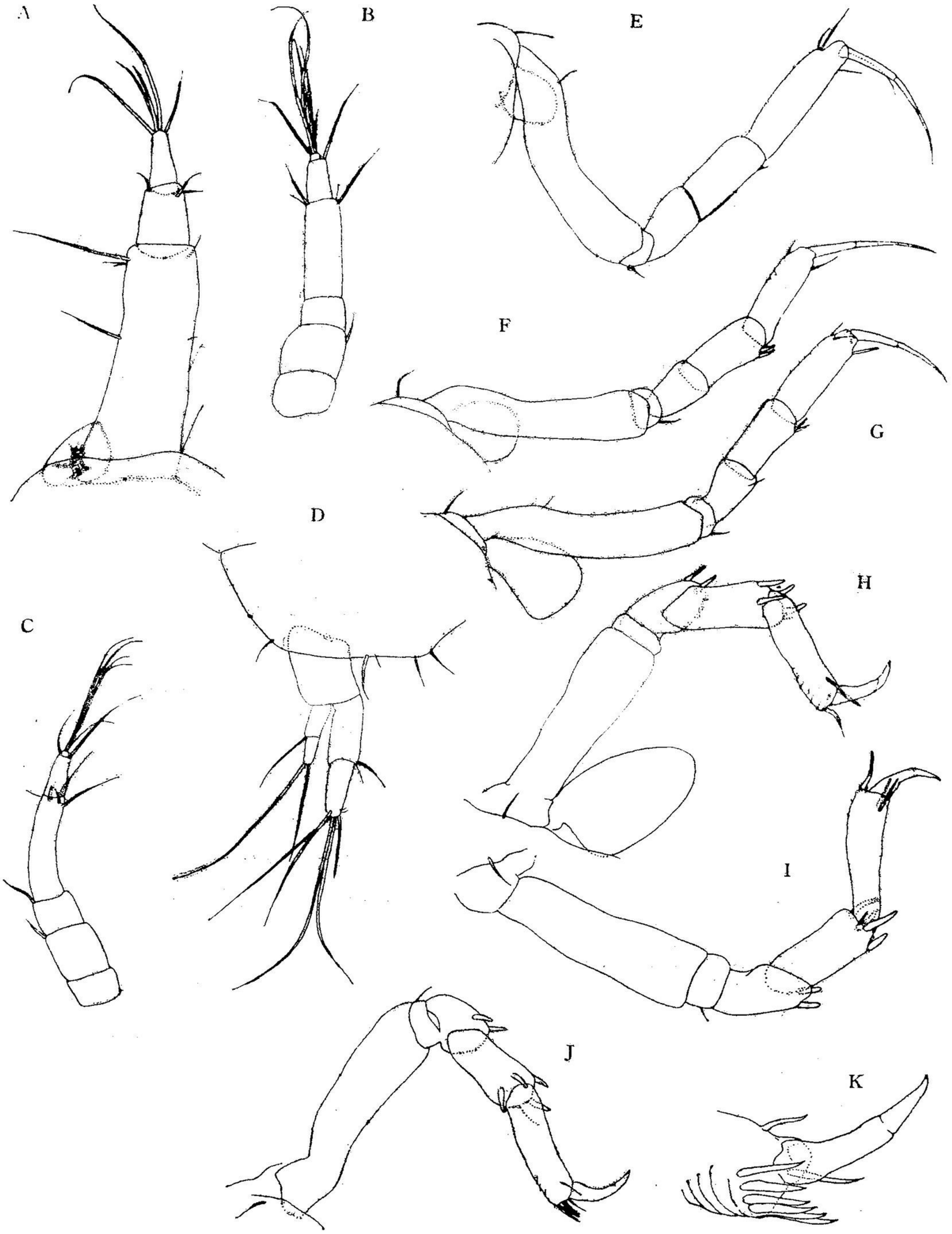


Fig. 3 *Nototanais antarcticus* (*Hodsson*), female.
A, antenna I. B, antenna II, ventral view. C, same, lateral view. D, uropod, dorsal view. E-J, pereopods I-VI. K, apex of pereopod VI. A, B, D-K, st. 40. C, st. 27. A-J x 115; K x 320.

Male: St. 40. 2.83 mm x 0.55 mm at pereonite I. Body slightly tapering backwards. Carapace two-sevenths as long as entire body, longer than wide, attenuating forwards, and more or less similar to the carapace of *dimorphus* in outline. Pereon one and half times as long as carapace, notched on the sides between every two consecutive somites, and

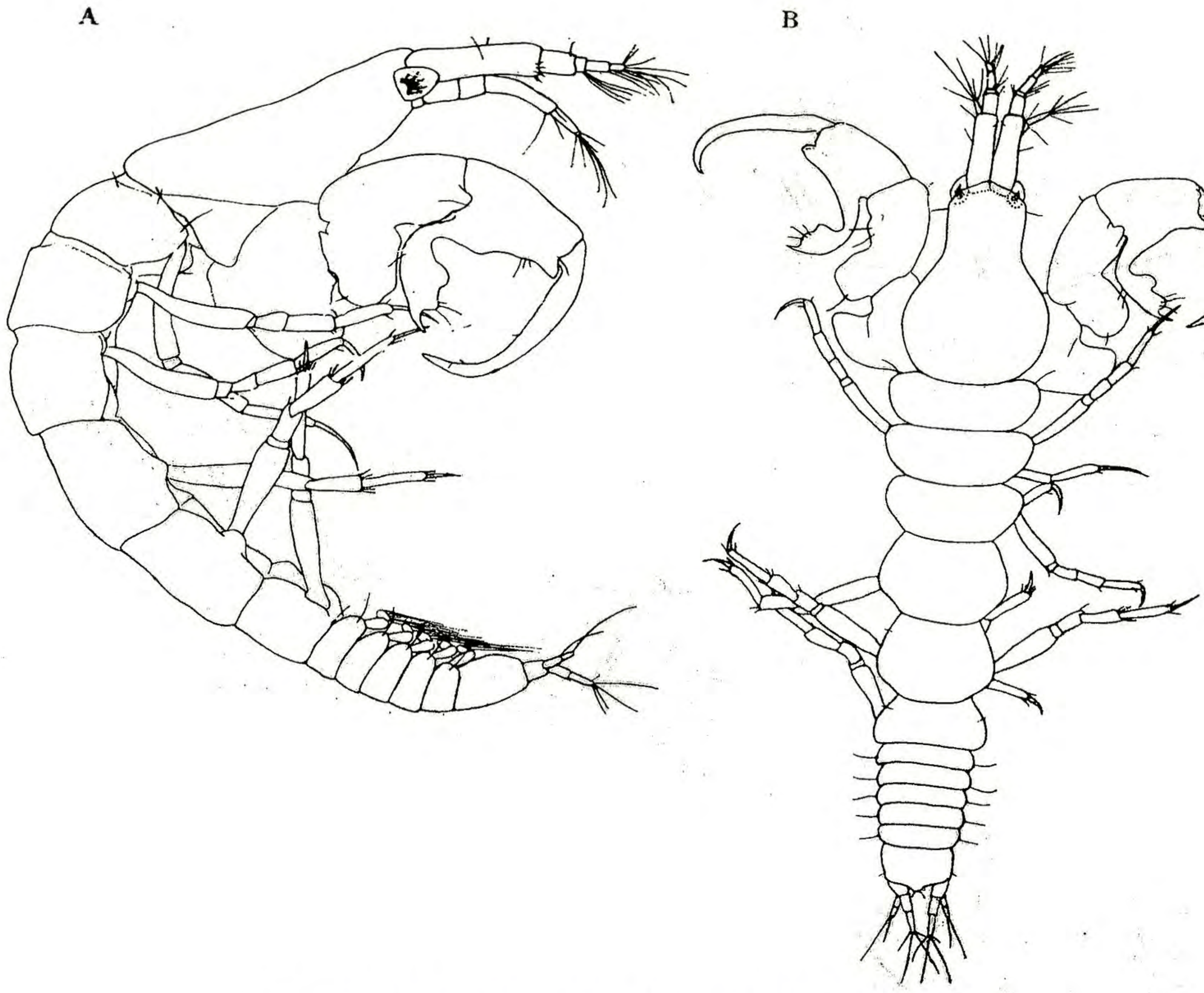


Fig. 4. *Nototanais antarcticus* (HODGSON), male.

A, lateral view. B, dorsal view. St. 40. A x 45; B x 30.

decreasing in width gradually backwards. Each pereonite round on sides. Pereonites I and VI shortest of all, subequal in length to each other; II and III a little longer, and equal to each other; IV and V longest and equal to each other. Pleon longer than last two pereonites. Five pleonites equal in length to one another, with sides rounded and with a pair of lateral hairs. Pleotelson nearly quadrate, with a slight median bulge.

Antenna I 5-segmented; segment I longer and broader than remaining segments; terminal three segments plentifully supplied with sensory filaments. Antenna II 6-segmented, shorter than I; segment IV longest of all, segment VI minute, with apical bunch of setae. Oral parts degenerated except for maxilla II and maxillipeds. Labrum retained, small in size. Palp of maxilliped bearing setae much longer than in female; endite much reduced, almost rudimentary.

Chelipeds enormous in size. Two fingers of chela encompass a large open space when closed. Movable finger curved near the tip like a sickle and extending over the tip of immovable finger. The latter is issued from basal part of propus as a narrow, proximally directing process, which curves further distally and widens into lunular lobe bearing two inner bulges an ending in a narrowed claw; distal bulge has three setae. Propus bears a comb-like row of spinules near the base of dactylus. Carpus has a large quadrate ventral expansión in its basal half. Merus is broad, broader than long, carrying a similar but larger ventral ex-

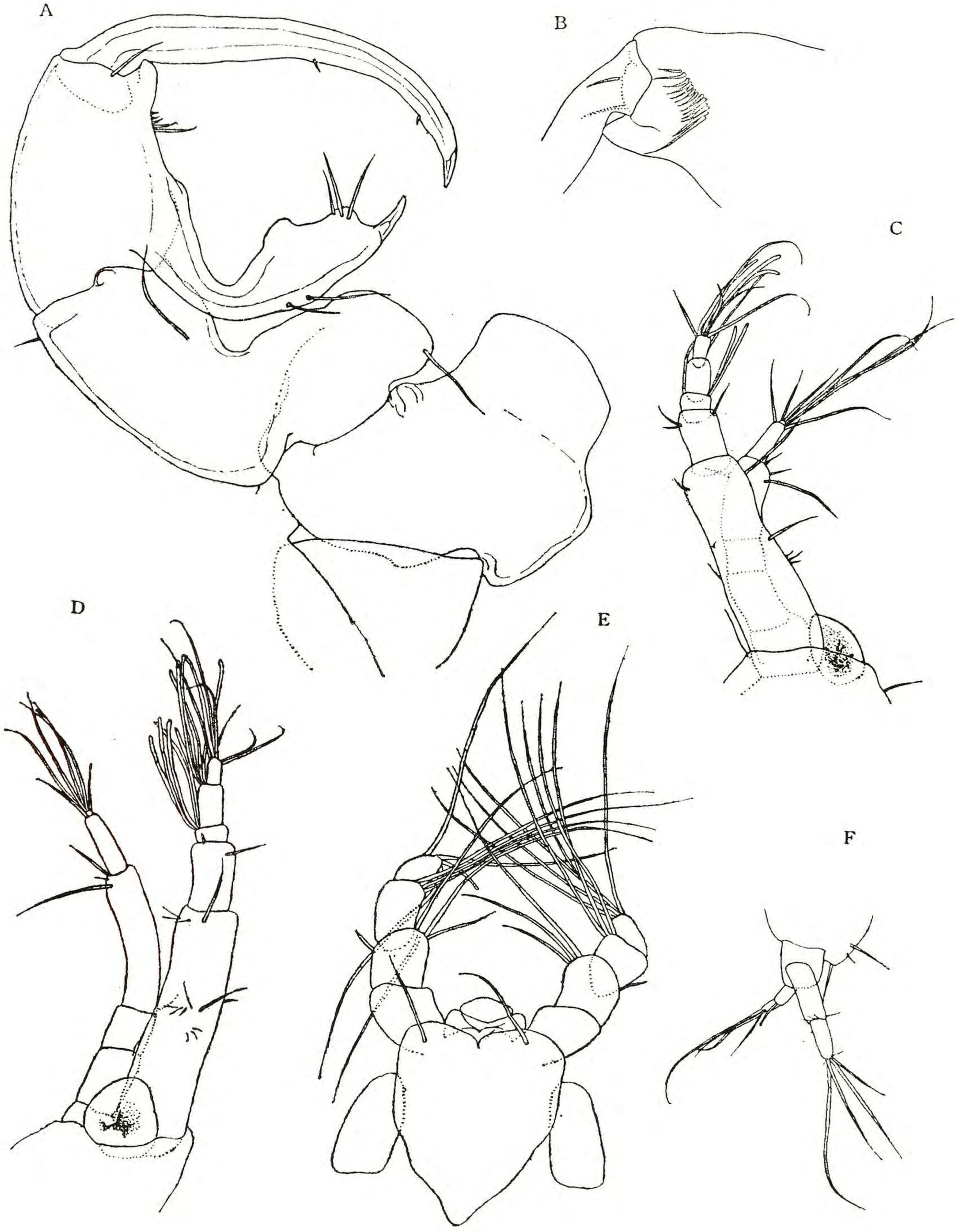


Fig. 5. *Nototanais antarcticus* (HODGSON), male.

A, cheliped. B, same, terminal end of propus. C, antenna I and II, dorsal view. D, same, lateral view. E, maxilla II and maxillipeds. F, uropod, lateral view. A-D, F x 115; E x 160.

pansion. Pereopods longer **and** stouter than in female, but exactly the **same in armatures.** Pleopods and uropods as in **female.**

Size range: **Female** 2.61 **mm** - 4.20 mm long.

Remarks: **As to the** chela of the male, HODGSON and RICHARDSON, **both of whom** gave **a** discription and figure **on** this limb, do not **appear** correct. HODGSON (1902) said "merus is very large and irregular, besides being considerably and irregularly expanded distally", and **gives** figures showing "merus" bearing two expansions. Later, the same author (1910) stated "the merus is a very short joint, wedged in obliquely between the ischium and the carpus", and seemed to maintain the two expansions as belonging to ischium and carpus. On the contrary, RICHARDSON (1907) showed in her figure of cheliped an oblique line **indicating** the border between carpus and merus, the latter of these having a ventral expansion. In my materials, the carpus and merus are entirely fused, without leaving Richardson's border between them, though the distal expansion may belong to the portion of merus.

Distribution: The species has been collected from the following localities. Off Cape Adare (HODGSON), Booth-Wandel Isl., Wincke Isl. (RICHARDSON), Winter Quarters (HODGSON), Peterman Isl. (RICHARDSON), South Shetland (STEPHENSEN), 67º 40' 1" S, 45º 48' 5" W (KUSSAKIN).

Nototanais dimorphus (BEDDARD)

(Figs. 6-10)

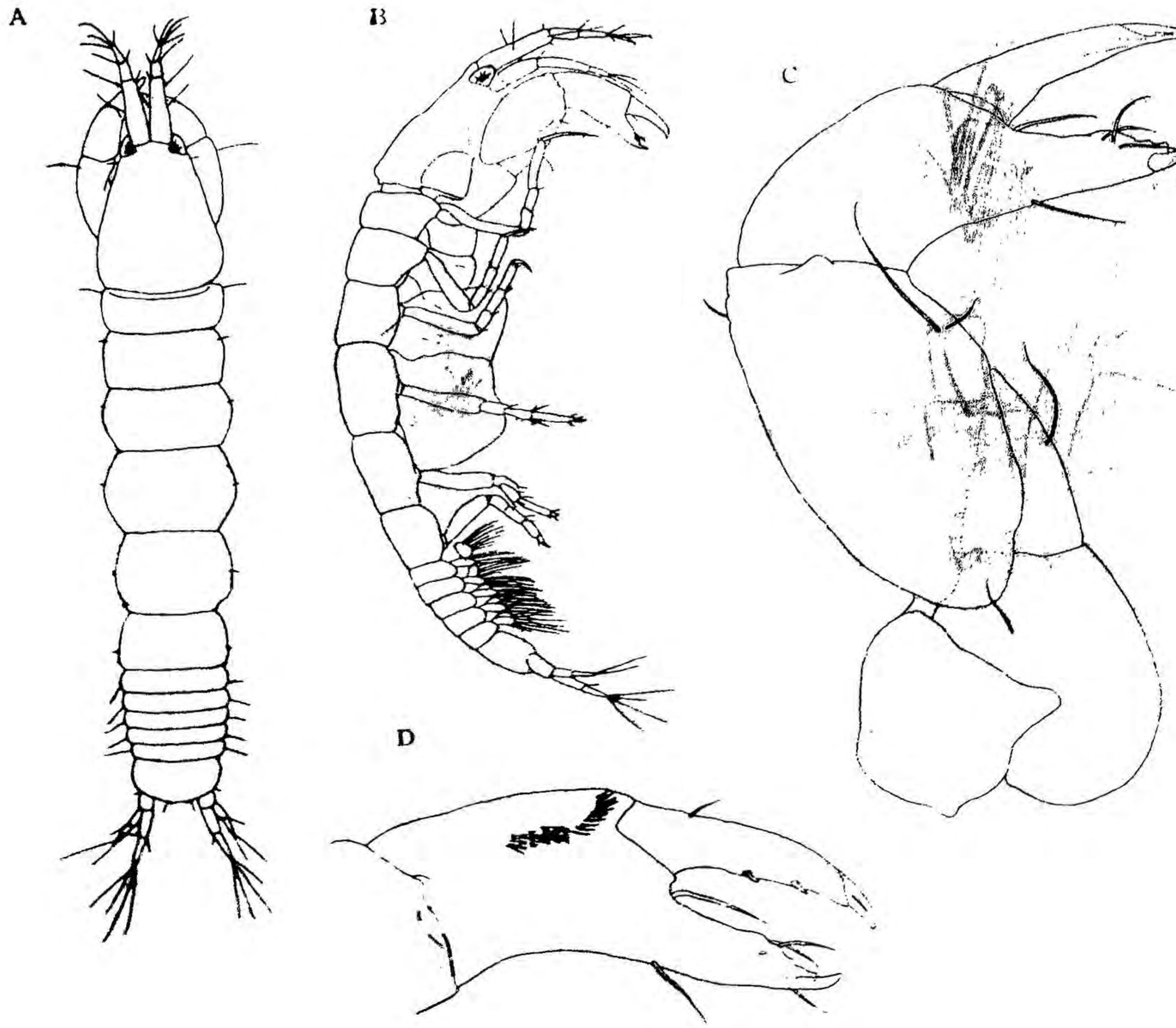


Fig. 6. ***Nototanais dimorphus*** **(BEDDARD), female.**

A, dorsal view. B, lateral view. C, cheliped, **outer view.** D, chela, inner view. St. 47. **A, B x 30; C, D x 45.**

Paratanais dimorphus, BEDDARD, 1886. Isopoda. Report of H. M. S. Challenger: 130-132, pl. XVII, figs. 1-8.
STUDER, 1851. Abh. V. Preuss. Akad. Wiss. Berlin.
Nototanais dimorphus, RICHARDSON, 1906. Bull. Mus. Hist. Nat. 1906: 187.
RICHARDSON, 1908. Isopodes (2e mémoire). Expédition Antarctique Française (1903-1905): 1-3, fig. 1.
VANHOFFEN, 1914. Die Isopodea, Deutsche Südpolar Expedition 1901-1903, 15. Zool. 7; 470-471.

Materials: St. 19, 1 female; st. 40, 1 male; st. 47, 1 male and 3 females; st. 51, 1 ovigerous female.

Female: St. 47. 2.75 mm x 0.54 mm. Body linear. Carapace a little less than a quarter of entire length, longer than wide, narrower anteriorly

Fig. 7. *Nototanais dimorphus* (BEDDARD), female.

A, antenna I and II, lateral view. B, maxila I. C, apex of same. D, epipodite of maxilliped. E, maxilla II and maxilliped. F, maxillipeds and other oral parts. G, labrum. H, pleopod I. I, mandible. J. incisor process of left mandible. K, same of right mandible. L, labium. M, molar process. St. 47, A x 45; B-I, L x 160; J. K, M x 320.

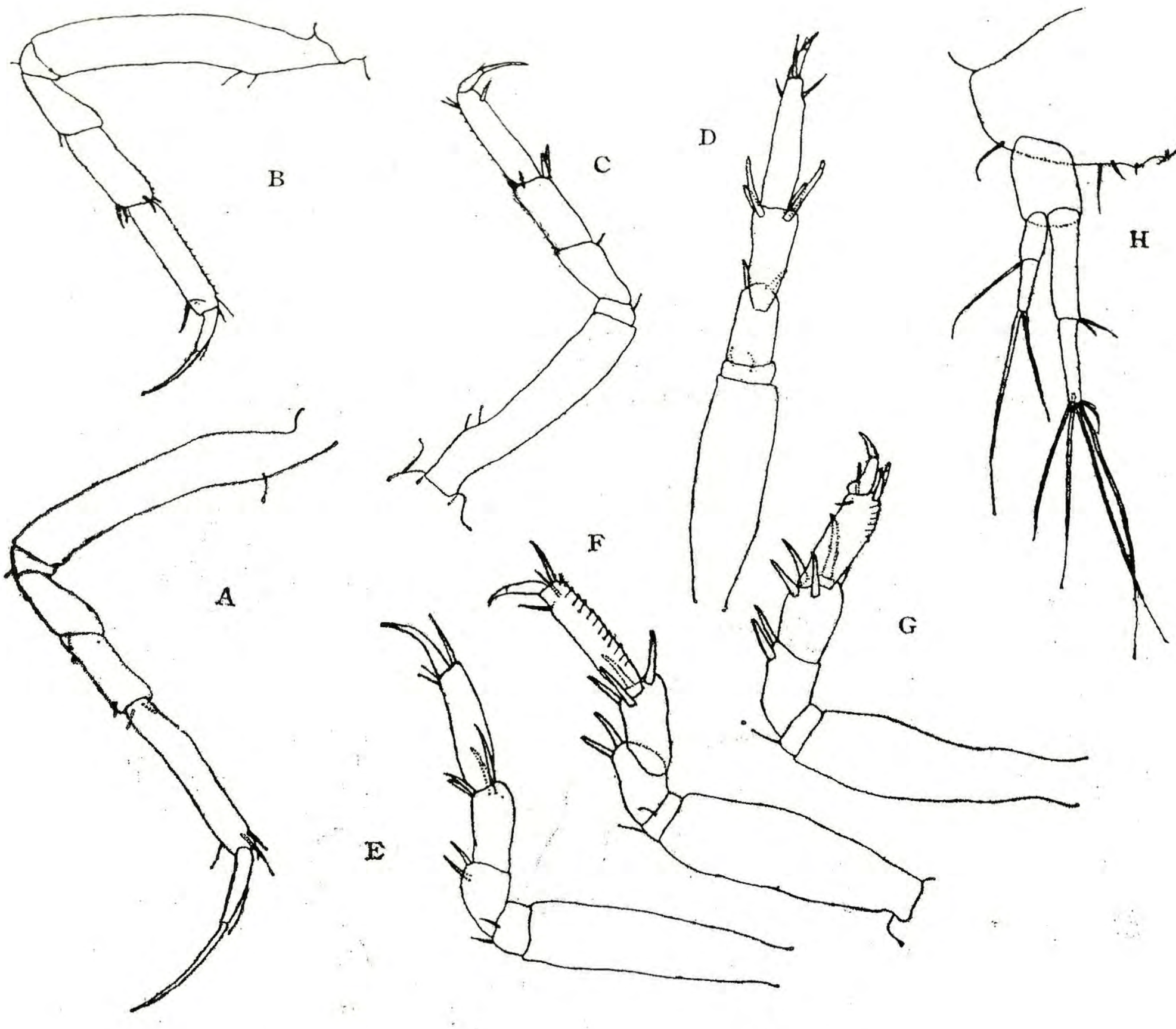


Fig. 8. *Nototanais dimorphus* (BEDDARD), female.

A-C, right pereopods I-III. D, right pereopod IV, dorsal view. E.-G, right pereopods IV-VI. H, uropod, ventral view. St. 47. x 115.

than posteriorly; anterior margin V-shaped, postero-lateral angles evenly curved. Eye lobes distinct and pigmented. Pereon two and half times as long as carapace; all pereonites uniform in width. Pereonite I shortest of all, pereonites II, III and VI somewhat longer than I, subequal to one another, and pereonites IV and V longest, equal to each other. Pereonites III-V more or less angular on either side. All pereonites with a pair of short setae. Pleon as long as last two pereonites, and subequal in width. Five pleonites twice as long as pleotelson. All pleonites similar in size, transversely linear, with round sides, all bearing a pair of lateral setae. Pleotelson well round on posterior side and with a pair of submedian tiny processes and a short seta laterally to these.

Antenna I 3-segmented, shorter than carapace, attenuating towards the tip; segment I longer than II and III combined together. Antenna II a little shorter than antenna I, 6-segmented; segment IV longest and segment VI tiny. Labrum widely round on margin, without tuberculation. Labium bilobed, V-shaped on free margin, without setae. Molar process of mandible columnar; triturating surface obliquely truncate and tuberculated. Incisor process of right mandible insinuate on distal edge, finely serrated on anterior border; same of left mandible narrower, irregularly dentate, and acompanied by wider lacinia mobilis with serrated margin.

Incisor process and lacinia mobilis brownish in color. Maxilla I slender, tipped by several teeth; epipodite broad at the base, attenuating distally to end in two hairs. Maxilla II degenerated into lunular lobe. Palp of maxilliped 4-segmented, with a few long spines. Basal segments of both sides entirely fused, triangular in shape. Epipodite band-like.

Cheliped relatively stout; chela narrower than carpus. Movable finger of chela with two spinules on inner border; immovable finger more or less dentate and with a few epinules on inner border in its terminal part which ends in a claw. Palm armed with an oblique series of spinules and with several short rows of finer spinules on inner surface close to the base of movable finger. Pereopod I has dactylus elongate, slender, sickle-shaped; spines on each segment feeble. Pereopods II and III similar to each other, with dactylus much shorter than in pereopod I. Pereopods IV-VI, resembling to one another; dactylus short, and spines on merus to propus much stouter than in preceding limbs. Propus of pereopod VI bears two spines at dorso-terminal angle, whereas others

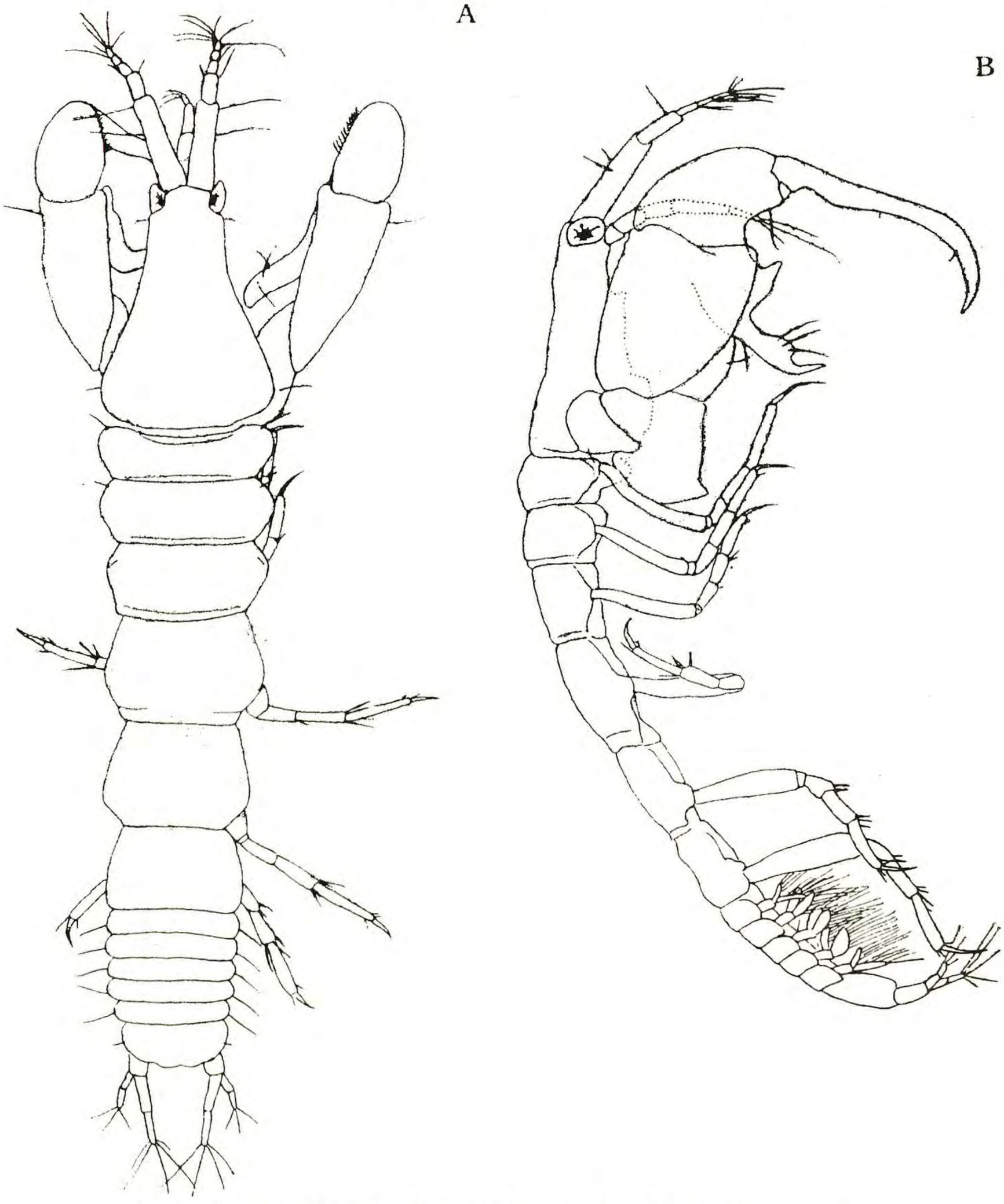


Fig. 9. *Nototanais dimorphus* (BEDDARD), male.

A, dorsal view. B, lateral view. St. 47. x 30.

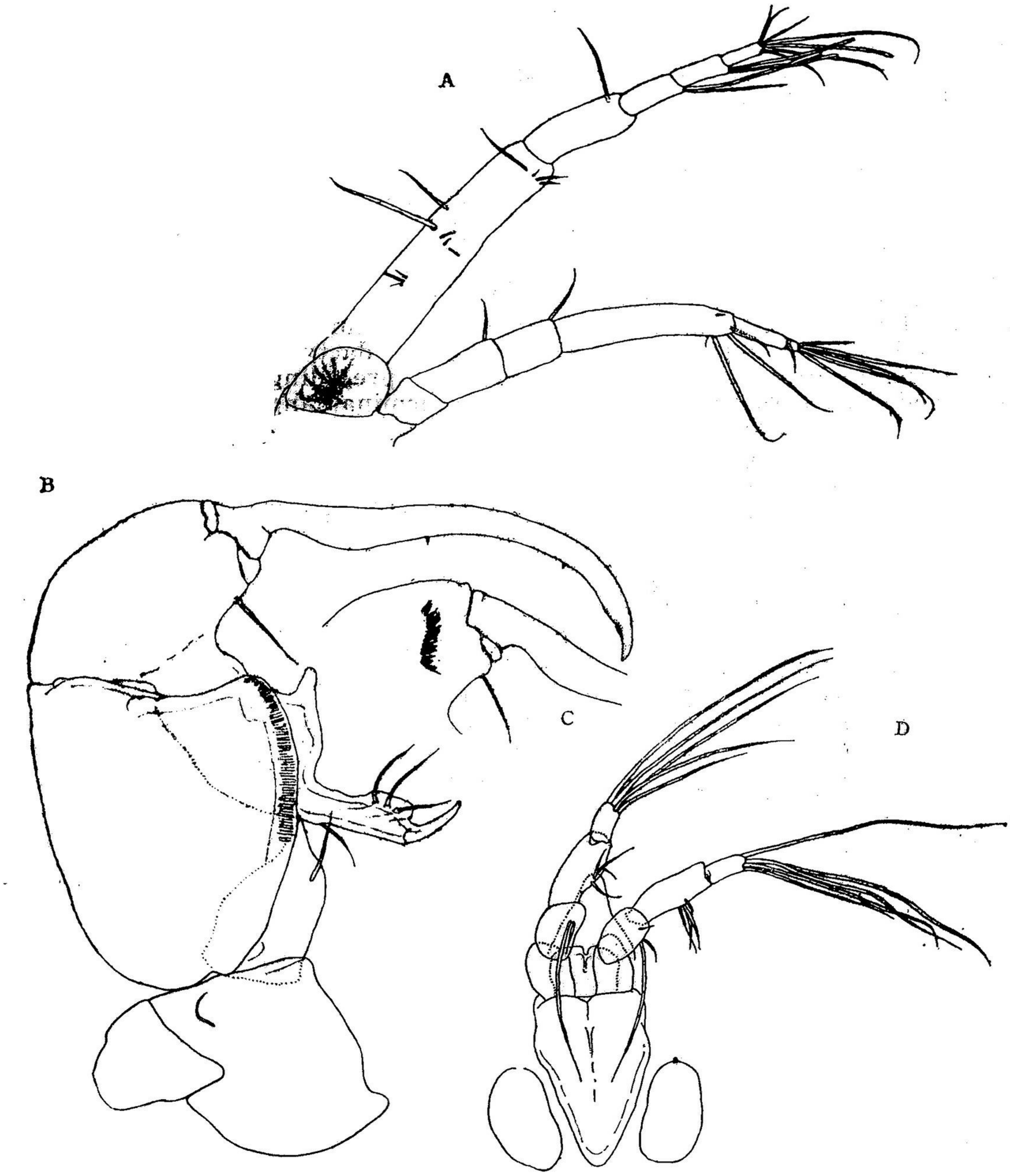


Fig. 10. *Nototanais dimorphus* (BEDDARD), male.

A, antenna I and II. B. right cheliped, outer view. C, left chela, terminal end of propus. D, maxillae II and maxillipeds. St. 47. A, D x 115; B, C x 80.

carrying a single spines. Oostegites in four pairs. Pleopods well-developed, biramous; rami fringed by finely plumose setae only on outer margin. **Protopodite** non-setose. Uropod biramous; endopodite twice as long as **exopodite**; both the rami two-segmented, with a terminal bunch of long setae.

Male: St. 47. 3.10 mm x 0.54 mm in carapace. Carapace a little more than a quarted of entire length, longer than wide, attenuating forwards; two sides bulged at posterior end, anterior margin narrow and V-shaped.

Pereon about twice as long as carapace; all segments more or less angular on lateral sides, relatively wider than in female. Proportional lengths of pereonites nearly as in female. Pleon one-third as long as pereon.

Both pairs of antennae relatively stouter than in female. Antenna I 5-segmented; segment I longer than combined length of remaining segments; terminal three segments supplied with sensory filaments. Antenna II more or less as in female. Oral parts obliterated except for rudimentary maxilla II and feebly-developed maxillipeds. Palp of the latter slender, terminating in setae slender and much longer than in female.

Cheliped enormously large, extending far beyond fore margin of carapace. Movable and immovable fingers encircling a wide space when closed. Movable finger elongated, curved like a sickle and with a basal notch on inner border. Immovable finger projects from basal part of propus, with which it makes a right angle. It is broad at the base and bears on inner border a triangular expansion terminating in a proximally bent finger-like process. Distal part of the finger is narrowed, ends in a hook-like claw and bears on inner edge a subterminal flattened bulge which carries three setae. Inner face of propus bears a transverse row of tiny spinules close to the base of movable finger. Tips of both the fingers brownish. Carpus large and broad, its ventral border overlapping basal part of immovable finger of chela. Pereopods and pleopods, though longer, resembling those of female in relative size of segments as well as in armature.

Size range: Female 2.66 mm — 3.10 mm long.

Remarks: RICHARDSON's *N. australis* was synonymized by VANHOEDFFEN with *N. dimorphus*. The female of *dimorphus* closely resembles the same sex of *N. antarcticus*. The cheliped of the female *antarcticus* is almost a counterpart of the same leg of *dimorphus*. The constitutions of pereopods are also very similar between them. The only material difference between them lies in that the propus of the pereopod VI is tipped by only three spines in the female of *dimorphus*, whereas it carries eight spines at the end in *antarcticus*. Such a difference in the number of spines are also shared by the male. Besides, the comb-like row of spinules on the inner face of propus of the female chelipeds are somewhat different in constitution between the two species. Further, the body of the female is relatively broader in *antarcticus* than in *dimorphus*.

Typhlotanais longidactylus n. sp.

(Figs. 11-13)

Materials: St. 27, 1 female with oostegites; st. 55, 1 female with oostegites and 11 females; st. 56, 6 females. No male is comprised.

Holotype: A female obtained from st. 56. 2.90 mm x 0.44 mm. Body linear, subequal in width throughout body except pleon. Carapace one-fifth as long as body, longer than wide, narrower anteriorly than posteriorly; two sides bulged in posterior region; anterior border V-shaped, with a blunt median point. Dorsal surface of carapace covered by scale-like ridges of cuticle. Eye lobe absent. Pereon a little more than half the entire length. All somites uniform in width, more or less angularly bulged on the sides, and carrying a pair of tiny hairs. Pereonites increasing in length from I to IV successively, and decreasing from IV to VI. Pleon about half as long as pereon. Pleonites a little wider than pereonites and uniform in length and width. Pleotelson as long as two pleonites combined, cordiform, with blunt median point.

Antenna I about as long as carapace, 3-segmented; segment I longer and broader than remaining segments, with aesthetasks. Antenna II

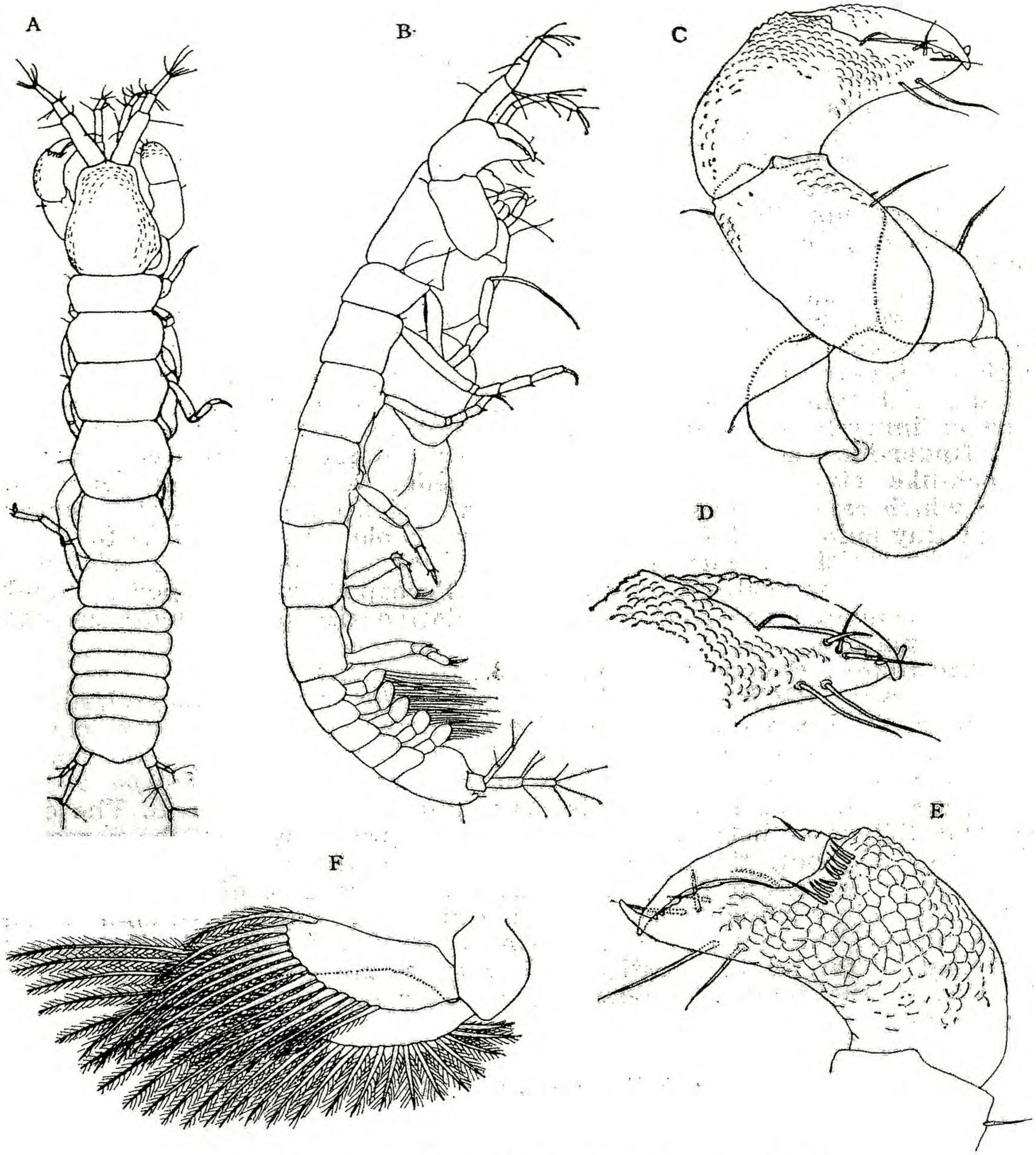


Fig. 11. *Typhlotanais longidactylus* n. sp., female.

A, dorsal view. B, lateral view. C, cheliped. D, chela, outer view. E, same, inner view. F, pleopod I. A, E, paratype: B-D, F, holotype. St. 56 A x 30; B x 45; C x 115; D-F x 160.

slightly shorter than antenna I, 6-segmented; segment IV longest of all segments, provided with several aesthetasks; terminal segment tiny. Labrum transversely fusiform, without fringing setae. Labium bilobed; free border of each lobe widely rounded and without setae. Molar process of mandible styliform, attenuating to a point. Incisor process broad, curved inwards; process of right mandible triangularly notched on cutting edge and serrated on anterior border; same of left mandible triangularly pointed, finely serrated on anterior border and accompanied by lacinia mobilis more or less similar in structure. Maxilla I curved inwards at right angle in apical part, which ends in several sharp spines.

Epipodite slender, terminating in a single filament. Maxilla II nearly triangular. Maxillipeds of two sides fused at the base. Fused base shield-like. with round posterior side; endites short and broad, also fused. Palp 4-segmented; each segment narrow, and with setae except in segment I. Epipodite short, band-like.

Cheliped relatively feeble, covered with scaly ridges in chela and terminal part of carpus. Chela about as long as and as wide as carpus; movable finger curved, simply attenuating to the tip, without spinule on inner border; immovable finger broader than movable finger at the base; its inner border serrated in its distal half, with three setae and ending in stout terminal claw. Propus with comb-like row of spinules on inner surface close to the base of dactylus. Ischium large, extending back beyond the attachment of cheliped as an oval lobe. Pereopod I longer than succeeding ones; dactylus strongly elongated, forming a narrowly pointed sickle-like segment which is as long as succeeding four segments combined. Pereopods II and III similar to each other in constitution, armed with sickle-shaped dactylus which is far shorter than the corresponding segment of pereopod I. Spines on these three limbs feeble, and small in number. Succeeding three pereopods resembling to one another, bearing short stumpy dactylus ending in tiny claw, and armed with spines stouter than in preceding pereopods. Basis of pereopod V carries two long aesthetasks which are absent in others. Propus of pereopods IV and V bears three terminal spines, whereas pereopod VI has four of them, and

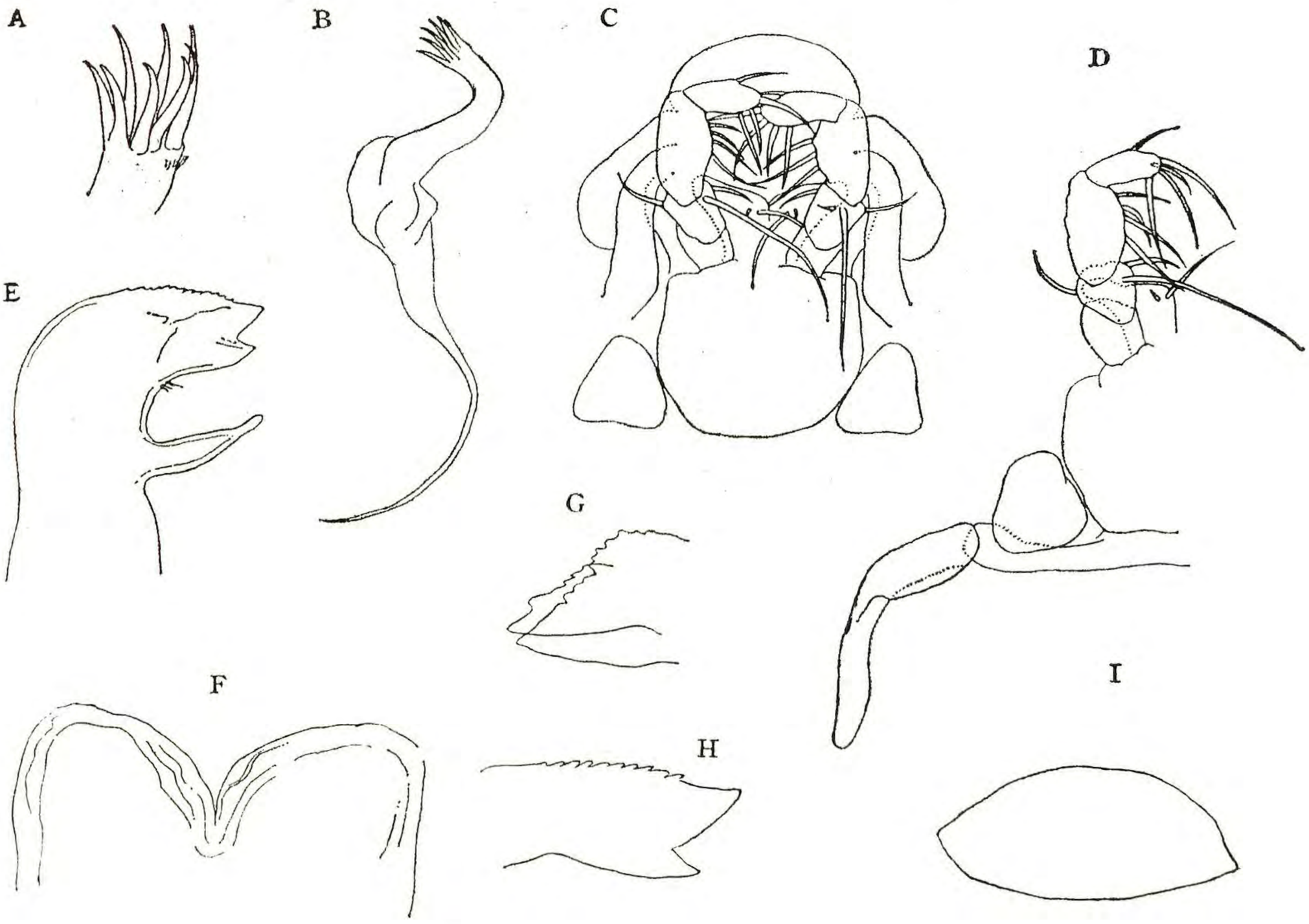


Fig. 12. *Typhlotanais longidactylus* n. sp., female.

A, apex of maxilla I. B, maxilla I. C, oral parts in situ. D, maxilla II and maxilliped. E, mandible. F, labium. G, incisor process of left mandible. H, same of right mandible. I, labium. Paratype. St. 56. A, G, H x 470; B-D x 160; E, F, I x 320.

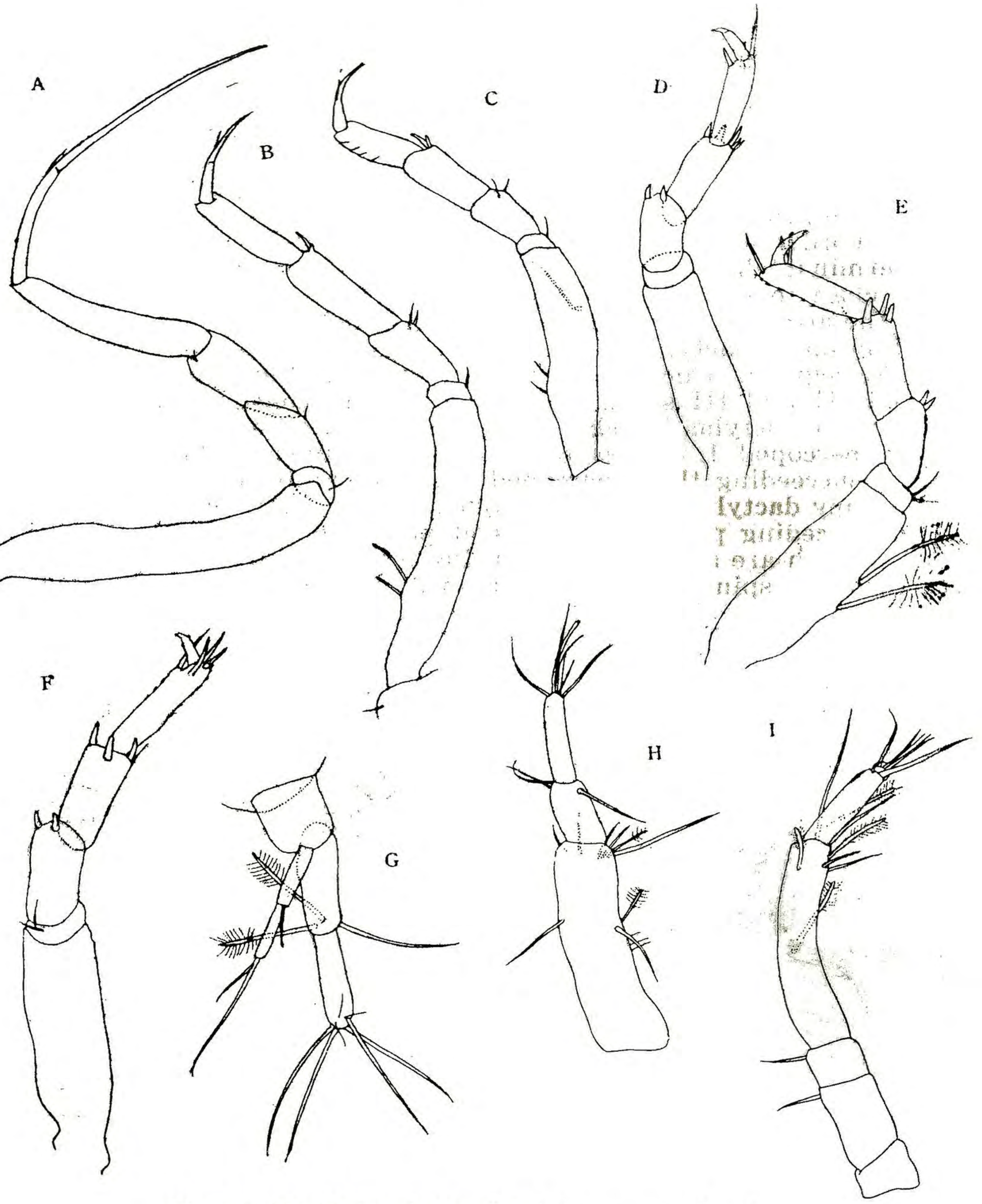


Fig. 13. *Typhlotanais longidactylus* n. sp., female.

A-E, right pereopods I-V. F, left pereopod VI. G, uropod, lateral view. H, antenna I. I, antenna II, lateral view. Holotype. St. 56. A-G, I x 160; H x 115.

pereopods I-III have none on the same segment. Oostegites present in pereopods I-IV.

Pleopods in five pairs, biramous. Two rami about equal in size, thickly fringed with strong plumose spines on outer margin. Uropod biramous, with two rami 2-segmented. Exopodite longer than half of endopodite and much narrower. Segment I of exopodite with two long aesthetasks.

Size range: Female 2.38 mm — 3.10 mm long.

Remarks: There may be a certain doubt in assigning the present species to the genus *Typhlotanais*. It has the molar process of mandible transformed into a conical process and lacking triturating surface. In the other species of the genus, where the structure of this oral appendage is known, the molar process is furnished with well-developed triturating surface. In the constitution of other appendages, however, the present species falls within the confines of this genus. For example, 2-segmented antenna I, 2-segmented rami of uropod, spiniform dactylus of anterior pairs of pereopods, 5 pairs of well-developed pleopods, all tell its close affinity to the species of *Typhlotanais*.

The new species has the cheliped relatively broader than that of other species of the genus. It is characterized, above all things, by its unusually elongated dactylus of pereopod I.

Typhlotanais greenwichensis n. sp.

(Figs. 14-16)

Materials: st. 23, 3 females; st. 24, 2 females; st. 25, 4 females; st. 41, 4 females, 1 female with oostegites; st. 42-2, 10 females, 1 female with oostegites; st. 52, 2 females; st. 53, 1 female; st. 54, 5 females, 1 female with oostegites; st. 55, 3 females with oostegites; st. 56, 4 females.

Holotype: A female from st. 56. 4.05 mm. x 0.77 mm. Body linear, relatively short, uniform in width except in pleon; two sides parallel. Carapace short one-fifth as long as body, longer than wide; two sides nearly parallel, but converging towards each other in anterior half; anterior border with a pair of round notches at the bases of antennae I, and with a blunt median projection. Optic lobe absent. Pereon less than thwice as long as carapace; all somites quadrangular in dorsal aspect. Pereonite I shortest of all, pereonite VI a little longer, pereonites II-V again longer and subequal in length to one another. Pleura of first three pereonites with an acuminating process tipped by a spinule at antero-lateral angle. Pleon only slightly longer than carapace, and slightly wider than pereon. Pleonites subequal in length and width to one another, and with a tiny lateral spinule. Pleotelson narrower than pleonites, wider than long, widely round on posterior side and with a short blunt median projection.

Antenna I only slightly shorter than carapace, 3-segmented; basal segment longer than remaining segments. Antenna II slightly shorter and much narrower than antenna I, 6-segmented; segment IV elongated and segment IV tiny, and segment II insensibly dilated. Labrum transversely elongate oval, with paired marginal rows of cirri and semicircular rows of stronger cirri on the surface. Labium bilobed, deeply cut in the median, truncate on margin on either side and bearing several rows of tiny apical spinules on either lobe. Mandible hasta well developed columnar molar process, apex of which is dilated into tuberculated triturating surface. Incisor process is curved at right angle; that of right mandible is cut into two teeth at the tip and finely toothed on anterior border; that of left mandible is narrower, tridentate on cutting edge, and is accompanied by a much broader lacinia mobilis, whose anterior border is serrated. Maxilla II curved near the apex, ending in several divergent spines; epipodite broad at base, ending in a single flagellum. Maxilla II rudimentary, semicircular in shape. Maxilliped has palp slender and 4-segmented; basal segments of both sides fused, and endites also fused leaving a median line of suture. Epipodite short, band-like.

Cheliped extending straight as far forward as the tip of antenna I. Chela almost in line with carpus and narrow; movable finger tipped by a sharp claw and with two spinules on inner border; immovable finger expanded into a narrow, nonserrated plate, with three hairs and termi-

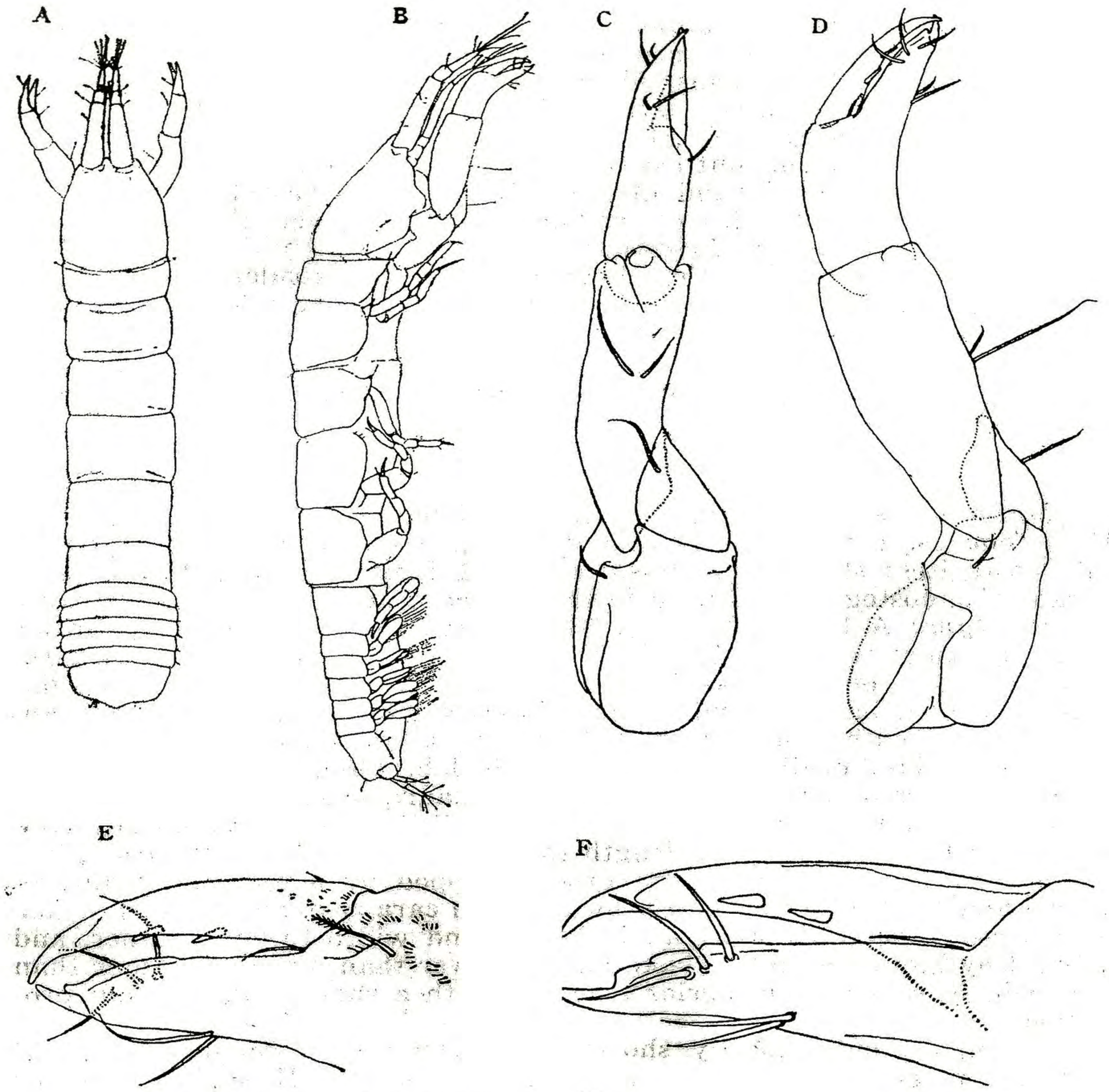


Fig. 14. ***Typhlotanais greenwichensis*** **n. sp., female.**

A, dorsal view. B, lateral view. C, cheliped, ventral view. D, same, lateral view. E, right chela, inner view. F, left chela, outer view. St. 56 A, B, D-F, holotype; C, paratype. St. 56. A x 17; B x 27; C, D x 80; E, F x 160.

nating in a sharp claw. Propus with a plumose spine near the base of dactylus on inner surface instead of ordinary comb-like row of spinules. Carpus relatively narrow and elongate; ischium without posteriorly extending lobe. Pereopods relatively short. First three pereopods armed with spines much thinner than in others. Dactylus of pereopod I elongate, ending in long styliform claw. Pereopods II and III similar to each other in structure and armature, and ending in a short dactylus which is much shorter than that of pereopod I. Last three pereopods similar to one another, with basis much broader than that of preceding limbs, and with stouter dactylus ending in a tiny claw. Pereopod IV and V with a single

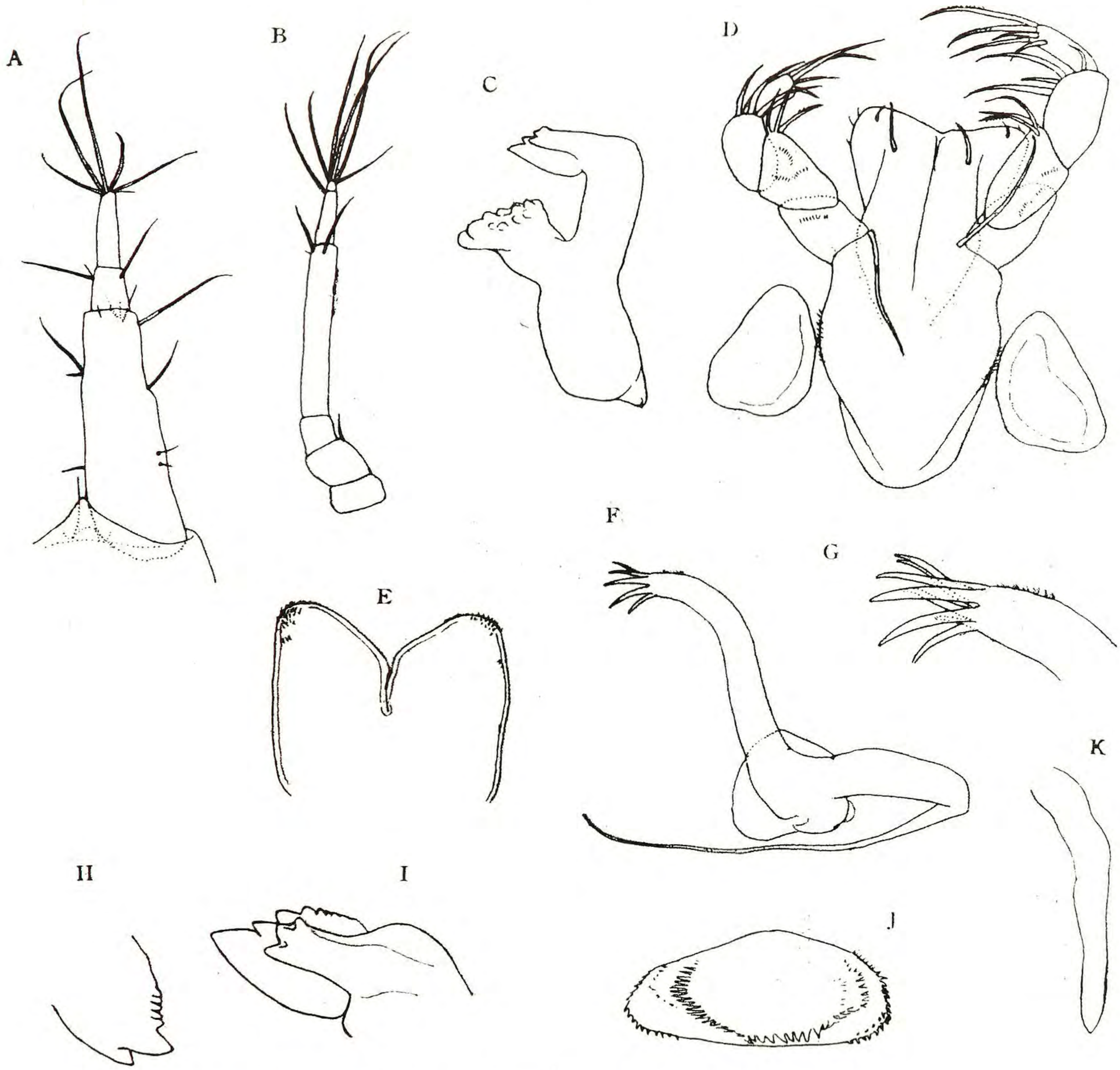


Fig. 15. *Typhlotanais greenwichensis* n. sp., female.

A, antenna I, dorsal view. B, antenna II, ventral view. C, mandible. D, maxillae II and maxillipeds. E, labium. F, maxilla I. G, apex of same. H, incisor process of right mandible. I, same of left mandible. J, labrum. Paratype. St. 56. A, B x 80; C-F, K x 160; G-J x 320.

stout spine at dorso-distal angle of propus, whereas pereopod VI bears three of such. Oostegites present in four pairs.

Pleopods in five pairs, biramous. Exopodite a little shorter than endopodite. Both rami thickly fringed by plumose setae along one edge. Uropoda small in size, biramous; both rami two-segmented. Exopodite narrower than endopodite and as long as basal segment of the latter.

Size range: Female 2.90 mm. — 6.45 mm. long.

Remarks: The present species is distinguished from the preceding ope in that the dactylus of the pereopod I is shorter, that the spines on the propus of the last three pereopods are far stouter, and that the cheliped is somewhat more slender but far longer. The cheliped of the new

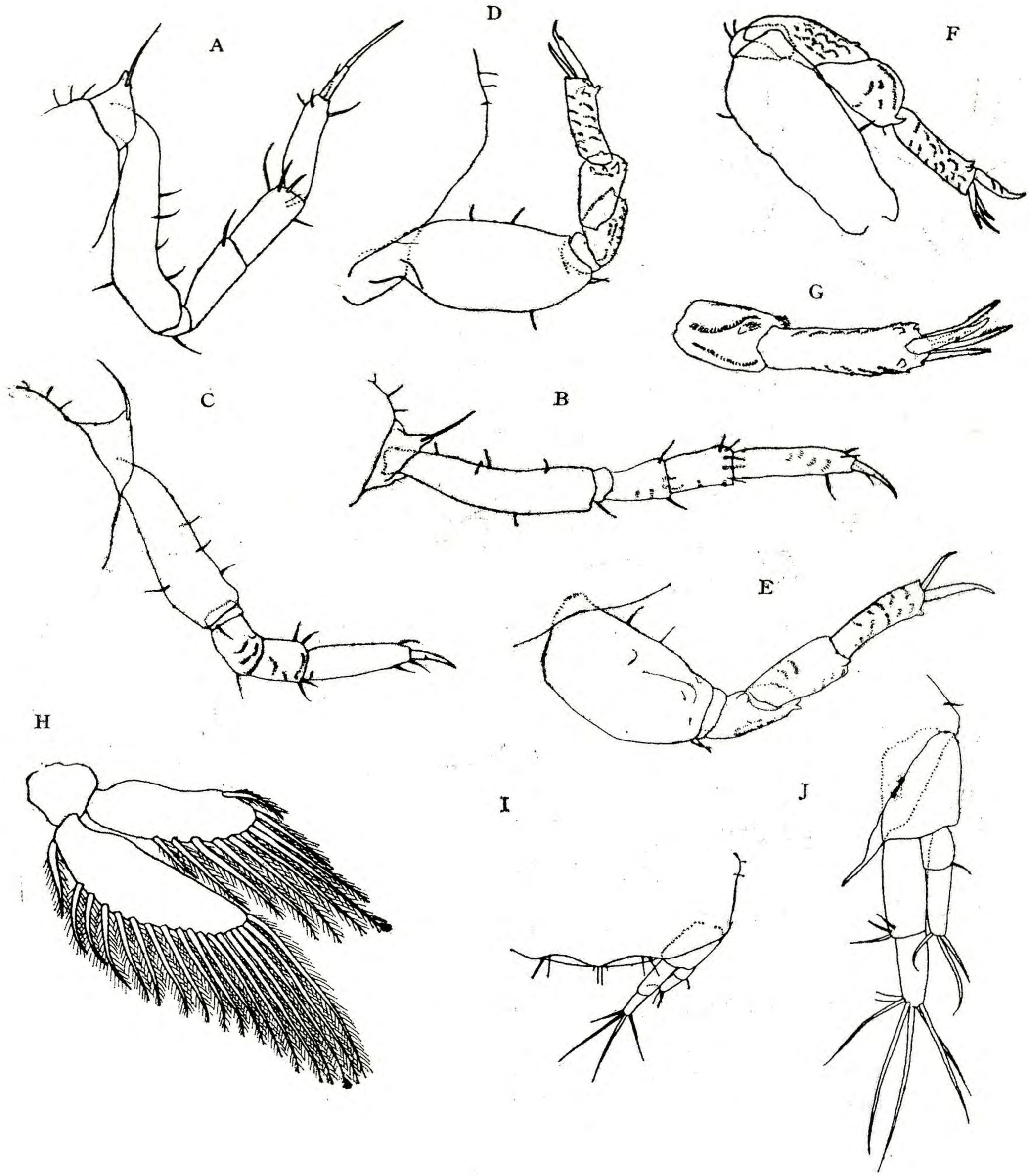


Fig. 16. *Typhlotanais greenwichensis* n. sp., female.

A-F, pereopods I-VI. G, terminal part of pereopod VI, ventral view. H, pleopod I. I, uropod dorsal view. J, same, central view. Paratype. St. 56. A-F, H x 115; G, J x 160; I x 80.

species extends straight forward far beyond the carapace. In all the specimens examined, the segments of cheliped show almost linear arrangement, the chela not bending downwards, so that this character may be counted for one of the distinctive features of the species. In the constitution of cheliped and pereopods, *greenwichensis* bears a certain resemblance to *angularis* described by *KUDINOVA-PASTERNAK*, but differs in the sides of pereonites being straight and not angulate.

Leptognathia gracilis (KROYER)

(Figs. 17-19)

Synonymy: Vide LANG (1957). Contributions du Department des Pêcheriés, Québeq. No. 52: 1-54.

Materials: St. 27, 4 females; st. 40, 1 female; st. 56, 1 female.

Female: St. 27. 3.45 mm. x 0.44 mm. Body slender, linear. Carapace about one-fifth as long as body, longer than wide, wider posteriorly than anteriorly; two sides inclining medially near fore end. Fore margin with a slight median point. Eye lobes absent. Pereon occupying three-fifths of entire length with somites uniform in width. Pereonite I subequal to pereonite VI, shortest of all; pereonite II longest, from which the somites decrease in length backward. Widest calibre lies at fore end in pereonite I, at the middle in II-IV and at the caudal end in V and VI. Pleon shorter

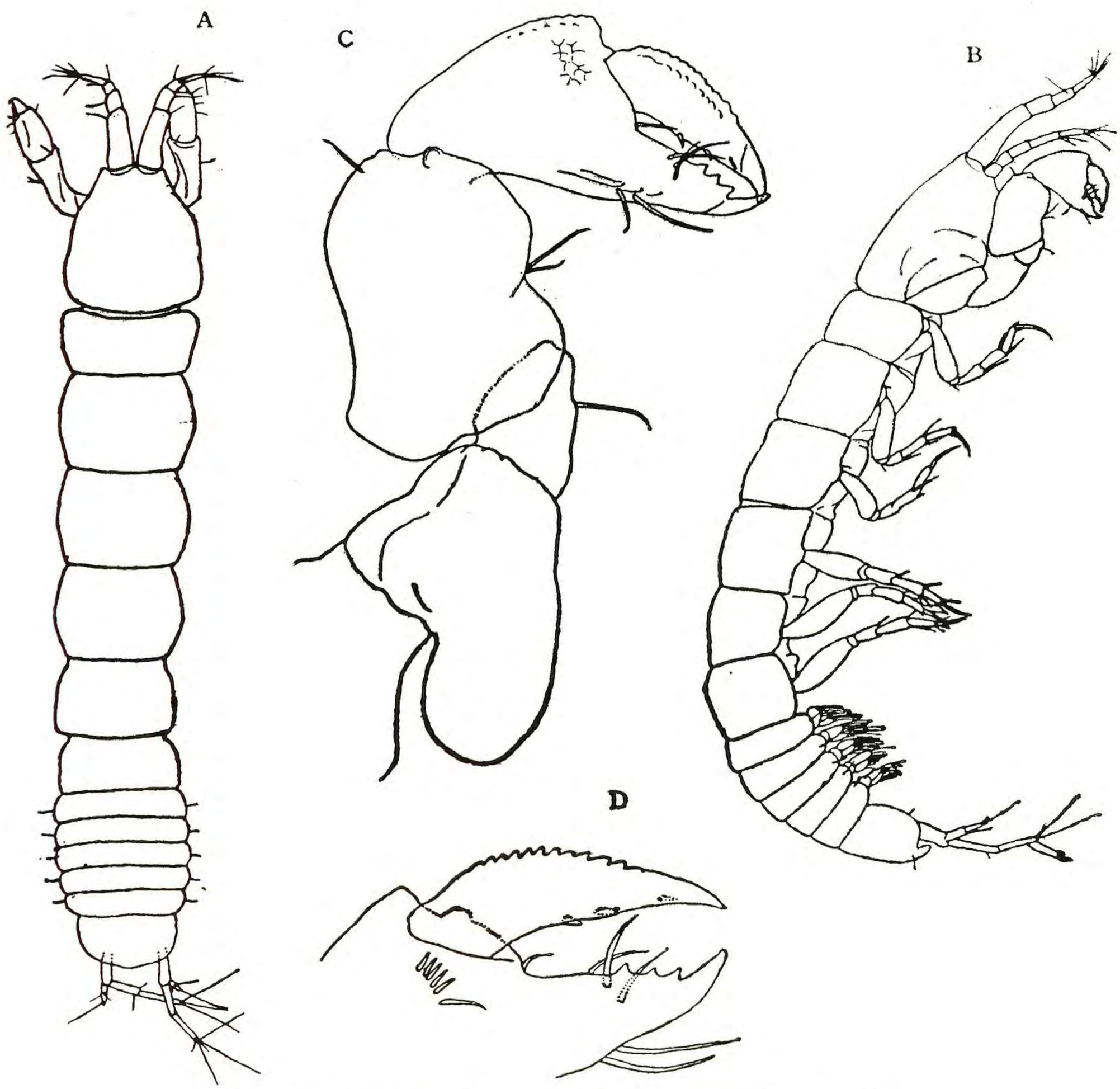


Fig. 17. *Leptognathia gracilis* (KROYER), female.

A, dorsal view. B, lateral view. C, cheliped. D, right chela, inner view. St. 27. A, B x 30; C x 115; D x 160.

than last three pereonites combined. Pleonites somewhat wider than pereonite, subequal in length and width, except V which is slightly narrower. All of them bear a pair of lateral hairs. Pleotelson as long as last two pleonites combined, but narrower than these, and semicircular with an insensible median point.

Antenna I shorter than carapace, 4-segmented; segment I longer and thicker than others. Antenna II a little shorter than antenna I, 1-segmented; segment II somewhat dilated, segment IV-VI elongated, and segment VII short and small. Labrum shield-like, truncate on free margin, round and finely spinulated on fore border. Labium bilobed, deeply incised in a V-form, and with a tiny spinule at distal angle of each lobe. Mandible with molar process conical and spinulose at the tip. Incisor process curved, with indistinct but sharp serration on cutting

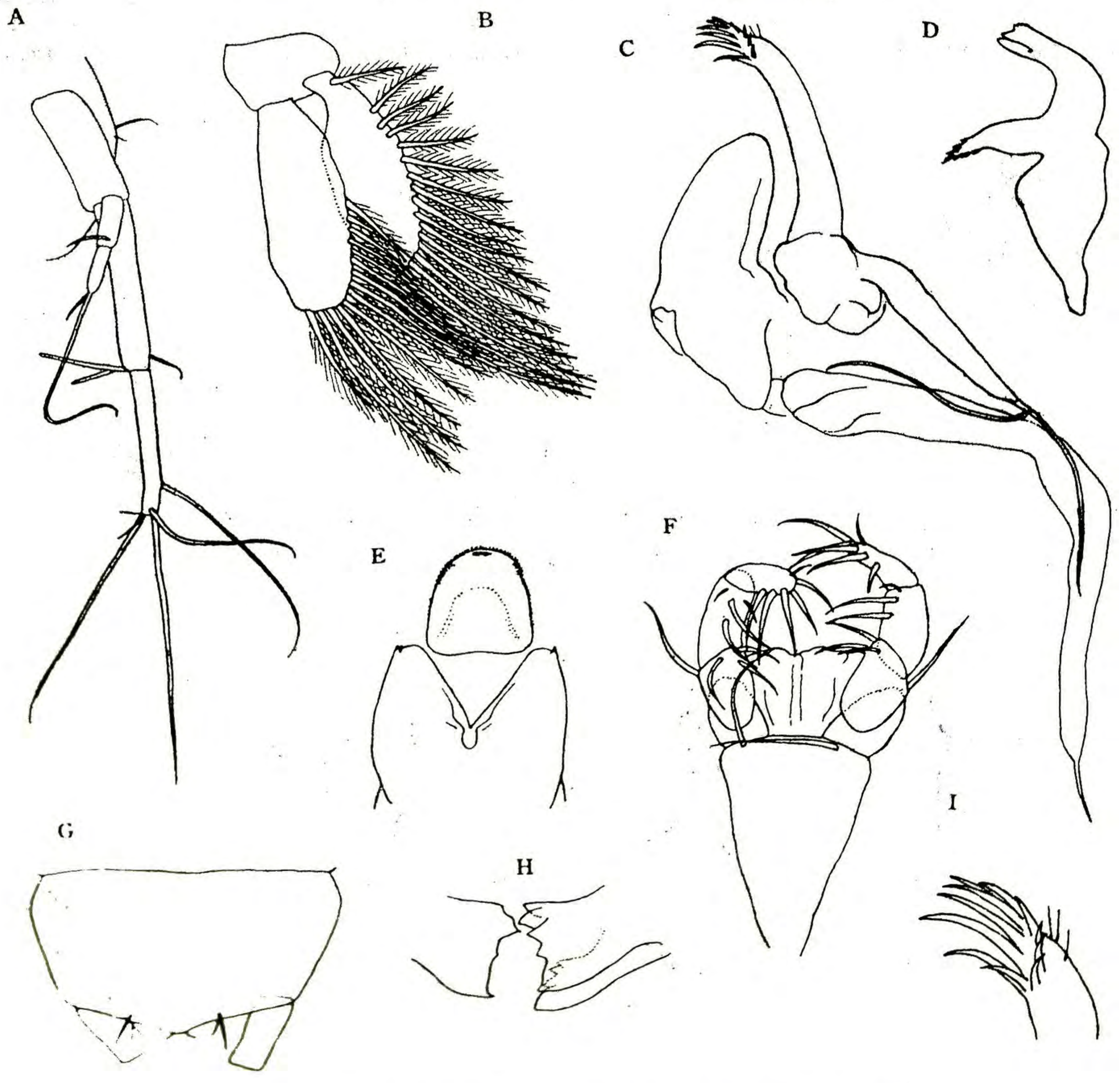


Fig. 18. *Leptognathia gracilis* (KROYER), female.

A, uropod, lteral view. B, pleopod I. C. maxillae I. and II. with epipodite of maxilliped. D, mandible. E, labrum and labium. G. pleotelson, dorsal view. H, incisor processes of right and left mandibles. I, apex of maxilla I. St. 27. A x 115; B-F x 160; G x 80; H x 470; I x 320.

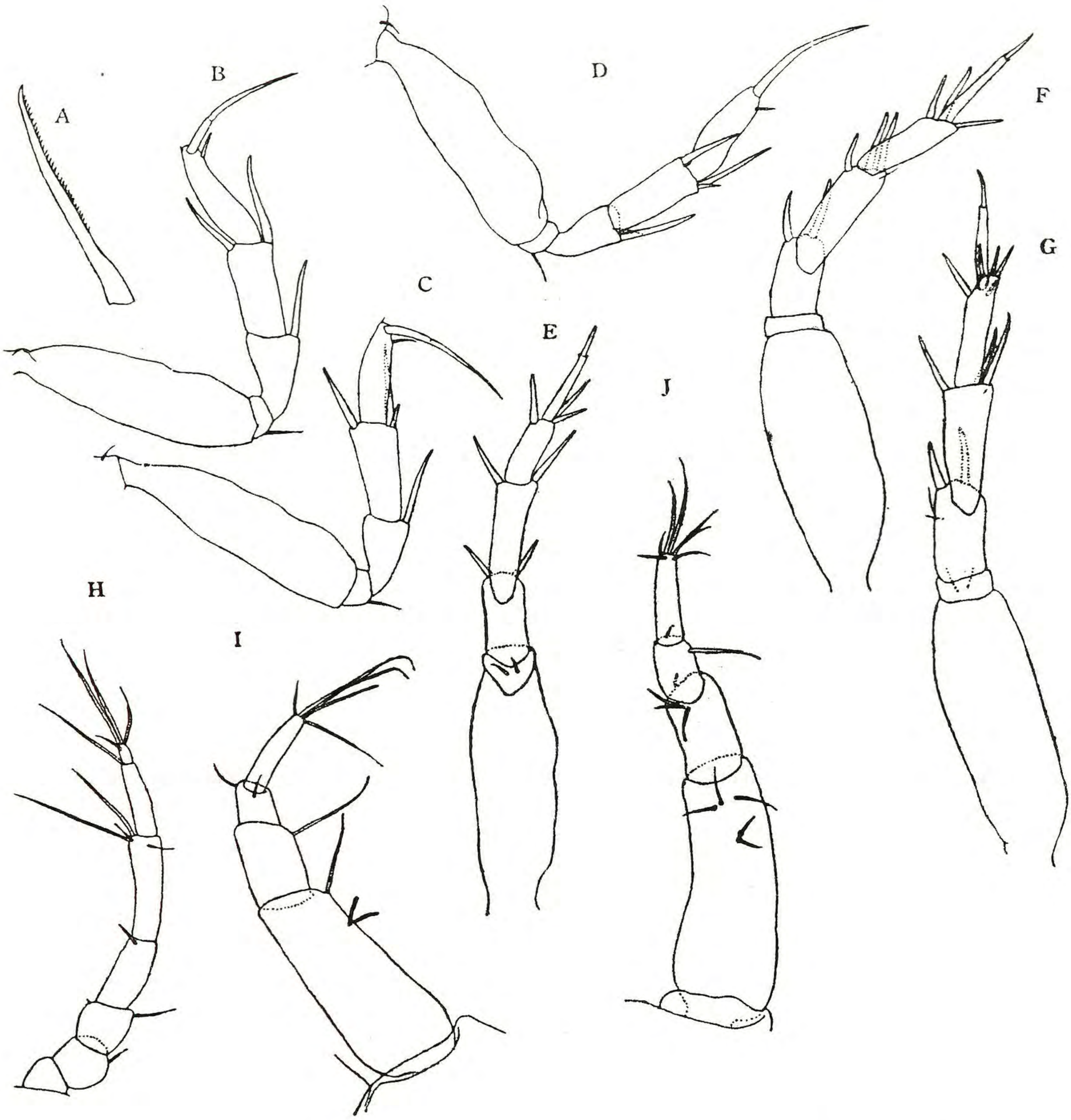


Fig. 19. *Leptognathia gracilis* (KROYER), female.

A, spine on perepod. B-G, pereopods I-VI. H. antenna II, inner view. I, antenna I, dorsal view. J, same, outer view. St. 27. A x 320; B-J x 115.

edge in right mandible. Cutting edge of left mandible distinctly serrated; lacinia mobilis narrower than incisor process, but similary serrated. Maxilla I slender, tipped by numerous spines; epipodite as long and as wide as maxilla and ending in two flagella. Maxillipeds of both sides fused to form a narrowly triangular base; endites also fused together. Palp narrow, 4-segmented, armed with spines except in segment I. Epipodite long, relatively broad, and with spiniform termination.

Cheliped somewhat feeble. Movable finger of chela not much curved, and acuminating to the tip. Outer border of the finger serrated and inner border with three tiny spinules. Immovable finger curved slightly and only near its sharp tip, behind which the inner border carries three sharp denticles and three short spines. Leaving immovable finger aside,

propus triangular in shape and bearing a short comb-like row of spinules on inner face close to the base of movable finger. Ischium has a large oval posteriorly directed lobe. Pereopods stout. Spines with which their segments are armed are longer and far stronger than those of the other species comprised in the present collection, and are pectinate on one border. Pereopods I-III have dactylus elongate and slightly curved like a sickle; the claw more than twice longer than dactylus proper. The same segment of pereopods IV-V is styliform, having claw much shorter than the segment. Propus of pereopods IV-V carries three spines at the end, whereas that of last pereopod bears four.

Pleopods biramous; both rami subequal in size and fringed by plumose spines along inner border. Uropod relatively longer than in other species, with 2-segmented rami. Exopodite short and small, one-third as long as endopodite.

Size range: 2.07 mm. — 3.80 mm. long.

Remarks: The present species was described and figured with surprising precision by LANG (1957). It is a striking fact that the species which has been widely distributed in the Arctic and the surrounding area is discovered from the Antarctic. In spite of the remoteness of the present locality from the hitherto known ones, the materials show an astonishingly exact coincidence with those studied by LANG in every detail. Only difference lying between them is the sharper serration of the immovable finger of cheliped in the specimens from the Antarctic.

Distribution: Alaska, Canada, West Greenland, East Greenland, Iceland, Spitzbergen, Franz Josef Island, Novaya Zemlya, Kara Sea, Norway, Sweden, Faroes, Scotland, Skagerak, North Sea and Chile Bay.

Leptognathia gallardoi n. sp.

(Figs. 20-24)

Materials: St. 19, 1 female; st. 42-2, 1 male, 10 females; st. 53, 2 females; st. 56, 8 females; st. 58, 1 male, 2 females; st. 61, 1 male, 1 female.

Holotype: A female from st. 56. 2.76 mm. x 0.47 mm. at pereonite IV. Body linear, somewhat flattened and proportionately wide. Carapace short, about one-seventh as long as entire body, somewhat wider than long, swollen on either side in posterior region and attenuating forwards; fore margin V-shaped. Dorsal surface covered with ridges forming polygonal areas. Pereon longer than half of entire length. Pereonites uniform in width, widely round on sides. Pereonites I-IV successively longer, pereonite V equal in length to IV, and pereonite VI again shorter, as long as II. Pereonite I produced into anteriorly directing triangular lobe at antero-lateral angle. All pereonites with one or two pairs of spinules. Pleon half as long as and wider than pereon. Pleonites subequal to one another in length and widely round on sides. Pleotelson as long as two pleonites combined, widely round on caudal margin though with a slight median point.

Antenna I longer than carapace, 5-segmented; length of segments decreasing in length in the order of I, IV, II, III, V; V tiny, tuberculiform, and with a sensory filament. Segments with polygonal surface rugae. Antenna II shorter and narrower than antenna I, 6-segmented; segment IV longest of all. Labrum lunular, insensibly trilobate, non-setose. Labium shallowly bilobed, non-setose on margin. Mandible with molar process narrow, conical, tapering to the tip. Incisor process stout, curved at right angle; process of right mandible narrowed to the blunt tip and finely serrated on anterior border. Same process of left mandi-

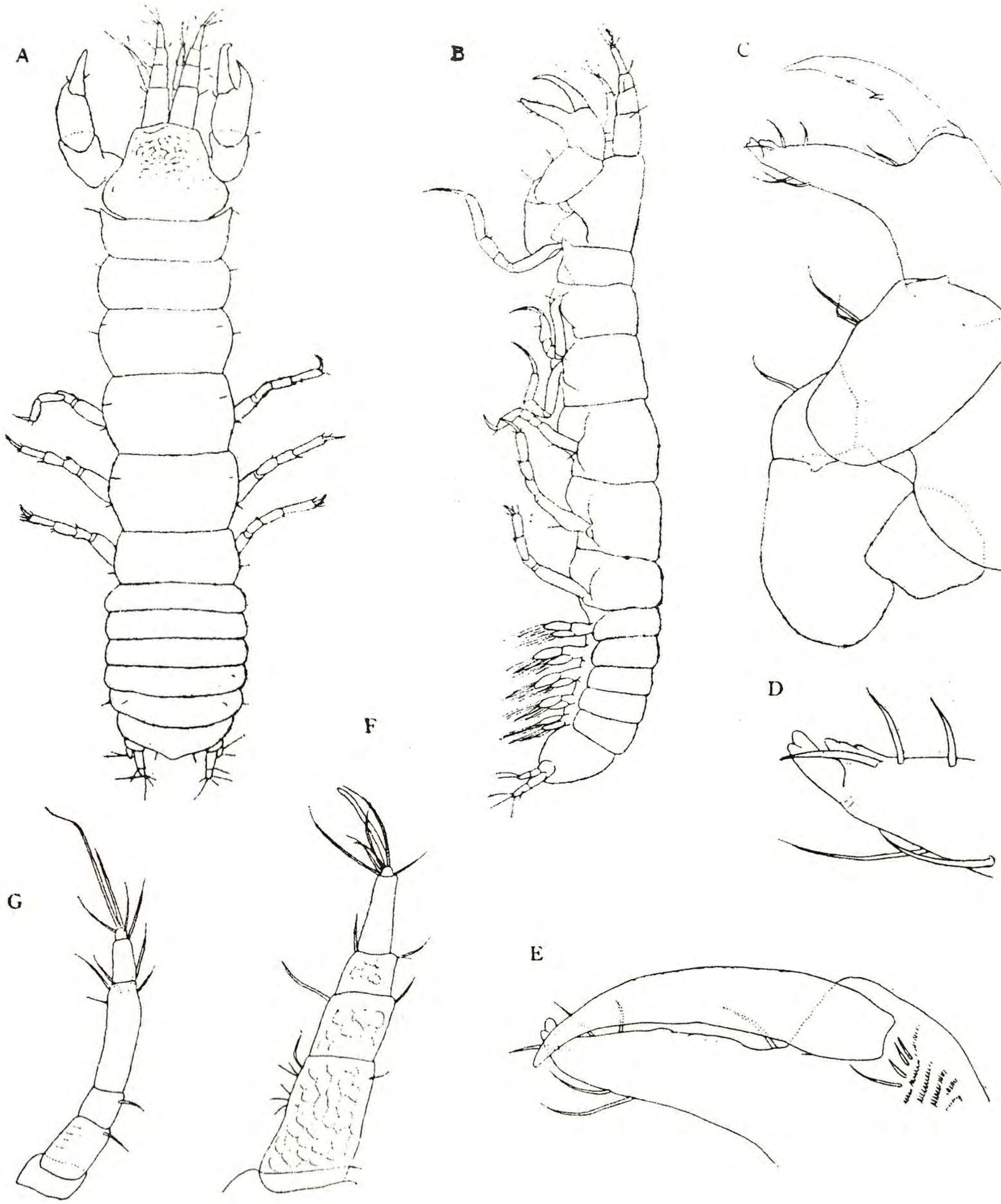


Fig. 20. ***Leptognathia gallardoi*** **n, sp., female.**

A, dorsal view. B, lateral view. C, cheliped. D, apex of immovable finger of chela. E, chela, inner view. F, antenna I. G, antenna II, dorsal view. Holotype except E. St. 56. A, B x 51; C, F, G x 115; D x 320; E x 160.

ble narrower than that of right mandible, truncate at the end, and associated with broader lacinia mobilis which is serrated on free edge. Maxilla I curved, ending in several spines. Epipodite much longer than maxilla I and terminating in two filaments. Maxilla II composed of anterior and posterior oval lobes. Maxillipeds of both sides partly fused together, retaining median line of suture on the basis; its endites also partly fused and expanded distally. Palp narrow 4-segmented, and spinulated on all segments except I. Epipodite band-like.

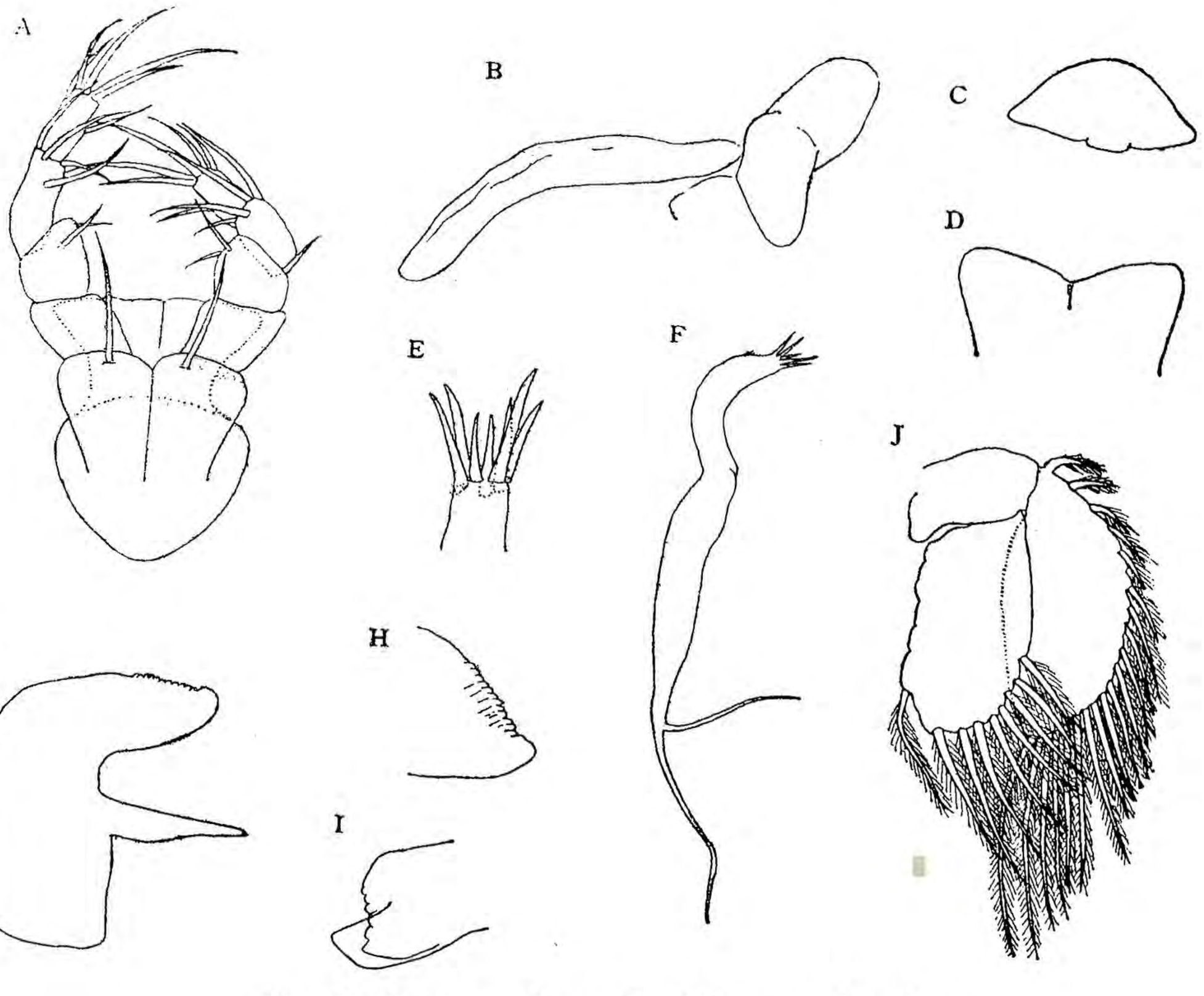


Fig. 21. *Leptognathia gallardoi* n. sp., female.

A, maxillipeds. B, maxilla II and epipodite of maxilliped. C, labrum. D, labium. E, apex of maxilla II. F, maxilla II. G, mandible. H, incisor process of right mandible. I, same of left mandible. J, pleopod I. Paratype. St. 56. A-D, F, J x 160; E, H, I x 470; G x 320.

Cheliped relatively feeble. Chela bent downwards, somewhat slender Movable finger slightly curved, simply tapering to the tip and armed with minute spinules on inner border. Immovable finger only slightly broader than movable one, tipped by bifid claw, armed with a small dentate process on inner border just behind, and with three spines a little more proximally. Propus with four short spines and several transverse rows of tiny spinules on inner face close to the base of dactylus. Ischium with oval lobe extending back. Pereopods slender. First three pereopods similar to one another in structure, though successively shorter backwards. Their dactylus is narrow, ending in a long spiniform claw, an of subequal length in three legs. Spines on remaining segments thin, short and few in number. Last three pereopods similar to one another, much shorter in their dactyli and stouter in spines of other segments. Pereopods IV and V bear three terminal spines on propus, whereas pereopod VI has five spines. Pereopod IV carries a simple spine and an aesthetask on basis.

Pleopods biramous, two rami subequal in size and fringed by plumose spines along outer border. Uropods small in size, biramous; both rami 2-segmented. Endopodite twice as long as exopodite and much wider.

Size range: Female 2.38 mm - 3.80 mm long.

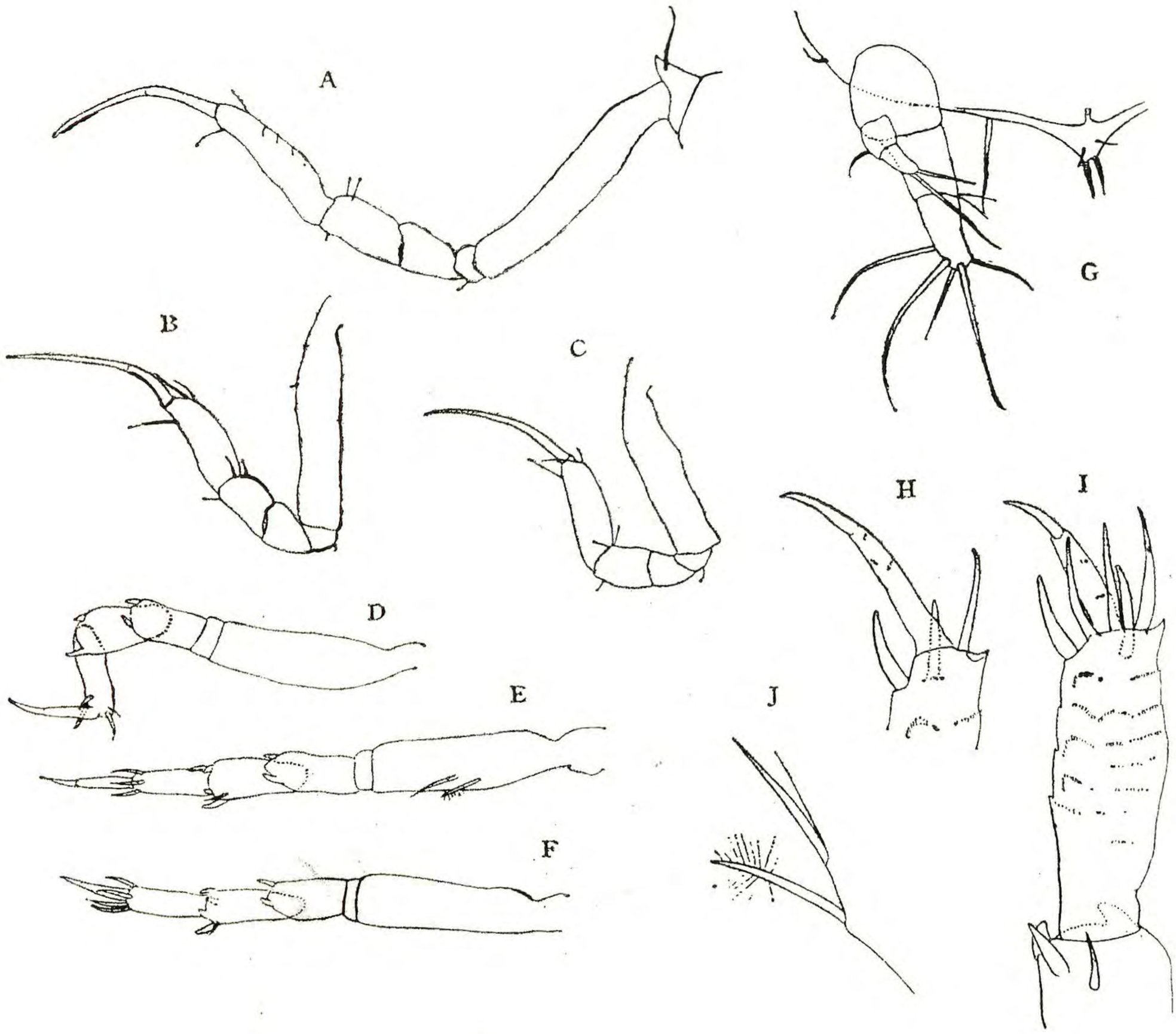


Fig. 22. *Leptognathia gallardoi* n. sp., female.

A-F, pereopods I-VI G, uropod,, ventral view. H, apex of propus of pereopod V. I, propus of pereopod VI. J, spine and aesthetask on basis of pereopod V. Holotype except G. St. 56. A-G-x 115; H-J x 320.

Paratype: Male from st. 58. 2.75 mm. x 0.49 mm. Carapace about one-sixth as long as body, similarly shaped as in female. Pereon more than twice as long as carapace. All pereonites relatively shorter and wider than in female, first three and last pereonites short, pereonites IV and V longer. Pereonite I without lateral acuminate lobe. Pleon much longer than in female, about as long as pereon. Pleonites subequal to one another as well as to pereonite in length and width. Pleotelson as long as last pleonite, cordiforn with a median projection, which is better developed than in female.

Antenna I longer than carapace, 7-segmented; first two segments forming a peduncle, broader than others wich constitute a flagellum in all. Segment I longest of all, provided with a number of short sensory hairs; segment II shorter, and succeeding three shortest of all, subequal to one another in length; segment VI elongate and VII again longer, about as long as II. Each of segments IV-VI with a bunch of numerous long sensory filaments along terminal border on ventral side; apical segment tipped by a single sensory filament besides by simple setae. An-

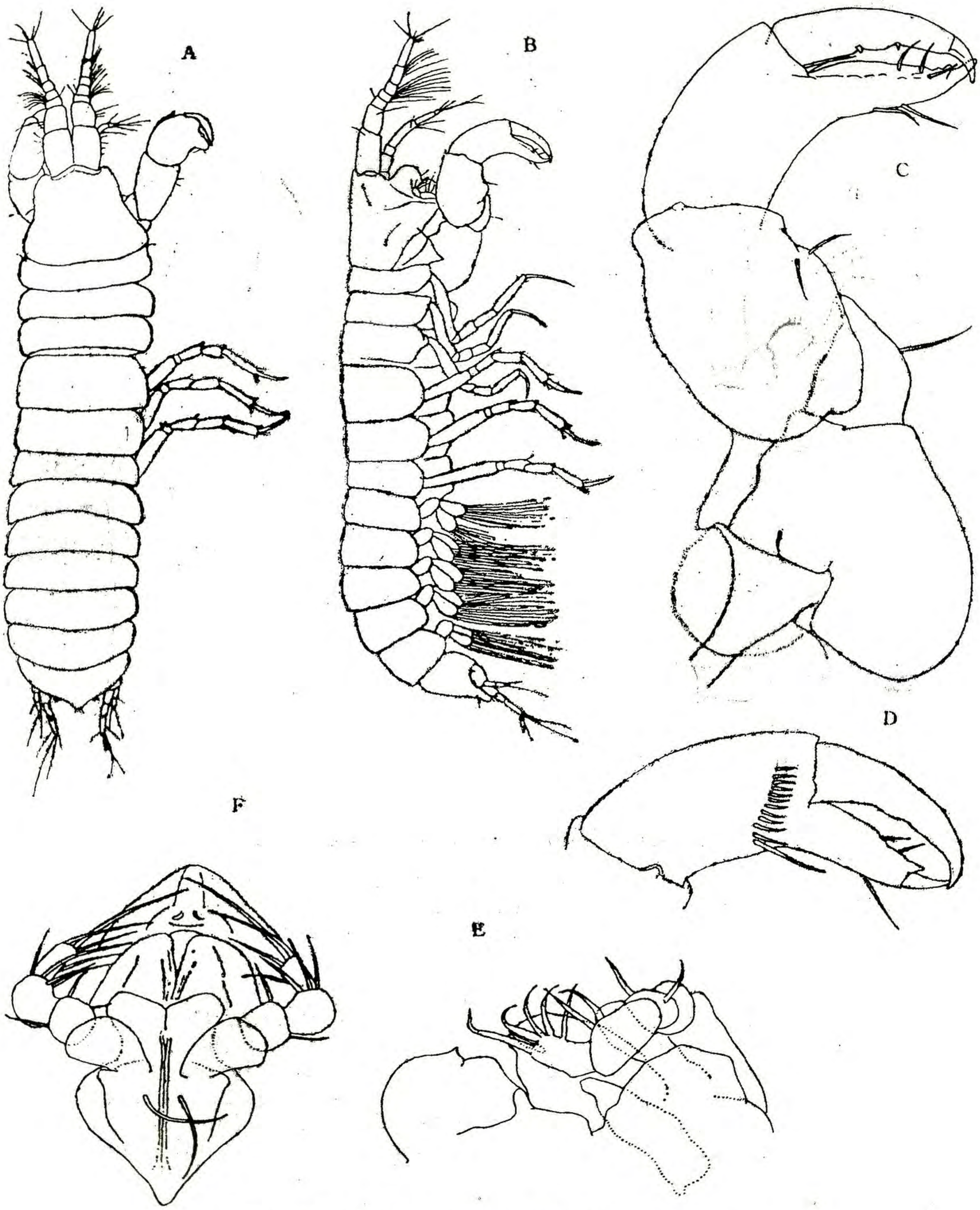


Fig. 23. ***Leptognathia gallardoi*** **n. sp., male.**

A, dorsal view. B, lateral view. C, cheliped. D, chela of left cheliped, inner view. E, oral parts, lateral view. F, same, ventral view. Male paratype. St. 58. A, B x 10; C, D x 115; E, F x 160.

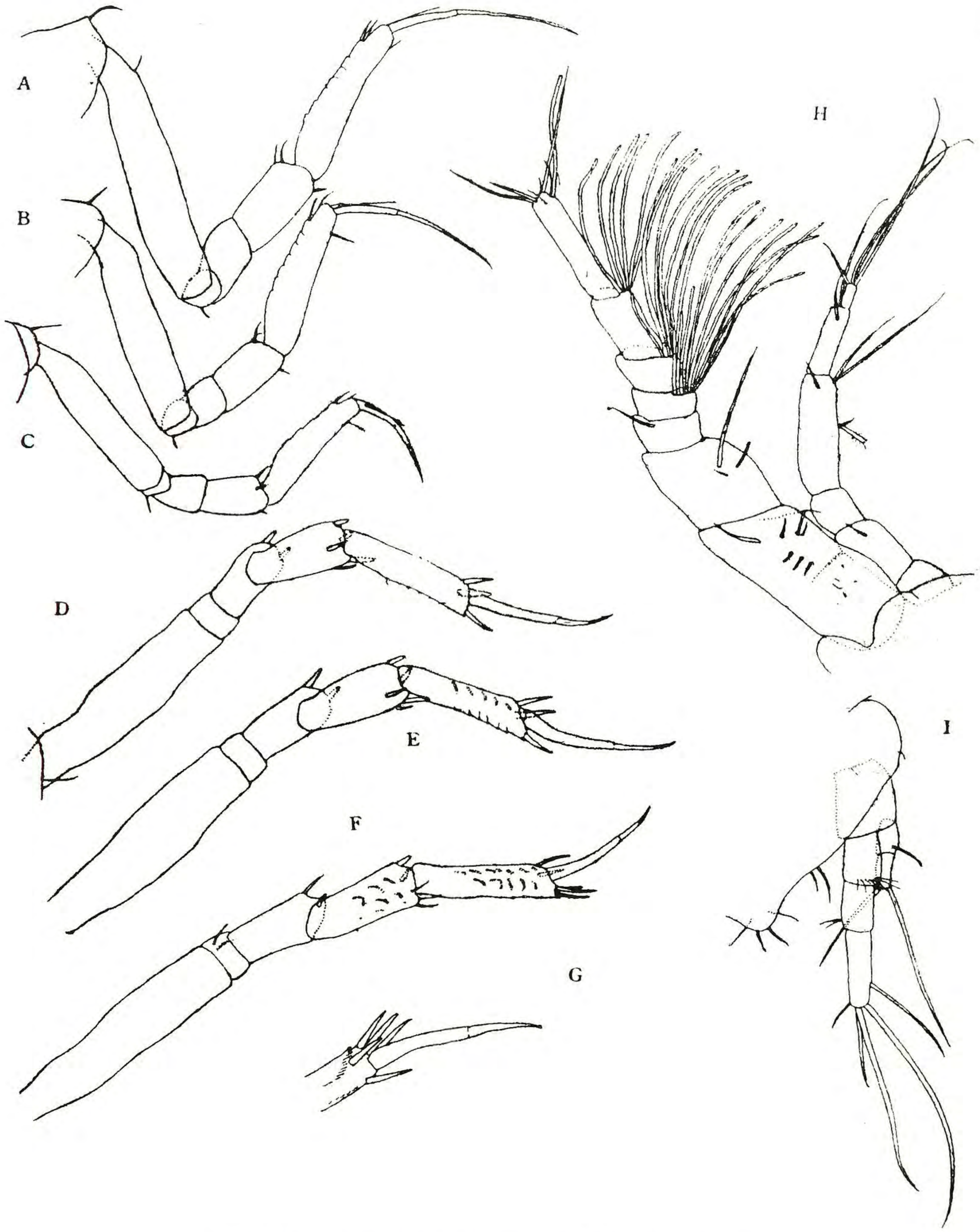


Fig. 24. *Leptognathia gallardoi* n. sp., male.

A-F, pereopods I-VI. G, terminal end of propus of pereopod VI. H, antennae I and II. I, uropod, dorsal view. Male paratype. St. 58. A-F, H, I x 115; G x 160.

tenna II shorter and much narrower than antenna I, 6-segmented; segments VI and V longer than others; segment IV armed with an aesthetask. Oral parts much degenerated. Labrum a simple bulge; labium deeply bilobed. Mandible a tiny tubercle; Maxilla I a small lanceolate lobe. Maxillipeds resembling that of female, but smaller in size.

Cheliped not much different from that of female in size and structu-

re. Movable finger of chela curved, terminating in a stout claw, and with two tiny spinules on inner border. Immovable finger as long and wide as movable one, ending in a similar claw; inner border just behind it produced into a triangular tiny process and armed with three spines. Propus furnished with a long transverse comb-like row of spines on inner surface close to the base of immovable finger. Ischium produced backwards into a short oval lobe.

Pereopods stouter and longer than in female. Structure of segments, and number of spines exactly the same as in female, but spines stouter. Dactylus of last three pereopods relatively longer than in female. Pleopods stouter and with longer spines than in female. Uropods relatively long; endopodite 3-segmented, more than twice as long exopodite which is narrower and 2-segmented.

Size range: Male 3.19 mm - 3.42 mm long.

Remarks: The present species is characterized, above all, by the cheliped having a serrated process close to the base of the terminal claw of immovable finger in the female, and by the pereonite I bearing a small triangular lobe at antero-lateral angle. It bears a certain resemblance in its appearance to *L. australis* BEDDARD from Kerguelen. Although it is almost impossible to deduce anything from BEDDARD's description, which may suffice to specify *australis*, this species appears to have the uropod much longer than that of the present species. HANSEN (1913) divided the species of *Leptognathia* into three major groups, each of which is subdivided. The present species may be placed in his *longiremis*-group and in the subgroup β, where the movable finger of the chela lacks serration along the anterior margin, and the pereonite V has no hastate sternal process. VANHOFFEN (1913) described three species of this genus from the Antarctic: *L. antarctica, L. luykeni* and *L. breviremis*. *L. antarctica* belongs to subgroup α in the *longiremis* group, where the movable finger of the chela has serration on anterior margin. *L. luykeni* and *L. breviremis* has the exopodite of uropod composed of a single segment.

The specific name is associated with the name of the collector.

Leptognathia elongata n. sp.

Figs. 25-26

Material: St. 55, 1 female.

Holotype: Female. 3.24 mm x 0.35 mm in carapace. Body very slender, linear. Carapace one-seventh as long as body, three quarters as wide as long, widest in the middle, narrowing forwards and only slightly backwards; fore margin with a blunt median point. Pereon occupying to-thirds of entire length. Pereonites of uniform width. Pereonites I and VI equal in length; the former wider than long, the latter as wide as long. Pereonites II-V longer than wide, all subequal in length except somewhat shorter V. Lateral side of somites almost straight or only slightly curved. Pleon a little longer than the combined length of last two pereonites. Pleonites I-V wider than pereonites, of about same size, round on sides and carrying a tiny lateral hair on either side. Pleotelson a little longer than last two pleonites, wider than long, pentagonal in shape.

Antenna I about as long as carapace, 4-segmented; segment I longest of all, segment IV tipped by two sensory filaments besides by ordinary spines. Antenna II shorter and narrower than antenna II, 6-segmented; segment II somewhat dilated and segmet IV elongated.

Cheliped and pereopods short an feeble. Chela covered with scale-like rugae on outer surface, with both fingers short. Movable finger

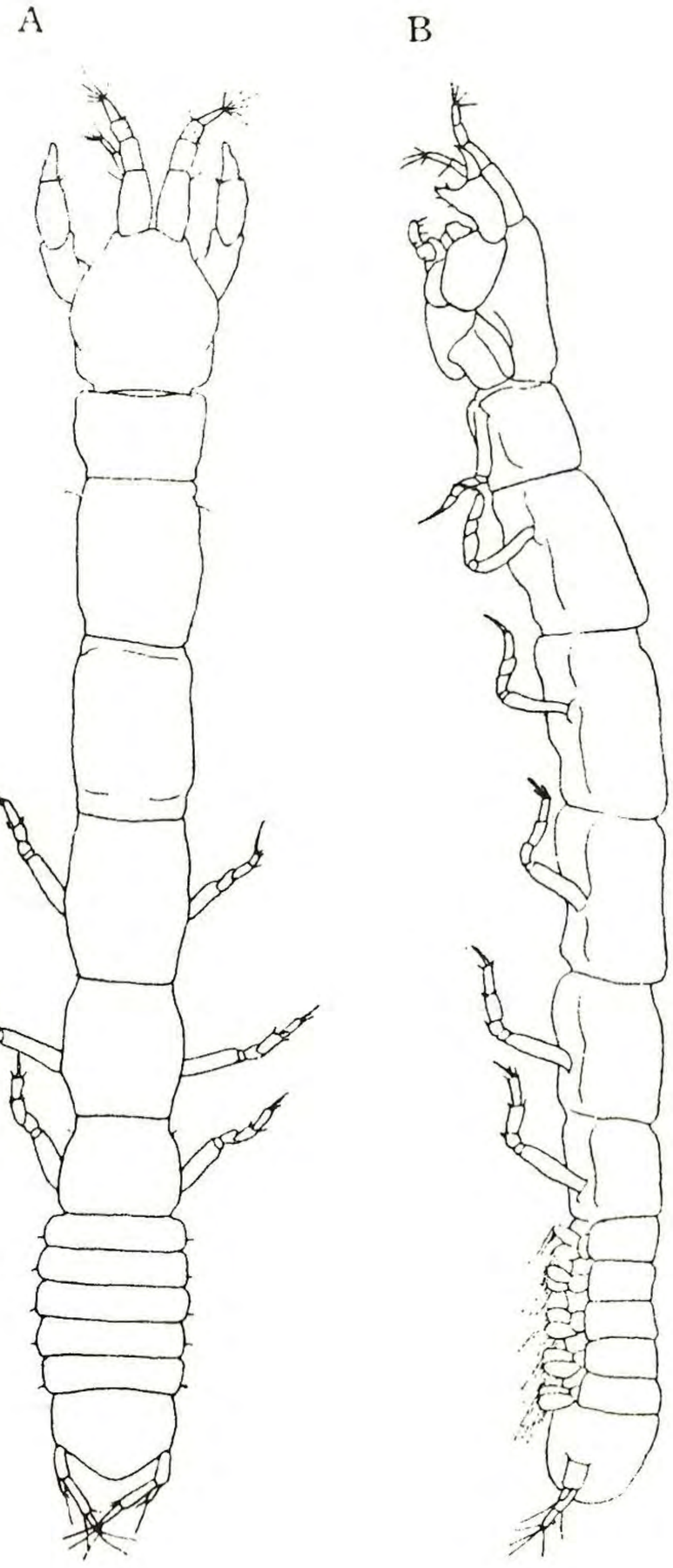


Fig. 25. *Leptognathia elongata* n. sp., female.

A, dorsal view. B, lateral view. Holotype. St. 55 x 30.

curved at the tip, scaly on outer border, with a single spine on inner border. Immovable finger bears a small process just behind terminal claw and three spines on inner border as usual. Comb-like spine row on inner face near the base of movable finger represented by only two spines.

Ischium with a narrow oval lobe on posterior side. Pereopods I-III resembling one another in structure and with dactylus ending in an acuminating claw to form, as a whole, a sickle-like segment. Pereopods IV-V have longer dactylus, but far shorter claw. Spines with which pereopods are armed are very feeble in pereopod I, growing successively thicker towards posterior legs. Propus of pereopods I-III has a single spine at the end, that of succeeding two carries three, whereas that of last bears five.

Pleopods biramous, both rami with fringing setae. Uropod short, biramous. Endopodite 2-segmented, whereas exopodite 1-segmented, tiny and conical in shape.

Remarks: Since this species is represented by a single specimen, I was obliged to dispense with the dissection of the mouth parts, which

provide an important clue to generic assignment. But, in so far as the species falls within the confine of *Leptognathia* in the characters of antenna, pereopods, pleopods and uropods, trere may be hardly any doubt in the propriety of the present generic designation. In having a strongly elongated body, the new species closely resembles *L. paramanca, L. armata,* and *L. elegans*. It is different from the first of these in the possession, of pleopods and of the exopodite of the urupods, and from the last two in this ramus of uropod being 1-segmented, intead of 2-segmented. Cheliped of the present species is more or less close to that of the first and the last species in structure.

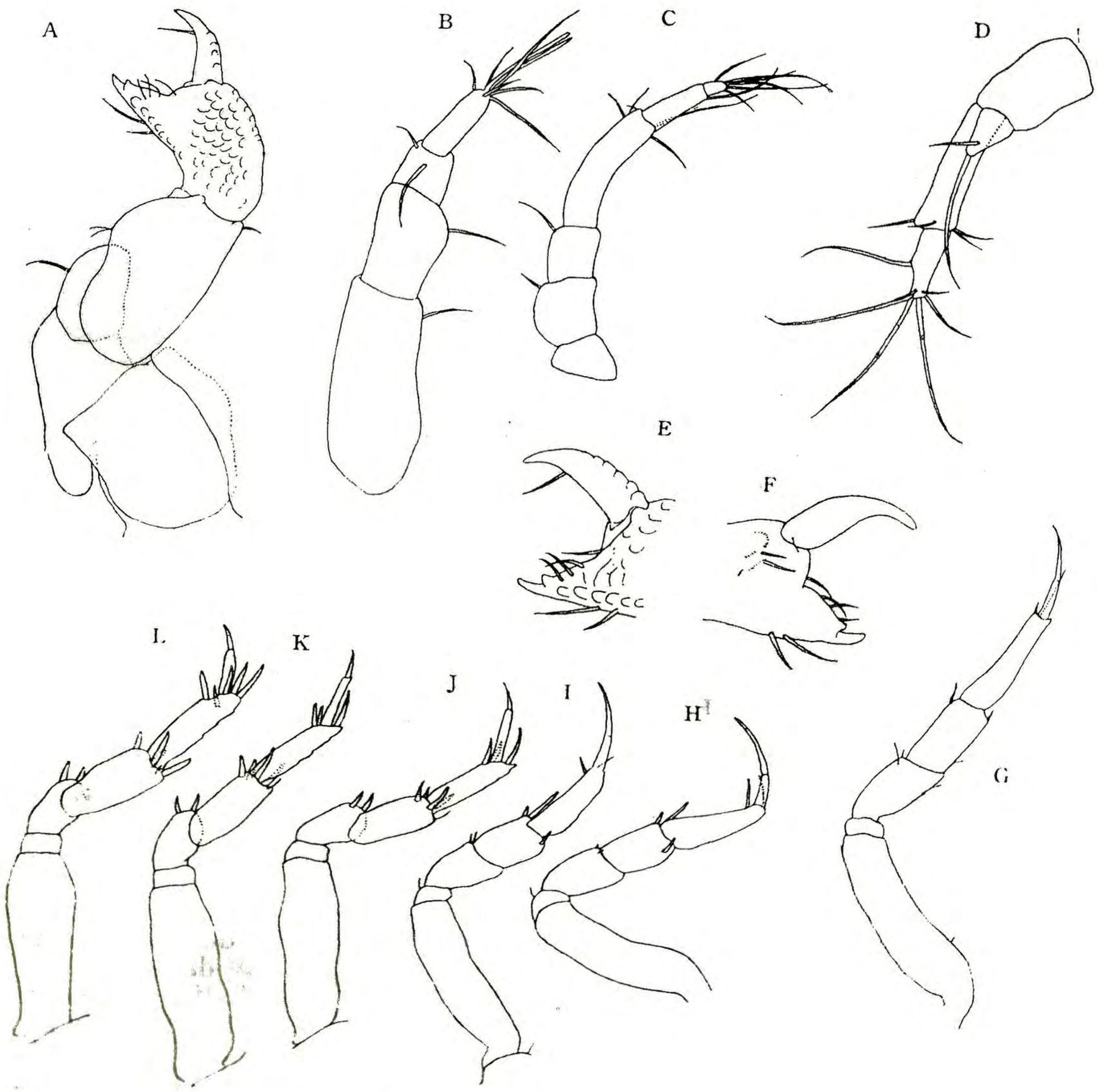


Fig. 26. *Leptognathia elongata* n. sp., female.

A, cheliped. B, antenna I, dorsal view. C, antenna II, inner view. D, uropod, lateral view. E, apical part of chela, outer view. F, same, inner view. G-L, pereopods II-VI. Holotype. St. 55. A x 115; B-L x 160.

Apseudes nipponicus SHIINO

forma *hermaphroditicus* (LANG) n. comb.

(Figs. 27-31)

Apseudes hermanphroditicus LANG, 1953. Ark f. Zool (2) 4:341.

Materials: St. P-2-M3, 1 female; st. P-2-M4, 1 female, 1 younger female; st. P-4-M1, 3 females with oostegites, 3 females without these, 3 younger females; st. P-4-M2, 1 female with oostegites, 2 younger females, 3 fragments; st. P-5-M2, 1 female lacking carapace; st. P-5-M3, 1 ovigerous female, 2 females with oostegites; st. P-5-M4, 1 female; st. P-5-M5, 2 females; st. P-5-M6, 1 ovigerous female, 2 younger females.

Female: With rudiments of oostegites. St. P-5-M3. 8.52 mm. x 1.87 mm. Body flattened, tapering from carapace backwards. Carapace a quarter as long as body, longer than wide, with a broad rostral plate terminating in an acuminating median spine. Two sides with a distinct notch in front of the middle. Eye lobe distinct, produced in front in a short spiniform process, and lodged in paired excavation of frontal marfin of carapace; pigmentation absent. Surface grooves on carapace distinct. Pereon half as long as body, with somites more or less contiguous. Each pereonite more than twice wider than long, with conspicuous paired longitudinal surface rugae, widely round on sides, and with a triangular lamella at each antero-lateral angle; the lamella of pereonite I larger than in others and that of last II pereonites not distinctly bordered from segment. Pereonites IV-VI with semi-oval coxal plate, which is fused with somite in II an III and absent in I. Coxal plates and sides of somites fringed by short plumose setae. Pereonites bear each a sharp hook-like median process on sternum. Oostegites in four pairs, present in pereonites I-IV. Pleon about as long as carapace narrower than pereonite. Five pleonites subequal in length, but successively narrower backwards, and produced on either side into an acuminating pleuron with spiniform termination, where they carry a bundle of plumose setae. Pleotelson shorter than five pleonites combined together, longer than wide, nearly quadrangular, round on caudal margin, and covered with plumose setae both on surface and margin.

Antenna I composed of 4-segmented peduncle, about 15-segmented outer flagellum and 6-segmented shorter inner flagellum. Peduncular segment I elongate, furnished with short plumose aesthetasks besides ordinary plumose hairs; segment II bent at right angle, with short sensory hairs on inner side and plumose hairs on outer side. External flagellum with sensory hairs near the tip. Antenna II composed of 2-segmented peduncle issuing 12-segmented inner flagellum and an outer squama fringed by plumose hairs. Peduncular segment I with a conical inner projection. Flagellar segments II and III much longer than others. Clypeus armed with forwardly directed spiniform process. Labrum trapezoid, somewhat excavated on free border. Labium shallowly bilobed, and with fusiform accesory lobe. Mandible stout; molar process columnar, with terminal face ciliated around its circumference. Incisor process indistinctly 4-dentate and associated with forked bristles. Lacinia mobilis present on left mandible, dentate. Both endites of maxilla I slender; inner endite tipped by six plumose spines, outer endite by nine simple and two serrated spines. Epipodite rod-like, armed with a long terminal and five shorter subterminal hairs. Maxilla II well-developed; endites densely armed with various forms of spines and setae. Maxillipeds also well-developed; palp 4 segmented; all segments except IV expanded, and all richly furnished with long spines. Basis broad, with endite fringed by a

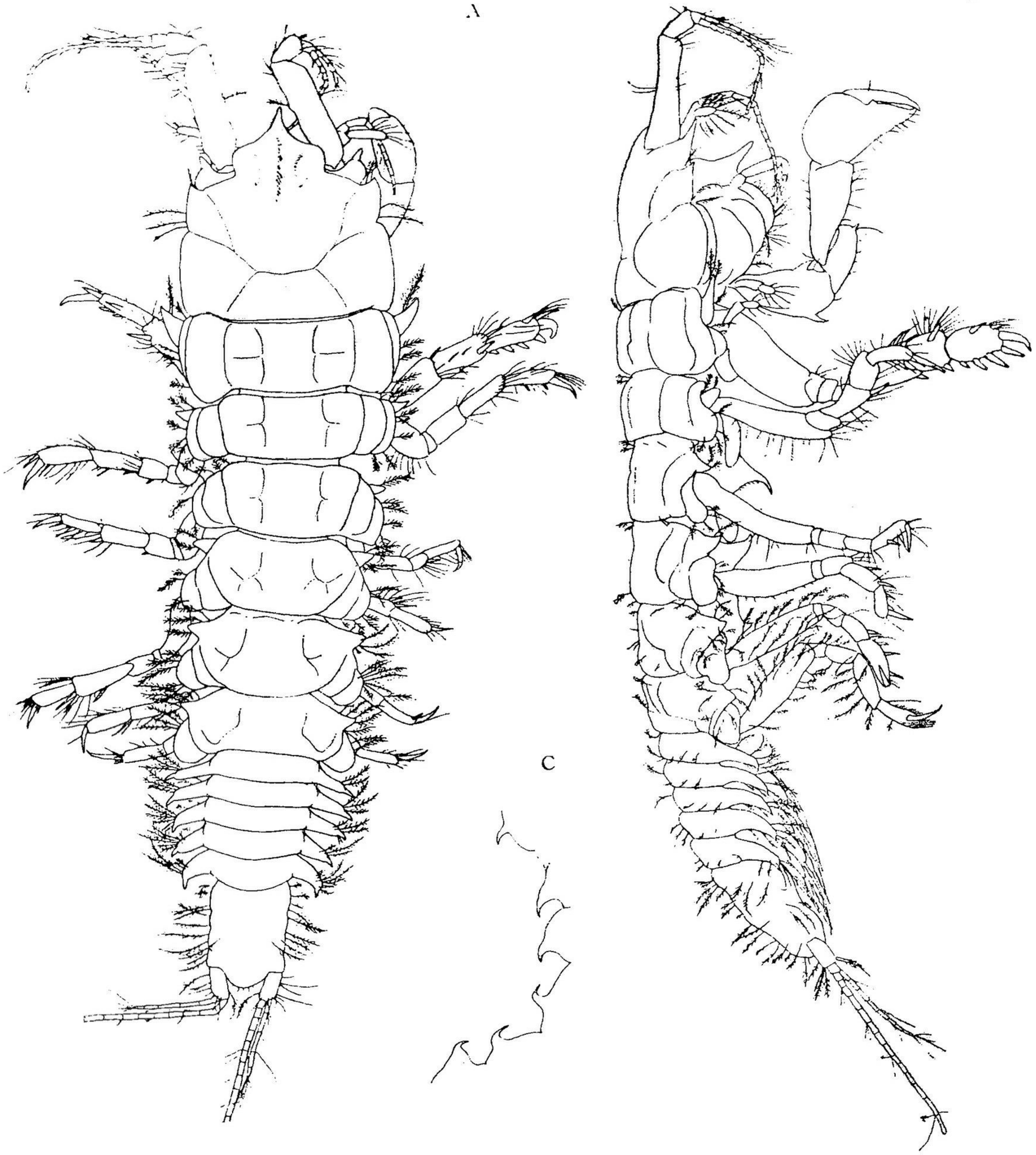


Fig. 27. *Apseudes nipponicus* forma *hermaphroditicus* (LANG)

A, female, dorsal view. B, same, lateral view. C, sternal spines, lateral view. St. P-5-M3. x 15.

row of short spines. Epipodite cup-like in shape, bearing oval anterior and finger-like posterior accessory lobes.

Cheliped relatively feeble. Movable finger of chela terminating in a strong claw and armed on inner border with a series of short spines. Immovable finger has a triangular process on inner border at the base, and extending from the process to the base of terminal claw the whole length of this border is cut into numerous small denticles or plates which are changed into finger-like processes near the claw. Carpus has a small

Fig. 28. *Apseudes nipponicus* forma *hermaphroditicus* (LANG)

A, antenna I. B, antenna II. C, carapace with cheliped removed. D, maxilla I. E, apices of endites of maxilla I. F, labrum. G, labium. H, mandible. I, incisor process of left mandible. J, same in another view. K, mandibular palp. L, incisor process of right mandible, lower view. M, molar surface of molar process. St. P-5-M3.
A, B x 40; C x 30; D, F-M x 80; E x 160.

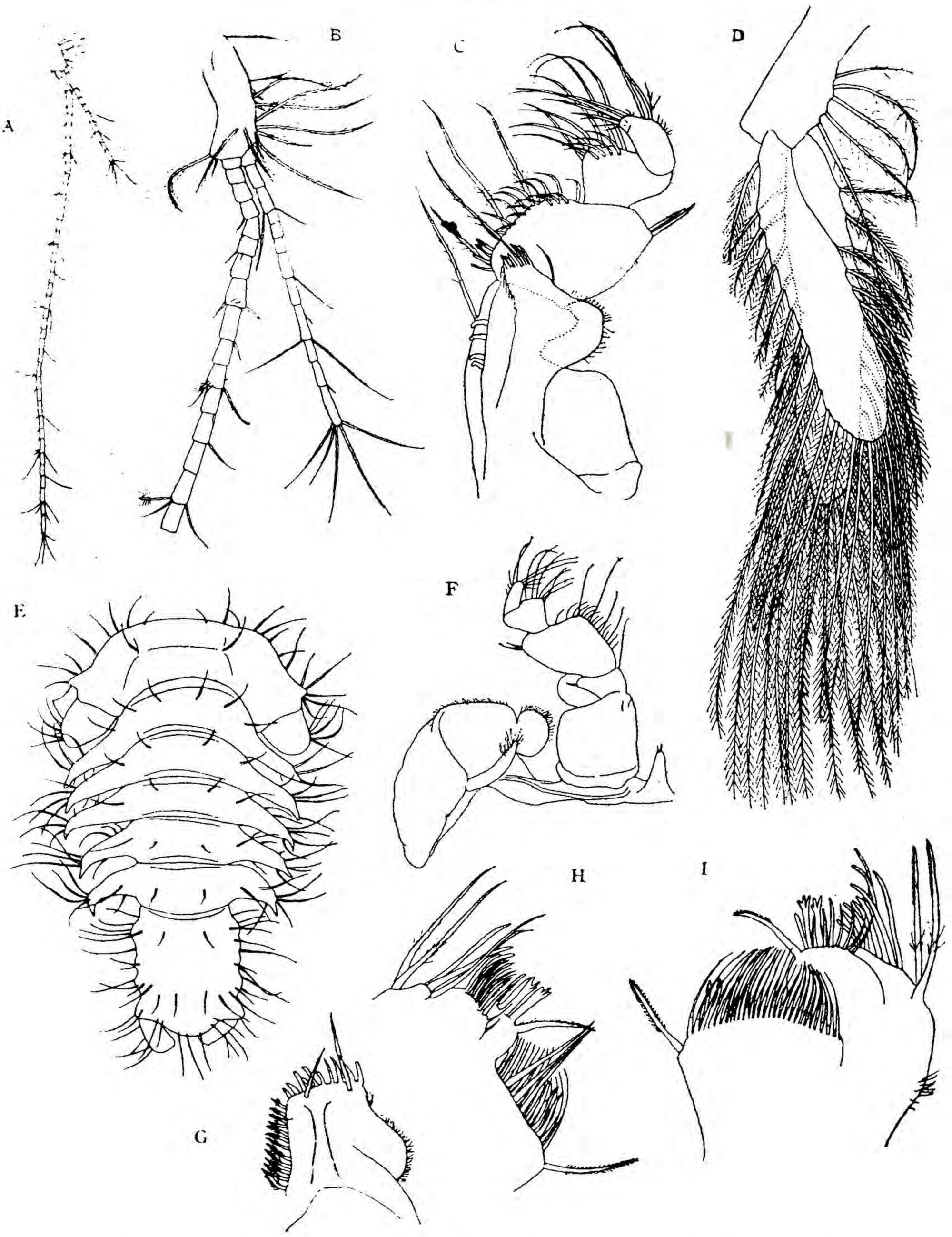


Fig. 29. *Apseudes nipponicus* forma *hermaphroditicus* (LANG).

A, uropod. B, a part of same. C, maxilliped. D, pleopod I. E, pleon, dorsal view. F, maxillipd. G, basis endite of maxilliped, viewed from median side. H, endites of maxilla II, exposed surface. I, same, the other surface. St. P-5-M3. A x 19; B x 45; C. D. G x 80; E x 23; F x 40; H, I x 115.

Fig. 30. *Apseudes nipponicus* forma *hermaphroditicus* (LANG).

A, cheliped. B, pereopod I. C, inner borders of movable and immovable fingers of chela. D, pereopod II. E, pereopod III. F, cheliped of younger fenale. A.-D, st. P-5- M3, F, st. P-2-M4. A, B, D, E x 40; C x 115; F x 50.

Fig. 31. *Apseudes nipponicus* forma *hermaphroditicus* (LANG).

A, pereopod IV. B, terminal part of same. C, same, left pereopod, inner view. D, pereopod V. E, terminal part of same. F, pareopod VI. G, terminal part of same. St. P-5-M3. A, D, F x 40; B, C. E, G x 115.

acuminate process at dorso-distal angle, and another similar process near ventro-proximal angle. Merus with a short spiniform process on ventral border near distal end, and basi-ischchium with similar but stouter processes, one on each of two borders. Exopodite 2-segmented, distal segment

fringed by plumose hairs. Pereopod I stout and flattened. Propus expanded, with four spines on ventral border and two on dorsal border; spines shorter than dactylus. Carpus with two spines on ventral border and one on dorsal border. Merus with one spine at each of dorsal and ventral angle of terminal border. Exopodite as in cheliped. Succeeding pereopods shorter an narrower than pereopod I. Pereopods II and III resembling each other, dactylus and spines on other segments much feebler and smaller than those of pereopod I. Perepod IV somewhat diferent from these in having shorter dactylus and in the armature of segments. Propus bears two transverse, horse-shoeshaped rows of spines close to the base of dactylus; spines of outer row shorter, more numerous and simple, whilst those of inner row longer and pectinate. The segment bears an aesthetask on dorsal side near the base. Similar sensory setae also present on basis, forming a group of three. Terminal border of merus bears strong spines both on outer and inner faces. Pereopod V lacks horseshoe-shaped spine rows of propus, these being replaced by two stouter spines. Ventral border of this segment is ornamented by a longitudinal comb-like row of short spines in distal half. Carpus with four plumose spines on dorsal border, merus with one of such, ischium with one on ventral border, and basis with two at ventro-distal angle and fringed by similar spines along dorsal border. In pereopod VI, the ventral comb-like spine row of propus extends as far as dorsal angle of the segment circumscribing terminal border. Carpus, merus, and basis plentifully supplied with long plumose spines along both dorsal and ventral borders.

Pleopods biramous; two rami subequal in size, elongate and narrow, and fringed by long plumose hairs on both outer and inner edges. Uropod long, filiform, about half as long as body. Peduncle with plumose hairs on outer border. Exopodite much shorter than endopodite, composed of about 12 segments of unequal lengths. Endopodite composed of about 40 segments, bearing here and there aesthetasks besides simple spines.

Younger specimen: Body semi-opaque. Cheliped more slender than in the adult, lacking basal process and pectination on inner border of movable finger. Spiniform processes on carpus and merus feebler. Dorsal spine on basi-ischium absent.

Size range: Adult female 10.60 mm. - 6.00 mm long. Young female 6.46 mm. - 4.00 mm. long.

Remarks: LANG's *Apseudes hermaphroditicus* which has been recorded from the Antarctic shows a certain extent of change in the structure of the cheliped according to ages, and some variations in the number of spines on the propus of pereopod I. Since the character of the present specimens with respect to these limbs falls within the confines of this variation of *hermaphroditicus*, there is no doubt in that they belong to this species. In erecting *hermaphroditicus*, LANG recognized its close affinity to *A. nipponicus* recorded by myself from Japan, saying "in the shape of the body, the pilosity and the well-marked furrows" the two agree well. At the same time, as the differences between them he referred to the rostral-spine, the eye-lobes and the epimera of the pleon segments. Differences observed in these structures are, in my opinion, too trivial to separate them into distinct species. Besides, the two species reach almost the same size of body, though Tierra del Fuego materials are somewhat smaller even in the largest one. Really, the two species are almost the counterpart of each other. Considering from the fact, however, that they occur in localities so remote from each other, and that they show some trivial differences, it may be appropriate to sink *hermaphroditicus* in the rank of a forma of *nipponicus* rather than uniting them into a single species. It appears that *nipponicus* and its forma *hermaphroditicus* represent another interesting case of bipolar distribution of the benthic tanaidaceans.

REFERENCES

BEDDARD, F. E. 1886.—Report on the Isopoda collected by H. M. S. Challenger during the Years 1873-76. Challenger Report. Zoology, **17**: 1-175, Pls. I-XXV.

CRAWFORD, G. I. 1936.—Additions to the Plymouth Fauna (1931) in the Crustacean Orders Tanaidacea, Isopoda and Amphipoda. J. Mar. Biol. Ass. Plymouth, **21**: 95-106.

DOLLFUS, A. 1898.—Campagnes de la Mélita. Tanaidae récoltés par N. Ed. Chevereux dans l'Atlantique et dans la Méditerranée. Mém. Soc. Zool. France, 11: 35-47.

GALLARDO, V. A. and J. C. CASTILLO. 1969.—Quantitative Benthic Survey of the Infauna of the Chile Bay (Greenwich Is., South Shetland Is.). Gayana, Zool. **16**: 3-17.

GREEVE, L. 1964.—The Records of *Leptognathia dentifera* G. O. Sars, (Tanaidacea). Sarsia, **15**: 71.

———— 1965.—The Biology of Some Tanaidacea from Raunefjorden Western Norway. Ibid., **20**: 43-54.

———— 1965.—New Records of Some Tanaidacea (Crustacea) from the Vicinity of Tromsö. Astrate, **27**: 1-6.

———— 1965.—Tanaidacea from Trondheimsfjorden. Det Kong. Norsk Vidensk. Selsk. Forh., **38**: 140-143.

———— 1968. Tanaidacea from Hardangerfjorden, Western Norway. Sarsia, **36**: 77-84.

HANSEN, H. J. 1913.—Crustacea Malacostraca II, the Order Tanaidacea. The Danish Ingolf-Expedition, **3**: 1-145, Pls. 1-12.

HODGSON, T. V. 1902.—Crustacea. Report on the Collection of Natural History made in the Antarctic Region during the Voyage of the "Southern Cross", London, 228-261, Pls. 29-40.

———— 1910 —Crustacea IX. Isopoda. National Antarctic Expedition 1901-1904, Natural History, **5, 3**: 1-77, Pls. 1-10.

KUDINOVA-PASTERNAK, R. K. 1965.—Deepsea Tanaidacea from the Bougainville Trench of the Pacific. Crustaceana, **8**: 75-91.

———— 1966.—Tanaidacea (Crustacea) of the Pacific Ultraabyssals (in Russian). Zool. Journ. Moscow, **45**: 518-535.

KUSSAKIN, O. G. 1967.—On Isopoda and Tanaidacea from the Coastal Zones of the Antarctic and Subantarctic (in Russian). Explorations of the Fauna of the Seas 4 (12). Biol. Results of the Soviet Antarc. Exped. (1955-1958), **3**: 220-380.

LANG, K. 1949.—Contribution to the Systematics and Synonymics of the Tanaidacea. Ark. f. Zool., **42A, 18**: 1-14.

———— 1953.—*Apseudes hermaphroditicus* n. sp. a Hermaphrotitic Tanaide from the Antarctic. Ibid. ser. 2, **4**: 349-350, Pls. 1-4.

———— 1957.—Tanaidacea from Canada and Alaska. Contrib. Dép. Pêche. Québec. **52**: 1-54.

———— 1958.—*Leptognathia paramanca* n. sp. Ark. f. Zool. Ser 2, 11: 431-434.

MENZIES, R. J. and J. L. MOHR. 1962.—Benthic Tanaidacea and Isopoda from the Alaskan Arctic and the Polar Basin. Crustaceana, **3**: 192-202.

RICHARDSON, H. 1905.—A Monograph on the Isopods of North America. U. S. Nat. Mus. Bull., **54**: 1-727.

———— 1906. Sur les Isopodes de l'Expedition Francaise Antarctique. Bull Mus. Hist. Nat., **1906**: 187-189.

———— 1907. Isopodes. Expédition Antarctique Française (1903-1905), Sci. Nat., Doc. Sci., 1-22, Pl. 1.

———— 1908. Isopodes (2e mém.) Ibid., 1-8.

SARS, G. O. 1898.—Isopoda. An Account of the Crustacea of Norway, **2**: 1-270, Pls. 1-100, Suppl. Pls. 1-4.

SHIINO, S. B. 1937.—On *Apseudes nipponicus n. sp.* (Crustacea, Tanaidacea), Annot. Zool. Japon., **16**: 53-62.

STEBBING, T. R. R. 1891. Sessile-eyed Crustaceans. Ann. Mag. Nat. Hist., (6) **8**: 324-331, Pls. 15-16.

STEPHENSEN, K. 1937. Marine Isopoda and Tanaidacea. The Zoology of Iceland, **3**, Pt. 27: 1-26.

———————— 1943.—The Zoology of East Greenland. Leptostraca, Mysidacea, Cumacea, Tanaidacea, Isopoda and Euphausiacea. Meddel. om Grönland, **121** (10): 1-82.

———————— 1947.—Tanaidacea, Isopoda, Amphipoda and Pycnogonida. Scientic Results of the Norwegian Antarctic Expedition 1927-1928 et sqq., **27**: 1-90.

———————— 1948. Storkrebs. Danmarks Fauna, **53**: 1-187.

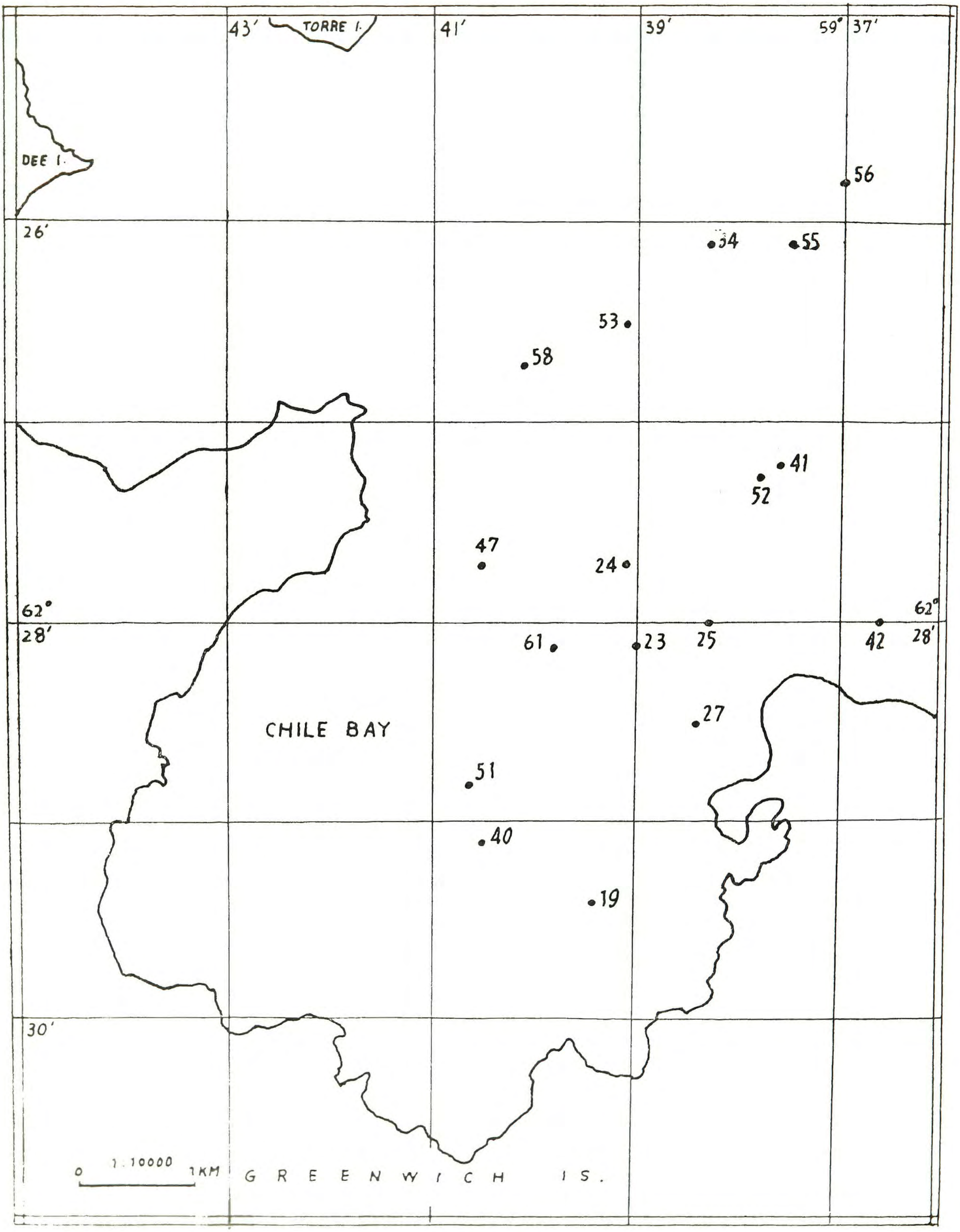
TATTERSALL, W. M. 1905. The Marine Fauna of the Coast of Ireland. Pt. 5. Isopoda. Fisheries, Ireland Sci. Invest., 1904, **11** (1905): 1-90, Pls. 1-11.

VANHOFFEN, E. 1907.—Crustaceen aus den kleinen Karajakfjord in West-Grönland. Zool. Jahrb. Abt. Syst., **25**: 507-524.

———————— 1914.—Die Isopoden der deutschen Südpolar-Expedition 1901-1903. Deutsch. Südpol. Exped., **15**, Zool., **7**: 447-598.

WALLACE, N. A. 1919. The Isopoda of the Bay of Fundy. Tront Univ. Stud Biol. Ser., **18**: 6-41.

Recibido en julio de 1970.



Map of Chile Bay, Greenwich Island with stations where Cumaceans were obstained.

LIST OF STATIONS

Stations	Date Month, Day, Year	Time (local)	Lat. S.	Long. W.	Depth (m)	Bottom Type
19	1-11-68	10.2	62° 29.4'	59° 39.4'	70	mud
23	1-11-68	11.8	62° 28.1'	59° 39.0'	225	mud
24	1-11-68	12.2	62° 27.7'	59° 39.1'	228	mud
25	1-11-68	12.6	62° 28.0'	59° 38.3'	200	mud
27	1-11-68	13.2	62° 28.5'	59° 38.4'	90	sandy mud
40	1-12-68	13.5	62° 29.1'	59° 40.5'	44	sandy mud
41	1-13-68	12.2	62° 27.2'	59° 37.6'	220	sandy mud
42	1-13-68	12.9	62° 28.0'	59° 36.6'	82	sandy mud
47	1-13-68	14.5	62° 27.7'	59° 40.5'	66	sandy mud
51	1-13-68	15.4	62° 28.8'	59° 40.6'	79	sandy mud
52	1-17-68	10.1	62° 27.2'	59° 37.8'	252	mud
53	1-17-68	10.5	62° 26.5'	59° 39.1'	184	mud
54	1-17-68	11.3	62° 26.1'	59° 38.3'	347	mud
55	1-17-68	11.6	62° 26.1'	59° 37.5'	355	mud
56	1-17-68	11.9	62° 25.8'	59° 37.0'	274	fine sand
58	1-17-68	13.3	62º 26.7'	59° 40.1'	90	mud
61	1-17-68	14.4	62° 28.1'	59° 29.8'	188	mud

LIST OF MATERIALS

Station	*Nototanais dimorphus*	*Nototanais antarcticus*	*Typhlotanais longidactylus*	*Typhlotanais greenwichensis*	*Leptognathia gallardoi*	*Leptognathia gracilis*	*Leptognathia elongata*
19	1 f.	1 m., 2 f.			1 f.		
23				3 f.			
24				2 f.			
25				4 f.			
27		3 f.	1 f.			5 f.	
40	1 m.	1 m.				1 f.	
41				5 f.			
42				11 f.	1 m., 9 f.		
47	1 m., 3 f.	1 f.					
51	1 f.						
52				2 f.			
53				1 f.	2 f.		
54				6 f.			
55			12 f.	3 f.			1 f.
56		1 m.	6 f.	4 f.	8 f.		
58					1 m., 2 f.		
61				1 f.	1 m., 1 f.		

f = female.
m = male.