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Crustacea Decapoda : Revision of the genus *Bathymunida* Balss, 1914, and description of six new related genera (Galatheidae)

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ABSTRACT

The genus *Bathymunida* Balss, 1914, is revised, based on an examination of previously recorded material (including types) and numerous specimens in the Muséum national d'Histoire naturelle, collected during recent explorations of the Indo-West Pacific. This genus now contains 13 species, seven of which are described as new. Nine additional species are described in five new genera : *Anoplonida* gen. nov. (two species, one of which is new); *Heteronida* gen. nov. (two species, one of which is new); *Neonida* (one species, new); *Onconida* gen. nov. (five species, all new); and *Plesionida* gen. nov. (one species, new). The five new genera, along with *Bathymunida* and *Paramunida* Baba, 1988, share characters with a number of species previously placed in *Munida*, which suggest that these taxa form a monophyletic group. The absence of the first pair of male pleopods, which represents the main characteristic of this group, is associated with a sexual differentiation of the chela of the last pair of pereopods. *Agononida* gen. nov. is proposed for the aforementioned species of *Munida*. A key to genera of the Galatheidae in which the males lack pleopods on the first abdominal segment, is provided.

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RÉSUMÉ

Crustacea Decapoda : Révision du genre *Bathymunida* Balss, 1914, et description de six genres voisins nouveaux (Galatheidae).

Le genre *Bathymunida* Balss, 1914, dont d'assez nombreux exemplaires, en collection au Muséum national d'Histoire naturelle, à Paris, ont été rassemblés au cours de récentes explorations dans l'Indo-Pacifique occidental, est révisé, après examen des types ou autre matériel signalé dans la littérature. Il inclut maintenant 13 espèces, dont sept sont décrites comme nouvelles. Neuf espèces nouvelles supplémentaires, ainsi que deux espèces précédemment rapportées à *Bathymunida*, sont réparties dans cinq autres genres : *Anoplonida* gen. nov. (deux espèces, dont une nouvelle); *Heteronida* gen. nov., (deux espèces, dont une nouvelle); *Neonida* (une espèce, nouvelle); *Onconida* gen. nov. (cinq espèces, toutes nouvelles); *Plesionida* gen. nov. (une espèce, nouvelle). *Bathymunida* et ces cinq nouveaux genres partagent avec *Paramunida* Baba, 1988, et avec un certain nombre d'espèces classées dans le genre *Munida* Leach, des caractères permettant de supposer qu'il s'agit d'un ensemble monophylétique. La perte de la première paire de pléopodes chez les mâles, associée à une différenciation sexuelle de la pince de la dernière paire de péréiopodes, représente la caractéristique essentielle de cet ensemble de Galatheidae. *Agononida* gen. nov. est proposé pour les espèces de *Munida* mentionnées ci-dessus, qui présentent ces caractères. Un tableau d'identification des genres de Galatheidae, dont les mâles sont dépourvus de pléopodes sur le premier segment abdominal, figure en tête de l'étude systématique.

INTRODUCTION

HISTORICAL. — *Bathymunida* is a small genus, accommodating eight species from the Indo-West Pacific. It was established by BALSS (1914) in a brief account based upon *B. polae* Balss, 1914, from the Red Sea. The expanded systematic account followed the next year (BALSS, 1915) and listed four males and three females of that species from the *"Pola"* Station 143 at 212 m. Subsequent works treating the genus were sporadic; YOKOYA (1933) described *Munida brevirostris* from a male collected from Japan, northwest of Kyushu, at 105 m, which was later transferred to *Bathymunida* by VAN DAM (1938). VAN DAM also described three new species based on the *"Siboga"* collection : *B. balssi* (three males) and *B. sibogae* (two females), both from the Ceram Sea at 118 m, and *B. longipes* (one male) from the Bali Sea near the Kangean Group at 100 m. MELIN (1939) provided a description of *B. quadratirostrata*, based on three specimens obtained from the Bonin Islands at 128–183 m. Subsequently, BABA (1970) pointed out that the type material of *Bathymunida brevirostris* was no longer extant and provided a redescription of the species, based on three specimens from the north of Kyushu, Japan, at 105 m. KHODKINA (1981) described *B. aspinirostris*, based on a female from the Norfolk Island Ridge at 51 m; this species was so aberrant that she expanded the definition of the genus to include it. Very recently BABA (1994) described *B. inermis* (14 specimens), taken off the Queensland slope at 303–296 m. This species was provisionally placed in *Bathymunida,* with remarks provided concerning unique characters potentially of generic importance. Additional locality records were given for *B. longipes* (7 specimens) from the Philippines (BABA, 1988) and *B. polae* (63 specimens) from Madagascar (BABA, 1990). In total, 105 specimens have been recorded for the genus.

MATERIAL. — The main part of the material studied was sorted from collections made in New Caledonia, and vicinity, by cruises LAGON (RICHER DE FORGES, 1991), BIOCAL, BIOGEOCAL, CHALCAL 2, CORAIL 2, MUSORSTOM 4, 5, 6, SMIB 3, 4, 5, 6, and VOLSMAR (RICHER DE FORGES, 1990; 1993), BATHUS 1, 2, 4 and SMIB 8 (RICHER DE FORGES & CHEVILLON, 1996), in Vanuatu by GEMINI (RICHER DE FORGES, 1993), and MUSORSTOM 8 (RICHER DE FORGES *et al.*, 1996), in Indonesia by KARUBAR, in the Philippines by MUSORSTOM 1 (FOREST, 1981), and in the South-West Pacific (Wallis and Futuna Islands) by MUSORSTOM 7 (RICHER DE FORGES & MENOU, 1993). They are now registered in the collection of the Muséum national d'Histoire naturelle, Paris (MNHN). The specimens of *Bathymunida* reported in the previous papers were examined on loan from the following repositories : Institute of Taxonomic Zoology, Amsterdam (ITZA); Kitakyushu Museum of Natural History (ZLKU); Naturhistorisches Museum, Vienna (NMW); Queensland Museum, Brisbane (QM); Swedish Museum of Natural History, Stockholm (SMNH); National Museum of Natural History, Smithsonian Institution (USNM). In addition comparative material was made available on loan from the Senckenberg Museum, Frankfurt (SMF) and the Natural History Museum, Chiba, Japan (CBM).

OUTLINE OF STUDY AND PRESENTATION. — The collection in the Paris Museum comprises 175 specimens in 84 lots, distributed among 21 species, including those referred to new genera (see below). Sixteen of these species are described as new.

In this paper, all the known species of *Bathymunida* are revised. Two previously described species (*B. inermis* Baba, 1994, and *B. aspinirostris* Khodkina, 1981) show unusual characteristics which are regarded as being of more than specific importance. Included in the present collection are a congener to each of these, and seven other species which are not referable to *Bathymunida*. Thus, five new genera (*Anoplonida, Heteronida, Onconida, Neonida* and *Plesionida*) are established to accommodate these unusual forms. All of these genera are grouped together by the lack of male gonopods on the first abdominal segment, a character which suggests that the genus *Munida* could eventually be divided into two genera (MACPHERSON & de SAINT LAURENT, 1991 : 374; MACPHERSON, 1994 : 423). Thus, a new generic name, *Agononida*, is proposed for those species of *Munida* which have gonopods on the second abdominal segment only.

A diagnosis is provided for each species. Distinguishing characters are often so slight between some of the species treated here that a full description is only given for selected species, in order to avoid excessive repetition. Most of the characters for the species will be apparent in the accompanying illustrations. Color notes are taken from transparencies by P. LABOUTE or J. L. MENOU, unless otherwise indicated. Sizes showing postorbital carapace lengths are given for species represented by more than three specimens. Range indicated shows the known range of vertical and horizontal distributions. Generic and specific names are placed in alphabetical order.

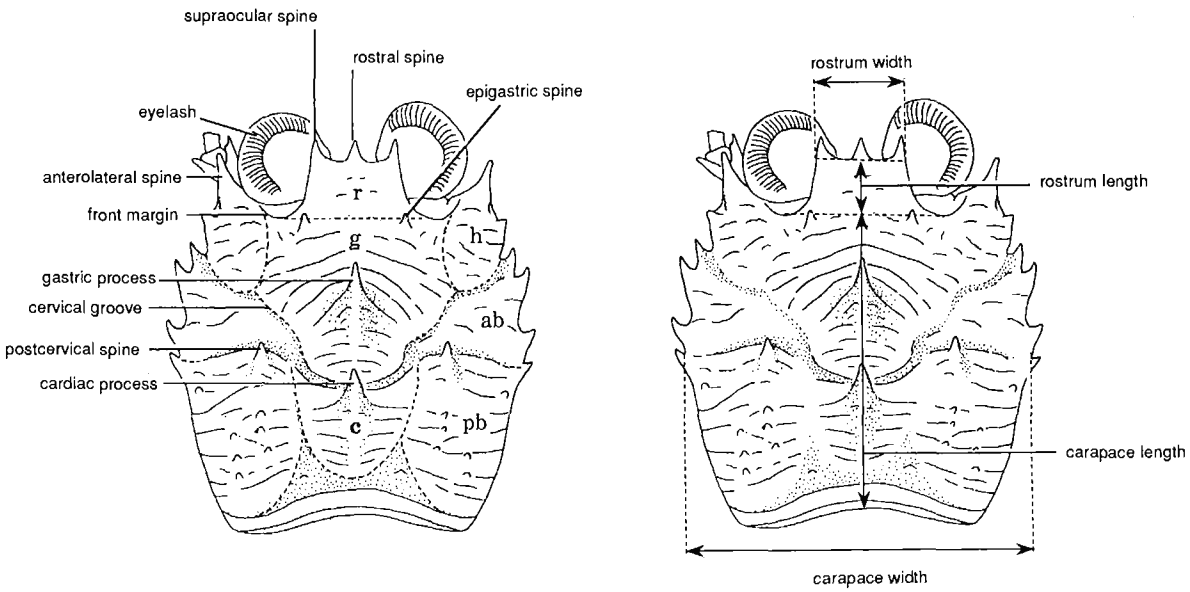

FIG. 1. — Schematic dorsal views of carapaces in *Bathymunida*, showing terminology used and measurements taken. Abbreviations : **ab**, anterior branchial region; **c**, cardiac region; **g**, gastric region; **h**, hepatic region; **pb**, posterior branchial region; **r**, rostrum.

TERMINOLOGY AND MEASUREMENTS. — BALSS (1914) used the term "rostrum" in a broad sense to include a median and two lateral spines. This was followed by VAN DAM (1938) and MELIN (1939). On the other hand, the "rostrum" and "supraocular spines" are used for the "median" and "lateral" spine respectively in related genera, i.e. *Munida* Leach, 1820, and *Paramunida* Baba, 1988 (see HAIG, 1973; BABA, 1988; MACPHERSON & BABA, 1993; MACPHERSON, 1993a). For the genera here treated, there is a need to describe the "base to rostral and supraocular spines." The "rostrum" used here includes this structure and both the rostral and supraocular spines (see Fig. 1). The term "front margin" used by HAIG (1973), BABA (1988), MACPHERSON & BABA (1993) and MACPHERSON (1993a) is restricted to the anterior margin of the carapace lateral to the rostrum. This term is also cited in this

paper. The ventral margin of the orbit is called the "suborbital margin." For the maxillipeds and walking legs, the terms "mesial, lateral" and "flexor, extensor" seem preferable to "inner, outer" and "ventral, dorsal." Other terminology used is as indicated in Fig. 1. The term "eyelash" used in the text means the setae fringing the end of the eyestalk proximal to the cornea.

The measurements given under "Material examined" indicate the carapace length excluding rostrum, taken as the distance between the front and posterior margins of the carapace in the midline. The width and length of the rostrum are as indicated in Fig. 1.

Part of the material studied will be deposited in the collection of the Smithsonian Institution, Washington.

OVERVIEW OF THE GROUP

The species treated herewith mostly belong to *Bathymunida*, but some are referable to other genera proposed below as *Anoplonida* gen. nov., *Heteronida* gen. nov., *Neonida* gen. nov., *Onconida* gen. nov. and *Plesionida* gen. nov. All of these genera are small, attaining to a postorbital carapace length of 8.6 mm (*Plesionida psila* sp. nov.) at most, and are characterized by the presence of male gonopods (G2) on only the second abdominal segment.

The lack of male gonopods (G1) on the first abdominal segment in the Galatheidae, a condition we believe could indicate a monophyletic group within the family, is also known in *Coralliogalathea* Baba & Javed, 1974, *Lauriea* Baba, 1971, *Phylladiorhynchus* Baba, 1969, *Paramunida* Baba, 1988, and part of the species of *Munida* Leach, 1820 (see BABA, 1977 : 251; MACPHERSON & de SAINT LAURENT, 1991; MACPHERSON, 1994). The first three genera are rather remote from the group herein treated in having a flattened triangular rostrum. The last mentioned group may be differentiated from the remaining species of *Munida* by the combination of the lack of G1, the carapace having a pair of epigastric spines and a postcervical spine on each side, the second to fourth abdominal tergites each armed with four spines on the anterior ridge and the merus of the third maxilliped bearing only one well-developed spine on the flexor margin. Thus, the new generic name, *Agononida*, is proposed for it. The genus *Munida*, however, still includes various aberrant species, such as *M. bellior* Miyake & Baba, 1967, *M. elegantissima* de Man, 1902, *M. leviantennata* Baba, 1988, and undescribed species in the Muséum national d'Histoire naturelle which challenge the definition of *Munida*. Species of *Paramunida* have recently been reviewed by MACPHERSON (1993b).

CHARACTERS TO SEPARATE THE GENERA. — The following characters are useful to differentiate the genera treated here : presence or absence of cardiac and/or gastric processes; structure of the rostrum; shape of the sternal plastron, in particular the fourth thoracic sternite; armature of the abdominal segments; subdivision of the telson; spination of the basal antennular segment; shape of the antennal peduncle (presence or absence of the anterior prolongation on the first segment and relative length of the antennal flagellum in particular); and shape of the third maxilliped, particularly the merus and ischium.

Examination of the fifth pereopod, which is considered to be a preening appendage, shows not only sexual dimorphism, but also differences between genera and even species, so far as the genera treated here are concerned (see below). Species of *Bathymunida* have a dense set of plumose setae of subequal length, arranged like a toothbrush (hereafter called "brush") on the flexor face (dorsal when the appendage is folded) of the propodus (palm and fixed finger in this case) in both sexes, as do species of *Heteronida*, *Neonida*, *Onconida* and *Plesionida* (Figs 2–4). However, the brush is replaced by longer, sparser, simple setae in *Anoplonida*. The same is true of species of *Paramunida* in which the setae are, however, much longer and denser and in which a row of stiff, curved setae is present along the opposable margin of the dactylus [see Fig. 5 a–d for *P. scabra* (Henderson, 1885) and *P. hawaiiensis* (Baba, 1981)].

Similarly, the setation on the extensor face (anterior when the appendage is folded) of the chela differs between genera : in males of *Bathymunida* (except for *B. balssi*, of which males are not available to us, and *B. quadratirostrata* the fifth pereopod of which is missing in the material examined), the movable finger bears ribbon-like setae, roughly arranged in rows, in addition to another group of similar or much finer setae on the distal portion of the propodus; the ribbon-like setae are absent in females (Fig. 2). Males of *Neonida*, *Onconida* and

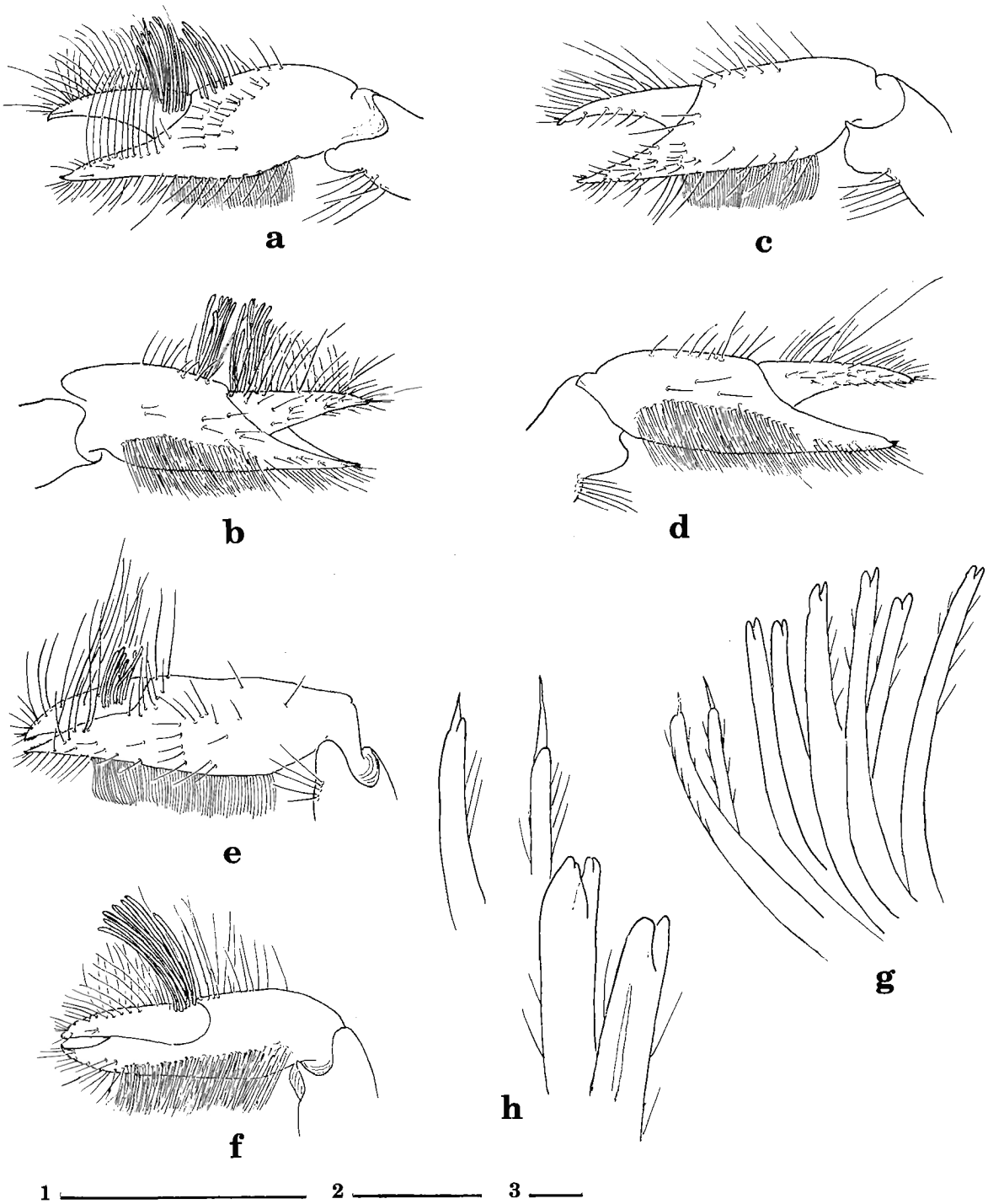

FIG. 2. — Fifth pereopods, distal segments : **a**, *Bathymunida polae*, male (MNHN-Ga 707), Madagascar, *"Vauban"*, CH 52, 150 m, right, lateral; **b**, same, mesial; **c**, female (MNHN-Ga 707), left, lateral; **d**, same, mesial; **e**, *B. nebulosa*, male (MNHN-Ga 3579), right, lateral; **f**, *B. sibogae*, male (MNHN-Ga 3589), right, lateral; **g**, *B. eurybregma*, ribbon-like setae on distal part of propodus, male (MNHN-Ga 3570); **h**, same, distal portions enlarged.

Scale 1 = 1 mm; scales 2, 3 = 0.05 mm. Scale 1 for a–f; scale 2 for h; scale 3 for g.

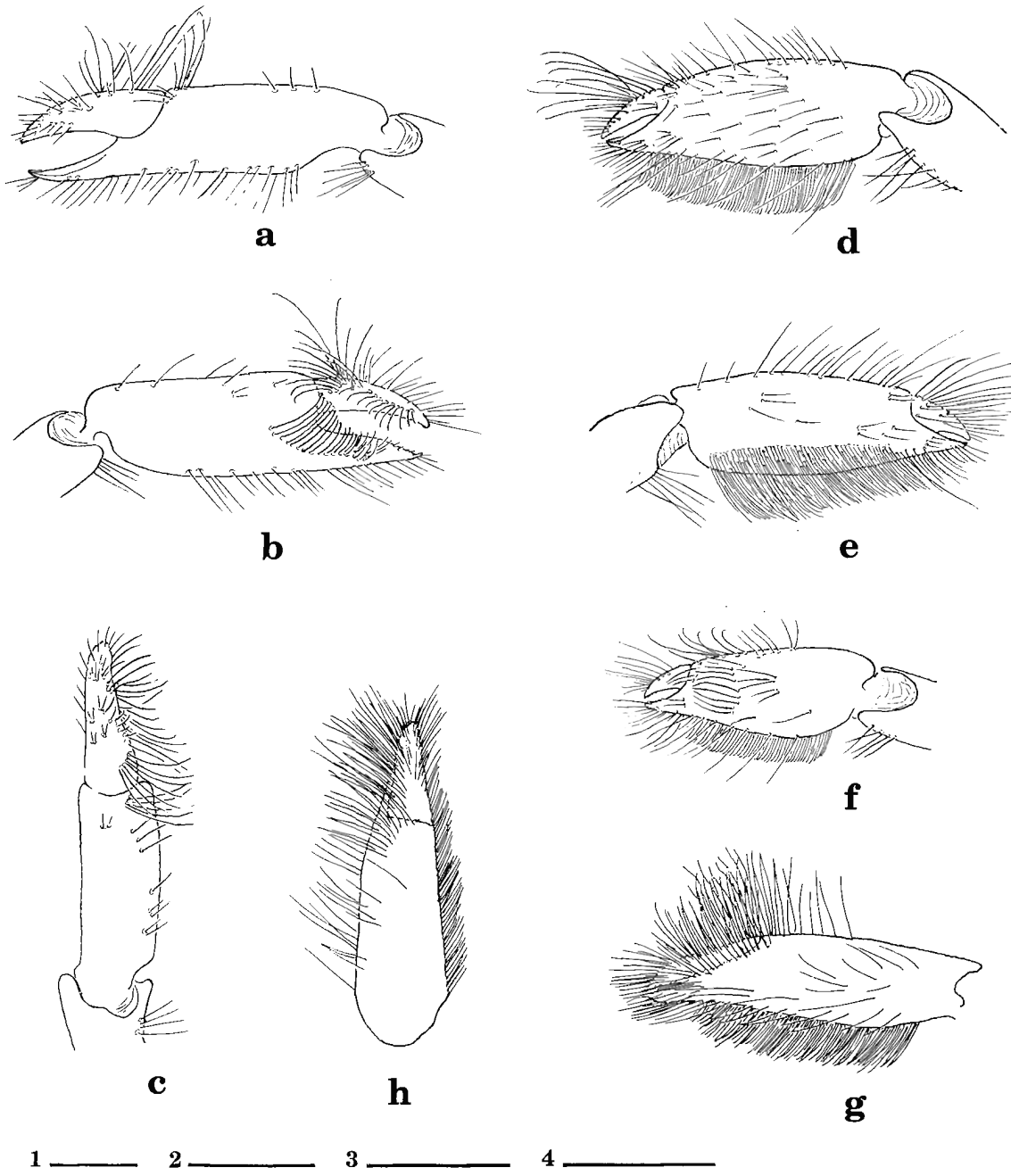

FIG. 3. — Fifth pereopods, distal segments : **a**, *Anoplonida cracentis*, male holotype (MNHN-Ga 3561), left, mesial; **b**, same, lateral; **c**, same, extensor side; **d**, *Heteronida aspinirostris*, male (MNHN-Ga 3626), right, lateral; **e**, same, mesial; **f**, *Heteronida barunae*, male holotype (MNHN-Ga 3640), right, lateral; **g**, *Neonida grandis*, male holotype (MNHN-Ga 3771), right, lateral; **h**, same, extensor side.
Scales = 0.5 mm. Scale 1 for g, h; scale 2 for a–c; scale 3 for f; scale 4 for d, e.

Paramunida have dense plumose setae which cover the fingers and even the distal half or more of the propodus, in addition to dense, long marginal setae (Figs 3–5); *Heteronida* and *Plesionida* have non-plumose setae (Figs 3-4). Females of these genera may have no plumose setae (females are not available for *Neonida*).

Selected species of *Munida* which lack G1 [= *Agononida*] (*M. analoga* Macpherson, 1993; *M. incerta* Henderson, 1888; *M. longipes* A. Milne Edwards, 1880; *M. longispinata* Baba, 1988, and *M. pilosimanus* Baba, 1969) and those which have G1 and G2 [true *Munida*] (*M. compressa* Baba, 1988; *M. kuboi* YANAGITA, 1943; *M. pilorhyncha* Miyake & Baba, 1966), specimens of which are in the collections of Kumamoto University, Kitakyushu Museum of Natural History, and the Muséum national d'Histoire naturelle, were examined for comparison. It is noted that those referable to *Agononida* have no brush, but dense long setae on the flexor face of the chela of the fifth pereopod and dense plumose setae in males on the extensor face; the plumose setae are absent in females (Fig. 5), hence showing a sexual dimorphism. The lack of the brush of plumose setae links *Agononida* to *Paramunida* and, to some extent, *Anoplonida*, in which the setae on the extensor face of the chela are non-plumose in both sexes. In true *Munida*, on the other hand, the setation usually does not differ between sexes, the chela bearing simple coarse setae, moderate in density on both the extensor and flexor faces. The dimorphic characters in *Agononida* and *Paramunida* suggest that the thicker setae in male may be used for mating or transferring spermatophores.

There is another hint to suggest that the fifth pereopod is important in functional morphology. As will be discussed under *Onconida*, males in that genus bear a barb-like, posteriorly-directed spine on the movable finger. This is, to the best of our knowledge, totally absent in all the other genera in the Galatheidae.

The length of the movable finger relative to that of the propodus in the fifth pereopod seems consistent within most genera : in *Bathymunida*, the movable finger is nearly or barely half the length of the propodus in both sexes while it is one-quarter of this length in *Heteronida* and *Agononida*, and distinctly more than 1/3 in *Anoplonida*, *Onconida* and *Plesionida*. In *Paramunida*, however, the dactylus-propodus length ratios seem to differ between species, as shown by *P. scabra* (Henderson, 1885) and *P. hawaiiensis* (Baba, 1981) (Fig. 5a–d).

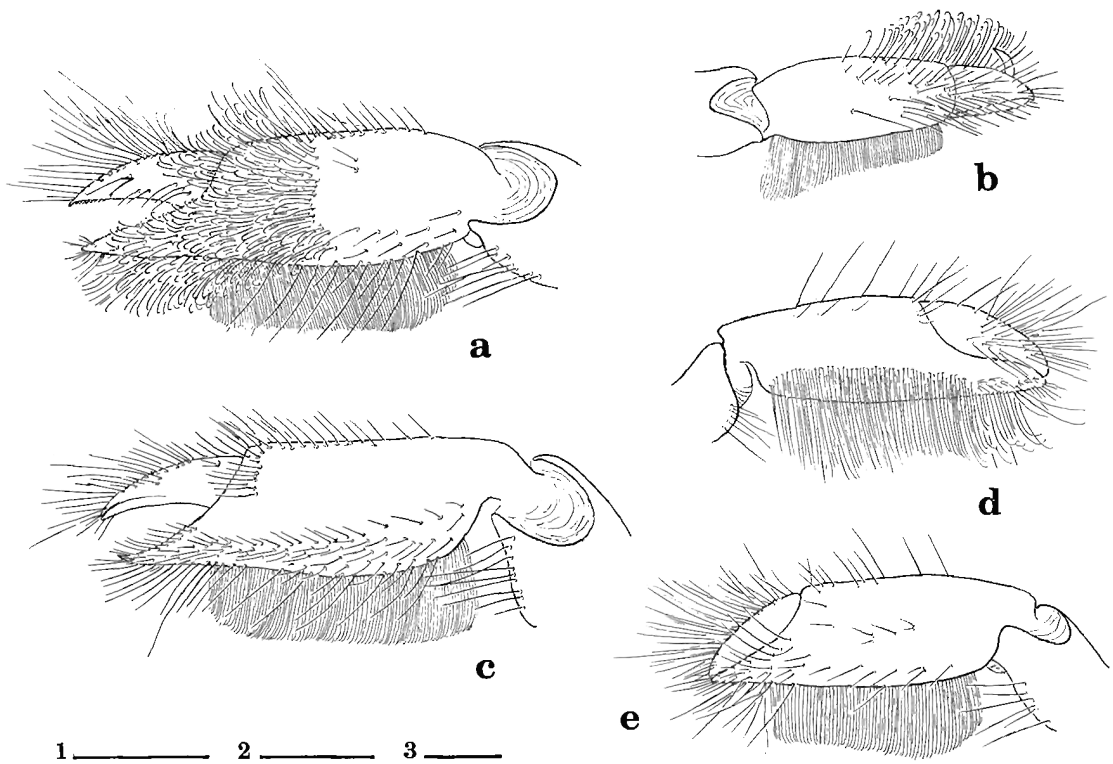

FIG. 4. — Fifth pereopods, distal segments : **a**, *Onconida alaini*, male (MNHN-Ga 3602), right, lateral; **b**, same, extensor side; **c**, same, female (MNHN-Ga 3597), right, lateral; **d**, *Plesionida psila*, male paratype (MNHN-Ga 3642), right, mesial; **e**, same, lateral.

Scales = 0.5 mm. Scale 1 for d, e; scale 2 for a, b; scale 3 for c.

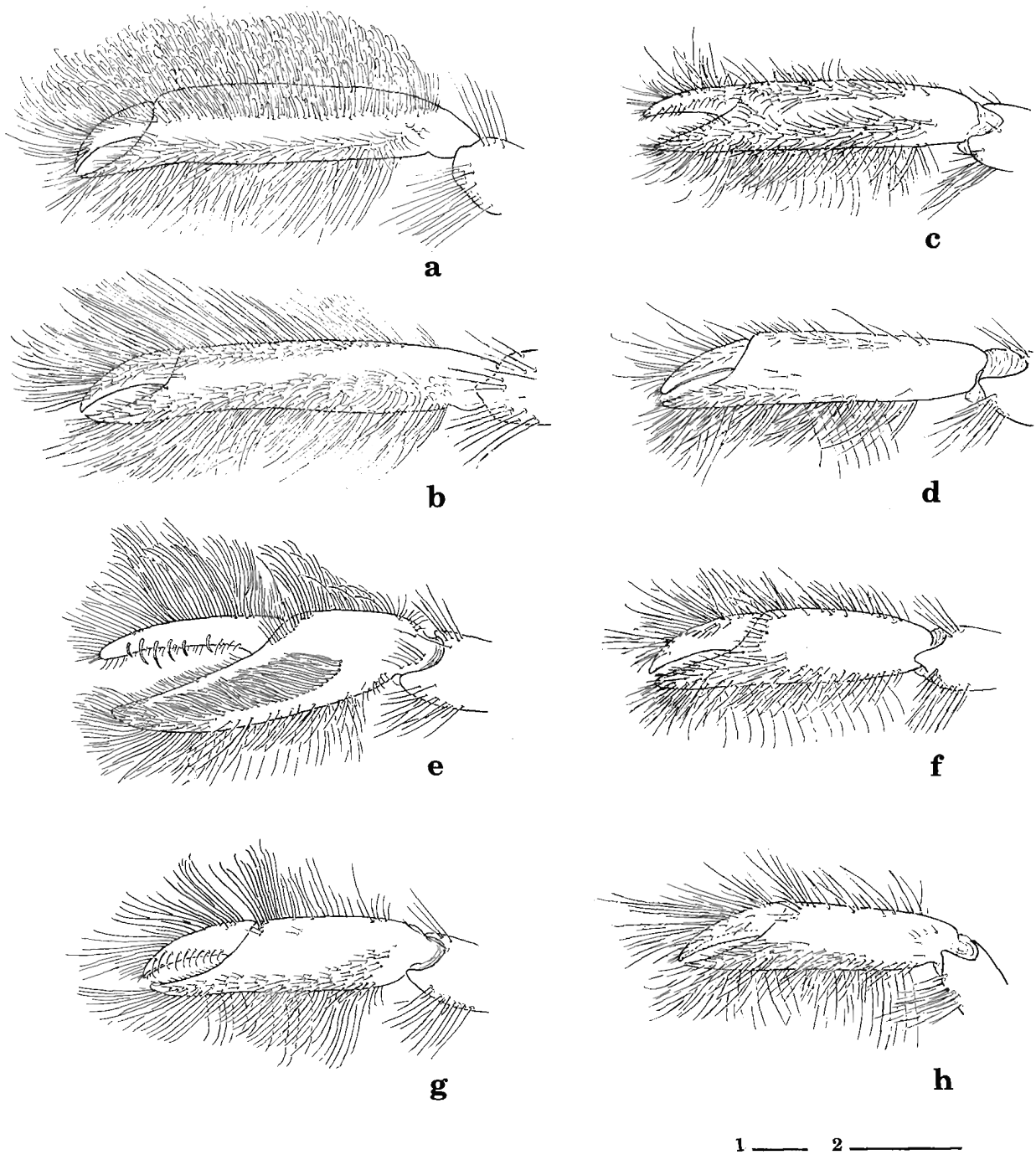

FIG. 5. — Fifth pereopods, distal segments, right, lateral : **a**, *Agononida incerta* (Henderson, 1888), male (MNHN-Ga 672), Madagascar, *"Vauban"* CH 1, 420–428 m; **b**, same, female (MNHN-Ga 672); **c**, *Agononida longispinata* (Baba, 1988), male (MNHN-Ga 2509), Philippines, MUSORSTOM 3 Stn 135, 486–551 m; **d**, same, female (MNHN-Ga 2509); **e**, *Paramunida scabra* (Henderson, 1885), male (MNHN-Ga 1075), Tosa Bay, Japan, 250–300 m; **f**, same, female (MNHN-Ga 1075); **g**, *Paramunida hawaiiensis* (Baba, 1981), male (MNHN-Ga 1103), off Honolulu, Hawaii, R/V *"Townsend Cromwell"*, cruise 61, 1967; **h**, same, female (MNHN-Ga 1103).
Scales = 1 mm. Scale 1 for a, b; scale 2 for c–h.

Key to genera of Galatheidae lacking G1

1. Rostrum triangular, dorsally flattish ..... ***Coralliogalathea*** Baba & Javed, 1974, ***Lauriea*** Baba, 1969 & ***Phylladiorhynchus*** Baba, 1969.
— Rostrum with spiniform median spine (genera here treated) **2**

2. Carapace without any dorsal spine ..... ***Anoplonida*** gen. nov.
— Carapace with dorsal spines or processes **3**

3. Second and third abdominal tergites each with strong median hump-like process ..... ***Heteronida*** gen. nov.
— Second and third abdominal tergites without hump-like process, unarmed or armed with spines **4**

4. Strong, longitudinally carinate process present on gastric region, but cardiac process absent; second and third abdominal tergites unarmed; fifth pereopods of male with barb-like process on movable finger ..... ***Onconida*** gen. nov.
— Strong gastric and cardiac processes either both present or both absent; second and third abdominal tergites with at least one pair of spines on anterior ridge; no barb-like process on dactylus of fifth pereopod in male **5**

5. Basal segment of antennule with 2 spines, one above the other, at distolateral angle ..... ***Neonida*** gen. nov.
— Basal segment of antennule with a single spine at distolateral angle **6**

6. Second and third abdominal segments each with a pair of submedian spines on anterior ridge ..... ***Plesionida*** gen. nov.
— Second and third abdominal segments each with 2 pairs of spines on anterior ridge **7**

7. Strong gastric and cardiac processes present; fourth thoracic sternite with strongly concave anterior margin ..... ***Bathymunida*** Balss, 1914
— Gastric and cardiac processes absent; fourth thoracic sternite anteriorly narrowed or with straight anterior margin **8**

8. Carapace with clear transverse ridges; dactyli of walking legs compressed mesio-laterally, without lateral ridge ..... ***Agononida*** gen. nov.
— Carapace without distinct transverse ridges, mostly with scale-like or very short ridges, tubercles, or small spines; dactyli of walking legs distally depressed in flexor-extensor direction, with ridge along lateral and mesial sides ..... ***Paramunida*** Baba, 1988

Genus *AGONONIDA* nov.

Munida Leach, 1820 : 52 (part).

DIAGNOSIS. — Carapace with distinct transverse ciliate ridges giving a granulated appearance. Rostral spine rather remote from supraocular spines. Pair of epigastric spines, situated directly behind supraocular spines, sometimes followed by 1–2 additional pairs, in longitudinal rows. Pair of postcervical spines consistently present, each sometimes followed by one or more spines in a row. Cardiac region having elevated transverse ridge often armed with one or more median spines. Posterior ridge of carapace unarmed, with one, or more, median spine. Second to fourth abdominal tergites with 2 elevated transversal ridges, each usually bearing 4 spines; a strong median spine usually present, occasionally absent on posterior ridge of fourth tergite. Telsonal subdivision incomplete. Eyes dilated, usually strongly depressed dorso-ventrally. Distomesial process of first segment of antennal peduncles stout, ending bluntly or more or less acutely, either of moderate size or greatly elongated. Merus

of third maxilliped with prominent submedian spine on flexor margin. Chelipeds slender, elongated, frequently with squamate ornamentation. Walking legs very long and slender, dactyli distally flattened mesio-laterally, without lateral keel. Chelae of fifth pereopods sexually dimorphic, more setose in male. No gonopods on first abdominal segment of male.

TYPE-SPECIES. — *Munida incerta* Henderson, 1883, by present designation.

ETYMOLOGY. — From the Greek *a* (without) + *gonos* (progeny), in reference to the absence of gonopods on the first abdominal segment, plus the last syllables of *Munida*. Gender : feminine.

SPECIES NEWLY COMBINED WITH *AGONONIDA*. — Indo-Pacific : *Agononida analoga* (Macpherson, 1993), *A. andrewi* (Macpherson, 1994), *A. callirrhoe* (Macpherson, 1994), *A. eminens* (Baba, 1988), *A. forfiantennata* (Baba, 1988), *A. incerta* (Henderson, 1888), *A. laurentae* (Macpherson, 1994), *A. longispinata* (Baba, 1988), *A. marini* (Macpherson, 1994), *A. normani* (Henderson, 1888), *A. ocyrhoe* (Macpherson, 1994), *A. pilosimanus* (Baba, 1969), *A. sabatesae* (Macpherson, 1994), *A. similis* (Baba, 1988), *A. soelae* (Baba, 1986), *A. sphecia* (Macpherson, 1994), *A. spinicordata* (Henderson, 1885), *A. squamosa* (Henderson, 1885), *A. tenuipes* (Miyake & Baba, 1967), *A. urizae* (Macpherson, 1994), *A. variabilis* (Baba, 1988), *A. yante* (Macpherson, 1994).

Atlantic : *Agononida longipes* (A. Milne Edwards, 1880). For lack of sufficient information, the Atlantic species will be reviewed later elsewhere.

REMARKS. — The absence of G1 in part of the *Munida* species, which suggests the existence of two genera in *Munida*, is noted by MACPHERSON & DE SAINT LAURENT (1991 : 374) and MACPHERSON (1993 : 423), a character also having been used in species descriptions of *Munida* and incorporated in the definition of *Paramunida* (see BABA, 1988). The new genus *Agononida* named here includes a number of species previously classified in *Munida* (see above) in which the first abdominal segment lacks male gonopods. It is also differentiated from true *Munida* by the following particulars : 1) the chela of the fifth pereopods of *Agononida* bears setae on the extensor face, more numerous in males than in females (Fig. 5a–d), a distinct sexual dimorphism not apparent in *Munida*; 2) the carapace in *Agononida* consistently bears one pair of well-developed epigastric spines, a postcervical spine often followed by additional spines in a longitudinal row, and it tends to be more spinous elsewhere, i.e. on the gastric and cardiac regions and on the posteriormost elevated ridges; on the other hand, *Munida* has epigastric spines usually in more than two pairs (rarely one pair) but the carapace is likely to be less spinous elsewhere, usually lacking spines on the cardiac and posterior ridges; 3) the second to fourth abdominal tergites have two elevated ridges, the anterior ridge bearing four spines in two pairs, and the posterior ridge frequently bears a median spine on the fourth tergite; in *Munida*, these tergites are unarmed or bear fewer or more numerous spines, not constant as in *Agononida*; 4) the merus of the third maxilliped bears a single well-developed spine on the flexor margin in *Agononida*, while usually two spines or more (the distal one being terminal, usually small, occasionally obsolescent), rarely one, in *Munida*; 5) the thoracic sternum in *Agononida* is wide compared to that of *Munida*, particularly the anterior two sternites; 6) the basal antennular segment in *Munida* bears two lateral and two distal spines, the distal of the former being well developed and directed dorsally and the proximal being small, whereas in *Agononida*, the distal of the two laterals is often reduced to small size and the proximal is usually obsolescent.

Most of the characters that separate *Agononida* from *Munida* are possessed by *Paramunida* Baba, 1988. The latter, however, is distinctive in the carapace bearing scale-like or very short ridges, tubercles, or small spines, without continuous transverse ridges, and dactyli of the walking legs depressed in the extensor-flexor direction, hence, bearing a ridge on each of the lateral and mesial sides.

Genus ***ANOPLONIDA*** nov.

DIAGNOSIS. — Carapace with distinct, uninterrupted, transverse ridges, without any spine on dorsal surface. Rostrum relatively narrow, rostral spine stout, laterally ridged, close to supraocular spines. Second and third abdominal segments each with 2 pairs of spines, lateral pair obsolescent. Fourth thoracic sternite with remarkably

wide, concave anterior margin, contiguous with whole posterior margin of preceding sternite. Sixth abdominal segment in male with well-developed expansion covered with tubercles on ventral surface of pleura. Telsonal subdivision complete. Ocular peduncles dorso-ventrally flattened, cornea dilated. Antennular basal segment with 2 distolateral spines. Antennal flagellum more than twice as long as carapace. Endopods of third maxillipeds having the 3 distal segments reduced in size, merus with median spine on flexor margin and distal spine on extensor margin. Dactyli of walking legs slender, nearly entire on flexor margin. Chelae of fifth pereopods with setae moderate in density on flexor face, without brush of plumose setae, fingers more setose, setae simple, not ribbon-like.

TYPE-SPECIES. — *Bathymunida inermis* Baba, 1994, by present designation.

ETYMOLOGY. — From the Greek *anoplos* (unarmed) plus the last syllables of *Munida*. Gender : feminine.

REMARKS. — *Anoplonida inermis* (Baba, 1994), n. comb., was recently described from off the Queensland Shelf, Australia.

The new genus is unique in lacking dorsal spines on the carapace, a character separating it from *Bathymunida* Balss, 1914, *Paramunida* Baba, 1988, and the five new genera (*Agononida*, *Heteronida*, *Neonida*, *Onconida*, and *Plesionida*) proposed in this paper. All these related genera have dorsal spines on the gastric and/or cardiac region. Also characteristic of the genus is the absence of a brush of plumose setae on chela of the fifth pereopod, which separates it from all the related genera other than *Agononida* and *Paramunida*. *Anoplonida* is closer to *Bathymunida* than to the other genera in that the antennal peduncle has no prolonged distomesial spine on the first segment; the fourth thoracic sternite is markedly concave on the anterior margin; the abdomen bears four spines on the second and third, and even fourth tergites; the third maxillipeds bear flexor-submedian marginal and extensor-distal marginal spines; and the chelipeds show strong sexual dimorphism – extremely long in grown males. However, the basal antennular segment bearing two distolateral spines (one placed above the other) and the fifth pereopods lacking both the brush of plumose setae on the extensor face of the chela and the ribbon-like setae on the dactylus in the male, are characteristic of the new genus. The dorsal of the two spines on the distolateral angle of the antennular basal segment is considered to be equivalent to the distal one of the two lateral spines in *Munida*, but much closer to, and proximally contiguous with, the distolateral spine in this case. The tuberculate expansion on each side of the ventral surface of the male sixth abdominal segment - presumably of copulatory function - and the two distolateral spines of the antennular basal segment link the genus to *Neonida*. Also, the rostrum is much like those of *Neonida* and *Onconida* and different from those of the other related genera. Their relationships are discussed under the "Remarks" for these related genera (see below).

The genus contains two species.

Key to species of *Anoplonida*

1. Lateral margin of carapace without distinct spine on branchial region; fourth abdominal tergite unarmed ..... ***A. cracentis*** sp. nov.
— Lateral margin of carapace with a few distinct spines on branchial region; fourth abdominal tergite with at least 2 distinct spines ..... ***A. inermis*** (Baba, 1994)

Anoplonida cracentis sp. nov.

Figs 5 a–c, 6

MATERIAL EXAMINED. — **Philippines**. MUSORSTOM 1 : stn 26, Northeast of Lubang Island, 14°00.9'N, 120°16.8'E, 189 m, 22 Mar. 1976 : 1 ♂ 4.3 mm, holotype (MNHN-Ga 3561). — Stn 64, 14°00.5'N, 120°16.3'E, 194-195 m : 1 ovig. ♀ 4.2 mm, paratype (MNHN-Ga 3562).

ETYMOLOGY. — From the Latin *cracentis* (slender, graceful), for the beautifully slender chelipeds.

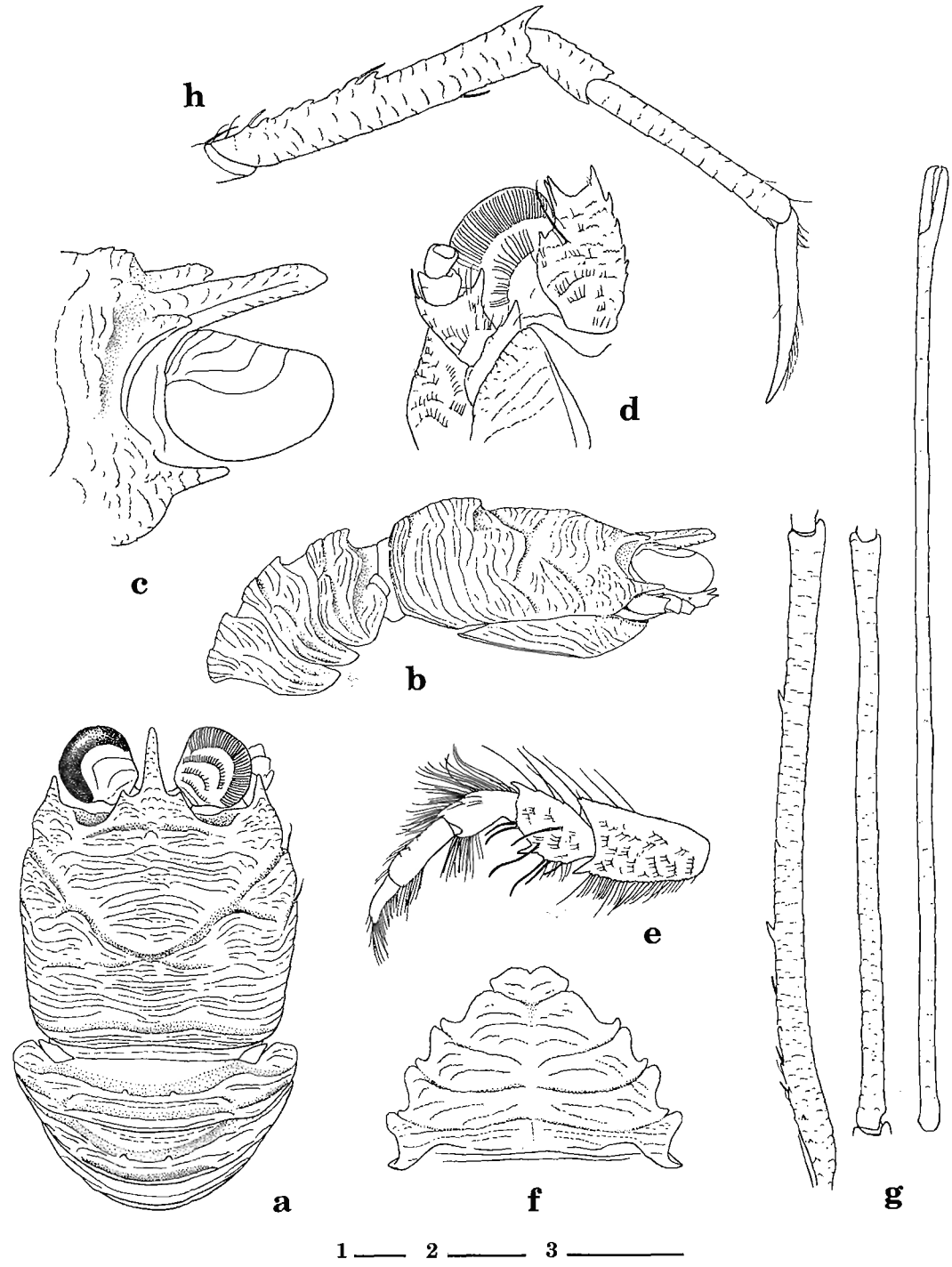

FIG. 6. — *Anoplonida cracentis* sp. nov., male holotype (MNHN-Ga 3561) from MUSORSTOM 1, Stn 26 : **a**, carapace and abdominal segments, dorsal; **b**, same (posterior part of abdomen omitted), lateral; **c**, anterior part of carapace, showing rostrum, lateral; **d**, anterior part of cephalothorax, showing antennule and antenna, ventral; **e**, endopod of left third maxilliped, lateral; **f**, sternal plastron; **g**, right cheliped, dorsal; **h**, right first walking leg, lateral.
Scales = 1 mm; scale 1 for a, b, g; scale 2 for f, h; scale 3 for c–e.

DIAGNOSIS. — Carapace without distinct spines on lateral margin of anterior branchial region. Fourth abdominal tergite unarmed. Male chelipeds 10.5 times as long as postorbital carapace length; carpus unarmed; chela much narrower than carpus and merus; palm 13 times as long as fingers. Walking legs slender, dactyli shorter than propodi.

DESCRIPTION. — Carapace 1.3 times as long as wide; dorsal surface without any spines, even on epigastric region, covered with numerous striae, mostly interrupted as figured. In profile, gastric region inflated moderately, separated by deep cervical groove from more elevated cardio-intestinal region. Lateral margins somewhat convex on anterior branchial region; anterolateral spine stout, horizontal, directed straight forward, overreaching supraocular spines but falling short of midlength of rostral spine; no spine on anterior branchial region.

Rostrum anteriorly narrowed; dorsal surface with median ridge continuing on to rostral spine; rostral spine straight, directed distinctly dorsally, laterally ridged, reaching opposite end of cornea, length 0.3 times postorbital carapace length. Supraocular spines very short, as illustrated.

Thoracic sternites with numerous ridges as illustrated, posteriorly widened; anterior margin of fourth thoracic sternite deeply concave, contiguous with entire posterior margin of preceding sternite.

Second and third abdominal tergites each with pair of submedian spines, additional lateral spine present on each side in female paratype, absent in male holotype; fourth tergite unarmed. Telson subdivided into 10 platelets.

Cornea strongly dilated, with long eyelashes reaching the end.

Antennules having basal segment denticular or with small spines on mesial margin, one small spine on distal third of lateral margin; distolateral margin with 2 spines nearly as long as, or slightly longer than, distomesial spine. First segment of antennal peduncle with ventral distomesial margin produced into a stout spine, second segment with acute distomesial and blunt distolateral spines.

Third maxillipeds having ischium relatively long, flexor margin with strong distal spine. Merus moderately long relative to width, flexor margin with sharp median spine, extensor margin with well-developed distal spine.

Chelipeds missing in female paratype; in male, 10 times as long as postorbital carapace length, remarkably slender. Merus longer and wider than carpus, and much more granulate; mesially with 5–6 spines (distalmost rather remote from second distal spine, equidistant between it and end of segment); a few small spines proximal to these, somewhat dorsal in position. Carpus unarmed, 34 times as long as wide (width measured at midlength). Palm unarmed, much narrower than, and 1.3 times longer than carpus, 13 times as long as movable finger; length 70 times width. Fingers very short, distally sharp and curved, crossing each other when closed.

Walking legs relatively slender, with both iridescent and fine plumose setae along extensor and flexor margins of merus, particularly proximally; first walking leg reaching distal fourth of cheliped. Merus longest on first leg, shortest on third, extensor margin with short inclined spines on proximal half, distally ending in distinct spine on first and second walking legs, unarmed on third leg; flexor margin with short terminal spine on first and second legs, no terminal spine on third leg. Carpus with small, blunt distal spine on extensor margin. Propodus 1.2 times as long as dactylus, flexor margin with slender, movable distal spine. Dactylus slender, somewhat curved, extensor margin with curved plumose setae on proximal half, long coarse setae on distal half, flexor margin smooth and unarmed.

Fifth pereopod of male holotype present on right side; chela without brush of plumose setae on flexor face, fingers and distal portion of propodus strongly setose (with numerous plumose setae).

REMARKS. — The differences between the new species and *A. inermis* are very slight, but we believe that the following differences are consistent. The fourth abdominal tergite is unarmed in *A. cracentis*, but armed with at least two distinct submedian spines in *A. inermis*. The branchial lateral margin of the carapace bears no distinct spine in *A. cracentis*, instead of a few distinct spines in *A. inermis*. The carpus of the cheliped in *A. inermis* bears at least a distinct mesial marginal spine at the distal third of length, whereas it is unarmed in *A. cracentis*. The dactylus of the walking legs is shorter than the propodus in *A. cracentis*, whereas it is equally long or longer in *A. inermis*.

The male chelipeds are much longer in the new species; 10 times as long as the postorbital carapace length in *A. cracentis*, as opposed to 3.5 times as long in *A. inermis*. However, chelipeds may show wide allometric variation.

RANGE. — Northeast of Lubang Island, Philippines; 189–195 m.

Anoplonida inermis (Baba, 1994) comb. nov.

Fig. 3 a–c

Bathymunida inermis Baba, 1994 : 1, fig. 1.

MATERIAL EXAMINED. — **New Caledonia**. BATHUS 1 : stn CP 670, 20°54'S, 165°53'E, 394–397 m, 14 Mar. 1993 : 1 ovig. ♀ 5.7 mm, 1 ♀ 5.3 mm with rhizocephalan parasite (MNHN-Ga 3788).
BATHUS 4 : stn CP 899, 20°16.68'S, 163°50.26'E, 500–600 m, 3 Aug. 1994 : 1 ovig. ♀ 5.3 mm (MNHN-Ga 3777).

TYPES. — Ovig. ♀, holotype (QM-W19702); 8 ♂, 13 ♀, paratypes (QM-W19701), off Queensland Shelf, 296–303 m.

DIAGNOSIS. — Carapace with a few (at most 4) spines on lateral margin of branchial region. Second to fourth abdominal tergites each with 2 pairs of short blunt spines on anterior ridge, lateral pair occasionally obsolete, particularly on fourth tergite. Chelipeds about twice as long as carapace in small males and all females, 3.5 times longer in large males; carpus in male with at least one distinct mesial marginal spine at distal third; palm in large male 3.8 times as long as fingers. Walking legs distally slender, dactylus as long as, or slightly longer, than propodus.

SIZE. — Males, 2.6–3.9 mm; females, 2.7–5.3 mm (ovigerous females from 3.3 mm).

RANGE. — Off the Queensland shelf and New Caledonia; 296–600 m.

Genus ***BATHYMUNIDA*** Balss, 1914

Bathymunida Balss, 1914 : 137; 1915 : 4. — VAN DAM, 1938 : 194. — BABA, 1988 : 53 (key).

DIAGNOSIS. — Carapace with strong keel-like process on both gastric and cardiac regions, and a pair of small epigastric spines; cardiac process usually accompanied by at least 1 long curved seta, usually 2 or 3, on each side; branchio-cardiac boundary ridged, with postcervical spine often followed by a few small spines. Rostrum wide, rostral and supraocular spines widely separated. Fourth thoracic sternite with anterior margin remarkably wide, deeply concave and contiguous with whole posterior margin of preceding sternite. Abdomen with 2 submedian spines on second to fourth tergites, papilla-like lateral spines often present on second tergite, rarely on third, none on fourth; pleura of sixth abdominal segment with small tuberculate expansion on ventral surface. Telson incompletely subdivided. Ocular peduncles dorso-ventrally compressed, cornea strongly dilated. Basal segment of antennule with 2 terminal (distolateral and distomesial) and 1 small lateral spine. Antennal flagellum more than twice as long as carapace. Third maxillipeds having the 4 distal segments reduced in size, merus short relative to width, often subrhomboidal in lateral view, usually with distal spine on extensor margin and submedian spine on flexor margin. Chelipeds much longer in male than in female, especially in fully-grown specimens. Dactyli of walking legs slender, curving, flexor margin smooth or with a few (at most 4) spine-like setae. Fifth pereopods with a brush of plumose setae on flexor face of chela in both sexes. In male, fingers nearly as long as propodus; movable finger usually with a set of ribbon-like setae mostly in crescentic line on proximal portion; propodus with another set of fewer such setae distally in some species; fixed finger with simple setae. In female, movable finger lacking ribbon-like setae.

TYPE-SPECIES. — *Bathymunida polae* Balss, 1914, by monotypy.

REMARKS. — As mentioned above, *Bathymunida aspinirostris* Khodkina, 1981, and *B. inermis* Baba, 1994, are transferred to *Heteronida* gen. nov. and *Anoplonida* gen. nov., respectively.

In several species, the merus of the walking legs has the extensor distal margin rounded instead of being produced into a distinct spine. This character was initially considered to be specific. However, careful examination suggests that it may have been a result of injury and is thus no longer regarded as representing a specific character. The differences between species are often more slight than those in the other genera. Meristic characters are so limited that the illustrations provided will help to understand species distinctions.

Key to species of *Bathymunida*

1. Rostral and supraocular spines separated by oblique margins ..... ***B. nebulosa*** sp. nov.
— Rostral and supraocular spines separated by concave or straight transverse margins **2**

2. Supraocular spines extending far beyond rostral spine **3**
— Supraocular spines shorter, slightly longer than, or subequal to rostral spine **8**

3. Rostral spine papilla-like or obsolescent ..... ***B. frontis*** sp. nov.
— Rostral spine small but distinct **4**

4. Rostrum with elevated ridge in midline ..... ***B. dissimilis*** sp. nov.
— Rostrum without distinct ridge in midline **5**

5. Merus of third maxilliped gently narrowed distally ..... ***B. longipes*** Van Dam, 1938
— Merus of third maxilliped rather truncate **6**

6. Dactyli of walking legs without spine-like seta on flexor margin .....
..... ***B. balssi*** Van Dam, 1938
— Dactyli of walking legs with 1–2 spine-like setae on flexor margin **7**

7. Eyestalks with tubercles along distal end proximal to cornea ..... ***B. ocularis*** sp. nov.
— Eyestalks without tubercles ..... ***B. brevirostris*** (Yokoya, 1933)

8. Rostral spine of small or moderate-size, about as large as, or only slightly larger than, supraocular spines **9**
— Rostral spine much longer than supraocular spines **12**

9. Branchial region with clear transverse ridges ..... ***B. polae*** Balss, 1914
— Branchial region with tubercles or scale-like ridges **10**

10. Carapace with tubercles and elevated scale-like ridges; lateral marginal spines on branchial region sharp and prominent; rostral and supraocular spines of moderate size .....
..... ***B. rudis*** sp. nov.
— Carapace with scale-like granulated ridges, lateral marginal spines on branchial region relatively small; rostral and supraocular spines small **11**

11. Anterolateral spine of carapace divergent anteriorly; fifth pereopods of male with fine setae on distal portion of propodus ..... ***B. eurybregma*** sp. nov.
— Anterolateral spine of carapace directed straight forward; fifth pereopods in male with ribbon-like setae on distal portion of propodus ..... ***B. recta*** sp. nov.

12 Anterior margin of rostrum straight between rostral and supraocular spines; carapace with scale-like ridges ..... ***B. quadratirostrata*** Melin, 1939
— Anterior margin of rostrum concave between rostral and supraocular spines; carapace with distinct transverse ridges ..... ***B. sibogae*** Van Dam, 1938

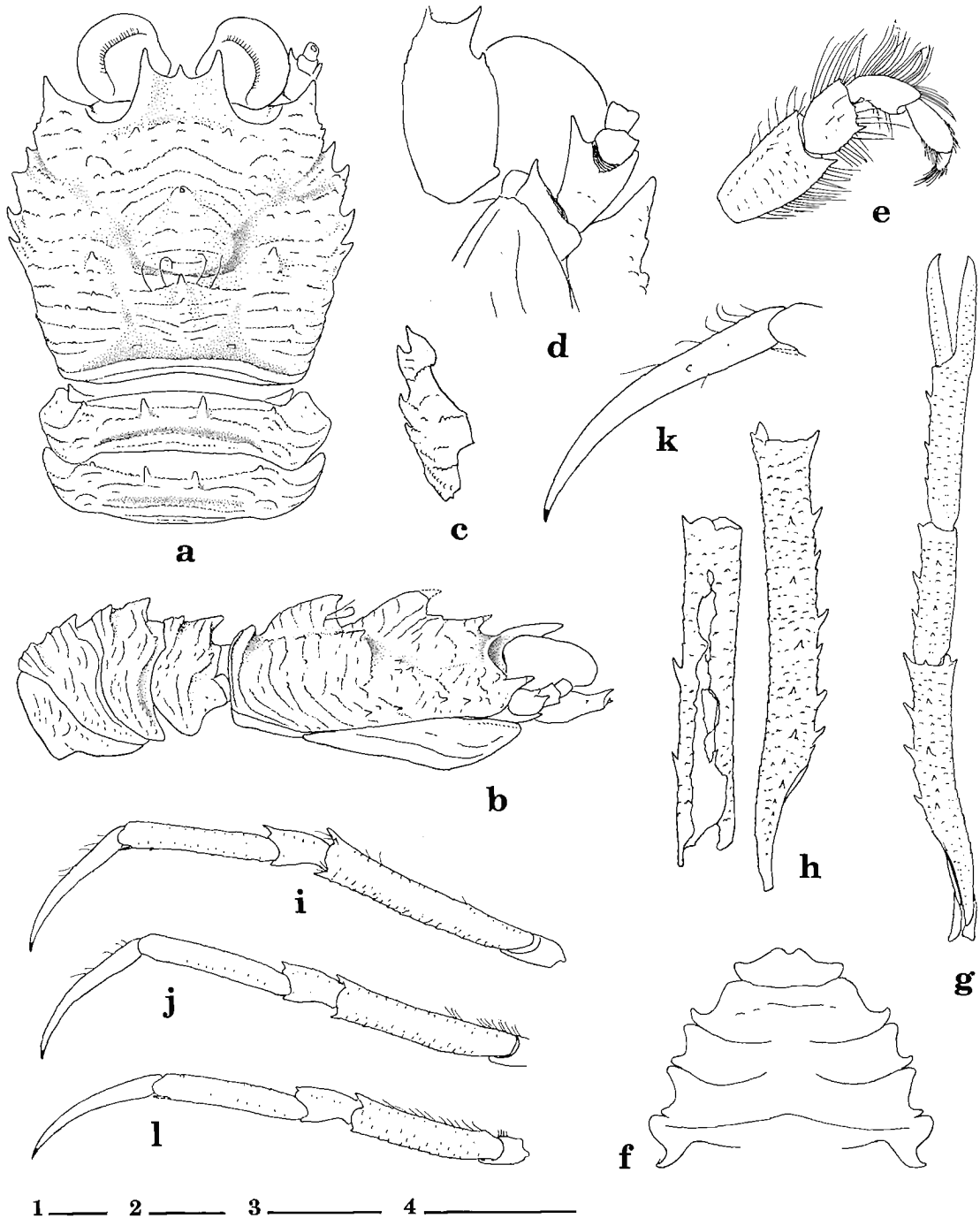

FIG. 7. — *Bathymunida balssi* van Dam, 1938; a, b, d, e–g, i–l, female 3.3 mm (MNHN-Ga 3565) from MUSORSTOM 4, Stn DW 150; c, h, syntypes (ITZA 102.130) from Ceram Sea : **a**, carapace and anterior part of abdomen, dorsal; **b**, same, lateral; **c**, lateral part of carapace (fragment), dorsal; **d**, anterior part of cephalothorax, showing antennule and antennal peduncle, ventral; **e**, endopod of right third maxilliped, lateral; **f**, sternal plastron; **g**, right cheliped, dorsal; **h**, left cheliped (fragments), left – ventral, right – dorsal; **i**, left first walking leg, lateral; **j**, left second walking leg; **k**, distal segment of same; **l**, left third walking leg.

Scales = 1 mm; scale 1 for c, g, h; scale 2 for a, b, i, j, l; scale 3 for e, f; scale 4 for d, k.

Bathymunida balssi van Dam, 1938

Fig. 7

Bathymunida balssi van Dam, 1938 : 199, fig. 4.

MATERIAL EXAMINED. — **Ceram Sea**. *"Siboga"* : stn 166, 2°28.5'S, 131°3.3'E, 118 m : 3 ♂ (fragmented), syntypes (ITZA 102.130).

New Caledonia. LAGON : stn 538, 19.07'S, 163°21'E, 195 m, 6 Mar. 1985 : 1 ♂ (carapace broken) (MNHN-Ga 3563).

MUSORSTOM 4 : stn DW 149, 19°07.6'S, 163°22.7'E, 155 m, 14 Sept. 1985 : 4 ♂ 2.0–3.2 mm, 4 ♀ 2.3–3.3 mm, 1 spn (sex indet.) 1.5 mm (MNHN-Ga 3564). — Stn DW 150, 19°07.5'S, 163°22.1'E, 110 m, 14 Sept. 1985 : 1 ♂ 3.0 mm, 1 ♀ 3.3 mm (MNHN-Ga 3565).

TYPES. — Syntypes, 3 ♂ (fragmented), ITZA 102.130, *"Siboga"*, Stn 166, Ceram Sea, 2°28.5'S, 131°3.3'E, 118 m. Due to the poor condition of the material, a lectotype designation is inadvisable.

DIAGNOSIS. — Carapace with widely interspersed distinct ridges, lateral margins strongly convergent posteriorly. Rostrum anteriorly narrowed, rostral spine small, supraocular spines well developed. Fifth abdominal tergite with scale-like striae, sixth with fine striae often obsolete. Merus of third maxilliped having flexor marginal spine situated apparently distal to midlength measured in midline on lateral face. Dactyli of walking legs without spine on flexor margin, slender, moderately curved.

DESCRIPTION. — Carapace 1.2–1.3 times as long as wide; dorsal surface with distinct striae finely tuberculate and moderately elevated, not scaly but comparatively continuous, rather widely interspersed. Lateral margins strongly convergent posteriorly on branchial region, anterolateral spine stout, barely reaching level of anterior margin of rostrum, followed by a few tubercular processes in front of cervical incision; anterior portion of branchial region with 4 pronounced marginal spines, anteriormost situated at end of cervical groove.

Rostrum 1.4–1.9 times as wide as long (relatively broad in large specimens), 0.2–0.3 times as long as carapace (relatively long in small specimens); distinctly narrowed anteriorly; dorsal surface without distinct ridge, deeply depressed; lateral margin in profile somewhat arched and directed distinctly upward; anterior margin with small rostral spine directed moderately upward, supraocular spines well developed, about twice as long as rostral spine, not reaching cornea.

Eyes distinctly wider than anterior margin of rostrum, eyelashes occasionally obsolescent.

Second and third abdominal tergites with 4 ridges, as illustrated; 2 submedian spines relatively sharp, lateral spines small; fifth tergite with scale-like striae, sixth with fine striae often barely discernible.

Basal segment of antennal peduncle less than twice as wide as second segment, distomesial spine small; second segment usually with blunt dorsolateral spine not reaching end of third segment and sharp distomesial spine of moderate length.

Third maxillipeds having merus rather truncate, occasionally with small denticular spines distal to usual flexor marginal spine; extensor margin with small distal spine.

Chelipeds tuberculate, 3.7 (female) times as long as carapace (in male, length 4.5 times that of postorbital carapace length, according to the measurements given by VAN DAM (1938 : 201)). Merus, carpus and palm (female) armed with 4, 3, 3 spines on mesial margins, and 7, 2, 0 spines on dorsal surface, respectively. Fingers three-quarters as long as palm.

Walking legs relatively slender, merus with distinct spine on extensor distal margin. Propodus about 6 times as long as wide. Dactylus as long as propodus, slender, curving more strongly on posterior legs; flexor margin entire, without any spines. First walking leg 2.5 times postorbital carapace length.

REMARKS. — The following discrepancies are noted between the brief species account by VAN DAM (1938) and the present material : the fine ridges on the rostrum as illustrated by VAN DAM are barely discernible in the specimens examined; the second segment of the antennal peduncle bears a blunt, shorter spine on the distolateral margin and is not strongly produced as by VAN DAM's figure; the distomesial spine of the same segment is

illustrated as being much shorter than the distolateral by VAN DAM, but it is consistently larger in the present material. The type material made available on loan (ITZA 102.130) is fragmented. Illustrated here from the fragments are part of the carapace and cheliped (Fig. 7c, h) which are more or less the same as those displayed by the present specimens.

The species was originally characterized by its long cheliped and a very short rostral spine (VAN DAM, 1938). The long chelipeds seem to represent a typical sexual character in males of *Bathymunida*, as already reported by BABA (1970, 1990). The chelipeds are missing in all the specimens examined here. The latter feature is also possessed by *B. dissimilis* sp. nov. (see below).

According to VAN DAM (1938), the dactyli of the walking legs in *B. balssi* are not as strongly curved as in *B. longipes*. In the specimens examined, however, it is hard to qualify them as such, being similar to those of *B. longipes* (see below). These two species both have the supraocular spine longer than the rostral spine. *Bathymunida balssi* may be differentiated from that species by the much stronger supraocular spines, the carapace strongly narrowed posteriorly, and the merus of the third maxilliped more gradually narrowed distally.

SIZES. — Males, 2.0–3.2 mm; females, 2.3–3.3 mm. No ovigerous females have been collected.

RANGE. — Ceram Sea and New Caledonia; 110–195 m.

Bathymunida brevirostris (Yokoya, 1933)

Fig. 8

Munida brevirostris Yokoya, 1933 : 64, fig. 28.
Bathymunida brevirostris : VAN DAM, 1938 : 201 (key). — MELIN, 1939 : 92. — BABA, 1970 : 59, Figs 1-2.

MATERIAL EXAMINED. — **Japan**. Northwestern Kyushu, 34°16.0'N, 129°31.5'E, 105 m, sand and shells, 5 Aug. 1968 : 1 ♂ 5.6 mm, 2 ovig. ♀ 3.8, 4.3 mm, ZLKU 15775-15777.

TYPE. — Holotype, ♂ (5.0 mm, according to the figure provided by YOKOYA), Japan off northwestern Kyushu (North of Goto Island), 106 m. Type no longer extant (BABA, 1970).

DIAGNOSIS. — Carapace without continuous ridges, but very small scale-like striae present on dorsal surface, especially on gastric region; gastric and cardiac processes strongly compressed laterally; postcervical spines pronounced; lateral margins in front of cervical incision with small spine, branchial marginal spines relatively strong, produced laterally. Rostrum anteriorly narrowed, with small rostral and well-developed supraocular spines, middorsal ridge very weak in male, barely discernible in female. Fifth and sixth abdominal tergites smooth. Eyestalks without tubercles, eyelashes barely discernible. Merus of third maxilliped with flexor marginal spine at about distal third of length, measured in midlateral line. Chelipeds 8.4 times as long as postorbital carapace length in male, 3.3 times as long in female. Dactyli of walking legs with 2 spine-like setae on flexor margins on first pair, 1 on second and third pairs. Fifth pereopods in male with ribbon-like setae on distal portion of propodus.

COLOR (in formalin). — Carapace pale orange-red, abdomen pale brown, fourth and fifth tergites light orange-red. Chelipeds pale brown, with red marks on fingers other than distal and proximal portions, entire carpus, and proximal portion of merus. Walking legs also pale brown, with orange-red marks on median part (near extensor margin) of propodus and proximal portion of merus. Cornea brownish (BABA, 1970).

REMARKS. — This species is closely related to *B. dissimilis* sp. nov. Their relationships are discussed under the "Remarks" for the latter (see below).

SIZES. — Males, 5.0–5.6 mm; ovigerous females, 3.8–4.3 mm.

RANGE. — Japan off northwestern Kyushu; 105–106 m.

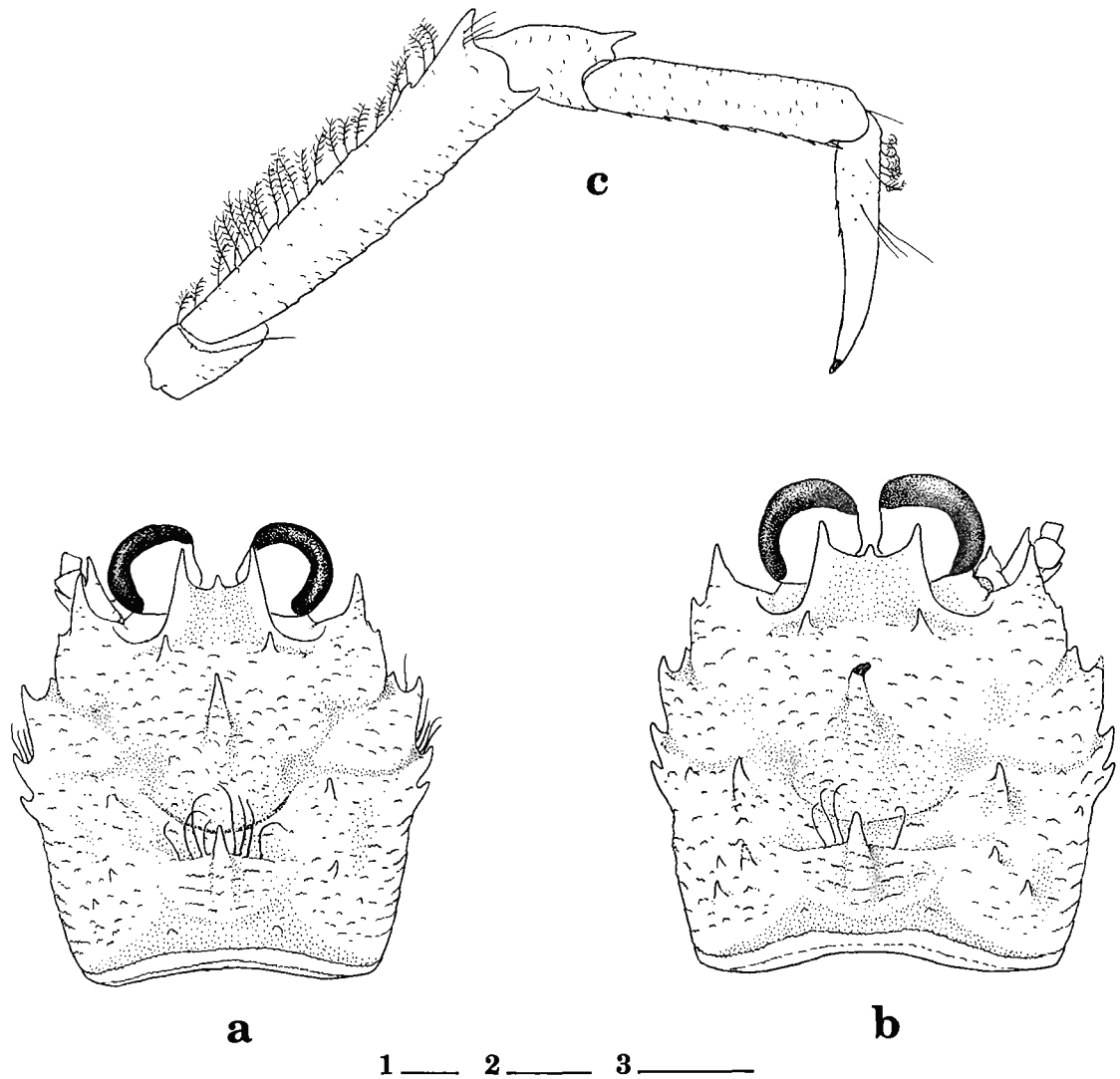

FIG. 8. — *Bathymunida brevirostris* (Yokoya, 1933) : **a**, carapace, dorsal, male 5.6 mm (ZLKU 15775) from Japan; **b**, same, ovigerous female 4.3 mm (ZLKU 15776) from same locality; **c**, first walking leg, same specimen.
Scales = 1 mm; scale 1 for a; scale 2 for b; scale 3 for c.

Bathymunida dissimilis sp. nov.

Fig. 9

MATERIAL EXAMINED. — **Futuna Island (SW Pacific)**. MUSORSTOM 7 : stn DW 494, 14°19'S, 178°03'W, 100–110 m, 10 May 1992 : 1 ♂ 4.4 mm, holotype (MNHN-Ga 3576).

ETYMOLOGY. — From the Latin *dissimilis* (different), indicating that the species is related to, but different from, *B. balssi*.

DIAGNOSIS. — Carapace without distinct continuous transverse striae, mostly with small tubercles and interrupted tuberculate ridges. Anterolateral spine overreaching anterior margin of rostrum, lateral margins of

carapace convex, without spine on hepatic region, gradually convergent posteriorly on branchial region, branchial marginal spines relatively small. Rostrum anteriorly narrowed, with distinct ridge on dorsal midline, supraocular spines well developed, rostral spine very small. Fifth and sixth abdominal tergites smooth, without striae. Merus of third maxilliped with flexor marginal spine rather distal in position. Fifth pereopods in male with ribbon-like setae on distal portion of propodus.

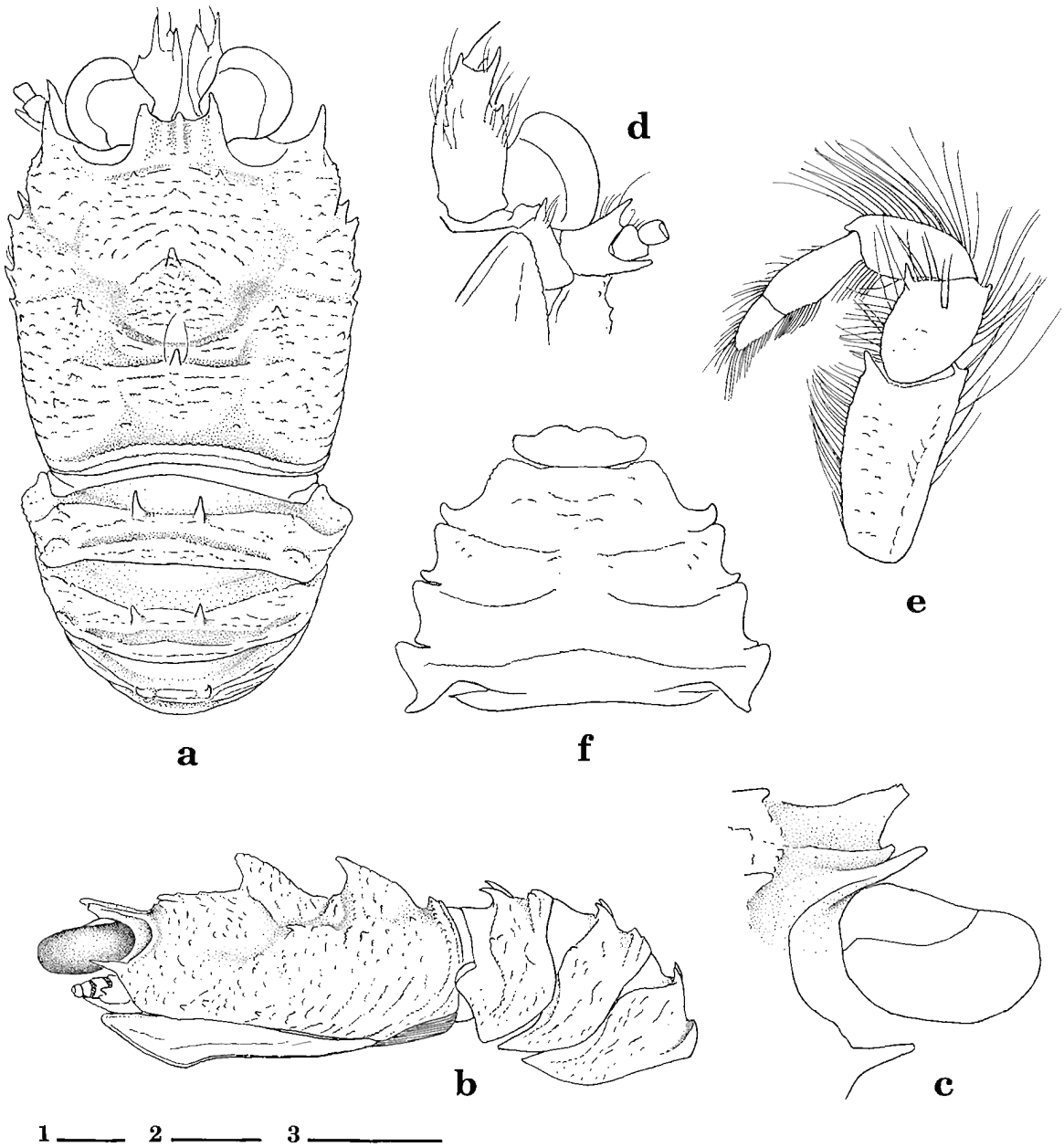

FIG 9. — *Bathymunida dissimilis* sp. nov., male holotype (MHNH-Ga 3576) from MUSORSTOM 7, Stn DW 494 : **a**, carapace and abdomen, dorsal; **b**, same (posterior part of abdomen omitted), lateral; **c**, anterior part of carapace, lateral; **d**, anterior part of cephalothorax, showing antennule and antennal peduncle, ventral; **e**, endopod of left third maxilliped; **f**, sternal plastron.

Scales = 1 mm; scale 1 for a, b; scale 2 for d, f; scale 3 for c, e.

COLOR. — On overexposed transparency, red band arising from pleura of fourth abdominal segment, convergent posteriorly to center of next segment.

REMARKS. — The anteriorly narrowed rostrum, with short rostral and well-developed supraocular spines, and the dorsal surface of the carapace bearing tuberculate scale-like ridges, link this species to *B. brevirostris* (see above). Although all the pereopods are missing in the sole specimen, the following characters seem to separate it from *B. brevirostris* : the postcervical spines are less pronounced and the gastric and cardiac processes are less compressed laterally; the lateral margin of the carapace is more weakly convergent posteriorly on the branchial region, with the four spines behind the cervical incision being less pronounced and less strongly expanded laterally; the hepatic lateral margin is somewhat convex, without any spine.

RANGE. — Futuna Island (SW Pacific); 100–110 m.

Bathymunida eurybregma sp. nov.

Figs 2 g-h, 10

MATERIAL EXAMINED. — **Chesterfield Islands**. MUSORSTOM 5 : stn DW 277, 24°10.60'S, 159°34.90'E, 270 m, 10 Oct. 1986 : 1 ♂ 3.1 mm (MNHN-Ga 3566).

Loyalty Islands. MUSORSTOM 6 : stn DW 392, 20°47.32'S, 167°04.60'E, 340 m, 13 Feb. 1989 : 1 ♂ 3.4 mm (MNHN-Ga 3567). — Stn DW 397, 20°47.35'S, 167°05.17'E, 380 m, 13 Feb. 1989 : 1 ♂ 4.1 mm (MNHN-Ga 3568). — Stn DW 398, 20°47.19'S, 167°05.65'E, 370 m, 13 Feb. 1989 : 4 ♂ 3.4–4.7 mm (smallest, holotype, MNHN-Ga 3569; MNHN-Ga 3570). — Stn DW 399, 20°41.80'S, 167°00.20'E, 282 m, 14 Feb. 1986 : 1 ♂ 3.9 mm (MNHN-Ga 3571). — Stn DW 479, 21°09.13'S, 167°54.95'E, 310 m, 22 Feb. 1989 : 1 ♂ 4.9 mm (MNHN-Ga 3572). — Stn DW 480, 21°08.50'S, 167°55.98'E, 380 m, 22 Feb. 1989 : 1 ♂ 4.2 mm (MNHN-Ga 3573).

TYPES. — One of the males (3.4 mm) from MUSORSTOM 6, Stn DW 398 (MNHN-Ga 3569) is selected as the holotype, and the remaining specimens are paratypes.

ETYMOLOGY. — The specific name is a noun in apposition from the Greek *eurys* (broad) plus *bregma* (front of the head), referring to the broad rostrum.

DIAGNOSIS. — Scale-like granulate ridges on hepatic and branchial regions. Anterolateral spines of carapace directed somewhat laterally. Rostrum twice as wide as long, rostral and supraocular spines small, subequal. Fifth and sixth abdominal tergites smooth. Eyelashes obsolescent. Merus of third maxilliped with flexor marginal spine rather distal in position. Dactyli of walking legs slender distally, flexor margin with 2–3 spine-like setae. Fifth pereopods in male with ribbon-like setae on distal portion of propodus.

DESCRIPTION. — Carapace 1.1–1.2 times as wide as long, 3.3–3.5 times as wide as anterior margin of rostrum; dorsal surface with granulate ridges more or less regularly separated, but interrupted on gastric and cardiac regions, scale-like elsewhere, more distinctly elevated on lateral hepatic region. Lateral margins gradually divergent posteriorly towards level of second marginal spine on branchial region, then convergent posteriorly. Anterolateral spines moderate in size, directed somewhat laterally; marginal spines on branchial region relatively small, second largest.

Rostrum usually about twice as wide as long, rarely slightly narrower; moderately narrowed anteriorly; rostral and supraocular spines small and subequal, distinctly arched and directed dorsally in profile; dorsal surface moderately depressed medially, with weak longitudinal ridge.

Suborbital margin with elongate lobe-like process directed laterally, ending medially in a small sharp spine.

Pair of strong submedian spines on second to fourth abdominal tergites, lateral spines more or less pronounced on second tergite, often absent on third. Fifth and sixth abdominal tergites smooth.

Eyes without distinct eyelashes, cornea as wide as anterior margin of rostrum.

First segment of antennal peduncle nearly twice as wide as second segment, with small sharp distomesial spine.

Merus of third maxilliped with flexor marginal spine close to distal end.

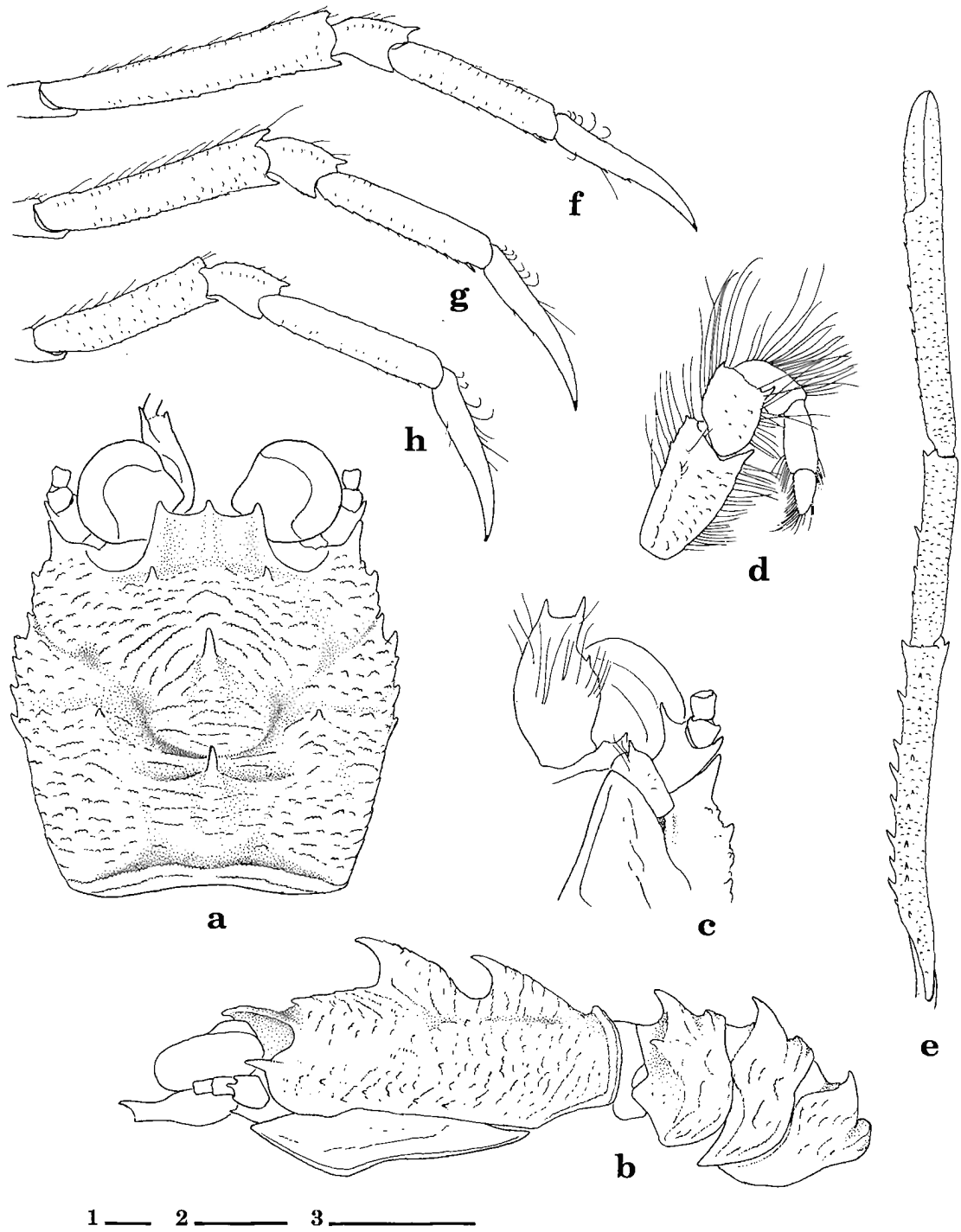

FIG. 10. — *Bathymunida eurybregma* sp. nov., male holotype (MNHN-Ga 3569) from MUSORSTOM 6, Stn DW 398 : **a**, carapace, dorsal; **b**, carapace and abdomen (posterior portion omitted), lateral; **c**, anterior part of cephalothorax, showing antennule and antennal peduncle, ventral; **d**, endopod of right third maxilliped, lateral; **e**, right cheliped, dorsal; **f**, right first walking leg, lateral; **g**, right second walking leg; **h**, right third walking leg.
Scales = 1 mm; scale 1 for e; scale 2 for a, b, f–h; scale 3 for c, d.

Chelipeds (male) 5.1–10 times as long as carapace excluding rostrum (longest in large specimens), subcylindrical proximally, moderately depressed distally, surface granulate. Merus 1.7–2.0 times as long as carpus, mesial margin with 8–9 spines, dorsally with row of 7–10 spines, much smaller than mesial ones, lateral margin with small distal spine. Carpus shorter than palm, mesially with 4 spines, proximal 2 often small, obsolescent or absent. Palm 2.0–2.9 times as long as movable finger (longest in large specimens), mesial margin with 6 spines often small or obsolescent, lateral margin unarmed. Fingers gaping in largest specimen (4.9 mm), unarmed, distally sharp and crossing.

Walking legs finely granulate; first walking leg more than twice as long as carapace. Meri successively shorter posteriorly, distally widened, dorsolateral surface flattish, extensor and flexor margins each with distinct terminal spine on first and second legs, indistinct one on third, flexor marginal spine somewhat larger. Carpus with sharp distal spine on flexor margin. Propodus about as long as dactylus, flexor marginal spines more than 10 in number on first leg, but likely to be obsolescent on second and third legs. Dactylus with 2–3 (mostly 3) spine-like setae on first, second and third legs, distal one at about midlength.

Fifth pereopods of male with ribbon-like setae on propodus distally.

REMARKS. — No female specimen is included in the collection.

The broad rostrum and two or three spines on the dactyli of the walking legs are also possessed by *B. recta* sp. nov. Their relationships are discussed under the "Remarks" for that species (see below).

SIZE. — Males, 3.1–4.9 mm.

RANGE. — Chesterfield Islands and Loyalty Islands; 270–382 m.

Bathymunida frontis sp. nov.

Fig. 11

MATERIAL EXAMINED. — **Indonesia**. *Kei Islands*. KARUBAR : stn DW 22, 05°22'S, 133°01'E, 85–124 m, 25 Oct. 1991 : 1 ♂ 2.3 mm, holotype (MNHN-Ga 3574), 1 ♂ 2.2 mm, paratype (MNHN-Ga 3575).

TYPES. — As specified above. Chelipeds missing in both types.

ETYMOLOGY. — From the Latin *frontis* (fore part), in reference to the concave appearance of the anterior part of the rostrum.

DIAGNOSIS. — Carapace with weak, more or less widely separated ridges. Rostrum with concave anterior margin, rostral spine papilla-like or obsolescent, supraocular spines short and blunt. Eyes with blunt spine-like processes proximal to cornea, eyelashes absent. Fifth abdominal tergite with very fine scale-like striae, sixth tergite smooth. Merus of third maxilliped relatively short, subrhomboidal in lateral view, with flexor marginal spine rather distally located. Dactyli of walking legs with spine-like seta about at midlength of flexor margin. Fifth pereopods in male with a few ribbon-like setae on distal portion of propodus.

DESCRIPTION. — Carapace 1.3 times as wide as long, greatest width measured directly behind cervical incision. Dorsal surface with weak striation, striae more or less widely separated, on branchial region particularly. Branchial regions with scattered tubercle-like spines on posteromesial portion. Lateral margins behind cervical incision strongly convergent posteriorly. Anterolateral spines relatively short, slightly divergent; anterior branchial regions with 4 distinct marginal spines.

Rostrum 1.6–1.7 times as wide as long, about one-quarter as long as carapace, distally directed dorsally, dorsal surface strongly depressed in midline, anterior margin concave with very small papilla-like rostral spine, supraocular spines also short, but blunt.

Suborbital margins with strong process, somewhat constricted basally, ending in a small median spine distally.

Fifth abdominal tergite with fine scale-like striae, sixth tergite smooth.

Eyes slightly wider than anterior margin of rostrum, with short, blunt processes (much like papillae) proximal to cornea, eyelashes barely discernible.

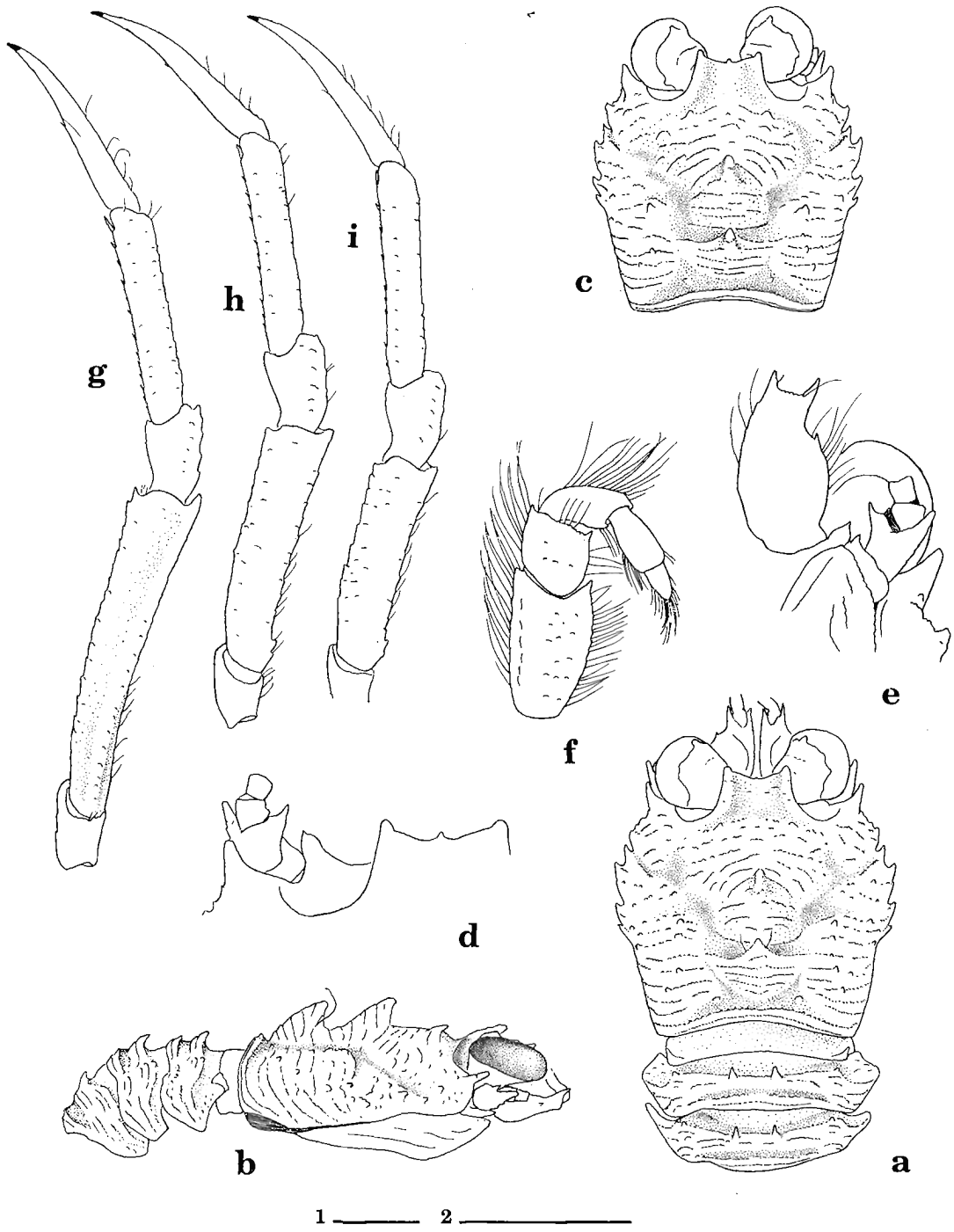

FIG. 11. — *Bathymunida frontis* sp. nov.; a, b, f–i, male holotype (MNHN-Ga 3574) from KARUBAR, Stn DW 22; c–e, male paratype (MNHN-Ga 3570) from same station : **a**, carapace and anterior part of abdomen, dorsal; **b**, same, lateral; **c**, carapace, dorsal; **d**, left anterior part of same; **e**, anterior part of cephalothorax, showing antennule and antennal peduncle, ventral; **f**, endopod of right third maxilliped, lateral; **g**, left first walking leg, lateral; **h**, left second walking leg; **i**, left third walking leg.

Scales = 1 mm; scale 1 for a–c; scale 2 for d–i.

Chelipeds missing. First walking legs more than twice as long as carapace, weakly granulate, except for dactylus. Merus somewhat twisted, dorsolateral face flattish, extensor margin rounded, not keeled, distally produced into stout blunt process, flexor margin with small sharp distal spine on first walking leg; carpus lacking spine on flexor distal margin; propodus 5.8–6.3 times as long as wide, with 12 movable spines; dactylus relatively slender, nearly as long as propodus, flexor margin with spine-like seta at about midlength on all walking legs.

Fifth pereopods in male with a few ribbon-like setae on distal portion of propodus.

REMARKS. — As indicated by the key to species, *B. frontis* is readily distinguished from others by the concave anterior rostral margin with a reduced, almost papilla-like or obsolescent, rostral spine, and short supraocular spines, and the eyestalk bearing papilla-like processes on the distodorsal portion proximal to the cornea, particularly pronounced near the mesial margin.

RANGE. — Kei Islands, Indonesia; depth between 85 and 124 m.

Bathymunida longipes van Dam, 1938

Fig. 12

Bathymunida longipes van Dam, 1938 : 195, figs 1-2. — BABA, 1988 : 58.

MATERIAL EXAMINED. — **Indonesia**. *Bali Sea. "Siboga"*: stn 15, 7°2.6'S, 115°23.6'E, 100 m : 1 ♂ 5.2 mm, holotype (ITZA 102.131).

Philippines. *Sulu Archipelago. "Albatross"* : stn 5140, 6°08'45"N, 121°03'E, 139 m : 7 ♂ 5.6–6.0 mm (USNM 151645).

TYPE. — Holotype male (ITZA 102.131), locality data as listed above.

DIAGNOSIS. — Carapace with relatively numerous transverse ridges. Rostrum about twice as wide as long, without ridge in dorsal midline, supraocular spines well developed, rostral spine small, strongly directed upward. Lateral margins of carapace convex; spines behind cervical incision relatively sharp. Eyelashes long, at most reaching end of cornea. Merus of third maxilliped gently narrowed distally, flexor marginal spine situated about at midlength of segment. Chelipeds long in mature male, nearly 12 times as long as postorbital carapace length, covered with tubercles, often replaced by small spines in large specimens, merus with 10–15 mesial and 10–13 dorsal spines, carpus with 4–5 mesial spines. Walking legs very slender; dactylus moderately curved on first leg, strongly so on second and third, flexor margin smooth and unarmed. Fifth pereopods of male with fine setae on distal portion of propodus.

REMARKS. — The rostrum illustrated for the holotype (Fig. 12) is unusually short, slightly exceeding beyond the level of the anterolateral angle of the carapace (the base of the anterolateral spine).

The well-developed supraocular spines (longer than the rostral spine) and the unarmed dactyli of the walking legs link this species to *B. balssi*. Their relationships are discussed under the "Remarks" for that species (see above).

VAN DAM (1938 : 196) described the eyelashes as short, but in the holotype examined they are much longer, as shown in Fig. 12a. In the *"Albatross"* material they are short (Fig. 12b).

SIZE. — Males, 5.2–6.0 mm. No females have been taken.

RANGE. — Bali Sea near Kangean Group and Sulu Archipelago; 100–139 m.

Bathymunida nebulosa sp. nov.

Figs 2 e, 13

MATERIAL EXAMINED. — **Hunter–Matthew Islands**. VOLSMAR : stn DW 9, 22°22.7'S, 171°41.8'E, 300 m, 1 Jun. 1989 : 1 ♂ 5.2 mm (MNHN-Ga 3580).

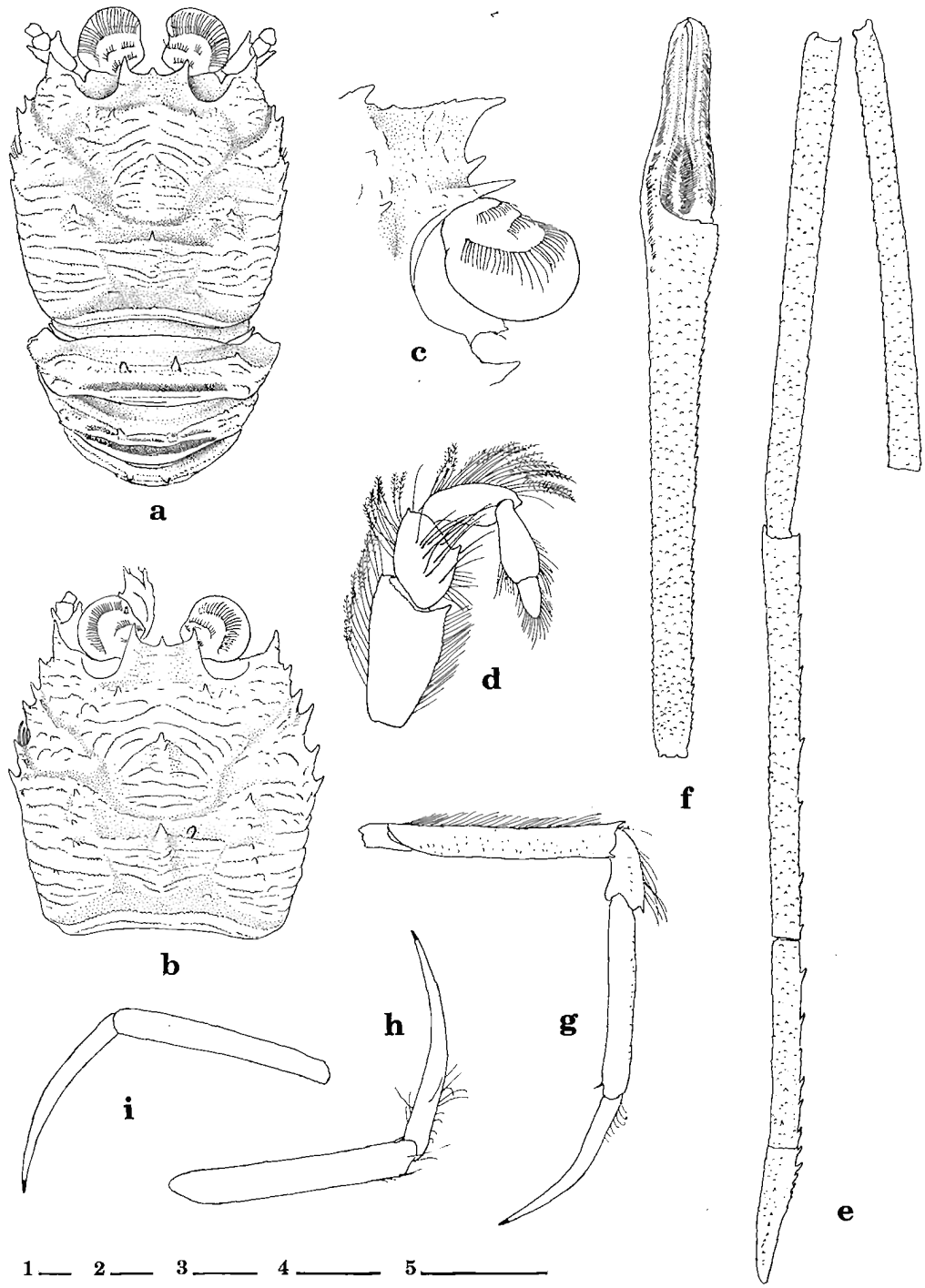

FIG. 12. — *Bathymunida longipes* van Dam, 1938; a, d, e, g–i, male holotype (ITZA 102.131) from *"Siboga"*, Stn 15; b, c, f, male 5.9 mm (USNM 151645) from *"Albatross"*, Stn 5140 : **a**, carapace and abdomen, dorsal; **b**, carapace, dorsal; **c**, anterior part of cephalothorax, showing rostrum and eye, lateral; **d**, endopod of right third maxilliped, lateral; **e**, left cheliped, distal portion broken and missing, dorsal; **f**, chela, dorsal; **g**, right first walking leg, lateral; **h**, distal segments of left second walking leg, lateral; **i**, distal segments of left third walking leg, lateral.
Scales = 1 mm; scale 1 for f; scale 2 for a, b, f, g; scale 3 for h, i; scale 4 for c, d; scale 5 for e.

Chesterfield Islands. MUSORSTOM 5 : stn DW 301, 22°06.90'S, 159°24.60'E, 487–610 m, 12 Oct, 1986 : 1 ♀ 3.2 mm (MNHN-Ga 3577). — Stn DW 305, 22°09.27'S, 159°24.42'E, 430–440 m, 12 Oct. 1986 : ♂ 3.3 mm (holotype, MNHN-Ga 3578), 3 ♂ 3.2–4.4 mm, 7 ovig. ♀ 3.0–3.6 mm (MNHN-Ga 3579).

TYPES. — One of the males (3.3 mm) from MUSORSTOM 5 : stn 305 (MNHN-Ga 3578) has been selected as the holotype, and the other specimens are paratypes.

ETYMOLOGY. — From the Latin *nebulosus* (indefinite, obscure), in reference to the very weak striae on the carapace.

DIAGNOSIS. — Carapace relatively long, with very weak, widely separated ridges. Gastric and cardiac processes relatively small. Rostrum without distinct middorsal ridge, rostral spine strong, overreaching end of cornea, basally wide, separated from small supraocular spines by oblique anterior margins. Fifth and sixth abdominal tergites without striae. Eyelashes barely discernible. Walking legs bearing carpus with distal spine on flexor margin; dactylus relatively stout, flexor margin with 2–3 spine-like setae. Fifth pereopods in male without ribbon-like setae on propodus.

DESCRIPTION. — Carapace 1.1 times as wide as long, dorsal surface with weak, relatively sparse striae. Gastric region somewhat elevated in profile, with sharp, anteriorly directed, moderate-sized median spine; epigastric spines small. Cardiac process smaller than gastric process. Mesial part of branchial region longitudinally elevated, with tubercle-like processes in 2 rows, mesial row situated anteriorly, anteriormost spine postcervical and well-developed but blunt, lateral row situated posteriorly. Lateral margins gently convergent posteriorly behind cervical incision, anterolateral spines falling short of level of anterior margin of rostrum, each followed by inflated hepatic margin; 4 spines on branchial region small.

Rostrum moderately narrowed anteriorly, about half as long as wide, 0.16 times as long as and 0.3 times as wide as carapace, depressed medially, laterally elevated, especially anteriorly; rostral spine continued on to oblique anterior margin, proximally wide, distally strongly narrowed, directed slightly upward, overreaching cornea; length twice that of rostrum; supraocular spines small.

Suborbital margins strongly produced, as illustrated (Fig. 13c).

Second and third segments of abdomen with 4 transverse ridges, first (anterior) ridge elevated, armed with 4 spines, median 2 prominent, lateral one very short and blunt, second ridge interrupted medially, third ridge preceded by groove, fourth ridge uninterrupted; fourth segment as in preceding, but lateral spine and third ridge absent; fifth and sixth abdominal segments smooth.

Eyes well developed, depressed, width 1.2 times that of rostrum, eyelashes barely discernible.

Antennal peduncles having first segment nearly twice as wide as second segment, with small sharp mesial spine directed straight forward along distal margin of segment; second segment with distolateral spine nearly contiguous with, and ending at midlength of, third segment, distomesial spine as large as distolateral.

Merus of third maxilliped much narrower than ischium, 1.5 times as long as wide (spines excluded), flexor margin with usual spine at midlength, occasionally with small one distad or a few tubercular processes proximad; extensor margin with small distal spine often barely discernible.

Chelipeds subcylindrical but moderately depressed on palm; 3.2 (male) or 2.8 (female) times as long as carapace; surface granulate. Merus nearly as long as chela in both sexes, mesially with proximally diminishing spines (6 in male, 2 in female), distal spine prominent; dorsally with smaller spines (6 in male, 1 distal in females), laterally with distal spine much smaller than distomesial; ventrally with small distal spine. Carpus elongate in male, 4 (male) or 3 (female) times as long as wide, 3/4 (male) or 4/5 (female) as long as palm, with 3 lateral spines. Palm distinctly more than twice (male) or about 1.7 times (female) as long as movable finger, 7.7 (male) or 4.5 (female) times as long as wide, mesially armed with 6 spines, laterally unarmed. Fingers not gaping in either sex, moderately curving and crossing distally, ending in sharp point.

Walking legs moderately slender, meri posteriorly diminishing in length; first walking leg more than twice as long as carapace. Merus with granulate scale-like ridges, slightly twisted on first leg, extensor margin with or without distal spine, flexor margin with sharp distal spine. Carpus with distal spine on both extensor and flexor margins. Propodal flexor margin with 8 (rarely 7) movable spines, rather distinct on first and second legs, obsolete

on third. Dactylus slightly shorter than propodus, distally slightly curving on first leg, somewhat more so on third leg, flexor margin with 3 spine-like setae on first leg, 2 on second and third.

Fifth pereopods in male without ribbon-like setae on propodus.

REMARKS. — The strongly oblique anterior margin of the rostrum separates the new species from all the other species of the genus in which the rostral and supraocular spines are separated by a concave or straight margin. The merus of the third maxilliped in this species is also worth noting : it is elongated, bearing a flexor marginal spine about at the midlength as in *B. longipes*. In most of the other species this segment is relatively short and distally truncate, and the margin between the flexor marginal spine and the distal end of the extensor margin is nearly straight.

SIZE. — Males, 3.2–5.2 mm; females, 3.0–3.6 mm (ovigerous females from 3.0 mm).

RANGE. — Chesterfield Islands and Hunter–Matthew Islands; 300–610 m.

Bathymunida ocularis sp. nov.

Fig. 14

MATERIAL EXAMINED. — **Loyalty Islands**. MUSORSTOM 6 : stn DW 461, 21°06.00'S, 167°26.20'E, 240 m, 21 Feb. 1989 : 1 ♂ 2.8 mm, holotype (MNHN-Ga 3581).

TYPE. — As specified above. Chelipeds, first and second walking legs missing.

ETYMOLOGY. — From the Latin *ocularis* (of the eyes), for the granulated eyestalks characteristic of this species.

DIAGNOSIS. — Carapace relatively long, with ridge-like lines of fine tubercles and scattered tubercles. Rostrum depressed medially, without ridge in midline, supraocular spines moderate in size, rostral spine small. Fifth and sixth abdominal segments without striae. Eyestalks with scattered tubercles. First segment of antennal peduncle with relatively sharp distomesial spine. Dactyli of walking legs distally slender, curving, with 2 spine-like setae on flexor margin. Fifth pereopods of male with ribbon-like setae on distal portion of propodus.

DESCRIPTION. — Carapace 1.2 times as wide as long. Dorsal surface covered with interrupted ridge-like lines of fine tubercles. Gastric and cardiac processes subequal in size. Gastric region somewhat inflated, pair of epigastric spines distinct. Tubercular processes scattered on anterior branchial region and anterolateral and mesial portions of posterior branchial region. Postcervical spines distinct. Lateral margins of carapace posteriorly divergent in front of cervical incision, convergent behind it. Anterolateral spines relatively small, somewhat divergent anteriorly, each followed behind by a few tubercular spines in front of cervical groove, 4 marginal spines on anterior branchial region, not strongly produced.

Rostrum 1.5 times as long as wide, 1/5 as long as carapace, distally somewhat narrowed; directed upward at angle as high as median gastric process; dorsal surface depressed medially, rostral spine very small, much lowered from level of moderate-sized lateral spines.

Suborbital margin with anterolaterally directed process having mesial margin somewhat convex, with 1 or 2 denticles.

Fifth and sixth abdominal segments smooth, without striae.

Eyes slightly wider than anterior margin of rostrum; eyestalks with granule-like scattered tubercles; eyelashes barely discernible.

Antennules, sternal plastron and third maxillipeds nearly as in *B. frontis*.

First segment of antennal peduncle with sharp spine, nearly twice as wide as second segment; second segment with distolateral spine barely reaching end of third segment, nearly as large as distomesial one.

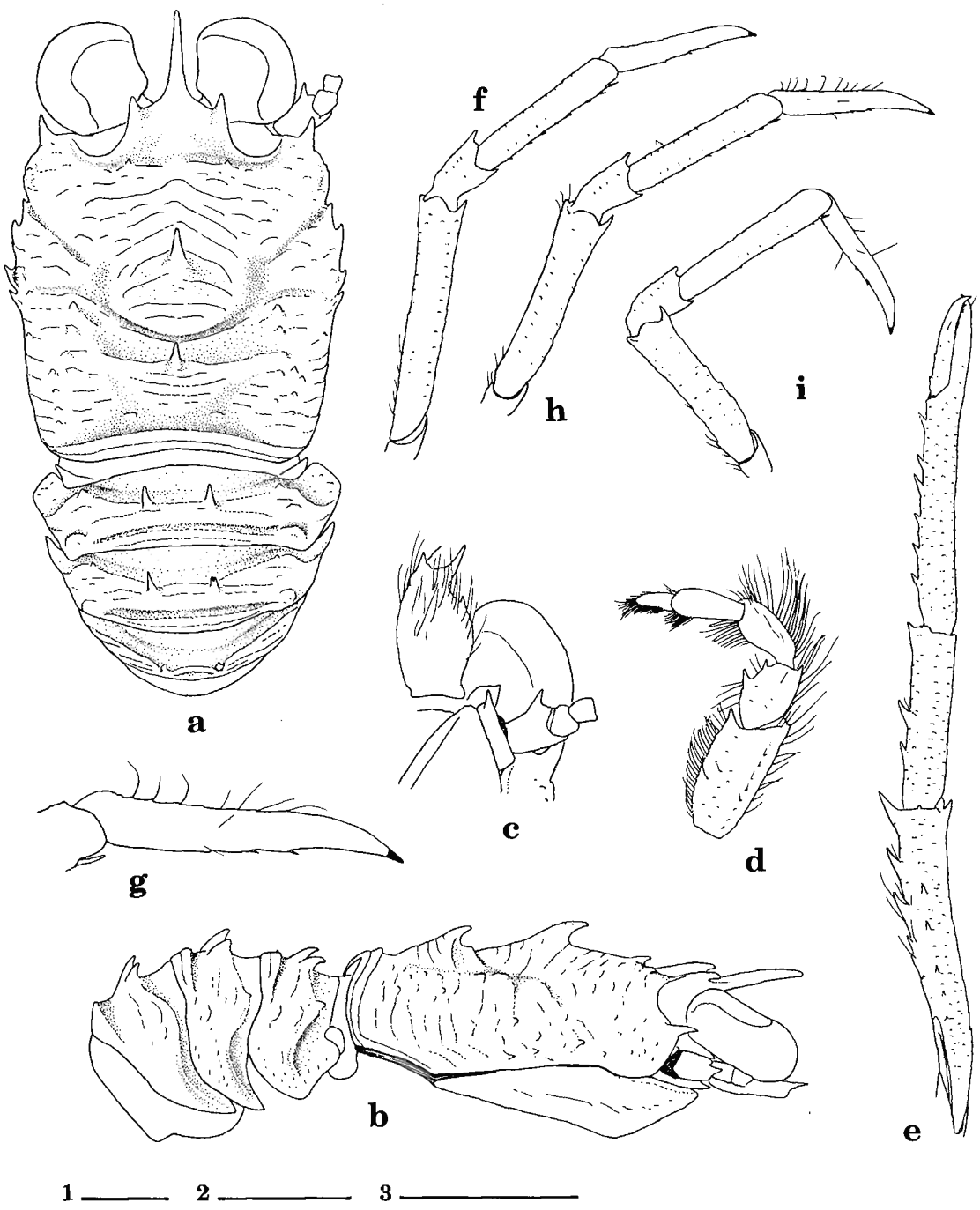

FIG. 13. — *Bathymunida nebulosa* sp. nov., male holotype (MNHN-Ga 3578) from MUSORSTOM 5, Stn 305 : **a**, carapace and abdomen, dorsal; **b**, same (posterior portion of abdomen omitted), lateral; **c**, anterior part of cephalothorax, showing antennule and antennal peduncle, ventral; **d**, endopod of left third maxilliped, lateral; **e**, right cheliped, dorsal; **f**, right first walking leg, lateral; **g**, distal segments of same; **h**, right second walking leg, lateral; **i**, right third walking leg, lateral.

Scales = 1 mm; scale 1 for a, b, e, f, h, i; scale 2 for c, d; scale 3 for g.

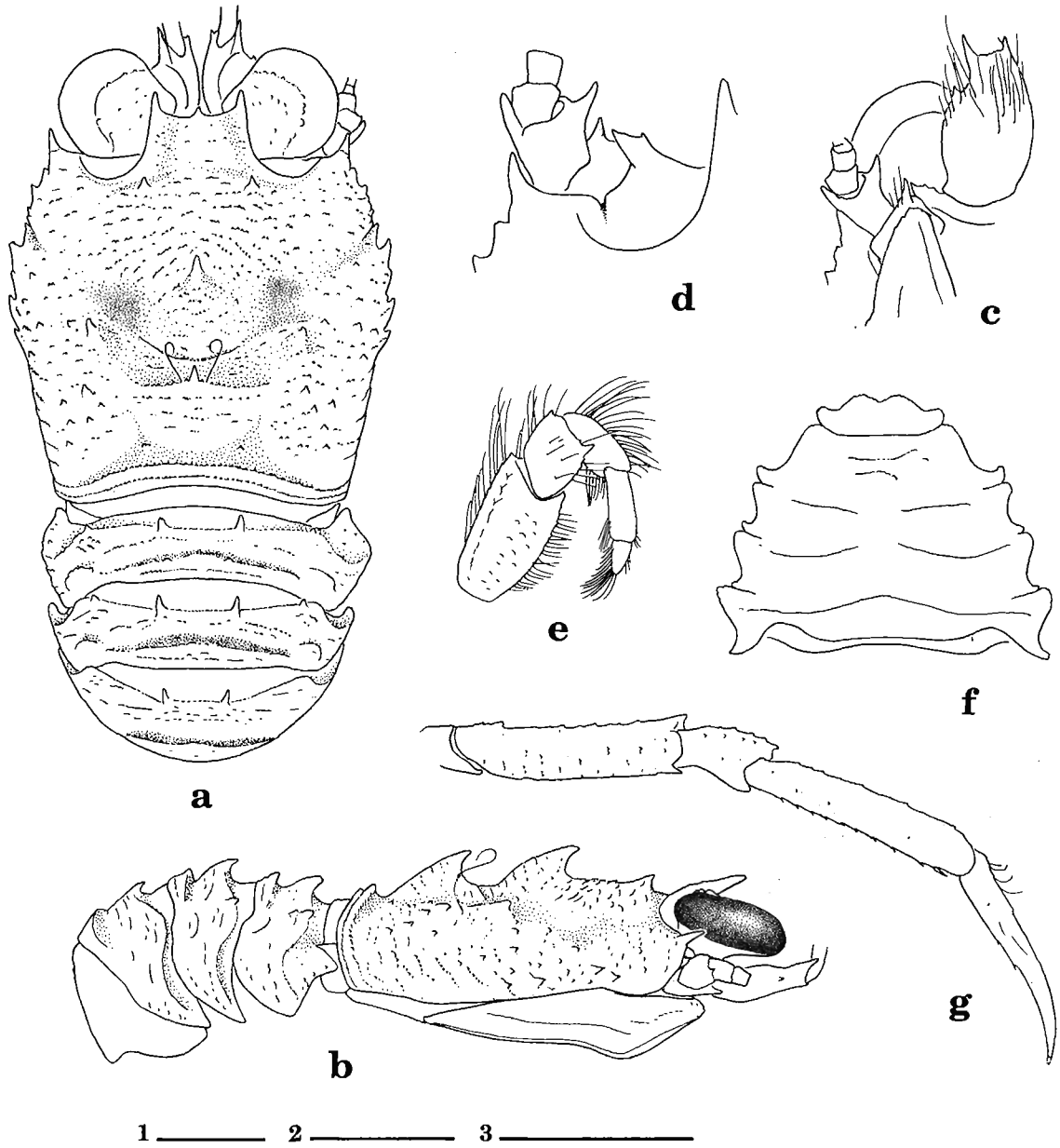

FIG. 14. — *Bathymunida ocularis* sp. nov., male holotype (MNHN-Ga 3581) from MUSORSTOM 6, Stn DW 461 : **a**, carapace and abdomen, dorsal; **b**, same (posterior part of abdomen omitted), lateral; **c**, anterior part of cephalothorax, showing antennule and antennal peduncle, ventral; **d**, left anterior part of carapace, showing orbit and antennal peduncle, dorsal; **e**, endopod of right third maxilliped, lateral; **f**, sternal plastron; **g**, detached right (presumably third) walking leg, lateral.

Scales = 1 mm; scale 1 for a, b; scale 2 for c, e-g; scale 3 for d.

Two detached walking legs, presumably the third pair, present. Merus as long as dactylus, extensor margin with tubercles, proximally with more produced one, distally ending in spine. Propodus slightly widened distally, 5.3 times as long as wide, flexor margin with 10 small movable spines. Dactylus slightly shorter than propodus, relatively slender, distally sharp, flexor margin sharply ridged, with 2 spine-like setae medially.

REMARKS. — The differences between the new species and *B. brevirostris* (Yokoya, 1933) are very slight but *B. ocularis* is more tubercular : the carapace bears more numerous tubercles and the eyestalks have tubercles along the distal end proximal to the cornea. However, it is not unlikely that the tubercular condition may be due to the small size of the specimen.

The presence of tubercles on the eyestalks links the species to *B. frontis* sp. nov. (see above), but *B. ocularis* is distinctive in having much longer supraocular and more distinct rostral spines, a more pronounced spine on the first antennal segment, a more laterally directed suborbital marginal process, and two spine-like setae on the dactylus of the walking legs.

RANGE. — Loyalty Islands; 240 m.

Bathymunida polae Balss, 1914

Figs 2 a–d, 15, 16

Bathymunida polae Balss, 1914 : 138; 1915 : 5, figs 2-5. — VAN DAM, 1938 : 202. — LEWINSOHN, 1969 : 132 (no record). — BABA, 1990 : 950, fig. 11.

MATERIAL EXAMINED. — **Red Sea**. *"Pola"* : stn 143, 212 m : 3 ♂ 3.2–4.0 mm (largest, lectotype), 1 ovig. ♀ 2.6 mm, 1 ♀ 2.6 mm (NMW Inv. No. 7029).

"Meteor" : stn Me5–283 Ku, 12°30.9'N, 44°47.7'E, 76 m, 16 Mar. 1987 : 2 ♂ 4.1, 4.2 mm (SMF).

La Réunion. *"Marion Dufresne"*, cruise MD 32 : stn CP 57, 21°04.5'S, 55°11'E, 210–227 m, 22 Aug. 1982 : 1 ♂ 2.4 mm (MNHN-Ga 3775).

Madagascar. As listed by BABA (1990 : 950) : 29 ♂ 3.2–5.9 mm, 27 ovig. ♀ 3.6–4.9 mm, 7 ♀ 2.9–5.0 mm (1 ♂, 1 ovig. ♀, transferred to Smithsonian Institution, USNM 244404), 1 ♂ with bopyrid parasite, 1 ♀ with rhizocephalan parasite.

TYPES. — One male (4.0 mm) of five syntypes from *"Pola"*, Stn 143 in NMW (Inv. No. 7029) is designated here as the lectotype, and the other specimens (2 males, 2 females) are paralectotypes (material as listed above).

DIAGNOSIS. — Carapace with strong transverse ridges, relatively wide, strongly narrowed posteriorly, lateral margins of branchial regions expanded laterally. Rostrum with weak middorsal ridge, rostral spine moderate in length, slightly overreaching, subequal to, or slightly falling short of well-developed supraocular spines. Fifth abdominal tergite with scale-like ridges more distinct than on sixth tergite. Eyelashes relatively long, usually reaching corneal margin. Merus of third maxilliped very short relative to width, nearly rhomboidal in lateral view. Dactyli of walking legs slender, about as long as propodus on first leg, distinctly longer on second and third legs, flexor margin with 1 or 2 spine-like setae; merus slightly twisted on first leg. Fifth pereopods of male with ribbon-like setae on distal portion of propodus.

REMARKS. — The rostral spine is shorter than the supraocular spines in all the type specimens; in the SMF material these spines are subequal; and in the specimens from Madagascar some variation is found (BABA, 1990 : 952).

BABA (1990 : 952) suggested that *B. balssi* and *B. polae* might be synonymous. However, the present study shows that they are distinct in the following particulars : the supraocular spine is much longer than the rostral spine in *B. balssi* instead of being at most slightly longer, as in *B. polae*; the dactyli of the walking legs are entire on the flexor margin in *B. balssi*, while they bear 1–2 spine-like setae in *B. polae*; the carapace ridges, especially on the gastric and branchial regions, are more numerous and stronger in *B. polae* than in *B. balssi*; the eyelashes in *B. polae* are well developed, reaching almost to the corneal margin, but those in *B. balssi* are short and occasionally obsolescent.

BABA (1990 : 952) noted that one male of the specimens from Madagascar bears an unusually long rostrum, the systematic status of which remains unresolved.

Chelipeds are missing in large males, suggesting that long chelipeds are easily lost during collection.

SIZE . — Males, 2.4–5.9 mm; females, 2.6–5.0 mm (ovigerous females from 2.9 mm).

RANGE. — Red Sea, Madagascar and La Réunion; 76–255 m.

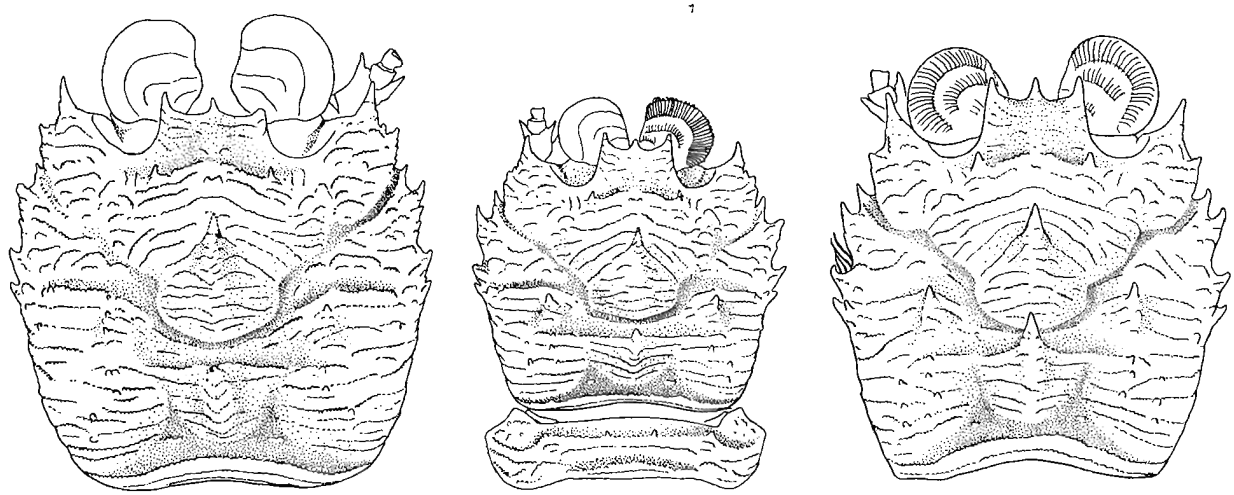

FIG. 15. — *Bathymunida polae* Balss, 1914, carapace, dorsal : **a**, male lectotype 4.0 mm (NMW Inv. No. 7029) from *"Pola"*, Stn 143; **b**, ovigerous female paralectotype 2.6 mm (NMW Inv. No. 7029); **c**, male 4.1 mm (SMF) from *"Meteor"*, Stn Me5-283 Ku.

Bathymunida quadratirostrata Melin, 1939

Figs 17, 18

Bathymunida quadratirostrata Melin, 1939 : 92, figs 59-61.

MATERIAL EXAMINED. — **Bonin Islands**. NE of Ototo-jima, 105 m : 1 ovig. ♀ 2.6 mm, lectotype (SMNH Type No. 2296).

Indonesia. *Kei Islands*. KARUBAR : stn DW 01, 05°46'S, 132°10'E, 156–305 m, 22 Oct. 1991 : 1 ovig ♀ 4.0 mm (MNHN-Ga 3582).

TYPES. — Lectotype, ovig. ♀ 2.6 mm (SMNH Type No. 2296), by present designation, Bonin Islands, northeast of Ototo-jima, 105 m. Two of the three syntypes which should be in the collection of the Uppsala University, under Type No. 435a–q (K. SINDEMARK and L. SANDBERG, pers. comm.), are paralectotypes.

DIAGNOSIS. — Carapace with interrupted, mostly scale-like ridges. Lateral margins convex, anterolateral spines moderate in size, directed straight forward, not reaching anterior margin of rostrum; 4 anteriorly directed spines on each branchial margin, first small or obsolete. Rostrum narrowed anteriorly, with rounded ridge in midline continued onto rostral spine, anterior margin nearly straight. Rostral spine long, but falling short of end of cornea; supraocular spines very small or obsolete. Anterior portion of sixth thoracic sternite narrower than posterior portion of preceding sternite. Fifth and sixth abdominal tergites smooth, without striae. Eyestalks in small specimen with tubercles proximal to cornea. Merus of third maxilliped relatively wide distally, extensor distal marginal spine small or obsolete. Dactyli of walking legs with 2–4 spine-like setae on first pair, 2–3 on second, 1 or 2 on third.

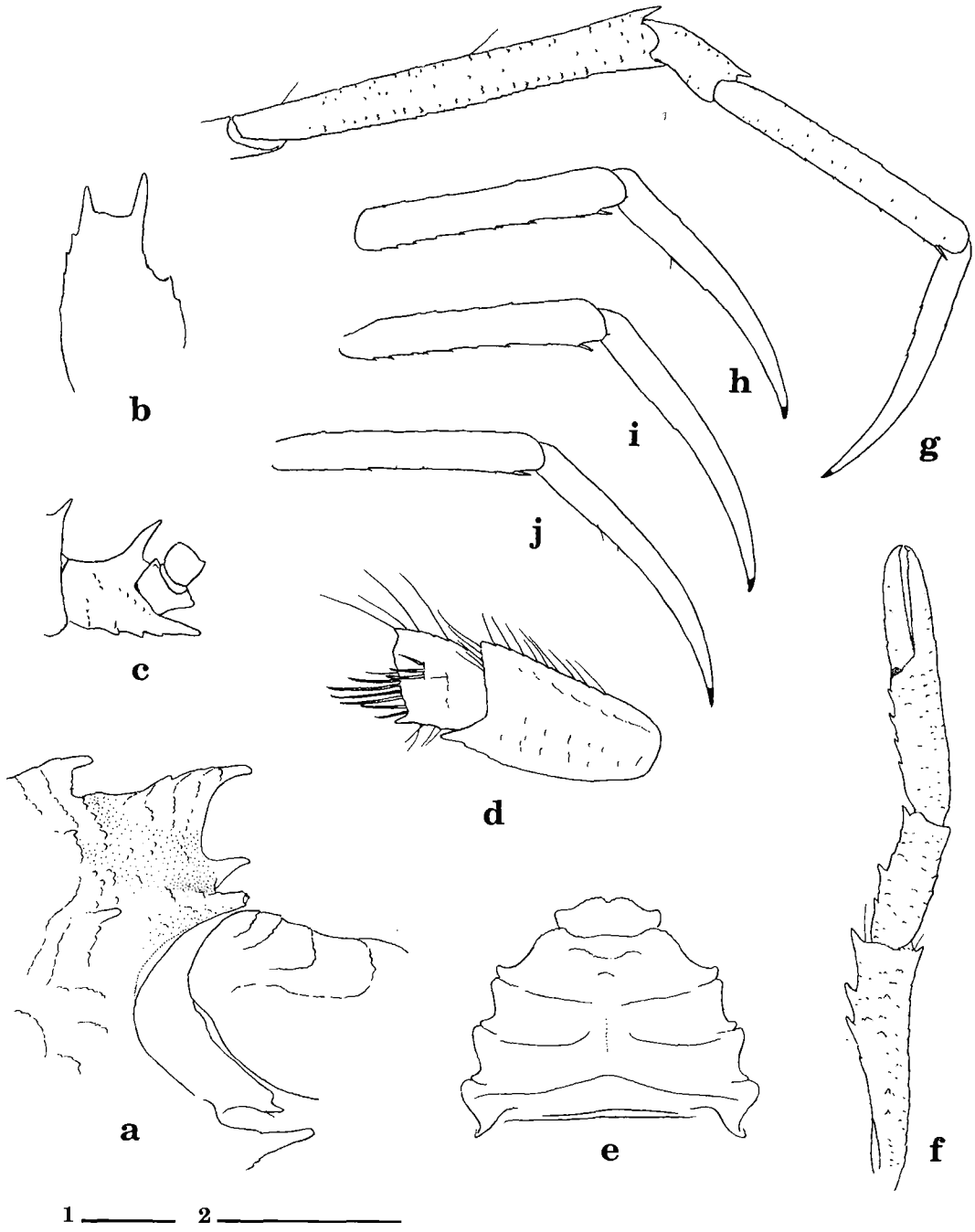

FIG. 16. — *Bathymunida polae* Balss, 1914, type specimens (NMW Inv. No. 7029) from *"Pola"*, Stn 143; **a**, e, g, male lectotype 4.0 mm; b–d, male paralectotype 3.5 mm; f, h, i, ovigerous female paralectotype 2.6 mm; j, detached from body : **a**, anterior part of carapace, showing rostrum and orbit, dorsolateral; **b**, left antennule, ventral; **c**, left antennal peduncle, ventral; **d**, proximal segments of endopod of left third maxilliped, lateral; **e**, sternal plastron; **f**, right cheliped, dorsal; **g**, right first walking leg, lateral; **h**, distal segments, right first walking leg; **i**, same, right second walking leg; **j**, same, right third walking leg.

Scales = 1 mm; scale 1 for e–g; scale 2 for a–d, h–j.

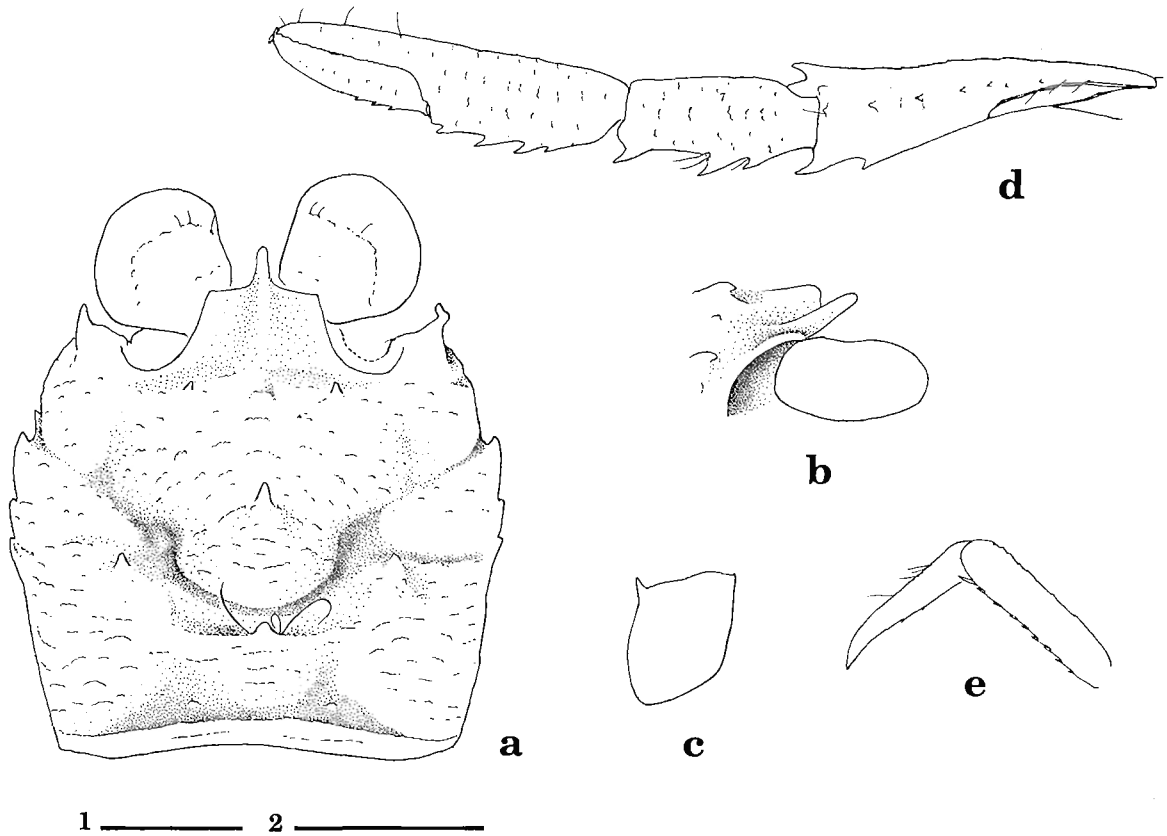

FIG. 17. — *Bathymunida quadratirostrata* Melin, 1939, ovigerous female lectotype 2.6 mm (SMNH Type No. 2296) from NE of Ototo-jima, Bonin Islands : **a**, carapace, dorsal; **b**, anterior part of carapace, showing rostrum, lateral; **c**, merus of left third maxilliped, lateral; **d**, right cheliped, dorsal; **e**, distal segments of left first walking leg, lateral.
Scales = 1 mm; scale 1 for a, b, d, e; scale 2 for c.

REMARKS. — No male specimen is included in the material examined.

No distinct differences were noted between the type and the specimen from Indonesia, except for the tubercular condition of the eyestalks on the small lectotype.

MELIN (1939) was the first to mention for the species that the brush of plumose setae is present on the chelae of the fifth pereopods, the presence or absence of which is regarded, in the present paper, to be at least of generic importance in the Galatheidae.

RANGE. — Bonin and Kei Islands; 105–305 m. The depth record provided by MELIN (1939 : 92) for the syntype examined here is 70 fathoms, but on the label it is indicated as 105 m.

Bathymunida recta sp. nov.

Figs 19, 32 a-b

MATERIAL EXAMINED. — **Futuna Island (SW Pacific)**. MUSORSTOM 7 : stn DW 510, 14°14'S, 178°11'W, 280–370 m, 12 May 1992 : 1 ♂ 5.0 mm, holotype (MNHN-Ga 3583).

ETYMOLOGY. — From the Latin *rectus* (straight), in reference to the anterolateral spine of the carapace which is directed straight forward.

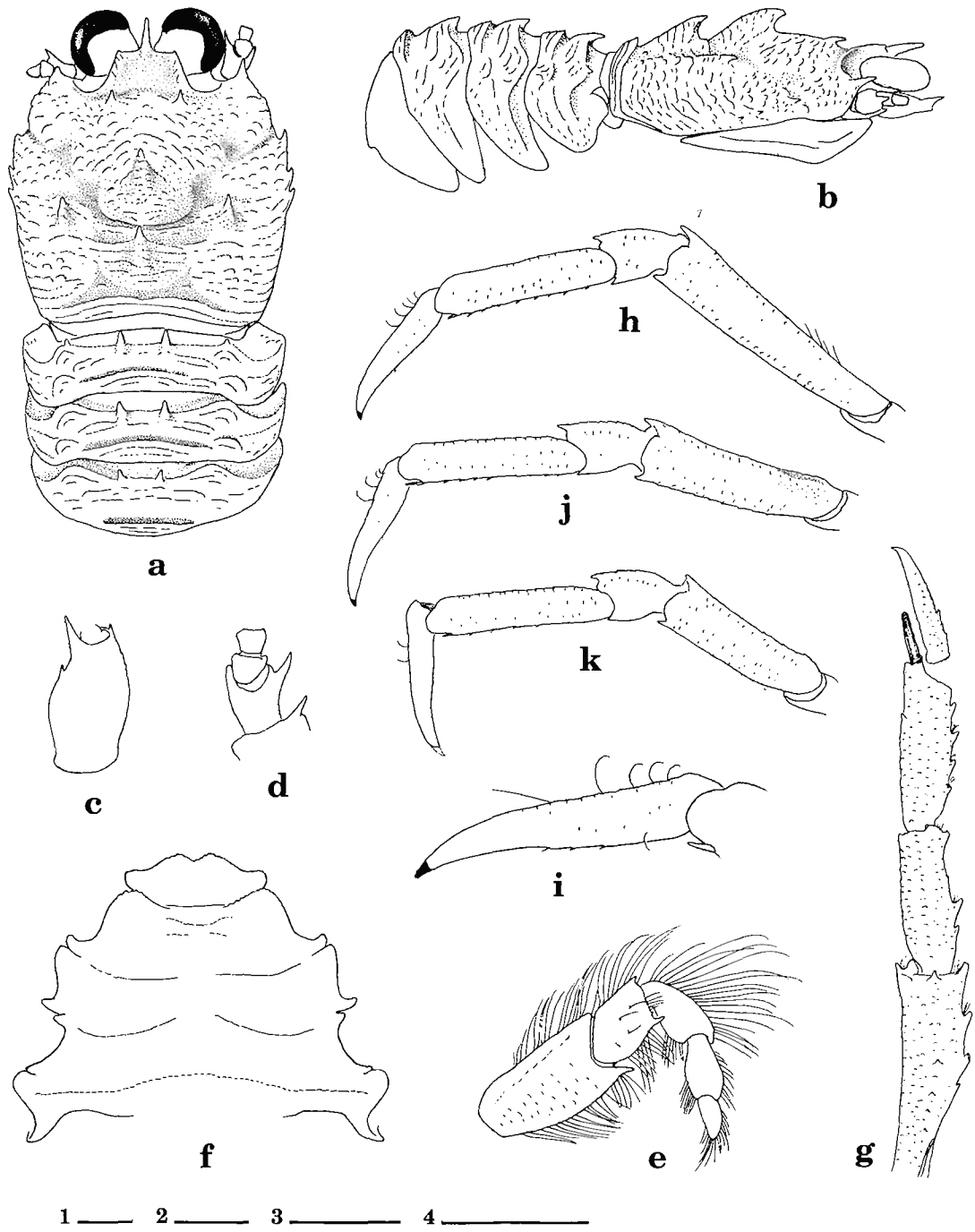

FIG. 18. — *Bathymunida quadratirostrata* Melin, 1939, ovigerous female 4.0 mm (MNHN-Ga 3582) from KARUBAR, Stn DW 01 : **a**, carapace and abdomen, dorsal; **b**, same (posterior part of abdomen omitted), lateral; **c**, right antennule, ventral; **d**, right antennal peduncle, ventral; **e**, endopod of right third maxilliped, lateral; **f**, sternal plastron; **g**, left cheliped, dorsal; **h**, left first walking leg, lateral; **i**, dactylus of same; **j**, left second walking leg; **k**, left third walking leg.

Scales = 1 mm; scale 1 for a, b, g; scale 2 for h, j, k; scale 3 for c–f; scale 4 for i.

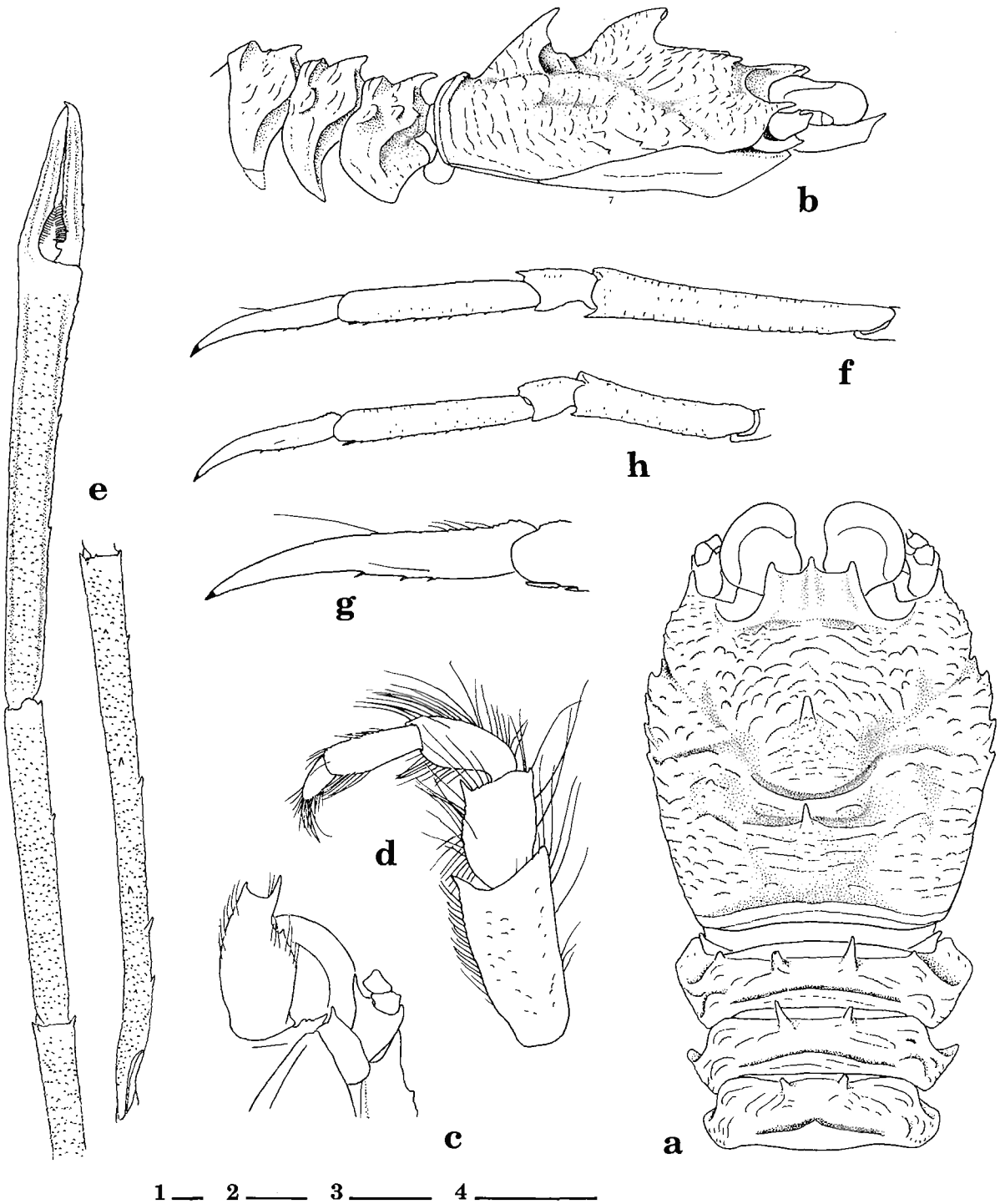

FIG. 19. — *Bathymunida recta* sp. nov., male holotype (MNHN-Ga 3583) from MUSORSTOM 7, Stn DW 510 : **a**, carapace and abdomen (posterior part omitted), dorsal; **b**, same, lateral; **c**, anterior part of cephalothorax, showing antennule and antennal peduncle, ventral; **d**, endopod of left third maxilliped, lateral; **e**, left cheliped, dorsal; **f**, left first walking leg, lateral; **g**, dactylus of same; **h**, left third walking leg.

Scales = 1 mm; scale 1 for e; scale 2 for a, b, f, h; scale 3 for c; scale 4 for d, g.

DIAGNOSIS. — Carapace with moderately granulate ridges, mostly interrupted on gastric region. Epigastric spines reduced in size. Rostrum relatively wide, about twice as wide as long, equally wide as cornea. Rostral and supraocular spines small, subequal. Lateral margins of carapace convex, anterolateral spines directed straight forward, margin of hepatic region expanded and tuberculate; anterior branchial region with 4 small marginal spines. Pair of submedian spines on second to fourth abdominal segments sharp; fifth and sixth abdominal segments without striae. First segment of antennal peduncle clearly exposed (not hidden by pterygostomial flap), with small sharp distomesial spine, distomesial spine of second segment nearly reaching end of fourth segment. Chelipeds (male) covered with tubercular granules, fingers gaping, merus with 5 dorsal and 5 mesial marginal spines. Dactyli of walking legs with 3 spine-like setae. Fifth pereopods of male with a few ribbon-like setae on distal portion of propodus.

COLOR. — Gastric region orange red, posteriorly bordered by purplish line along cervical groove, posterior half of carapace with orange ridges. Abdomen posteriorly transparent, tergites orange, pleura dark red. Chelipeds with fingers distally red; palm, carpus and merus with distal and median red bands, and extra red band proximally; these bands interspersed by pale portion bearing orange flecks. Remaining pereopods with red bands on merus, propodus, and dactylus (distal segments of fifth pereopod invisible) (Fig. 32a-b).

REMARKS. — The broad rostrum with three, small, subequal spines (rostral and supraocular) link this species to *B. eurybregma* sp. nov. (see above). The differences between them are very slight, but we believe that they are differentiated by the following characters : the ridges on the carapace are less granulate, with scale-like striae on the gastric region in *B. recta*, whereas in *B. eurybregma* they are definitely granulated and more elevated, those on the gastric region being rather continuous; the anterolateral spines in *B. recta* are directed straight forward, instead of being anterolaterally directed in *B. eurybregma*; the chelipeds bear fewer spines on the merus (5 mesial and 5 dorsal spines) in *B. recta*, than in *B. eurybregma* (8–9 mesial and 7–10 dorsal spines).

RANGE. — Futuna Island (SW Pacific); depth between 280 and 370 m.

Bathymunida rudis sp. nov.

Fig. 20

MATERIAL EXAMINED. — **New Caledonia**. *Norfolk Ridge*. SMIB 5 : stn DW 81, 22°38.20'S, 167°34.80'E, 110 m, 9 Sept. 1989 : 1 ♂ 4.1 mm (MNHN-Ga 3584). — Stn DW 82, 22°31.70'S, 167°32.40'E, 155 m, 9 Sept. 1989 : ♂ 4.4 mm (holotype, MNHN-Ga 3585), 1 ♂ 5.2 mm, 2 ovig. ♀ 3.5, 3.9 mm (MNHN-Ga 3586).

ETYMOLOGY. — From the Latin *rudis* (rough), for the rough dorsal surface of the carapace.

DIAGNOSIS. — Carapace with numerous tubercles on branchial regions, tuberculate scale-like ridges on gastric region; epigastric spines small but sharp. Rostrum somewhat or considerably narrowed anteriorly, with median ridge continuing onto rostral spine. Supraocular spines well developed, directed slightly upward, subequal to, or slightly shorter than, rostral spine. Lateral margins of carapace gently convergent posteriorly; spines on branchial margins acuminate. Anterolateral spines divergent anteriorly, nearly reaching to anterior margin of rostrum. Eyelashes short. Second to fourth abdominal tergites with tuberculate ridges; fifth tergite with fine scale-like striae, sixth tergite smooth. Merus of third maxilliped subrhomboidal in lateral view, flexor marginal spine rather close to distal end. Chelipeds (male) 4.8 times as long as carapace, granulate; merus with 3 rows of spines (10 mesial marginal, 12 dorsal, 3 dorsal to proximal portion of mesial margin), carpus and palm each with about 9 spines on mesial margin. Walking legs having dactylus shorter than propodus, with 1 or 2 spine-like setae on flexor margin. Fifth pereopods in male with ribbon-like setae on distal portion of propodus.

REMARKS. — The well-developed rostral spine, nearly as large as the supraocular spines, is also possessed by *B. polae*. However, the new species is readily distinguished by the ornamentation of the carapace and abdomen : the carapace bears more numerous tubercles, especially on the branchial regions, and more tuberculate scale-like ridges on the gastric region; the lateral margins are more gently narrowed posteriorly; the abdominal segments are also

tuberculate, bearing additional spine-like processes behind the anterior pair of strong spines, at least on the second tergite; the male fifth pereopods bear distinct ribbon-like spines on the propodus.

Bathymunida eurybregma and *B. recta* also have subequal rostral and supraocular spines which are, however, much shorter. In addition, the rostrum in these species is relatively wide, nearly twice as wide as long, instead of being slightly more than 1.5 times as long in the new species; dorsal tubercles are almost absent; and the lateral spines on the branchial regions are less pronounced.

SIZE. — Males, 4.1–5.2 mm; ovigerous females, 3.5, 3.9 mm.

RANGE. — Norfolk Ridge; 110–155 m.

Bathymunida sibogae van Dam, 1938

Figs 2f, 21, 22, 32c

Bathymunida sibogae van Dam, 1938 : 197, figs 2 (lower), 3.

MATERIAL EXAMINED. — **Indonesia**. *Ceram Sea. "Siboga"* : stn 166, , 2°28.5'S, 131°3.3'E, 118 m : 2 ♀ 3.0 et 4.9 mm, syntypes (ITZA 102.129).

Kei Islands. KARUBAR : stn DW 02, 05°47'S, 132°13'E, 209–240 m, 22 Oct. 1991 : 2 ovig. ♀ 3.7, 3.7 mm (MNHN-Ga 3593). — Stn DW 18, 05°18'S, 133.01'E, 205–212 m, 24 Oct. 1991 : 1 ovig. ♀ 3.8 mm (MNHN-Ga 3594).

Chesterfield Islands. MUSORSTOM 5 : stn DW 274, 24°44.83'S, 159°41.00'E, 285 m, 9 Oct. 1986 : 1 ♂ 3.2 mm (MNHN-Ga 3587). — Stn CP 288, 24°04.80'S, 159°36.80'E, 270 m, 10 Oct. 1986 : 1 ♂ 3.5 mm (MNHN-Ga 3588). — Stn DW 303, 22°11.93'S, 159°23.17'E, 332 m, 12 Oct. 1986 : 1 ♂ 3.4 mm (MNHN-Ga 3589). — Stn CP 307, 22°11.0'S, 159°24.07'E, 350–345 m, 12 Oct. 1986 : 2 ♂ 3.5, 3.6 mm (MNHN-Ga 3590). — Stn CP 309, 22°10.20'S, 159°22.80'E, 340 m, 12 Oct. 1986 : 4 ♂ 3.2–4.3 mm, 1 ovig. ♀ 3.0 mm (MNHN-Ga 3591).

New Caledonia. SMIB 6 : stn DW 126, 18°59.1'S, 163°22.7'E, 320–330 m, 3 Mar. 1990 : 1 ovig. ♀ 3.6 mm (MNHN-Ga 3592).

Japan. *"Toyoshio Maru"* : stn 8, east of Kakeroma-jima, Amami-Group, Ryukyu Is., 310 m, 10 Nov. 1994, coll. E. TSUCHIDA & S. OHTSUKA : 2 ♂ 2.6, 2.6 mm, 1 ovig. ♀ 2.3 mm, 1 ♀ 2.2 mm (CBM-ZC 1955).

TYPES. — Two females (3.0, 4.9 mm), *"Siboga"*, Stn 166, Ceram Sea, 2°28.5'S, 131°3.3'E, 118 m (ITZA 102.129). The larger is here designated as the lectotype, and the other as the paralectotype.

DIAGNOSIS. — Carapace with distinct ridges, moderately dense on branchial regions. Rostral spine well developed, barely or almost reaching anterior level of cornea, supraocular spines small, never reaching midlength of rostral spine, often short (probably due to injury). Lateral margins of carapace behind cervical incision gently convergent posteriorly. Eyelashes long, occasionally reaching corneal margin. Fifth abdominal segment with distinct striae, sixth segment with fine striae laterally. Merus of third maxilliped subrhomboidal in lateral view, flexor marginal spine rather distal in position. Chelipeds 2.2–2.3 (female), or more than 7.3 (male) times as long as carapace; mesial margin with 2–3, 4, 3 (female) or 13, 3, 2 (male) spines on merus, carpus and palm, respectively. Walking legs with dactylus slender, curving, flexor margin bearing 1 (rarely 2) spine-like seta proximal to midlength. Fifth pereopods of male with several fine setae on distal portion of propodus.

COLOR. — Basic color seashell pink, carapace orange-yellow on gastric region and with flecks of same color elsewhere; gastric region posteriorly bordered by hint of a purple line, with purple spot on trough directly lateral to posterior part. Orange bands arising from cardiac region, posteriorly divergent, changing to reddish-orange. Pleura of abdominal segments with reddish-orange patch near each tergite. Chelipeds reddish-orange on distal portion of fingers, with orange flecks elsewhere. Walking legs reddish-orange on distal portions of propodus and dactylus, at least on first pair (Fig. 32c).

REMARKS. — The rostrum of the lectotype is deflexed and an extra spine is present on the midpoint of the posterior transverse ridge (Fig. 21b). Since no other specimen such as this is found in the rest of the material studied, these exceptional features are excluded from the distinguishing characters.

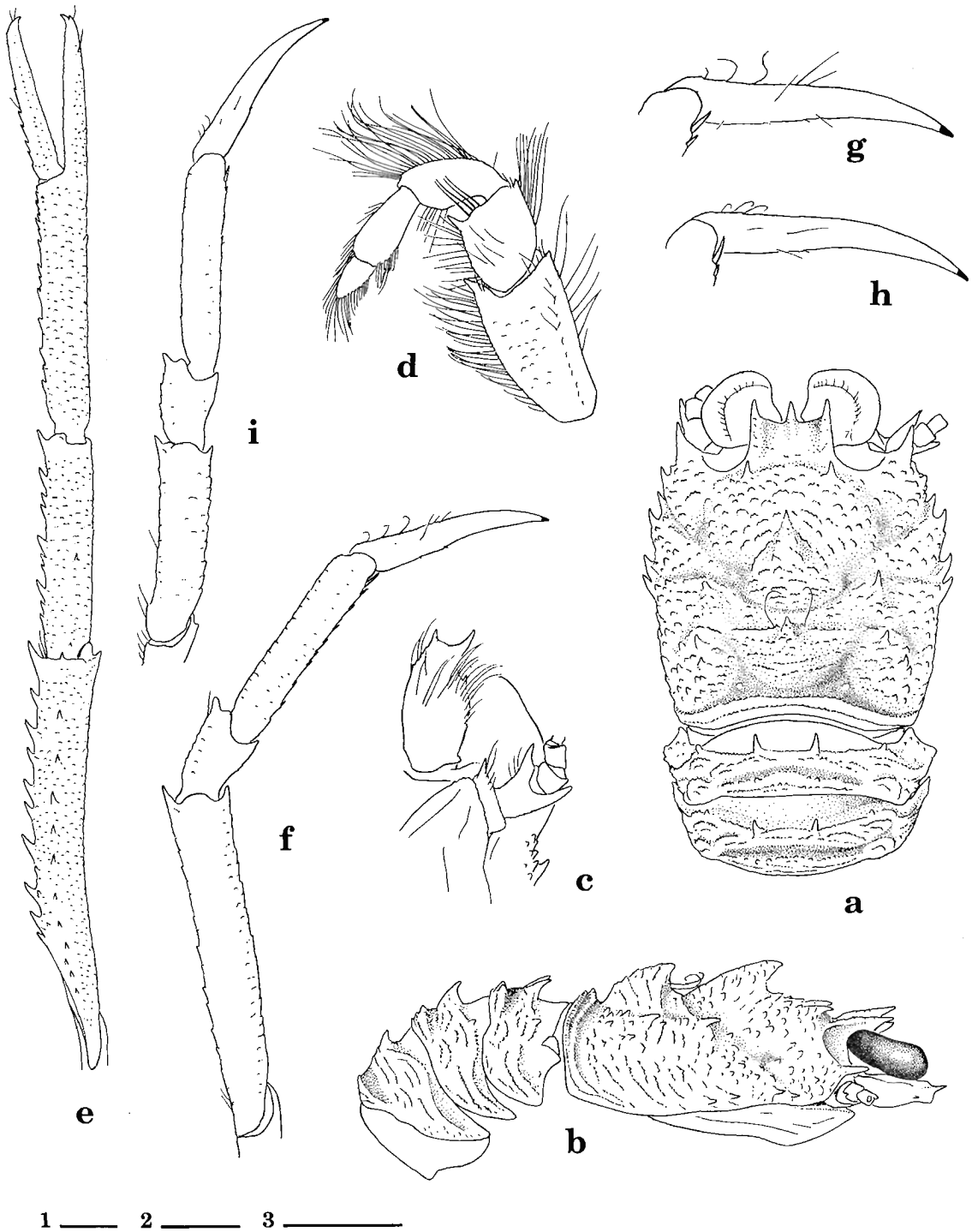

FIG. 20. — *Bathymunida rudis* sp. nov., a–d, f–i, male holotype (MNHN-Ga 3585) from SMIB 5, Stn DW 82; e, male paratype (MNHN-Ga 3586) from same station : **a**, carapace and anterior part of abdomen, dorsal; **b**, same, lateral; **c**, anterior part of cephalothorax, showing antennule and antennal peduncle, ventral; **d**, endopod of left third maxilliped, lateral; **e**, right cheliped, dorsal; **f**, right first walking leg, lateral; **g**, dactylus of same; **h**, dactylus of right second walking leg; **i**, right third walking leg.

Scales = 1 mm; scale 1 for a, b; scale 2 for c, e, f, i; scale 3 for d, g, h.

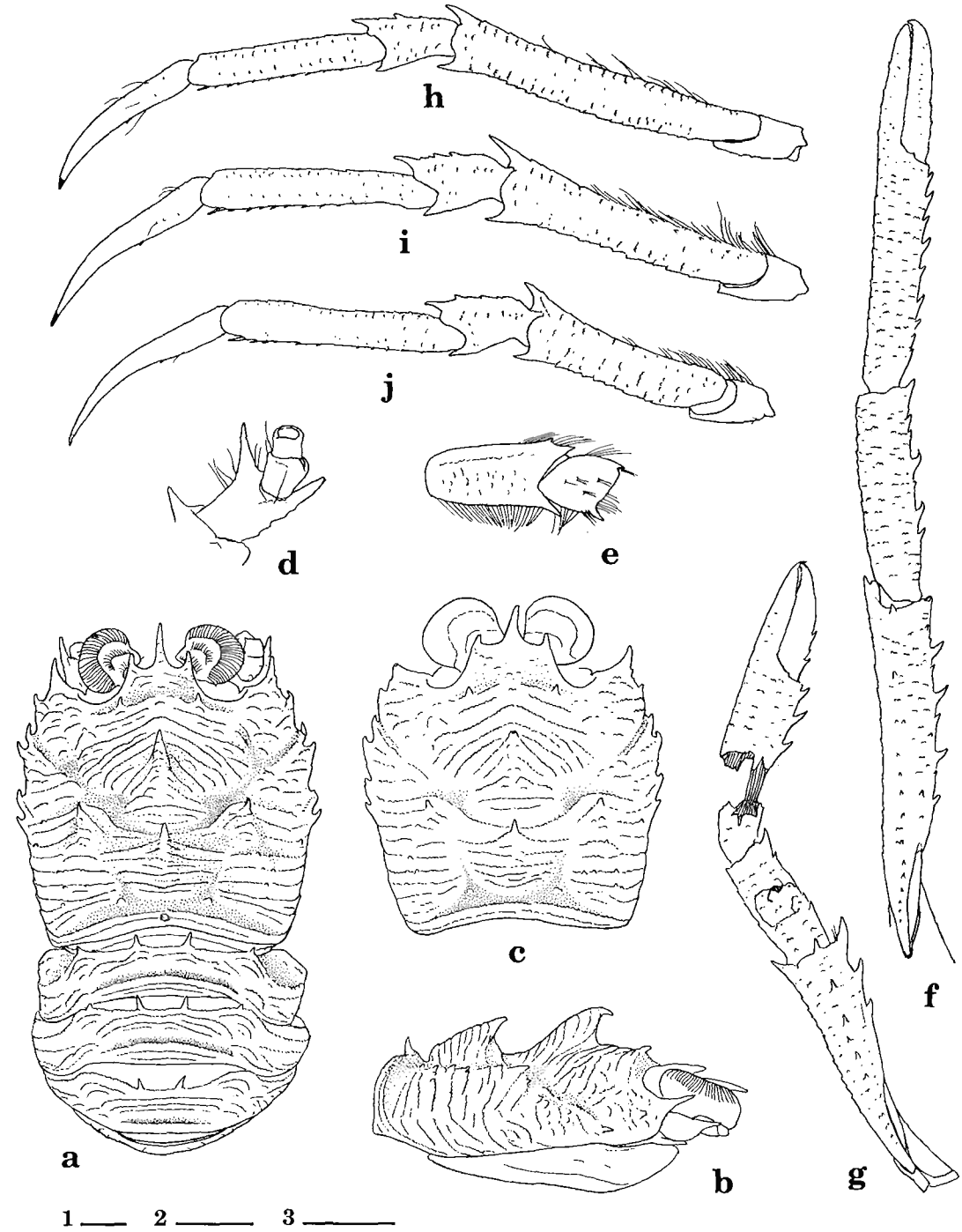

FIG. 21. — *Bathymunida sibogae* van Dam, 1938, type specimens (ITZA 102.129) from *"Siboga"*, Stn 166; a, b, d–f, female lectotype 4.9 mm; c, g, h–j, female paralectotype 3.0 mm : **a**, carapace and abdomen, dorsal; **b**, carapace, lateral; **c**, same, dorsal; **d**, left antennal peduncle, ventral; **e**, proximal segments of endopod of right third maxilliped, lateral; **f**, left cheliped, dorsal; **g**, same; **h**, left first walking leg, lateral; **i**, left second walking leg; **j**, left third walking leg.

Scales = 1 mm; scale 1 for a, b, f; scale 2 for c, e, g; scale 3 for d, h–j.

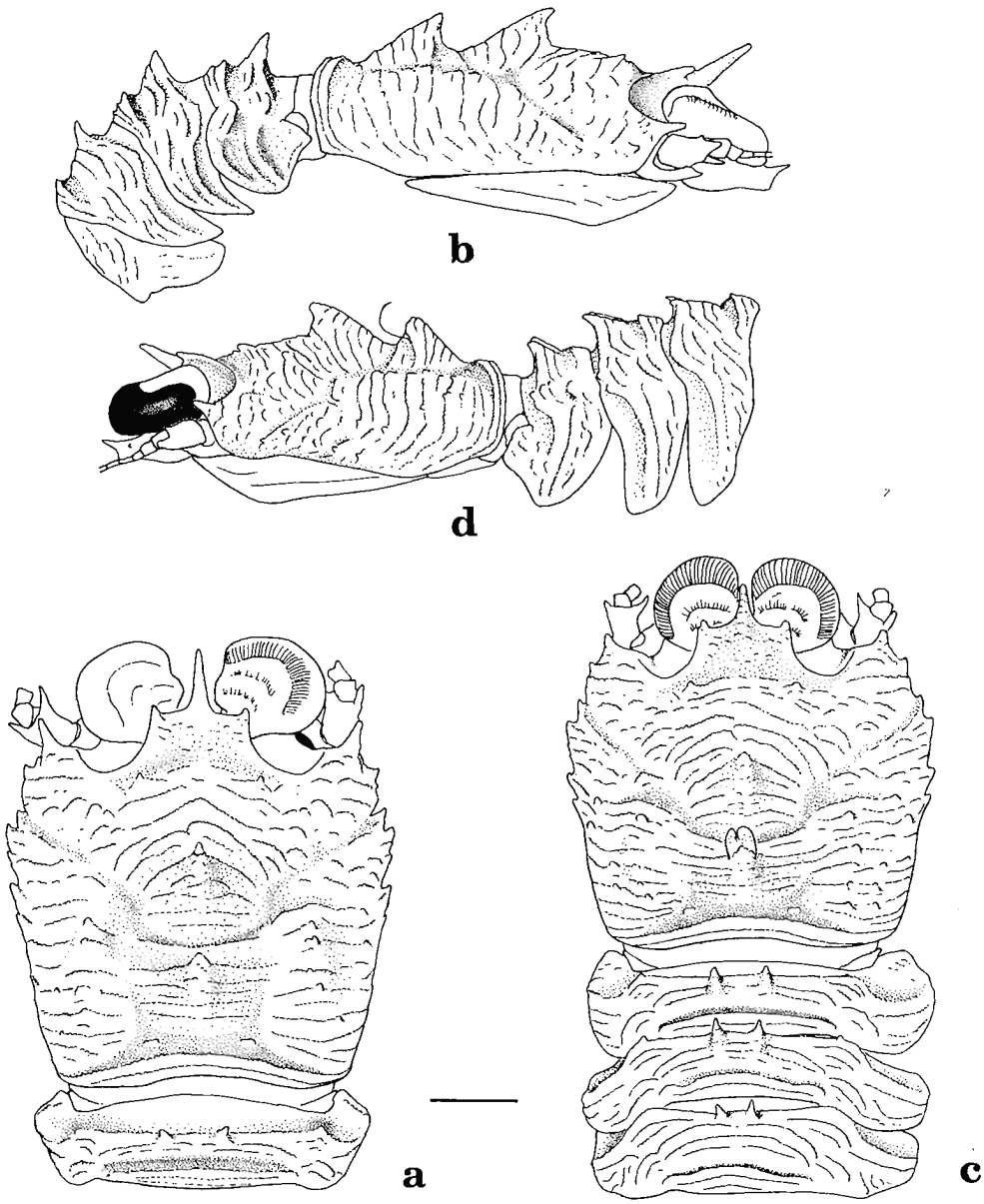

FIG. 22. — *Bathymunida sibogae* van Dam, 1938, specimens (MNHN-Ga 3591) from MUSORSTOM 5, Stn CP 309, carapace and abdomen (posterior part omitted) : **a**, male 3.5 mm, dorsal; **b**, same, lateral; **c**, ovigerous female 3.0 mm, dorsal; **d**, same, lateral. Scale = 1 mm.

The specimens examined in the collection of the Paris Museum are somewhat different from the types. In the specimens from MUSORSTOM 5 (Stn CP 288, DW 303, CP 309), SMIB 6 (Stn DW 126), KARUBAR (Stn DW 02, DW 18), the first segment of the antennal peduncle is much broader, about twice as wide as the second segment instead of being 1.5 times as wide as in the types, and the second segment bears a much smaller distolateral spine and a smaller distomesial ventral spine. In the specimens from MUSORSTOM 5 (Stn DW 274, CP 307, CP 309), the ridges on the carapace are more numerous, as is apparent on the figure (see Fig. 22c-d), and the supraocular spines are much shorter. Inasmuch as the species is characterized by the rostral spine pronouncedly longer than the supraocular spines, the above-mentioned differences are considered to represent individual variation.

In one of the lots examined (MNHN-Ga 3591) is a male specimen (4.3 mm) which has incomplete chelipeds (12 mm) lacking distal three segments and the distal part of the merus. It can be assumed that these chelipeds would be more than 10 times the length of the carapace.

Long male chelipeds are likely to be detached and missing, as noted for *B. polae* (see above).

SIZE. — Males, 2.6– 4.3 mm; females, 2.2–4.9 mm (ovigerous females from 2.3 mm).

RANGE. — Ceram Sea, Kei Islands, New Caledonia, Chesterfield Islands, Japan; 118-345 m.

Genus ***HETERONIDA*** nov.

DIAGNOSIS. — Carapace without continuous transverse ridges, with strong laterally compressed process on gastric region, but none on cardiac region. Pair of epigastric spines obsolescent. Rostrum wide, with rudimentary rostral spine, supraocular spines often barely discernible. Fourth thoracic sternite with anterior margin almost straight, narrower than posterior margin of third thoracic sternite. Abdomen with strong median process flanked at each side by low lateral process on second and third tergites, telson subdivided into distinct platelets. Eyes moderate in size, cornea not strongly dilated. Antennular basal segment with 2 terminal spines (distomesial and distolateral) and 1 small lateral spine. Basal segment of antennal peduncle with distomesial process stout, but not prolonged, second segment slender and elongate, flagellum short and slender, terminating opposite end of antennular flagellum. Ischium of third maxilliped relatively wide, ending in lobe-like process on flexor distal margin, without distal spine; merus also lobe-like on flexor margin and very short, extensor margin with strong distal spine. Dactyli of walking legs with row of spine-like setae on flexor margin. Fifth pereopods with brush of plumose setae on flexor face of chelae in both sexes, fingers slightly less than 1/3 length of propodus.

TYPE-SPECIES. — *Bathymunida aspinirostris* Khodkina, 1981, by present designation.

ETYMOLOGY. — From the Greek, *heteros* (different), plus the last syllables of *Munida*. Gender : feminine.

REMARKS. — KHODKINA (1981) expanded the definition of *Bathymunida* to include *B. aspinirostris* which is characterized by the absence of rostral and cardiac spines, as well as transverse ridges on the dorsal surface of the carapace. The absence of the cardiac spine that she noted now proves to be of more than specific importance. The antennal peduncles, to which KHODKINA did not refer, also indicate an important key character; in particular, the short and very slender flagellum apparently differentiates the species from *Bathymunida*. The reduced antennae, as well as the clearly subdivided telsonal plates, are also recognizable in *Onconida* gen. nov. (see below), but the relationship is rather distant. In *Heteronida*, the rostral spine is widely separated from the supraoculars, the carapace lacks distinct transverse ridges, the eyes are not strongly dilated, the basal antennular segment bears a small lateral spine in addition to two terminal spines, the first segment of the antennal peduncles bears a prominent, but not prolonged, spine on the distomesial margin, the abdominal tergites bear a single strong median and low lateral processes, at least on the second and third segments, and the movable finger of the fifth pereopod bears no barb-like distal spine. The distinctly subdivided telson is also possessed by *Munidopsis* Whiteaves, 1874, *Galathea bidens* Baba, 1988, *Onconida* gen. nov. (see below) and *Plesionida* gen. nov. (see below).

Key to species of *Heteronida*

1. Branchial region of carapace with distinct elevation; rostrum with longitudinal ridge in midline ..... ***H. aspinirostris*** (Khodkina, 1981)
— Branchial region of carapace without elevation; rostrum without ridge in midline ..... ***H. barunae*** sp. nov.

Heteronida aspinirostris (Khodkina, 1981) comb. nov.

Figs 3 d-e, 23, 32 d-f

Bathymunida aspinirostris Khodkina, 1981 : 1261, figs 1–4.

MATERIAL EXAMINED. — **New Caledonia**. LAGON : stn 475, 18°35.7'S, 163°11.2'E, 415–460 m, 2 Mar. 1985 : 1 ♂ 3.2 mm (MNHN-Ga 3612).

BIOCAL : stn CP 45, 22°47.34'S, 167°14.80'E, 430–465 m, 30 Aug. 1985 : 1 ♀ 3.8 mm, with rhizocephalan parasite (MNHN-Ga 3620). — Stn DW 66, 24°55.43'S, 168°21.67'E, 505–515 m, 3 Sept. 1985 : 1 ♂ 3.3 mm, 1 ovig. ♀ 4.1 mm (MNHN-Ga 3621).

MUSORSTOM 4 : stn DW 162, 18°35.0'S, 163°10.3'E, 525 m, 16 Sept. 1985 : 1 ovig. ♀ 3.4 mm (MNHN-Ga 3613). — Stn CP 170, 18°57.0'S, 163°12.6'E, 480 m, 17 Sept. 1985 : 1 ovig. ♀ 3.6 mm (MNHN-Ga 3614). — Stn CP 180, 18°56.8'S, 163°17.7'E, 440 m, 18 Sept. 1985 : 2 ovig. ♀ 3.5, 3.7 mm (MNHN-Ga 3615).

CHALCAL 2 : stn CC 2, 24°55.48'S, 168°21.29'E, 500 m, 28 Oct. 1986 : 3 ovig. ♀ 3.5–3.7 mm, 1 ♀ 3.0 mm (MNHN-Ga 3622). — Stn CP 21, 24°54.00'S, 168°21.61'E, 500 m, 28 Oct. 1986 : 2 ♂ 3.3, 3.7 mm, 2 ovig. ♀ 3.2, 3.8 mm (MNHN-Ga 3623, 3624). — Stn DW 73, 24°39.9'S, 168°38.1'E, 573 m, 29 Oct. 1986 : 1 ♂ 3.9 mm, 1 ovig. ♀ 3.1 mm (MNHN-Ga 3625). — Stn DW 74, 24°40.36'S, 168°38.38'E, 650 m, 29 Oct. 1986 : 3 ♂ 3.1–3.5 mm, 3 ovig. ♀ 3.8–4.2 mm (MNHN-Ga 3626).

SMIB 3 : stn DW 3, 24°55.0'S, 168°21.7'E, 513 m, 20 May 1987 : 2 ovig. ♀ 3.7, 3.7 mm (MNHN-Ga 3627).

SMIB 4 : stn DW 34, 24°55.0'S, 168°22.0'E, 515 m, 7 Mar. 1989 : 1 ♂ 3.3 mm (MNHN-Ga 3628). — Stn DW 34, 24°55.0'S, 168° 22.0'E, 515 m, 7 Mar. 1989 : 2 ♂ 3.3, 3.4 mm (MNHN-Ga 3629). — Stn DW 36, 24°55.6'S, 168°21.7'E, 530 m, 7 Mar. 1989 : 1 ♂ 3.2 mm (MNHN-Ga 3630). — Stn DW 37, 24°54.5'S, 168°22.3'E, 540 m, 7 Mar. 1989 : 1 ♂ 3.3 mm (MNHN-Ga 3631).

SMIB 8 : stn DW 146, 24°55'S, 168°22'E, 514–522 m, 27 Jan. 1993 : 1 ♂ 3.1 mm (MNHN-Ga 3785).

BATHUS 2 : stn CP 762, 22°18'S, 166°09'E, 620–700 m, 16 May 1995 : 1 ♂ 3.5 mm (MNHN-Ga 3787).

Loyalty Islands. BIOCAL : stn DW 08, 20°34.35'S, 166°53.90'E, 435 m, 12 Aug. 1985 : 2 ♂ 2.6, 3.2 mm, 1 ovig. ♀ 3.2 mm, 2 ♀ 3.0, 3.7 mm (MNHN-Ga 3616).

MUSORSTOM 6 : Stn DW 487, 21°23.30'S, 167°46.40'E, 500 m, 23 Feb. 1989 : 1 ♀ 3.1 mm (MNHN-Ga 3617).

Loyalty Islands Basin. BIOGEOCAL : stn DW 307, 21°35.38'S, 166°55.25'E, 470–480 m, 1 May 1987 : 1 ♂ 3.1 mm (MNHN-Ga 3618). — Stn DW 308, 20°40.0'S, 166°58.05'E, 510–590 m, 1 May 1987 : 1 ♂ 2.9 mm (MNHN-Ga 3619).

Vanuatu. GEMINI : stn DW 51, 20°58.5'S, 170°03.4'E, 450 m, 4 Jul. 1989 : 3 ovig. ♀ 3.5–3.6 mm (MNHN-Ga 3638).

Chesterfield Islands. MUSORSTOM 5 : stn DW 272, 24°40.91'S, 159°43.00'E, 500–540 m, 9 Oct. 1986 : 1 ♂ 3.4 mm (MNHN-Ga 3632). — Stn DW 301, 22°06.90'S, 159°24.60'E, 487–610 m, 12 Oct. 1986 : 1 ♂ 2.6 mm (MNHN-Ga 3633). — Stn DW 302, 22°10.00'S, 159°23.30'E, 345–360 m, 12 Oct. 1986 : 1 ♂ 2.7 mm (MNHN-Ga 3634). — Stn DW 305, 22°09.27'S, 159°24.42'E, 430–440 m, 12 Oct. 1986 : 13 ♂ 2.3–3.1 mm, 4 ovig. ♀ 2.9–3.1 mm, 6 ♀ 2.5–3.1 mm, 1 sp. (sex indet., 2.6 mm) (MNHN-Ga 3635). — Stn DW 306, 22°07.66'S, 159°21.40'E, 375–415 m, 12 Oct. 1986 : 1 ♂ 2.9 mm (MNHN-Ga 3636). — Stn DW 313, 22°24.31'S, 159°32.53'E, 780–930 m, 13 Oct. 1986 : 1 ♂ 3.6 mm (MNHN-Ga 3637).

TYPE. — Ovigerous female holotype, MA-2241 (Zoological Museum of Moscow University), Norfolk Ridge off Philip Island, 510 m.

DIAGNOSIS. — Carapace finely granulate, branchial region with distinct elevation. Rostrum slightly or moderately narrowed anteriorly, middorsally with distinct ridge reaching posteriorly to gastric process, anteriorly directed strongly upward. Second and third abdominal tergites with strong, median hump-like process and low lateral process on each side, fourth tergite with smaller median process on each of anterior and posterior ridges. Chelipeds and walking legs granulate. Dactyli of walking legs relatively stout, flexor margin with 6–10 spine-like setae, distal one rather close to tip.

DESCRIPTION. — Carapace finely granulate, but less so on lateral gastric region and mesial portion of anterior branchial region, posterior branchial region with distinct elevation. Gastric region expanded, with strong median process rounded anteriorly in profile; epigastric spines very small, papilla-like or obsolescent. Cardiac region with somewhat elevated transverse ridge preceded by distinct cervical groove. Anterolateral spines strong, blunt, barely reaching anterior margin of rostrum, followed by a small, blunt process in front of cervical incision. Lateral

margins of branchial regions posteriorly convergent, with a few usually indistinct processes, occasionally distinct, especially when viewed from dorsolateral angle, anteriormost process rounded, usually produced laterally.

Rostrum wide, slightly narrowed anteriorly, occasionally with subparallel lateral margins, mesially strongly depressed; strongly elevated anterolaterally, ending in blunt process (in profile, strongly directed dorsally); rostral spine rudimentary, somewhat produced into blunt tip, occasionally ending in papilla-like process; anterior margin concave between rostral and supraocular processes; dorsal surface with middorsal ridge continued posteriorly to epigastric level.

Third thoracic sternite having anterior margin moderately convex with weak median concavity, surface strongly depressed medially, width slightly less than half that of following sternite. Fourth thoracic sternite also depressed medially, anterior margin relatively narrow, straight or slightly convex, and somewhat narrower than posterior margin of preceding sternite.

Second and third abdominal tergites each with strong median process hump-like or often more strongly produced, accompanied on each side by low process. Fourth tergite with 2 distinct transverse sculptures, each with median process often not pronounced. Telson subdivided into 9 platelets.

Eyes of moderate size, corneae not strongly dilated as in *Bathymunida*, eyestalks granulate.

Antennular basal segment with 2 distal spines (distolateral larger) and 1 very small lateral spine. First segment of antennal peduncle with stout distomesial process reaching at most to level of end of second segment; second segment relatively narrow and elongate, distolateral margin rounded, distomesial margin with small spine; fourth segment much narrower than second and third, without spine; flagellum consisting of 11–13 segments, terminating opposite end of antennular flagellum.

Third maxillipeds having ischium with rounded lobe-like process on flexor distal margin; merus short, distal margin strongly oblique, extensor margin with sharp distal spine.

Chelipeds 2.4–2.6 (in smaller males), 2.8–3.3 (average, 3.1, in males more than 2.8 mm), 1.9–2.3 (average 2.0, in females) times as long as carapace; granulate, somewhat massive, subcylindrical, more or less depressed on palm; merus with distomesial and distolateral spines but no other spinulation.

Walking legs granulate. Extensor margin of merus twisted and cristate, at least on proximal half, on first leg, not cristate but rounded on second and third; with blunt distal spine. Propodus occasionally somewhat widened distally, flexor margin with slender movable spine distally. Dactylus relatively stout, flexor margin with 6–9 spines, distal one rather close to (about at one-tenth from tip); extensor margin with line of plumose setae at most along proximal 2/3.

Fingers of fifth pereopods with simple, long, dense setae in males, somewhat less numerous setae in females.

COLOR. — Three transparencies of specimens from three different localities on the Norfolk Ridge show different colorations. Only the chelipeds are nearly the same.

Male from SMIB 4, Stn DW 36 : Basically pink; light orange-red on anterolateral spines of carapace, middorsal ridge anterior to gastric process, middorsal portion of posterior part of carapace extending onto first abdominal tergite, third to fifth abdominal segments in semicircular shape, meri of chelipeds (distal portion excluded), and carpi and meri of walking legs (Fig. 32d).

Female from CHALCAL 2, Stn CP 21 : Anterior half of carapace including rostrum and eyestalks brilliant red, posterior half pink; abdomen light orange. Merus of chelipeds reddish except for distal portion; fingers and distal part of palm pink; remaining portion of palm and carpus seashell pink; distal portion of fingers whitish. Walking legs reddish on merus and carpus; propodus and proximal part of dactylus light orange; remaining portion of dactylus light seashell pink (Fig. 32e).

Male from CHALCAL 2, Stn DW 74 : Carapace and abdomen reddish, pale on distal part of rostrum, median portion of posterior half of carapace, and processes on abdominal tergites. Chelipeds and walking legs nearly as in preceding specimen, but propodi of walking legs with pale orange-red band medially (distinct on first leg, faded on second and third); eyestalks light orange with pale flecks (Fig. 32f).

REMARKS. — The relationship with *H. barunae* sp. nov. from the Kei Islands is discussed under the "Remarks" for that species (see below).

There are no morphological differences between the specimens representing different colorations as noted above.

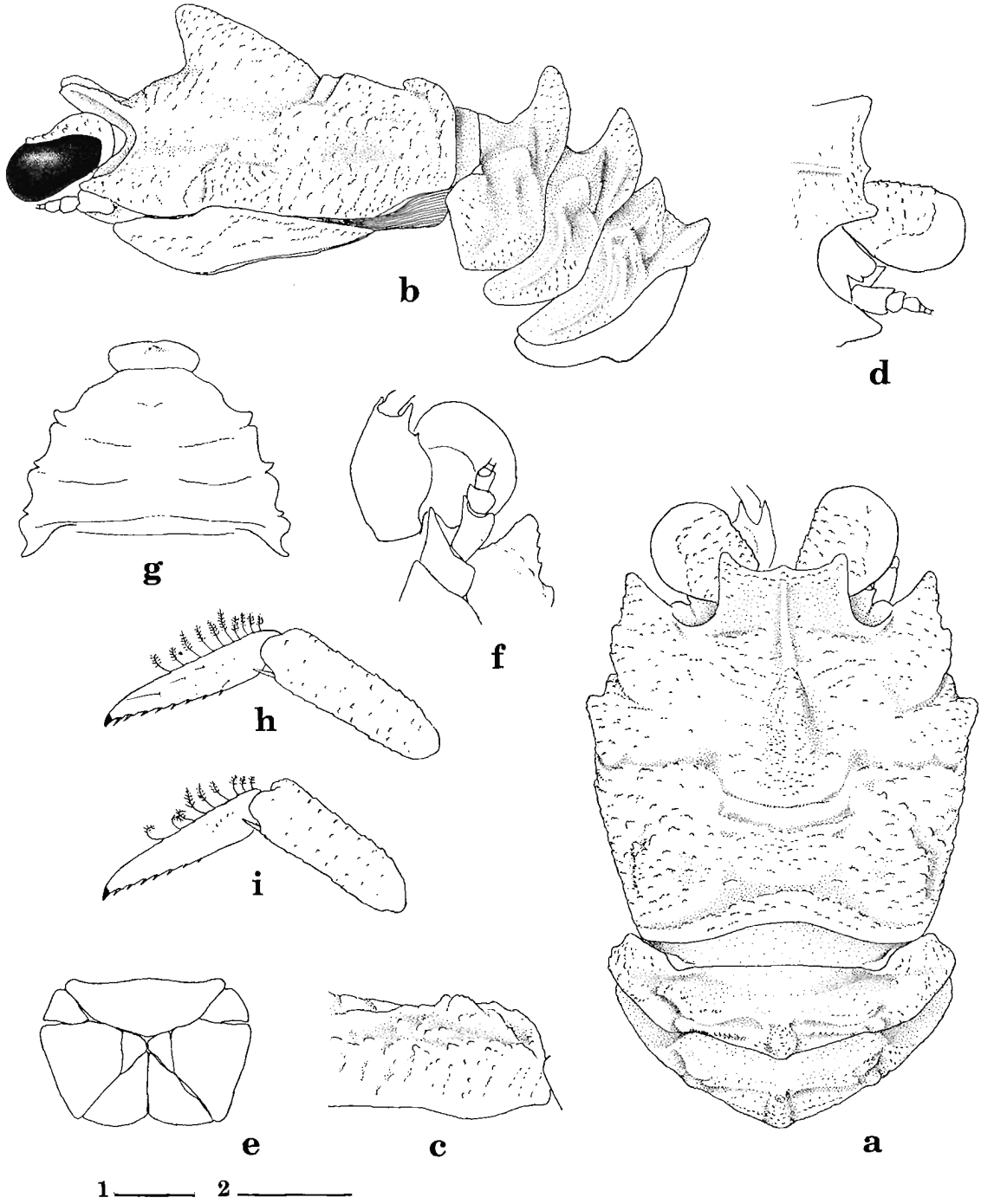

FIG. 23. — *Heteronida aspinirostris* (Khodkina, 1981), male 3.7 mm (MNHN-Ga 3624) from CHALCAL 2, Stn CP 21 : **a**, carapace and abdomen, dorsal; **b**, same (posterior part omitted), lateral; **c**, branchial region of carapace, lateral; **d**, anterior part of carapace, showing rostrum and orbit, dorsolateral; **e**, telson; **f**, anterior part of cephalothorax, showing antennule and antennal peduncle, ventral; **g**, sternal plastron; **h**, left first walking leg, distal segments, lateral; **i**, left second walking leg, same.

Scales = mm; scale 1 for a, b, d, f; scale 2 for c, e, g–i.

SIZES. — Males, 2.6–3.7 mm; females, 2.5–4.2 mm (ovigerous females from 2.9 mm).

RANGE. — New Caledonia, Loyalty Islands, Vanuatu, Chesterfield Islands, and Norfolk Ridge; 345–930 m.

Heteronida barunae sp. nov.

Figs 3 f, 24

MATERIAL EXAMINED. — **Indonesia**. *Kei Islands*. KARUBAR : stn DW 13, 05°26'S, 132°38'E, 417–425 m, 24 Oct 1991 : 1 ovig. ♀ 2.7 mm (MNHN-Ga 3639). — Stn DW 18, 05°18'S, 133°01'E, 205–212 m, 24 Oct. 1991 : 1 ♂ 2.8 mm (MNMH Ga 3640), 2 ♂ 2.2, 2.6 mm, 1 ovig. ♀ 2.7 mm (MNHN-Ga 3641).

TYPES. — One of the males from KARUBAR, Stn DW 18 (MNHN-Ga 3640) has been selected as the holotype, and the remaining specimens are paratypes.

ETYMOLOGY. — Named for the R/V *"Baruna Jaya I"*, by which the material was collected.

DIAGNOSIS. — Carapace with slightly granulate dorsal surface, without elevation on branchial region. Rostrum narrowed anteriorly, somewhat elevated laterally, dorsally without ridge in midline. Epigastric spines rudimentary, papilla-like, flanking anterior median ridge, never extending anteriorly onto rostrum. Third and fourth thoracic sternites not strongly depressed. Pereopods moderately granulose. Abdomen with weak sculpturing, especially on fourth tergite, without median processes. Chelipeds 4.9 (male) or 2.3 (female) times as long as postorbital carapace length. Dactyli of walking legs relatively slender, flexor margin with 6 spines, ultimate one distant (about at point 1/5) from distal end.

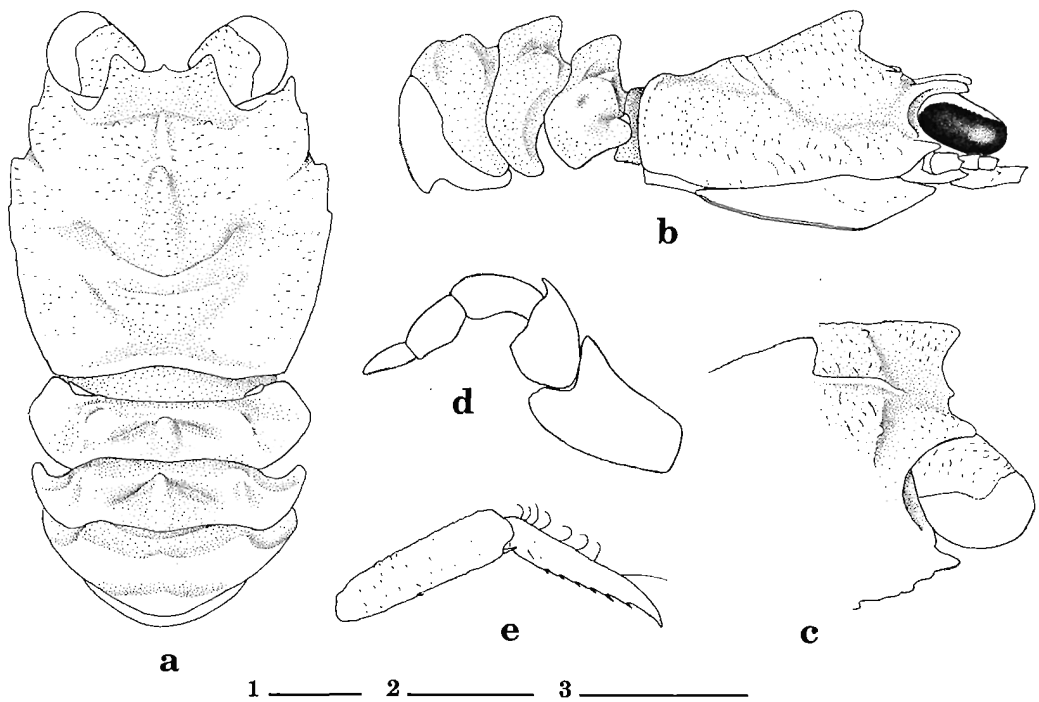

FIG. 24. — *Heteronida barunae* sp. nov., male holotype (MHNH Ga 3640) from KARUBAR, Stn DW 10 : **a**, carapace and abdomen, dorsal; **b**, same (posterior part of abdomen omitted), lateral; **c**, anterior part of carapace, showing rostrum, dorsolateral; **d**, endopod of left third maxilliped, setae omitted, lateral; **e**, distal segments of right first walking leg, lateral.

Scales = 1 mm; scale 1 for a, b; scale 2 for c, e; scale 3 for d.

COLOR (in alcohol). — Reddish on fingers of chelipeds, median third of propodus and proximal portion of merus of walking legs (KARUBAR, Stn DW 13).

REMARKS. — The following characters displayed by the present material seem to differ from those of the preceding species : the carapace is generally much weaker in striation, nearly smooth on the branchial region without elevation, and the rostrum is much narrower anteriorly without a middorsal ridge; the abdominal segments are less strongly sculptured, especially the fourth tergite; the dactyli of the walking legs are much more slender, with the ultimate one of the flexor marginal spines apparently more distant from the distal end; and the color pattern (though in alcohol) is different from that (from a transparency) of the preceding species. In addition, there is a clear geographical isolation between the two species.

SIZE. — Males, 2.2–2.8 mm; ovigerous females, 2.7 mm.

RANGE. — Indonesia, Kei Islands ; 205–425 m.

Genus ***NEONIDA*** nov.

DIAGNOSIS. — Carapace with numerous transverse ridges interspersed irregularly by small tubercles, bearing prominent cristiform gastric and cardiac processes, epigastric spines absent. Rostral spine stout, not sharply elevated dorsally, supraocular spines somewhat close to rostrum and very small. Sternites with a few ridges, fourth thoracic sternite having anterior margin nearly straight transverse. Abdominal tergites strigose, with 2 elevated ridges, anterior ridge strongly elevated, bearing 2 well-developed submedian spines on second to fourth tergites, tubercle-like lateral spine on second and third tergites, no lateral on fourth; posterior ridge with median spine on fourth tergite; sixth segment in male without expansion on ventral surface of pleura. Telsonal subdivision incomplete. Ocular peduncles depressed, with dilated cornea. Basal antennular segment with 2 distolateral spines. Antennal peduncles movable at base, distomesial angle of first segment slightly produced, without anterior prolongation, third segment relatively wide, width fully 2/3 that of second segment. Ischium of third maxilliped with distal spine on flexor margin; merus short, bearing submedian spine on flexor margin and distal spine on extensor margin. Chelipeds short, stout, covered with elevated, scale-like ridges. Dactyli of walking legs curving, flexor margin with a few spine-like setae. Fifth pereopods with brush of plumose setae on flexor face of chela, movable finger of male lacking barb-like process.

The genus contains a single species.

TYPE-SPECIES. — *Neonida grandis* sp. nov., by present designation and monotypy.

ETYMOLOGY. — From the Greek *neos* (new), plus the last syllables of *Munida*. Gender : feminine.

REMARKS. — At first glance, the sole male specimen available to us looks much like species of *Onconida* (see below) which have the carapace with numerous striae and a strong hump-like process on the gastric region, the short and stout chelipeds, and the stout rostral process rather close to short supraocular spines. However, it may be differentiated from that genus by the following particulars : 1) the strong median spine on the elevated cardiac region; 2) absence of median crest on the rostrum; 3) striae on the dorsal surface of the carapace interspersed with tubercles; 4) second to fourth abdominal tergites with well-developed submedian spines on the anterior ridge; 5) the distomesial process of the antennal segment reduced to a small spine; 6) the propodus of the fifth pereopod lacking a barb-like spine on the movable finger.

The new genus also resembles *Bathymunida* in the ornamentation of the carapace and abdomen, and the shape of the third maxillipeds and antennal peduncles. It is separated from that genus by the shape of both the rostrum and the gastric process of the carapace, the much shorter, thicker male chelipeds, and the absence of epigastric spines and of ribbon-like setae on the dactylus of the male fifth pereopod.

The stout rostral spine close to small supraocular spines, the two distolateral spines on the antennular basal segment, the tuberculate expansion on either side of the ventral surface of the sixth abdominal segment, and the

shape of both the antennal peduncle and third maxilliped, link this genus to *Anoplonida* (see above). The latter, however, is characterized by the carapace lacking dorsal spines, the fourth thoracic sternite deeply concave on the anterior margin, the very long male chelipeds, and the fifth pereopods lacking a brush of plumose setae on the chela.

Neonida grandis sp. nov.

Figs 3 g-h, 25, 34 a

MATERIAL EXAMINED. — **New Caledonia**. MUSORSTOM 8 : stn CP 1107, 15°05.64'S, 167°15.31'E, 397–402 m, 7 Oct. 1994 : 1 ♂ 7.0 mm, holotype (MNHN-Ga 3771).

ETYMOLOGY. — From the Latin *grandis* (great), suggesting that the species is rather large among those species which bear a brush of plumose setae on the chela of the fifth pereopod.

DESCRIPTION. — Carapace, excluding rostrum, somewhat wider than long; dorsal surface convex, transverse ridges as figured, interspersed with small tubercles; cervical groove distinct, its dorsal midpoint distinctly posterior to midlength of postorbital carapace length; in profile, gastric region anteriorly lowered, posterior half with prominent process in midline almost cristiform and posteriorly lowered, anterior end straight, vertical; cardiac region with anteriorly elevated, cristate process in midline, posteriorly flanked by tubercular process. Lateral margins with weak constriction at ends of anterior bifurcation of cervical groove. Anterolateral spines well developed and stout, directed straight forward, overreaching supraocular spines, each followed by small blunt process in front of anterior cervical groove, another blunt small spine at end of cervical groove, but no other spinulation.

Rostral spine stout, reaching end of cornea, length slightly more than that of rest of rostrum, straight and nearly horizontal, dorsally somewhat convex, with successive, apposed, oblique ridges. Supraocular spines very small and close to base of rostral spine.

Sternal plastron as illustrated; almost glabrous, ventrally with a few lateral striae other than distinct bordering ridges. Fourth thoracic sternite transversely contiguous with preceding sternite.

Transverse ridges on abdominal segments as illustrated; pair of distinct submedian spines on anterior ridge of second to fourth tergites and small a tubercle-like lateral spine on second and third, absent on fourth; posterior ridge of fourth segment with median spine. No lateral expansion on ventral surface of pleura of sixth segment.

Eyes dilated, depressed, with eyelashes not reaching end of cornea.

Basal segment of antennule relatively wide, dorsoventrally depressed, distolateral margin with 2 spines (one above the other), distomesial spine very small. First segment of antennal peduncle slightly produced on ventral distomesial margin, second segment barely 1.5 times as long as wide, bearing distomesial and distolateral spines, both with blunt tip, third segment relatively wide, width distinctly more than half that of second segment.

Ischium of third maxilliped elongate, with stout distal spine on flexor margin; merus short, flexor margin with moderate-sized submedian spine, extensor margin with small distal spine.

Chelipeds similar, 2.4 times as long as carapace excluding rostrum, dorsally and ventrally bearing scale-like elevated ridges. Merus as wide as carpus, but much wider than chela (distal 2 segments), mesially armed with 2 spines (well-developed distal and smaller subdistal), dorsally unarmed, laterally with distal spine. Carpus slightly less than 1.5 times as long as wide, mesial margin with 2 spines, distal one terminal, proximal one at midlength. Propodus narrower than carpus, barely twice as long as wide, mesial margin convex, with 3 spines on proximal 2/3. Fingers 0.8 times as long as palm, not gaping, distally curved and crossed.

Walking legs relatively stout, covered with small, scale-like ridges. Meri similar, but diminishing in size posteriorly; extensor margin ending in prominent spine preceded by a line of short spines of irregular size, distinct on first pair, indistinct on second and third; flexor margin also with prominent distal spine, but smaller than extensor distal marginal one. Carpi with extensor margin ending in strong spine, preceded by a few obsolescent spines. Propodi 4.5 times as long as wide, slightly longer than dactylus, flexor margin with slender distal spine. Dactyli curved as figured, extensor margin with relatively long, coarse setae on distal half, flexor margin with 4 spine-like

setae on proximal half, smooth on distal half. First walking leg nearly reaching end of propodus (excluding fixed finger) of cheliped.

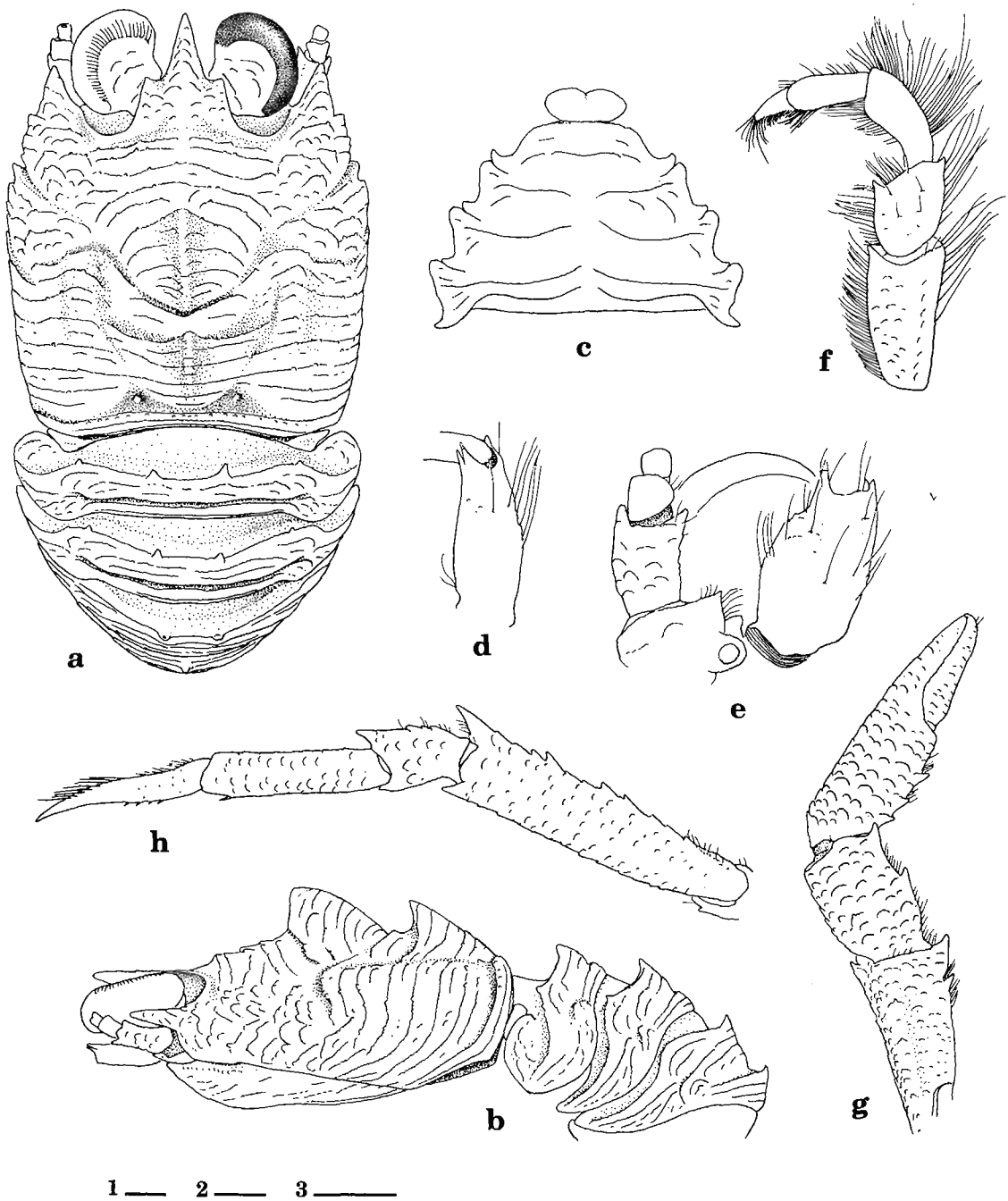

FIG. 25. — *Neonida grandis* sp. nov., male holotype (MNHN-Ga 3771) from MUSORSTOM 8, Stn CP 1107 : **a**, carapace and abdomen, dorsal; **b**, same, posterior part of abdomen omitted, lateral; **c**, sternal plastron; **d**, basal segment of right antennule, lateral; **e**, anterior part of cephalothorax, showing antennule and antenna, ventral; **f**, endopod of left third maxilliped, lateral; **g**, left cheliped, dorsal; **h**, left first walking leg, lateral.

Scales = 1 mm; scale 1 for a, b, g; scale 2 for c, h; scale 3 for e–f.

COLOR. — Ground color pale orange. Carapace reddish, somewhat darker on posterior half (behind level of gastric process, including anterior branchial region), pale or whitish transversely on epigastric region. Abdomen reddish on anterior half, deeply so submedially (lateral to level of submedian spines on second to fourth segments), pale on posterior half including telson. Chelipeds with reddish flecks of moderate size. Walking legs reddish on meri and carpi, pale on propodi and dactyli (Fig. 34a).

REMARKS. — After the specimen was illustrated, part of the carapace (around the gastric process) was accidentally damaged.

RANGE. — New Caledonia; depth between 397 and 402 m.

Genus *ONCONIDA* nov.

DIAGNOSIS. — Carapace with distinctly granulate transverse ridges, armed with 1 median gastric process and pair of small epigastric spines on dorsal surface. Anterolateral angle of carapace strongly produced. Postcervical spine on each side small or obsolescent. Rostrum with small supraocular spines, more or less close to well-developed rostral spines, proximally wide and distally blunt. Fourth thoracic sternite with narrow anterior margin. Abdomen unarmed on second, often on third tergites, sixth segment in male without expansion on ventral surface of pleura. Telson with distinct subdivision. Eyes strongly dilated and depressed. Antennular basal segment with 2 (distomesial and distolateral) spines only. First segment of antennal peduncle with very long distomesial spine,second segment relatively slender, third and fourth segments much more so (width about half that of second segment), antennal flagellum short, terminating at most opposite end of antennular flagellum. Third maxillipeds having 3 distal segments reduced in size; ischium strongly produced on flexor distal margin, ending in small spine; merus relatively long, without spine on extensor distal margin, flexor margin convex, with submedian spine small or obsolete. Chelipeds relatively short and stout, surface scale-like; somewhat longer in male than in female. Meri of walking legs with sharply-keeled extensor margin; dactyli with 4–8 flexor marginal spines at least on first pair. Fifth pereopods with brush of soft plumose setae on extensor face of chela; movable finger in male bearing barb-like, proximally-directed spine on distal portion.

TYPE-SPECIES. — *Onconida alaini* sp. nov., by present designation.

ETYMOLOGY. — From the Greek *onkos* (barb), alluding to the barb-like spine on the dactylus of the fifth pereopod, plus the last syllables of *Munida*. Gender : feminine.

REMARKS. — The stout rostral process seems to link this genus to *Anoplonida*, but their relationships are rather distant. *Onconida* is distinctive in that the antenna bears a very reduced flagellum and an elongated distomesial spine on the first segment, the fourth thoracic sternite is narrowly convex on the anterior margin, the sixth abdominal segment of the male that has no expansion on the ventral surface of pleura, the merus of the third maxilliped has no distinct distal spine on the extensor margin, the chelipeds are short and stout even in grown males, and the fifth pereopods bear a brush of plumose setae on the chela.

The distinct median gastric process, and the antennal peduncles bearing a short flagellum and small distal segments, are also possessed by *Heteronida*, from which *Onconida* is readily distinguished by the shape of the rostrum. More details concerning their relationships are discussed under "Remarks" for *Heteronida* (see above).

The absence of G1 in the male and the characteristic shape of the antennae, having the first segment with a prominent distomesial spine and the second segment relatively slender, show that the new genus approaches *Paramunida*. However, *Paramunida* has the carapace usually covered with small spines, without distinct transverse ridges, the abdomen bearing spines regularly on the second, third and fourth tergites, the third maxillipeds bearing a well-developed flexor marginal spine on the merus, and the subdivision of the telson obscured posteriorly. Moreover, the fifth pereopods bear a brush of plumose setae on the flexor face of the chela in *Onconida*, as well as in *Bathymunida*, *Heteronida* and *Plesionida* (see below), while it is replaced by longer, coarser setae in *Paramunida*.

All the male specimens of *Onconida* examined have a barb-like, proximally directed spine near the distal end of the movable finger of the fifth pereopods. This spine is absent in females, and in both sexes in all other related genera. Although it is not confirmed in one of the four species here described (*O. tropis*), which is represented only by two females, this feature is here considered to be a generic character.

It is worth noting that all species belonging to this genus have a red spot on the distal portion of the merus, or the juncture between the merus and carpus of the cheliped.

The genus contains five species.

Key to species of *Onconida*

1. Carapace in fully grown specimens with widely separated transverse ridges; rostral spine with 2 uninterrupted longitudinal ridges dorsally ..... ***O. prostrata*** sp. nov.
— Carapace in fully grown specimens with numerous transverse ridges; rostral spine with 2 longitudinal rows of successive oblique scale-like ridges dorsally **2**

2. Fourth abdominal tergite unarmed ..... ***O. tropis*** sp. nov.
— Fourth abdominal tergite with pair of submedian spines **3**

3. Gastric process low, height less than 1/5 that of carapace (measured in lateral view between dorsal surface and linea anomurica); distolateral spine of 2nd segment of antennal peduncle strong, reaching end of 3rd segment ..... ***O. modica*** sp. nov.
— Gastric process relatively high, more than 1/4 as high as carapace; distolateral spine of 2nd segment of antennal peduncle small, not overreaching midlength of 3rd segment **4**

4. Gastric process very high, anteriorly produced; dactyli of walking legs with few (usually 4) spine-like setae on flexor margin ..... ***O. alaini*** sp. nov.
— Gastric process moderately high, with anterior extremity straight, vertical in profile; dactyli of walking legs with 7–8 (usually 8) spine-like setae on flexor margin ..... ***O. gemini*** sp. nov.

Onconida alaini sp. nov.

Figs 4 a–c, 26, 33 a-b

MATERIAL EXAMINED. — **Loyalty Islands**. BIOCAL : stn DW 08, 20°34.35'S, 166°53.90'E, 435 m, 12 Aug. 1985 : 1 ♂ 3.8 mm, 1 ovig. ♀ 5.7 mm (MNHN-Ga 3595).

MUSORSTOM 6 : stn DW 459, 21°01.39'S, 167°31.47'E, 425 m, 20 Feb. 1989 : 1 ♀ 5.3 mm (MNHN-Ga 3596). — Stn CP 464, 21°02.30'S, 167°31.60'E, 430 m, 21 Feb. 1989 : 1 ♂ 5.7 mm, 1 ovig. ♀ 5.8 mm (MNHN-Ga 3597). — Stn CP 467, 21°05.13'S, 167°32.11'E, 575 m, 21 Feb. 1989 : 2 ovig. ♀ 6.5, 6.8 mm (MNHN-Ga 3599). — Stn DW 487, 21°23.30'S, 167°46.40'E, 500 m, 23 Feb. 1989 : 1 ♂ 5.7 mm (MNHN-Ga 3600).

New Caledonia. MUSORSTOM 4 : stn CP 180, 18°56.8'S, 163°17.7'E, 440 m, 18 Sept. 1985 : 1 ovig. ♀ 5.7 mm (MNHN-Ga 3601).

BIOCAL : stn DW 77, 22°15.32'S, 167°15.40'E, 440 m, 5 Sept. 1985 : 2 ♂ 3.1, 5.4 mm (MNHN-Ga 3602).

BATHUS 2 : CP 736, 23°03'S, 166°58'E, 452–464 m, 13 May 1993 : 1 ♂ 5.0 mm, 1 ♀ 5.5 mm, 2 ♀ 5.3, 6.5 mm (MNHN-Ga 3786).

DRAGAGES *"Vauban"* : Sud Pointe Grand Récif , 200 m, 5 Nov. 1976 : 1 ♂ 5.7 mm (MNHN-Ga 3772).

Chesterfield Islands. CORAIL 2 : stn DE 16, 20°47.75'S, 160°55.87'E, 500 m, 21 Jul. 1988 : 1 ♂ 4.2 mm (MNHN-Ga 3603).

TYPES. — The ovigerous female from MUSORSTOM 4, Stn CP 180 (MNHN-Ga 3601) has been selected as the holotype; the remaining specimens are paratypes.

ETYMOLOGY. — Named for Alain CROSNIER of ORSTOM, who has made herculean efforts for MUSORSTOM projects and who supported our study.

DIAGNOSIS. — Carapace with numerous, granulate, transverse ridges. Gastric process well elevated, anteriorly rounded and produced in profile. Rostral spine dorsally with 2 longitudinal rows of successive, oblique, scale-like ridges. Abdomen with at least 6 transverse ridges on second, third and fourth tergites; third tergite occasionally with pair of papilla-like processes on anterior ridge; fourth tergite with 2 submedian spines on anterior ridge. First segment of antennal peduncles with distomesial spine reaching or overreaching end of antennular basal segment (spines excluded), second segment having distolateral spine short, ending at midlength of third segment. Dactyli of walking legs moderately curving, flexor margin with 4–7 (usually 4) spine-like setae, last at least 1/3 from tip.

DESCRIPTION. — Carapace 1.3 times as wide as long, dorsal surface with numerous, finely granulate, transverse ridges as figured; cervical groove not clear medially but discernible laterally, its dorsal midpoint somewhat posterior to midlength of postorbital carapace length. Striations as figured, all striae clear, but not distinctly elevated, mostly interrupted. Median gastric process high, keel-like, dorsally somewhat rounded, anteriorly produced and rounded in profile; epigastric spines small, situated behind supraocular spines. Cardiac region, in profile, nearly continuous with gastric region, without distinct depression, laterally delimited by posteriorly convergent groove. Branchial regions near cardio-branchial boundary with small spines (postcervical), followed by posteriorly diminishing longitudinal elevation. Lateral margins convex medially. Anterolateral processes stout, slightly or distinctly overreaching supraocular spines, no spine in front of cervical incision; branchial lateral margins behind cervical groove with 4 or 5 (mostly 4) small spines.

Rostrum slightly narrowed anteriorly, dorsal surface somewhat depressed medially and proximally. Rostral spine barely reaching end of cornea, strongly directed upward, narrowly subtriangular in dorsal view, laterally ridged, distally rounded in both dorsal and lateral views; dorsal surface with 2 longitudinal rows of several successive, oblique, scale-like ridges; length slightly more than that of rostrum, less than 1/5 that of carapace; width 1/4 that of carapace. Supraocular spines small and very short.

Sternal plastron as illustrated; third thoracic sternite 2.5–2.6 times as wide as long, anterior margin with 2 lobes, lateral margins subparallel; greatest width measured on seventh sternite, 3.5–3.6 times width of third thoracic sternite. Fourth thoracic sternite short relative to width, anterior margin narrow and straight transverse.

Abdominal tergites with numerous transverse ridges; second and third tergites each with 6 ridges, anterior (first) and median (fourth) ridges more elevated, preceded by groove; anterior ridge of third tergite unarmed, but rarely with pair of papilla-like median processes; that of fourth tergite with pair of spines. Telson divided into 12 distinct platelets.

Eyes dilated and depressed dorsoventrally, eyelashes long, but falling short of end of cornea in dorsal view.

Basal segment of antennule with small mesial and well-developed, stout, lateral spines. Antennal peduncles having first segment with strong distomesial spine usually reaching or overreaching end of antennular basal segment (distal spines excluded), laterally fringed with long setae, second segment twice as long as wide, somewhat curved mesially, laterally with short, blunt, distal spine terminating at most in midlength of third segment, mesially with very small distal spine, third and fourth segments half as wide as second segment, flagellum terminating opposite end of antennular flagellum, consisting of about 20 segments.

Third maxillipeds with long setae. Ischium elongate, distinctly longer than merus, flexor margin with moderate-sized process at distal end. Merus relatively elongate, distally narrowed, length (in midlateral line) 1.7 times greatest width measured at proximal third, flexor margin with very small spine (occasionally absent) at proximal third.

Chelipeds 2.4–2.9 (in male) or 2.4–2.6 (in female) times as long as carapace, somewhat longer in males with carapace more than 5.0 mm long; relatively massive, covered with distinct scale-like ridges. Merus short, about 3/5 length of palm, narrower than carpus, strongly ridged dorsally in midline, nearly triangular in cross section at midlength, terminally armed with 3 spines. Carpus as wide as long or slightly longer than wide; wider and more strongly expanded than palm; mesial margin ridged, with a few small spines (often reduced). Palm unarmed, somewhat longer than carpus, about 1.5 times as long as wide, mesial and lateral margins subparallel. Fingers slightly longer than palm, distally crossing by incurved terminal claws; opposable margins slightly curving, fitting to each other when closed.

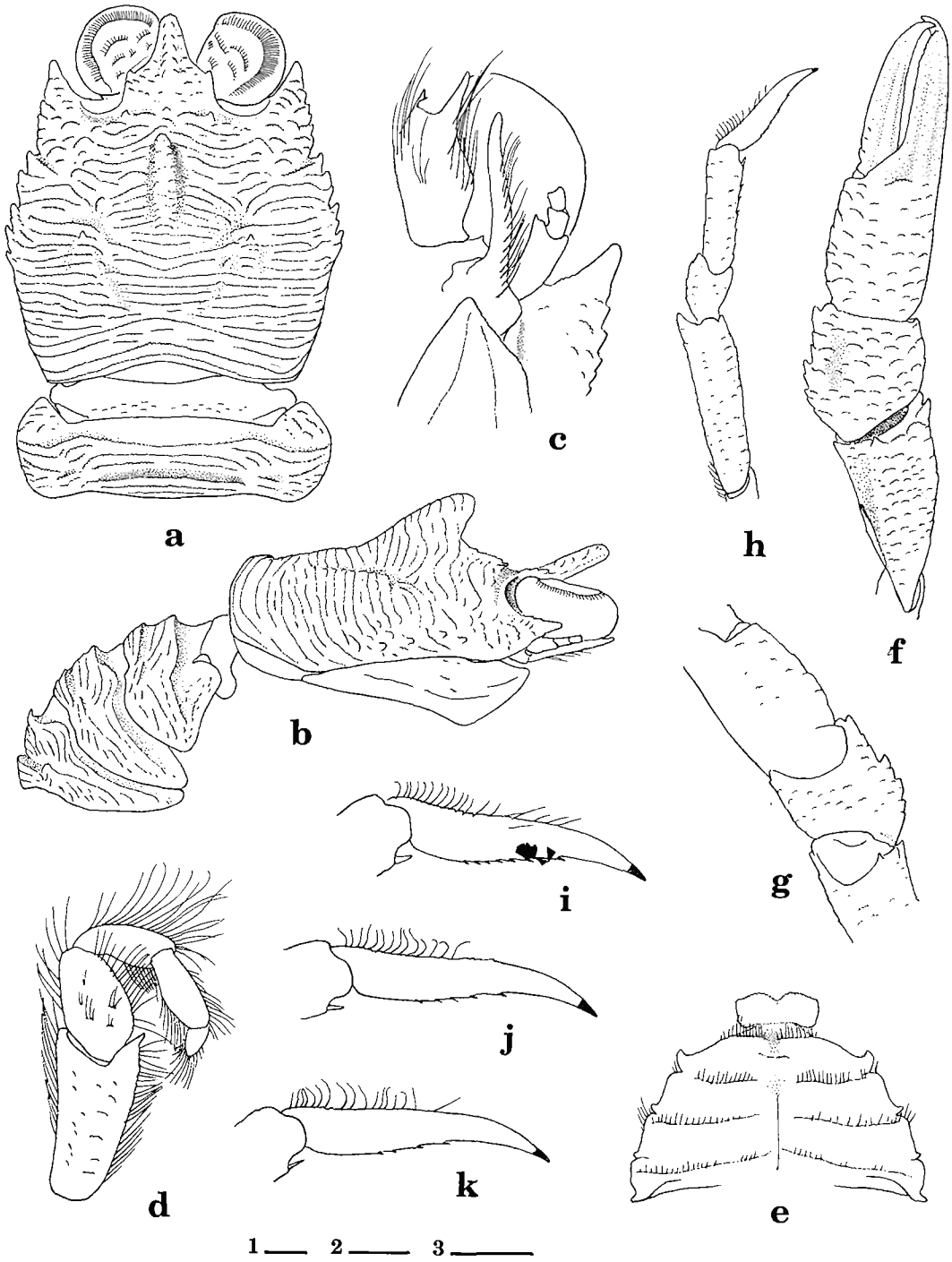

FIG. 26. — *Onconida alaini* sp. nov., ovigerous female holotype (MNHN-Ga 3601) from MUSORSTOM 4, Stn CP 180 : **a**, carapace and anterior part of abdominal segments, dorsal; **b**, same, lateral; **c**, anterior part of cephalothorax, showing antennule and antennal peduncle, ventral; **d**, endopod of right third maxilliped, lateral; **e**, sternal plastron; **f**, right cheliped, dorsal; **g**, palm, carpus and distal part of merus of same, ventral; **h**, right first walking leg, lateral; **i**, dactylus, right first walking leg, lateral; **j**, same, right second walking leg; **k**, same, right third walking leg.
Scales = 1 mm; scale 1 for a, b, f–h; scale 2 for e; scale 3 for c, d, i.

Walking legs compressed, with tuberculate scale-like ridges especially numerous on meri; first walking leg barely reaching end of palm of cheliped, 2.2 times as long as carapace. Meri diminishing in length posteriorly, dorsolateral face flattish, extensor margin knife-edged, distally with prominent, but blunt process, flexor margin with distal spine sharper and smaller than that of extensor margin. Carpal extensor margins with distal spine often obsolete. Propodi nearly as long as dactyli, flexor margin with distinct, slender, terminal spine and 5–7 smaller rather obsolescent spines on third walking leg. Dactyli relatively sharp, distally curved, flexor margin with 4–7 (usually 4) spine-like movable setae on first leg, 3-4 on second and third, distal one situated about at point 1/3 from distal end on first walking leg, much more remote on second and third walking legs.

Fifth pereopods with brush of plumose setae on flexor face of chela; in male, chela very setose distally (with plumose setae on extensor face, long non-plumose setae marginally), movable finger with prominent barb-like spine near distal end; in female, chela less setose, without spine on movable finger.

COLOR. — Carapace and abdomen orange with reddish transverse ridges, gastric process anteriorly whitish, cardiac region bordered by lighter color, fourth and fifth abdominal segments orange-red in male, orange in female, sixth segment whitish, tailfan transparent. Chelipeds whitish on fingers, orange or light purple-orange elsewhere, merus and palm distally reddish; border of color between fixed finger and palm oblique (Fig. 33a-b).

REMARKS. — In the smallest, probably immature male (MNHN-Ga 3602), the striae on the carapace and abdomen are less numerous and less granulate than in the mature specimens, the chelipeds are almost smooth, without scale-like ridges, and the distomesial spine of the first segment of the antennal peduncle terminates in the midlength of the basal antennular segment, but the spination of the carapace (gastric process, epigastric and postcervical spines) and abdomen (on the fourth tergite) is distinct.

The relationships with the other species are discussed under the "Remarks" of each species that follows (see below).

SIZE. — Males, 3.1–5.7 mm; females, 5.3–6.8 mm (ovigerous females from 5.5 mm).

RANGE. — New Caledonia, Chesterfield Islands, and Loyalty Islands; 200–575 m.

Onconida modica sp. nov.

Figs 27, 33 c-d

MATERIAL EXAMINED. — **Wallis Island (SW Pacific)**. MUSORSTOM 7 : stn CP 606, 13°21'S, 176°08'W, 420–430 m, 26 May 1992 : 1 ovig. ♀ 6.0 mm (holotype, MNHN-Ga 3605), 1 ovig. ♀ 5.9 mm (MNHN-Ga 3606).

Waterwitch Bank (SW Pacific). MUSORSTOM 7 : stn 537, 12°30'S, 176°41'W, 325–400 m, 16 May 1992 : 1 ♂ 6.5 mm (MNHN-Ga 3607).

TYPES. — The larger of the ovigerous females from MUSORSTOM 7, Stn CP 606 (MNHN-Ga 3605) has been selected as the holotype, and the other specimens are paratypes.

ETYMOLOGY. — From the Latin *modicus* (moderate, medium), in reference to the moderate size of the gastric process.

DIAGNOSIS. — Carapace with numerous, granulate, transverse ridges. Median gastric process low, moderately cristate. Pair of epigastric spines small, postcervical spines obsolescent. Rostral spine dorsally with 2 longitudinal rows of successive, oblique, scale-like ridges. Abdomen with 6–7 transverse ridges on second, third and fourth tergites, anteriormost and median ridges elevated; third tergite unarmed; fourth tergite with 2 submedian spines on anterior ridge, median spine on posterior, elevated ridge usually obsolete. Antennal peduncles having first segment with distomesial spine barely reaching opposite end of antennular basal segment, second segment with prominent distolateral spine reaching end of third segment. Dactyli of walking legs gently curving, flexor margin with 8–9 spine-like setae on first pair, 8–11 on second, 8 on third, distal one about 1/5 from tip.

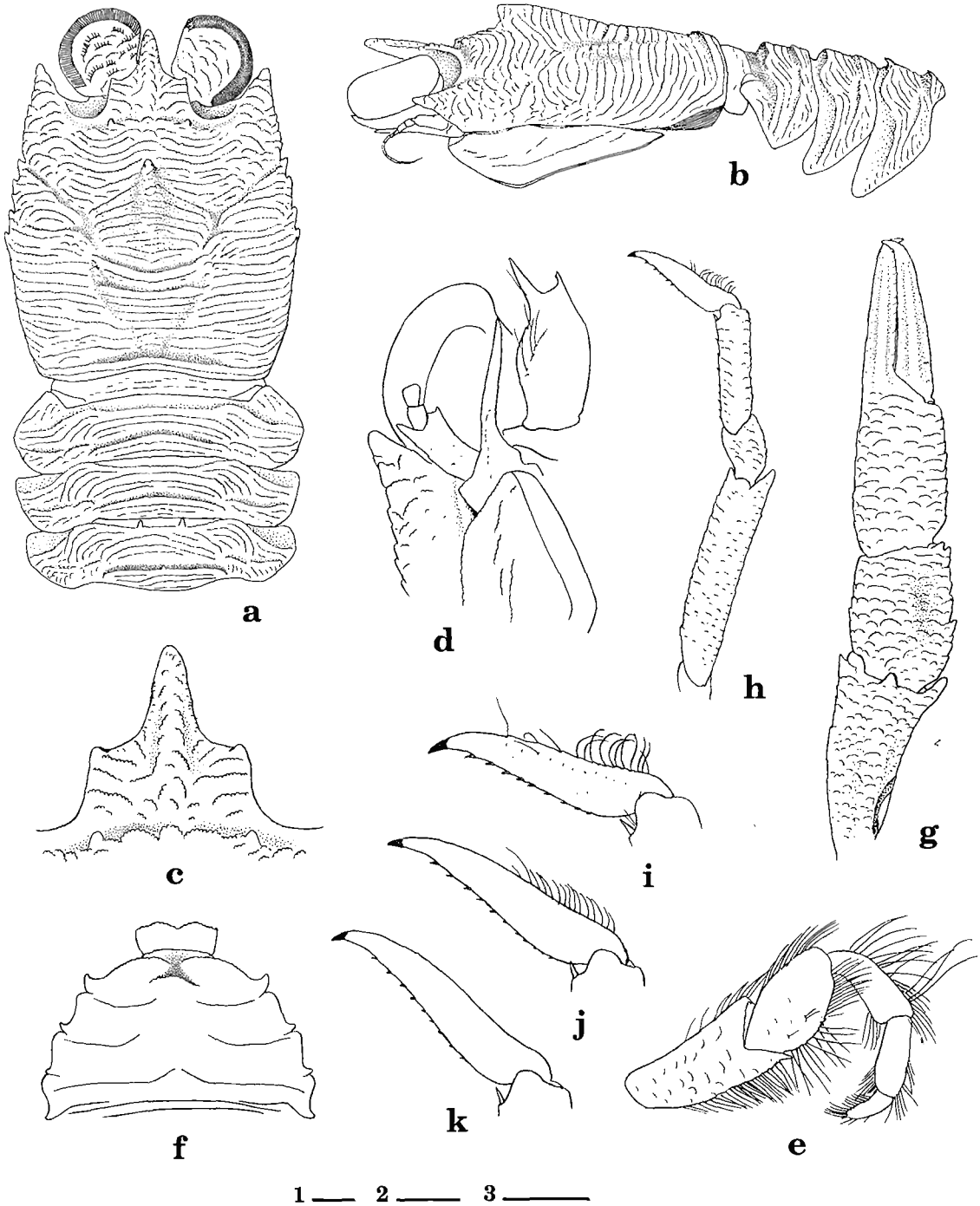

FIG. 27. — *Onconida modica* sp. nov., ovigerous female holotype (MNHN-Ga 3605) from MUSORSTOM 7, Stn CP 606 : **a**, carapace and abdomen (posterior part omitted), dorsal; **b**, same, lateral; **c**, rostrum, dorsal; **d**, anterior part of cephalothorax, showing antennule and antennal peduncle, ventral; **e**, endopod of right third maxilliped, lateral; **f**, sternal plastron; g, left cheliped, dorsal; **h**, left first walking leg, lateral; **i**, dactylus, left first walking leg, lateral; **j**, same, left second walking leg; **k**, same, left third walking leg.

Scales = 1 mm; scale 1 for a, b, g, h; scale 2 for f; scale 3 for c–e, i–k.

COLOR. — Females from MUSORSTOM 7, Stn CP 606 : Carapace light brownish-red or somewhat pale, median portion reddish-brown, abdomen pale orange on second and third segments, paler posteriorly. Chelipeds with whitish fingers, but movable finger proximally orange-red, palm totally orange or brownish-orange, lacking deep colored part on distal portion as seen in *O. alaini*; reddish mark distinct near lateral portion of articulation between carpus and merus. Walking legs pale (Fig. 33c-d).

REMARKS. — The differences between *O. modica* and *O. alaini* are very slight, but they can be discriminated by the following differences : the gastric process of *O. alaini* is well developed, high, and keel-like, whereas that of *O. modica* is low, not keel-like; the distolateral spine of the second segment of the antennal peduncle is strong, reaching the end of the third segment in *O. modica*, but much smaller, terminating in the midlength of the third segment, in *O. alaini;* the ultimate (distalmost) of the flexor marginal spines on the dactylus of the walking legs is situated two-thirds along in *O. alaini*, more distal in *O. modica*. The coloration is also different, especially in the chelipeds : the anterior end of the orange color of the chela is distinctly oblique in *O. alaini*, nearly transverse in *O. modica*.

One of the specimens from MUSORSTOM 7, Stn CP 606 has the rostrum nearly the same as that of *O. tropis* sp. nov. (see below), bearing transverse ridges interrupted only in the middle. The carpus of the cheliped is nearly as long as wide or slightly longer in the females, but in the sole male from MUSORSTOM 7, Stn 537, which is much larger than the females, it is 1.3 times longer than wide. Inasmuch as no other character has been found to discriminate this from the remainder of the material, these discrepancies may be considered a sexual difference, although such a case has not been found in *O. alaini* or *O. prostrata*, described below (male specimens are not available in *O. tropis*).

SIZE. — Male, 6.5 mm; ovigerous females, 5.9–6.0 mm.

RANGE. — Wallis Island (SW Pacific) and Waterwitch Bank (SW Pacific); 325–430 m.

Onconida prostrata sp. nov.

Figs 28, 34 b

MATERIAL EXAMINED. — **Field Bank (SW Pacific)**. MUSORSTOM 7 : stn DW 594, 12°31'S, 174°20'W, 495–505 m, 24 May 1992 : 1 ♂ 6.2 mm, holotype (MNHN-Ga 3608), 1 ♀ 6.3 mm (MNHN-Ga 3609). — Stn DW 597, 12°31'S, 174°19'W, 469–475 m, 24 May 1992 : 1 ♀ 6.3 mm (MNHN-Ga 3610).

TYPES. — The female from MUSORSTOM 7, Stn DW 594 (MNHN-Ga 3608) has been selected as the holotype; the remaining specimens are paratypes.

ETYMOLOGY. — From the Latin *prostratus* (laid low), for the low elevation on the median gastric region.

DIAGNOSIS. — Carapace with distinct, moderately granular, rather sparse transverse ridges. Median gastric process very low, only slightly elevated in profile. Epigastric spines small but distinct, postcervical spines small or obsolete. Rostral spine with 2 longitudinal, uninterrupted, posteriorly divergent ridges fringed with setae. Abdomen with 4 transverse ridges on second and third tergites; fourth tergite with pair of median spines on anterior ridge and another median spine on posterior ridge. Antennal peduncles having first segment with distomesial spine slightly overreaching midlength of antennular basal segment, second segment with prominent distolateral spine reaching end of third segment. Dactyli of walking legs gently curving, flexor margin with 7–9 spine-like setae on first and second pairs, 7 or 8 on third, distalmost about 1/5 from distal end.

DESCRIPTION. — Carapace about 1.1 times as wide as long; dorsal surface with relatively widely separated, elevated, transverse ridges; cervical groove distinct, its dorsal midpoint somewhat posterior to midlength of postorbital carapace length. Gastric region more or less elevated medially, with median process blunt and short; pair of epigastric spines blunt, interspersed with 3 scale-like ridges. Cardiac region, without distinct transverse elevation, indistinctly V-shaped, posteriorly lowered. Postcervical spines small or rudimentary. Lateral margins

moderately convex at about midlength. Anterolateral spines reaching or slightly overreaching supraocular spines; branchial margins behind cervical incision with 4 well-developed spines.

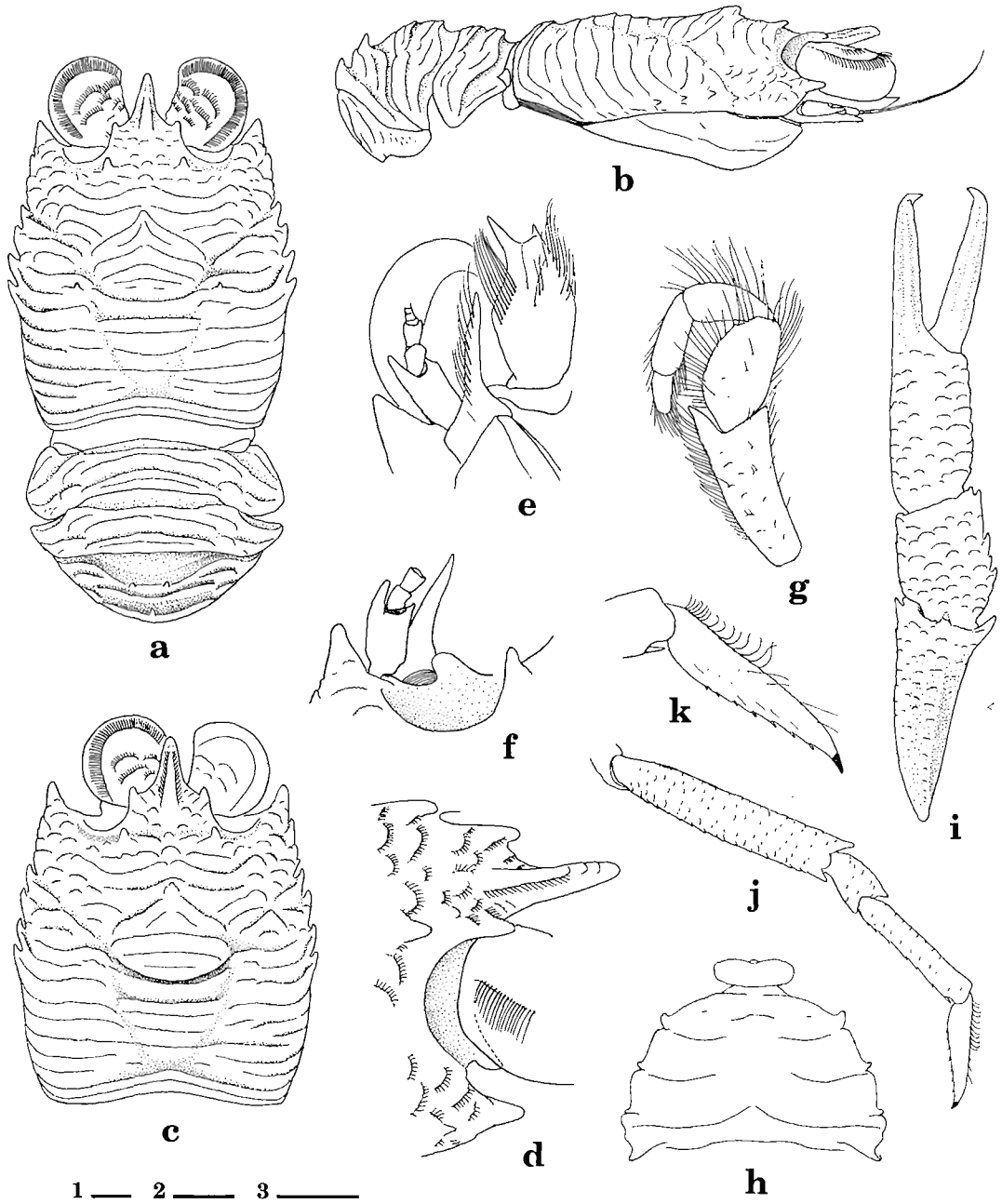

FIG. 28. — *Onconida prostrata* sp. nov.; a, b, e, g, h, j, k, female holotype (MNHN-Ga 3608) from MUSORSTOM 7, Stn DW 594; c, d, f, i, female paratype (MNHN-Ga 3609) from same station : **a**, carapace and abdomen, dorsal; **b**, same (posterior part of abdomen omitted), lateral; **c**, carapace, dorsal; **d**, anterior part of carapace, showing rostrum and orbit, dorsolateral; **e**, anterior part of cephalothorax, showing antennule and antennal peduncle, ventral; **f**, orbit and antennal peduncle, dorsal; **g**, endopod of left third maxilliped, lateral; **h**, sternal plastron; **i**, left cheliped, dorsal; **j**, right first walking leg, lateral; **k**, distal segments of same, lateral.

Scales = 1 mm; scale 1 for a–c, i, j; scale 2 for h; scale 3 for d–g.

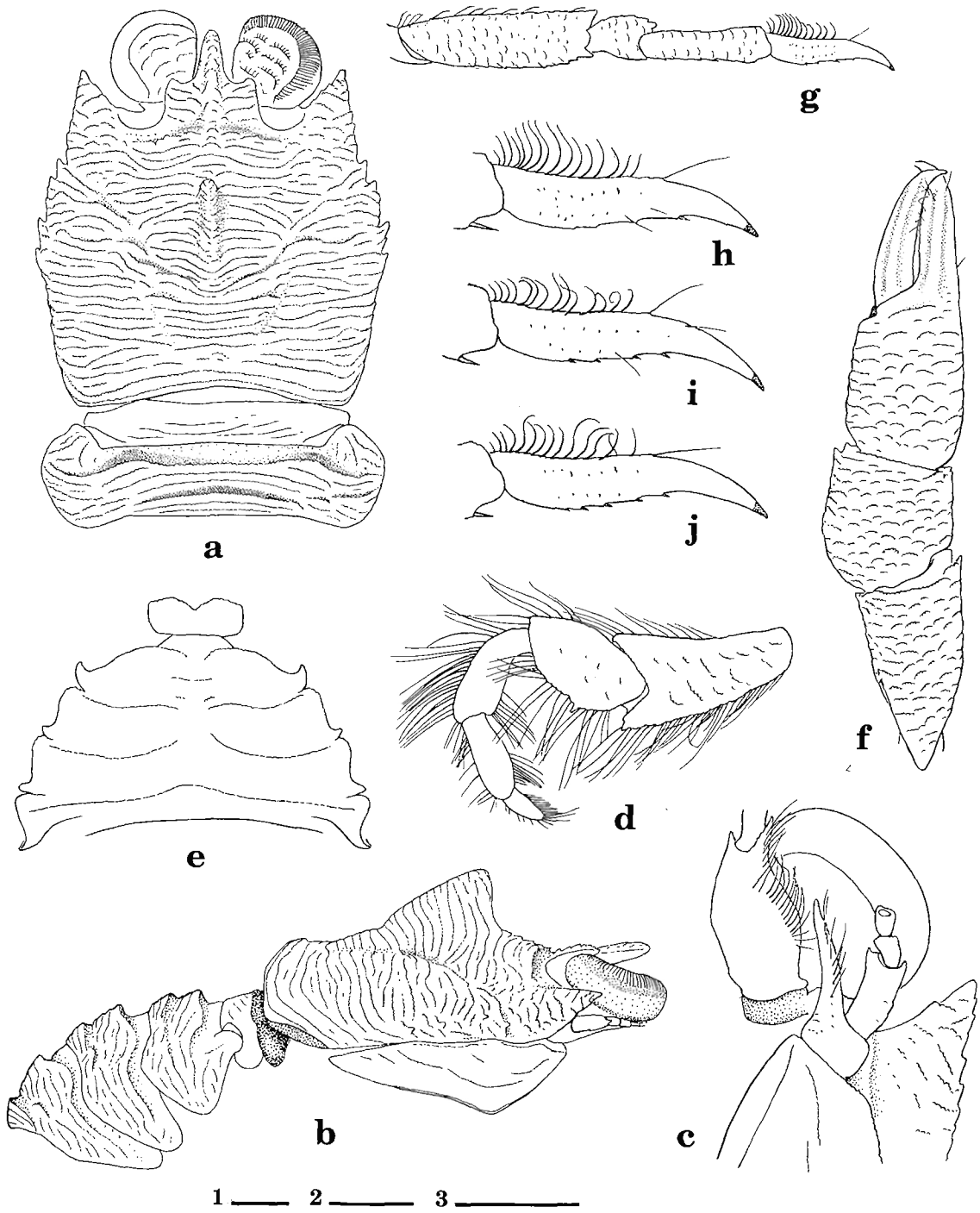

FIG 29. — *Onconida tropis* sp. nov., ovigerous female holotype (MNHN-Ga 3611) from KARUBAR, Stn CP 36 : **a**, carapace and anterior abdominal segments, dorsal; **b**, same, lateral; **c**, anterior part of cephalothorax, showing antennule and antennal peduncle, ventral; **d**, endopod of left third maxilliped, lateral; **e**, sternal plastron; **f**, right cheliped, dorsal; **g**, right first walking leg, lateral; **h**, dactylus, right first walking leg, lateral; **i**, same, right second walking leg; **j**, same, right third walking leg.

Scales = 1 mm; scale 1 for a, b, f, g; scale 2 for e; scale 3 for c, d, h–j.

Rostrum anteriorly narrowed, dorsally somewhat concave, with scale-like ridges, length 0.15 and width 0.25–0.28 times that of carapace. Rostral spine falling short of end of cornea, directed moderately upward, dorsal surface with 2 posteriorly divergent, longitudinal ridges, fringed with setae. Supraocular spines small and very short.

Abdominal tergites with transverse ridges relatively elevated, especially anterior and median (situated in middle) ones, as illustrated; second and third tergites each with 4 ridges; fourth tergite with 3 ridges, anterior (first) ridge with pair of small spines, posterior (third) ridge with median spine of same size.

Telsonal subdivision, eyes, basal segment of antennule, third maxillipeds, sternal plastron more or less as in *O. alaini*.

First segment of antennal peduncle with distomesial spine reaching or slightly overreaching midlength of antennular basal segment; second segment laterally with stout blunt distal spine slightly overreaching end of third segment, mesially with small spine (absent on holotype), flagellum consisting of 18–20 segments.

Chelipeds 2.7 times as long as carapace in female (missing in male); covered with distinct scale-like ridges. Merus relatively short, less than twice length of carpus, middorsally ridged; terminally armed with 3 spines, strong but blunt dorsomesial and middorsal, and smaller, sharper lateral. Carpus distinctly longer than wide (1.3 times), wider than merus and palm, mesial margin ridged, with 4–5 relatively small spines. Palm unarmed, 1.2 times as long as carpus, 1.8 times as long as wide. Fingers slightly longer than palm, not gaping, ending in stout, incurved spine.

Walking legs very much like those of *O. alaini*; differing in having dactyli distally somewhat curved, flexor margin slightly convex, with 7 or 8 spine-like setae, distal one at 1/5 from distal end.

Fifth pereopods as in *O. alaini* sp. nov.

COLOR. — Carapace orange, with pale transverse ridges; abdomen and pereopods pale orange, fingers of chelipeds and dactyli of walking legs white, posterior part of abdomen paler, chelipeds with red spot on distodorsal portion of merus (Fig. 34b).

REMARKS. — The new species keys out in the first couplets of the key to species (see above) by the carapace bearing a very low gastric process and widely separated transverse ridges, and the rostral spine bearing two longitudinal, uninterrupted, posteriorly divergent dorsal ridges fringed with setae. The immature specimen of *O. alaini* (see above) seems to have less numerous transverse ridges on the carapace and abdomen, as in the adult of *O. prostrata*. However, it is easily distinguished from this species by the shape of the gastric process and the striation of the rostrum. In addition, the second segment of the antennal peduncle bears a strong distolateral spine in *O. prostrata*, but a small one in *O. alaini*; the distalmost of the flexor marginal spines on the dactyli of the walking legs is much closer to (about at 1/5 from) the tip in *O. prostrata*, but remote (about 1/3 from the distal end) in *O. alaini*.

SIZE. — Male, 6.2 mm, females, 6.2, 6.3 mm. No ovigerous females have been taken.

RANGE. — Field Bank (SW Pacific); in 469–505 m.

Onconida tropis sp. nov.

Figs 29, 34 c

MATERIAL EXAMINED. — **Indonesia**. *Kei Islands*. KARUBAR : stn CP 36, 06°05'S, 132°44'E, 210–268 m, 27 Oct. 1991 : 1 ovig ♀ 4.7 mm, holotype (MNHN-Ga 3611).

New Caledonia. MUSORSTOM 8 : stn CP 973, 19°21.30'S, 169°27.03'E, 460–480 m, 22 Sept. 1994 : 1 ovig. ♀ 6.2 mm, paratype (MNHN-Ga 3773)

ETYMOLOGY. — From the Latin *tropis* (keel), in reference to the keel-like gastric process.

DIAGNOSIS. — Carapace with numerous, transverse ridges. Median gastric region with high, keel-like process not produced anteriorly, anterior extremity straight, vertical in profile. Epigastric and postcervical spines obsolescent. Rostrum with transverse ridges interrupted medially, rostral spine directed slightly upward, with dorsal

convexity bearing several oblique scale-like ridges. Abdomen unarmed on fourth segment. Distomesial process of first antennal segment ending in midlength, or reaching end of antennular basal segment, second segment with small distolateral spine not overreaching midlength of third segment. Dactyli of walking legs strongly curving, flexor margin with 4–5 (usually 4) spine-like setae, last at 1/3 from tip on first walking leg, more remote (2/5 from tip) on third.

COLOR. — Female from MUSORSTOM 8, Stn CP 973 : Very similar to that of *O. gemini* (see below, Fig. 34d), but more reddish on carapace, abdomen, cheliped, and even first walking legs, particularly propodi and meri. Chelipeds deep red on proximal portions of fingers and on juncture between meri and carpi, remaining portion of fingers orange-red. Walking legs yellowish-orange on proximal portion of meri of second and third pairs, pale on distal half of dactylus (Fig. 34c).

REMARKS. — The ovigerous female from MUSORSTOM 8, Stn CP 973 (MNHN-Ga 3773) is considered conspecific with the holotype of *O. tropis* on the basis of the unarmed fourth abdominal tergite, shape of the gastric process, arrangement of the setae on the flexor margin of the dactylus in walking legs, although differing in the length of the distomesial spine of the first antennal segment, presumably reaching the end of the basal antennular segment (it is broken on both appendages).

This new species is separated from the other four species by the absence of spines on the fourth abdominal tergite.

The shape of the antennal peduncles and walking legs, especially the dactyli, links *O. tropis* to *O. alaini*, but *O. tropis* is distinguished from that species by the straight, vertical in profile, gastric process, and by the reddish body and appendages, as illustrated in Figs 33a-b, 34c. *O. tropis* is separated from *O. modica* by the walking legs bearing the distalmost of the flexor marginal setae on the dactylus at 1/4 or more from the end, the antennal peduncles having the second segment with a small distomesial spine, at most ending in the midlength of the third segment, and the coloration (reddish on the carapace and appendages).

RANGE. — Indonesia, Kei Islands and New Caledonia; 210–480 m.

Onconida gemini sp. nov.

Figs 30, 34 d

MATERIAL EXAMINED. — **Vanuatu**. GEMINI : stn DW 51, 20°58.5'S, 170°03.4'E, 450 m, 4 Jul. 1989 : 1 ovig. ♀ 5.2 mm, holotype (MNHN-Ga 3774), 1 ♂ 3.6 mm, 1 ovig. ♀ 5.3 mm, paratypes (MNHN-Ga 3604).

ETYMOLOGY. — Named after the GEMINI project, by which the material was collected.

DIAGNOSIS. — Carapace with numerous transverse ridges. Gastric process moderately high, anterior extremity straight, vertical in profile. Rostral spine as in *O. alaini*. Abdomen with 6 transverse ridges on second to fourth tergites, fourth tergite with pair of submedian spines. First segment of antennal peduncle with distomesial spine reaching distal end of basal antennular segment, second segment with distolateral spine small, not overreaching midlength of third segment. Dactyli of walking legs with 7–8 spine-like setae on flexor margin, distalmost about 1/4 from distal end on first pair, more remote on second and third.

COLOR. — Female from GEMINI, Stn DW 51 : Carapace orange-red to brownish-red, with deep red gastric process tipped with white. Abdomen also orange-red on second to fourth segments, pale orange on fifth and sixth segments, faded on tailfan. Chelipeds orange-red, more strongly reddish distally about at end of palm and proximal portions of fingers, but remaining portion of fixed finger pale, tinged with red along midline; deep red spots on juncture between merus and carpus. Remaining pereopods slightly paler than abdomen (Fig. 34d).

REMARKS. — The male paratype is regarded to be immature, because of its small size and relatively smooth chelipeds, as seen in the small male specimen of *O. alaini* (see above). In this specimen, the striation of the

carapace and abdominal segments is as in *O. prostrata*, but the gastric process is higher; the distomesial spine of the first antennal segment terminates in the midlength of the basal antennular segment; the flexor marginal setae on the dactyli of the walking legs are fewer (6 in number).

The coloration is very similar in *O. tropis* and *O. gemini* (Fig. 34c-d), but the dactyli of the walking legs of *O. tropis* are pale on the distal half, instead of being uniform light orange-red in *O. gemini*. Morphologically, they can be separated by the number and arrangement of the flexor marginal spines on the dactyli of the walking legs and by the presence or absence of spines on the fourth abdominal tergite. The latter feature also separates *O. tropis* from all the other species.

RANGE. — Vanuatu, Gemini; 450 m.

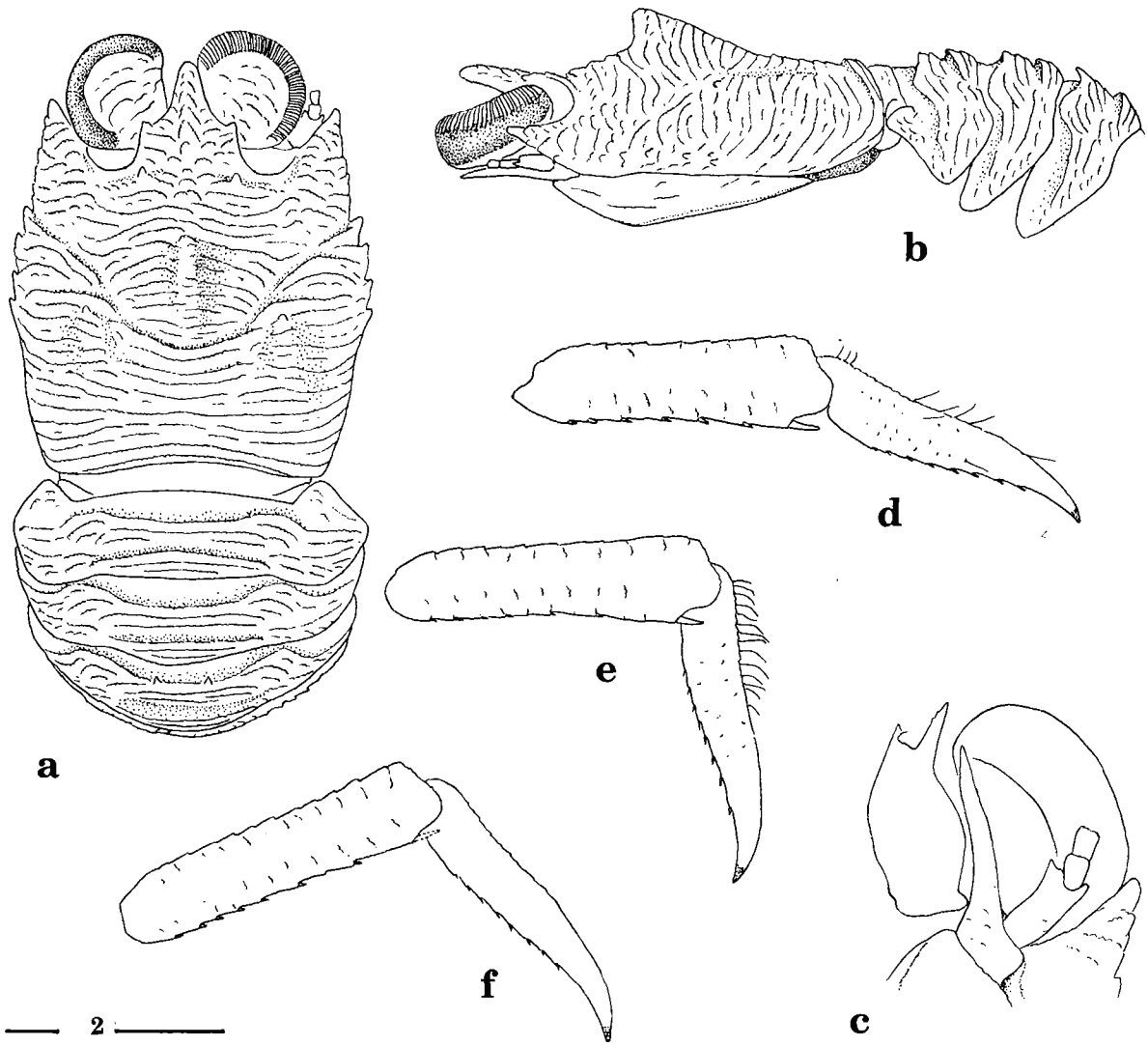

FIG. 30. — *Onconida gemini* sp. nov., a–e, ovigerous female holotype (MNHN-Ga 3774) from GEMINI, Stn DW 51; f, ovigerous female paratype (MNHN-Ga 3602) from same station : **a**, carapace and abdomen, dorsal; **b**, same, lateral; **c**, anterior part of cephalothorax, showing antennule and antennal peduncle, ventral; **d**, distal segments, right first walking leg, lateral; **e**, same, right second walking leg; **f**, same, right third walking leg.

Scales = 1 mm; scale 1 for a, b; scale 2 for c–f.

Genus *PLESIONIDA* nov.

DIAGNOSIS. — Carapace with strong, sharp, laterally compressed, gastric and cardiac processes, pair of epigastric spines, and postcervical spine on each side. Rostrum wide, rostral spine sharp distally, basally broad, supraocular spines remote from each other. Second, third and fourth abdominal tergites each with 2 submedian spines; pleura of sixth abdominal segment in male with small tuberculate expansion at mesioposterior portion of ventral surface. Fourth thoracic sternite anteriorly narrowed, anterior margin contiguous with median half width of preceding sternite. Telson with distinct subdivision. Eyes dilated and depressed. Basal segment of antennule with distomesial and distolateral spines only. First segment of antennal peduncle with prolonged distomesial spine, second segment slender, third and fourth segments somewhat narrower than second, flagellum slender, slightly longer than carapace. Endopods of third maxillipeds slender, merus elongate, convex on flexor margin. Chelipeds glabrous and smooth. Walking legs strongly compressed, slender, dactylus smooth on flexor margin. Chelae of fifth pereopods with brush of plumose setae on flexor face.

TYPE-SPECIES. — *Plesionida psila* sp. nov., by present designation and monotypy.

ETYMOLOGY. — From the Greek *plesios* (near) and the last syllables of *Munida*. Gender : feminine.

REMARKS. — The antennular basal segment bearing two terminal spines only, the antennal peduncle bearing a prominent distomesial spine on the first segment and the walking legs strongly compressed, especially knife-edged on extensor margins, characteristics of *Plesionida*, are also possessed by *Onconida*. However, *Plesionida* differs in having a distinct cardiac process and a pair of spines on the second and third abdominal tergites; the third and fourth antennal segments not strongly narrowed compared with the second segment; the antennal flagellum much longer, distinctly more than the postorbital carapace length; and lacking a barb-like spine on the movable finger of the male fifth pereopod.

The ornamentation of the carapace and the prolonged antennal process also link this genus to *Paramunida*. However, the latter genus may be distinctive in lacking strongly cristate gastric and cardiac processes; the second to fourth abdominal segments each bearing 4 spines; the merus of the third maxilliped bearing a well-developed spine on the flexor margin; the telson usually not clearly subdivided; and the lack of a brush of plumose setae on the chelae of the fifth pereopods.

Plesionida psila sp. nov.

Figs 4 d-e, 31

MATERIAL EXAMINED. — **New Caledonia**. MUSORSTOM 4 : stn CP 169, 18°54.3'S, 163°11.2'E, 590 m, 17 Sept. 1985 : 1 ♂ 4.8 mm, paratype (MNHN-Ga 3642).

BATHUS 4 : stn CP 921, 18°46.72'S, 163°17.01'E, 610–613 m, 6 Aug. 1994 : 1 ovig. ♀ 8.6 mm, holotype (MNHN-Ga 3776).

ETYMOLOGY. — From the Greek *psilos* (smooth, bald), for the smooth, almost glabrous cheliped.

DESCRIPTION. — Carapace slightly wider than long (1.1 times), with scattered tubercles on hepatic and lateral gastric regions, arranged in oblique interrupted lines on branchial regions; no distinct ridges. Cervical groove deep medially, indistinctly continued to anterior bifurcation, without furrow lateral to posterior gastric region, as seen in *Bathymunida*. Gastric region moderately expanded, median process strong, compressed laterally, directed anterodorsally; pair of epigastric spines well developed, widely separated. Cardiac region indistinctly V-shaped, anteriorly elevated in midline, with strong median process smaller than gastric process, preceded by deep furrow and cervical groove. Postcervical spines well developed. Lateral margins subparallel in anterior half, with sharp cervical incision, convexly convergent posteriorly in posterior half. Anterolateral spines well developed, directed anterodorsally and anterolaterally, each followed behind by small spine somewhat anterior to midpoint between anterolateral spine and cervical incision; anterior branchial regions with 4 acute spines, anteriormost somewhat ventral to level of others.

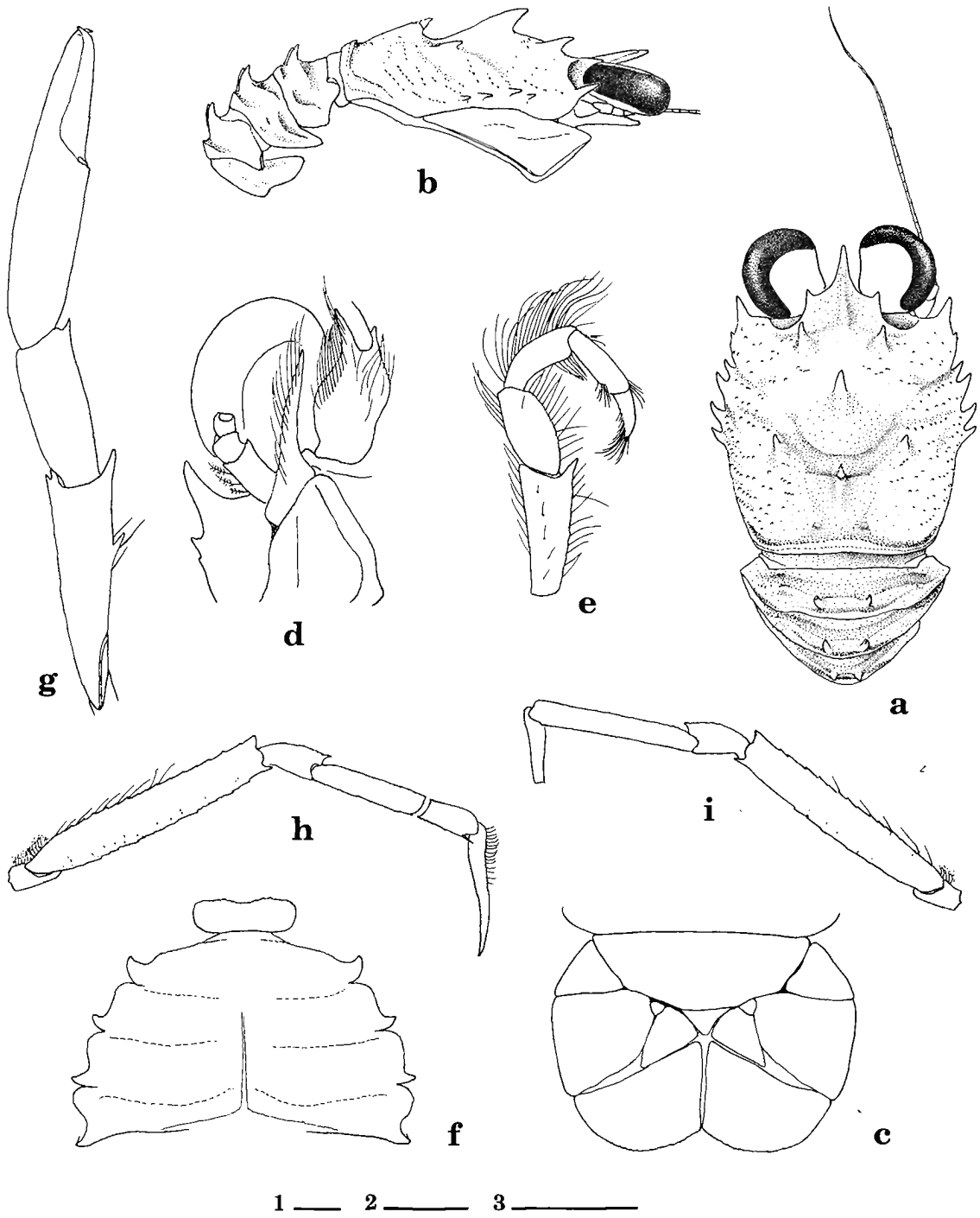

FIG. 31. — *Plesionida psila* sp. nov., male paratype (MNHN-Ga 3642) from MUSORSTOM 4, Stn CP 169 : **a**, carapace and abdomen, dorsal; **b**, same (posterior part of abdomen omitted), lateral; **c**, telson; **d**, anterior part of cephalothorax, showing antennule and antennal peduncle, ventral; **e**, endopod of right third maxilliped, lateral; **f**, sternal plastron; **g**, left cheliped, dorsal; **h**, right first walking leg, distal portion detached, lateral; **i**, left second walking leg, distal portion of dactylus broken, lateral.

Scales = 1 mm; scale 1 for a, b, g–i; scale 2 for d–f; scale 3 for c.

Rostrum relatively short, medially depressed, with median longitudinal ridge continuing onto rostral spine; lateral margins moderately convergent posteriorly, nearly horizontal in lateral view. Rostral spine wide proximally, distally sharp, directed anterodorsally, distinctly longer than remaining rostrum, barely reaching end of eyes. Supraocular spines widely separated from each other, short, directed anterolaterally.

Suborbital margin on each side with anterolaterally directed lobe ending in small spine.

Third thoracic sternite oblong, 3 times as wide as long, width less than 1/3 that of seventh sternite, shallowly excavated medially. Fourth thoracic sternite with narrow anterior margin contiguous with about half width of preceding sternite.

Second, third and fourth abdominal tergites each with 2 elevated transverse ridges, anterior ridge with pair of acute spines; pleura of sixth abdominal segment in male with small tuberculate expansion at posterior mesial portion of ventral surface. Telson subdivided into 12 platelets.

Eyes well developed, depressed, width 1.2 times that of rostrum; eyelashes obsolete.

Basal antennular segment with strong distolateral and small distomesial spines, with line of setae laterally. First segment of antennal peduncle with distomesial spine reaching or falling slightly short of end of rostral spine, lateral margin with line of long setae; second segment slender, about twice as long as wide, with obsolescent distomesial spine; antennal flagellum of moderate length, about as long as, or somewhat longer than, carapace, including rostral spine.

Third maxillipeds relatively setose, slender. Ischium thin, with prominent, sharp spine on flexor distal margin, mesial ridge with 11–12 denticles. Merus 0.8 times as long as ischium, twice as long as wide, flexor margin gently convex, unarmed or with very small spine on proximal third, extensor margin unarmed.

Chelipeds 3.5 (male) or 3.7 (female) times as long as postorbital carapace length, almost glabrous and smooth. Merus slightly longer than palm, cristate along mesial margin, accompanied by iridescent setae, mesial margin with 2–3 flattened spines, distal spine terminal, prominent and sharp; small distomesial spine ventrally. Carpus shorter than palm, 2.4 (male) or 2.7 (female) times as long as wide, mesial margin cristate, distally with distinct spine. Palm 1.2–1.4 times as long as movable finger, unarmed, slightly less than 3 times as long as wide. Fingers not gaping, distally incurved, crossing, ending in sharp spine.

Walking legs similar, relatively long, slender, strongly compressed laterally. First walking leg overreaching midlength of palm of cheliped. Meri successively diminishing in size posteriorly, flattish on dorsolateral face, extensor margin sharp, knife-like, with fine crenulations and both fine and iridescent setae, moderate in density, ending distally in obtuse process, flexor margin not sharply ridged but more or less rounded, ending distally in small, sharp spine. Carpi short, slightly narrower than merus, with distinct spine on extensor distal margin. Propodi about 8 times as long as wide, 0.6–0.7 times as long as merus, with distal movable spine mostly detached. Dactyli 0.7–0.8 times as long as propodus, distally very slender and curving, without spine on flexor margin, extensor margin minutely denticulate, with curved plumose setae along proximal half.

Chelae of fifth pereopods with brush of plumose setae on flexor face; fingers moderately setose, length 0.6 times that of propodus.

REMARKS. — The specimen designated as the holotype, an intact ovigerous female was received shortly before the manuscript went to press.

The chelipeds, which are longer in this ovigerous female than in the single male, suggest that the male specimen has not attained its mature size. The same is also indicated by the chelae of the male fifth pereopods which are less setose than in the ovigerous female. In all probability, the fifth pereopods of mature males must develop into a more distinctive morphology as in the other genera.

RANGE. — New Caledonia; 590–613 m.

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REFERENCES

BABA, K., 1969. — Four new genera with their representatives and six new species of the Galatheidae in the collection of the Zoological Laboratory, Kyushu University, with redefinition of the genus *Galathea*. *Ohmu*, **2** (1) : 1–32.

BABA, K., 1970. — Redescription of *Bathymunida brevirostris* (YOKOYA, 1933) (Crustacea, Decapoda, Galatheidae). *Mem. Fac. Educ., Kumamoto Univ.*, Sect. 1 (Nat. Sci.), **18** : 59–62.

BABA, K., 1971. — *Lauriea*, a new genus proposed for *Galathea gardineri* Laurie (Crustacea, Anomura, Galatheidae). *Mem. Fac. Educ., Kumamoto Univ.*, Sect. 1 (Nat. Sci.), **19** : 51–53.

BABA, K., 1977. — The galatheid Crustacea of the Snellius Expedition. *In* : Biological results of the Snellius Expedition XXVIII. *Zool. Meded., Leiden*, **50** (15) : 243–259.

BABA, K., 1981. — A new galatheid crustacean (Decapoda, Anomura) from the Hawaiian Islands. *J. Crust. Biol.*, **1** (2) : 288–292.

BABA, K., 1988. — Chirostylid and Galatheid Crustaceans (Decapoda : Anomura) of the "Albatross" Philippine Expedition, 1907–1910. *Res. Crust.*, The Carcinological Society of Japan, Spec. No. 2 : v + 203 pp.

BABA, K., 1990. — Chirostylid and galatheid crustaceans of Madagascar (Decapoda : Anomura). *Bull. Mus. natn. Hist. nat.*, (4), sect. A, (1989) **11** (4) : 921–975.

BABA, K., 1994. — Deep-sea galatheid crustaceans (Anomura : Galatheidae) collected by the "Cidaris I" Expedition off Central Queensland, Australia. *Mem. Queensland Mus.*, **35** (1) : 1–21.

BABA, K. & JAVED, W., 1974. — *Coralliogalathea*, a new genus of Galatheidae (Crustacea, Anomura) with further notes on its type-species. *Annot. Zool. Japon.*, **47** (1) : 61–64.

BALSS, H., 1914. — Über einige interessante Decapoden der «Pola»-Expeditionen in das Rote Meer. *Sitz. Kaiserl. Akad. Wiss.*, math.-naturw. Kl., 1914 : 133–139.

BALSS, H., 1915. — Die Decapoden des Roten Meeres, II. Anomuren, Dromiaceen und Oxystomen. Expeditionen S.M. Schiff "Pola" in das Rote Meer. Nördliche und südliche Halfte 1895/96-1897/98. Zoologische Ergebnisse XXXI. Berichte der Kommission für ozeanographische Forschungen. *Denkschr. Akad. Wiss. Wien. Math.-naturwiss. Kl.*, **92** : 1–20.

DAM, A. J. VAN, 1938. — Die Gattung *Bathymunida* BALSS. *Zool. Anz.*, **121** : 194–202.

FOREST, J., 1981. — Compte rendu et remarques générales. Report and general comments. *In* : Résultats des Campagnes MUSORSTOM. I. — Philippines (18–28 mars 1976). Volume 1. *Mém. ORSTOM*, **91** : 9–50.

HAIG, J., 1973. — Galatheidae (Crustacea, Decapoda, Anomura) collected by the H.I.S. Endeavour. *Rec. Austr. Mus.*, **28** (14) : 269–289.

HENDERSON, J.R., 1885. — Diagnoses of the new species of Galatheidea collected during the "Challenger" Expedition. *Ann. Mag. Nat. Hist.*, (5) **16** : 407–421.

KHODKINA, I. V., 1981. — A contribution to the fauna of the family Galatheidae (Decapoda) of the south-west Pacific. *Zool. Zh.*, **60** (8) : 1261–1264.

LEACH, W. E., 1820. — Galatéadées. Dictionnaire des Sciences Naturelles, **18** : 48–56. Paris.

LEWINSOHN, C., 1969. — Die Anomuren des Roten Meeres (Crustacea Decapoda : Paguridea, Galatheidea, Hippidea). *Zool. Verhand. Leiden*, **104** : 213 pp., 2 pls.

MACPHERSON, E., 1993a. — Crustacea Decapoda : Species of the genus *Munida* Leach, 1820 (Galatheidae) collected during the MUSORSTOM and CORINDON cruises in the Philippines and Indonesia. *In* : A. CROSNIER (ed.), Résultats des Campagnes MUSORSTOM. Volume 10. *Mém. Mus. natn. Hist. nat.*, **156** : 421–442.

MACPHERSON, E., 1993b. — Crustacea Decapoda : Species of the genus *Paramunida* Baba, 1988 (Galatheidae) from the Philippines, Indonesia and New Caledonia. *In* : A. CROSNIER (ed.), Résultats des Campagnes MUSORSTOM. Volume 10. *Mém. Mus. natn. Hist. nat.*, **156** : 443–473.

MACPHERSON, E., 1994. — 1994 : Crustacea Decapoda : Studies on the genus *Munida* Leach, 1820 (Galatheidae) in New Caledonian and adjacent waters with descriptions of 56 new species. A. CROSNIER, (ed.), Résultats des Campagnes MUSORSTOM. Volume 12. *Mém. Mus. natn. Hist. nat.*, **161** : 421–569.

MACPHERSON, E. & BABA, K., 1993. — Crustacea Decapoda : *Munida japonica* Stimpson, 1858, and related species (Galatheidae). *In* : A. CROSNIER (ed.), Résultats des Campagnes MUSORSTOM, Volume 10. *Mém. Mus. natn. Hist. nat.*, **156** : 381-420.

MACPHERSON, E. & DE SAINT LAURENT, M., 1991. — Galatheid crustaceans of the genus *Munida* Leach, 1818, from French Polynesia. *Bull. Mus. natn. Hist. nat.*, (4) **13**, sect. A : 373–422.

MAN, J.G., de, 1902. — Die von Herrn Professor Kukenthal im Indischen Archipel gesammelten Dekapoden und Stomatopoden. *Abhandl. Senckenb. Naturf. Gesel.*, **25** : 467-929, pls 19-27.

MELIN, G. 1939. — Paguriden und Galatheiden von Prof. Dr. Sixten Bocks Expedition nach den Bonin-Inseln 1914. *K. Svensk. VetenskAkad. Handl.*, (3) **18** (2) : 1–119.

MILNE EDWARDS, A., 1880. — Reports on the results of dredging under the supervision of Alexander Agassiz, in the Gulf of Mexico and in the Caribbean Sea, etc. VIII. Études préliminaires sur les Crustacés. *Bull. Mus. Comp. Zool. Harvard Coll.*, **8** (1) : 1–68, pl., 1-2.

MIYAKE, S. & BABA, K., 1966. — Two new species of the family Galatheidae from the Tosa Bay, Japan. *J. Fac. Agr., Kyushu Univ.*, **14** (1) : 81-88.

MIYAKE, S. & BABA, K., 1967. — New and rare species of the family Galatheidae (Crustacea, Anomura) from the Sagami Bay in the collection of the Biological Laboratory, Imperial Household, Japan. *J. Fac. Agr., Kyushu Univ.*, **14** (2) : 213-224.

RICHER DE FORGES, B., 1990. — Les campagnes d'exploration de la faune bathyale dans la zone économique de la Nouvelle-Calédonie. *In* : A. CROSNIER (ed.), Résultats des Campagnes MUSORSTOM. Volume 6. *Mém. Mus. natn. Hist. nat.*, (A), **145** : 9–54.

RICHER DE FORGES, B., 1991. — Les fonds meubles de Nouvelle-Calédonie : généralités et échantillonnages par dragages. *In* : B. RICHER DE FORGES (ed.), Le Benthos des fonds meubles des lagons de Nouvelle-Calédonie. Volume 1. *Études et Thèses*, Paris, ORSTOM : 7-148, 21 fig. et 51 cartes.

RICHER DE FORGES, B., 1993. — Campagnes d'exploration de la faune bathyale faites depuis mai 1989 dans la zone économique de la Nouvelle-Calédonie. Liste des stations. *In* : A. CROSNIER (ed.), Résultats des Campagnes MUSORSTOM. Volume 10. *Mém. Mus. natn. Hist. nat.*, Zool., **156** : 27–32.

RICHER DE FORGES, B., & MENOU, J., 1993. — La campagne MUSORSTOM 7 dans la zone économique des îles Wallis et Futuna Compte rendu et liste des stations. *In* : A. CROSNIER (ed.), Résultats des Campagnes MUSORSTOM. Volume 10. *Mém. Mus. natn. Hist. nat.*, **156** : 9–25.

RICHER DE FORGES, B., FALIEX, E. & MENOU, J.-L., 1996. — La campagne MUSORSTOM 8 dans l'archipel de Vanuatu. Compte rendu et liste des stations. *In* : A. CROSNIER (ed.), Résultats des Campagnes MUSORSTOM. Volume 15. *Mém. Mus. natn. Hist. nat.*, **168** : 9-32.

RICHER DE FORGES, B. & CHEVILLON, C., 1996. — Les campagnes d'échantillonnage du benthos bathyal en Nouvelle-Calédonie, en 1993 et 1994 (BATHUS 1 à 4, SMIB 8 et HALIPRO 1). *In* : A. CROSNIER (ed.), Résultats des Campagnes MUSORSTOM. Volume 15. *Mém. Mus. natn. Hist. nat.*, **168** : 33-53.

YANAGITA, I., 1943. — Revision of *Munida*, a genus of decapod crustaceans found in Japanese waters. *Bull. biogeogr. Soc. Japan*, **13** : 13–32

YOKOYA, Y., 1933. — On the distribution of decapod crustaceans inhabiting the continental shelf around Japan, chiefly based upon the materials collected by S.S. Soyo-Maru during the years 1923–1930. *J. Coll. Agric., Tokyo imp. Univ.*, **12** (1) : 1–226.

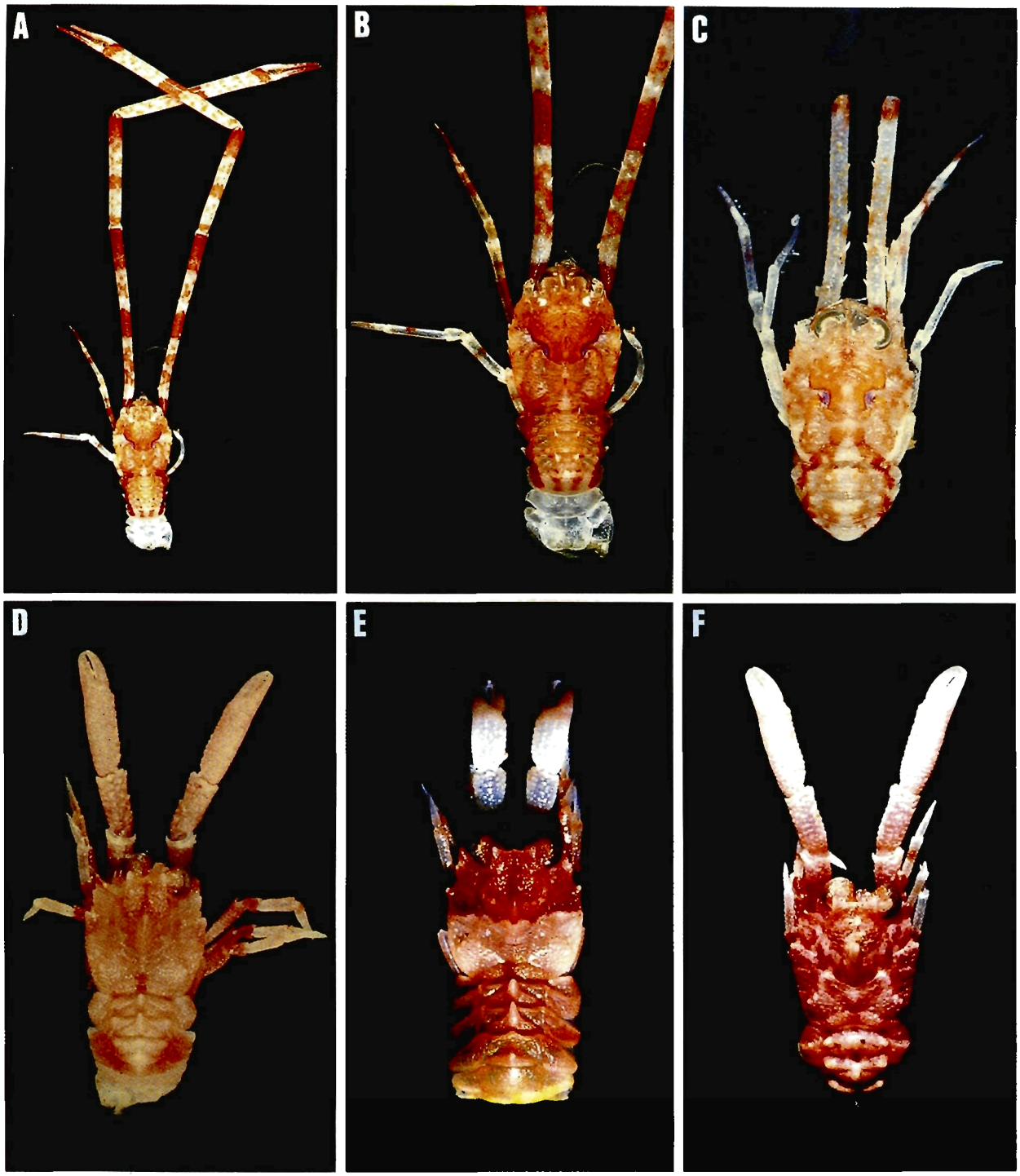

FIG. 32. — **a-b**, *Bathymunida recta* sp. nov., male holotype 5.0 mm (MNHN-Ga 3583) from MUSORSTOM 7, Stn DW 510; **c**, *B. sibogae* van Dam, 1938, male 4.3 mm (MNHN-Ga 3591) from MUSORSTOM 5, Stn CP 309; **d**, *Heteronida aspinirostris* (Khodkina, 1981), male 3.2 mm (MNHN-Ga 3630) from SMIB 4, Stn DW 36; **e**, same, ovigerous female 3.8 mm (MNHN-Ga 3623) from CHALCAL 2, Stn CP 21; **f**, same, male (MNHN-Ga 3626) from CHALCAL 2, Stn DW 74.

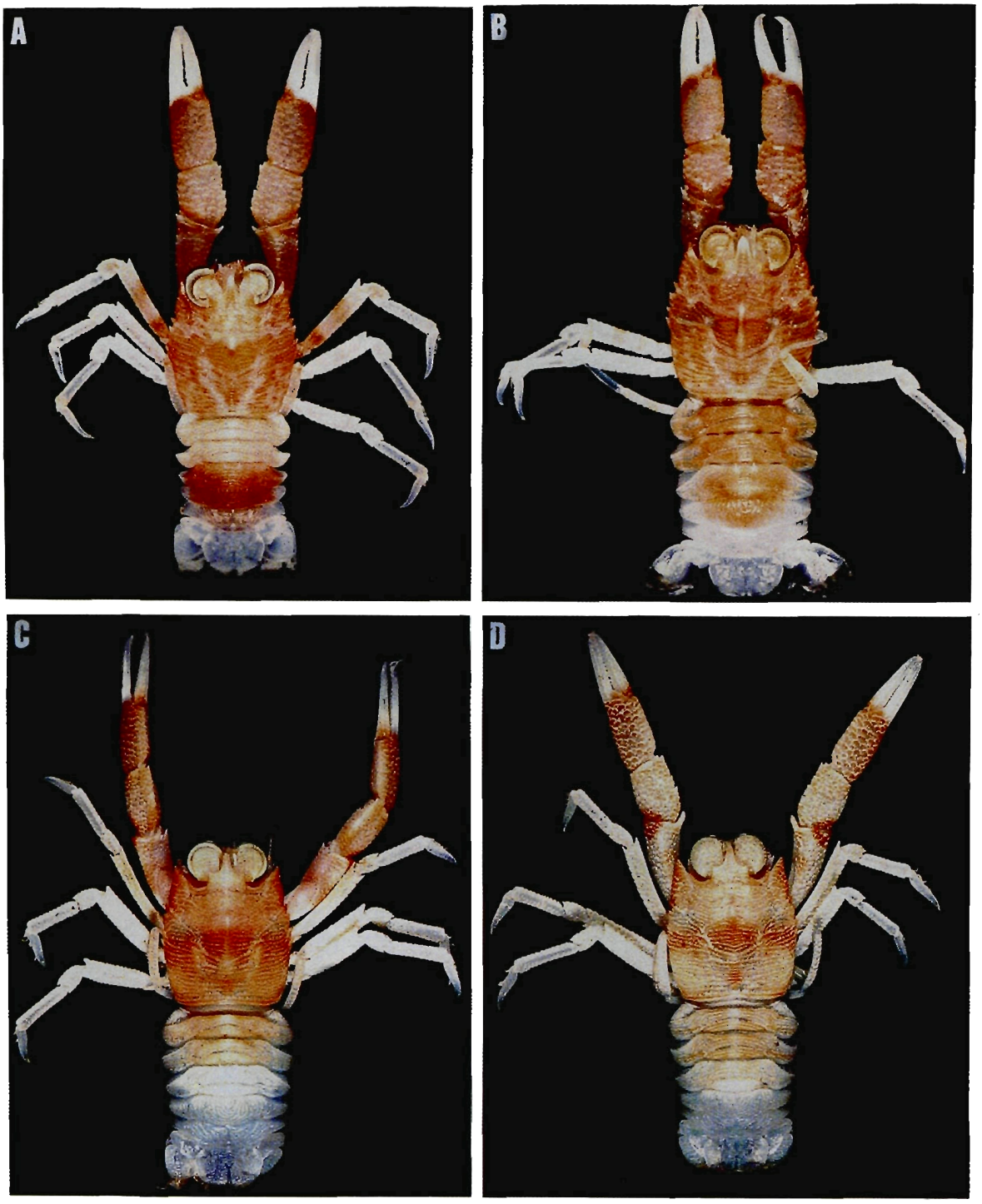

FIG. 33. — **a-b**, *Onconida alaini* sp. nov., MUSORSTOM 6, Stn CP 464 : **a**, male paratype 5.7 mm (MNHN-Ga 3597); **b**, ovigerous female paratype 5.8 mm (MNHN-Ga 3597); **c-d**, *O. modica* sp. nov., MUSORSTOM 7, Stn CP 606 : **c**, female holotype 6.0 mm (MNHN-Ga 3605); **d**, ovigerous female paratype 5.9 mm (MNHN-Ga 3606).

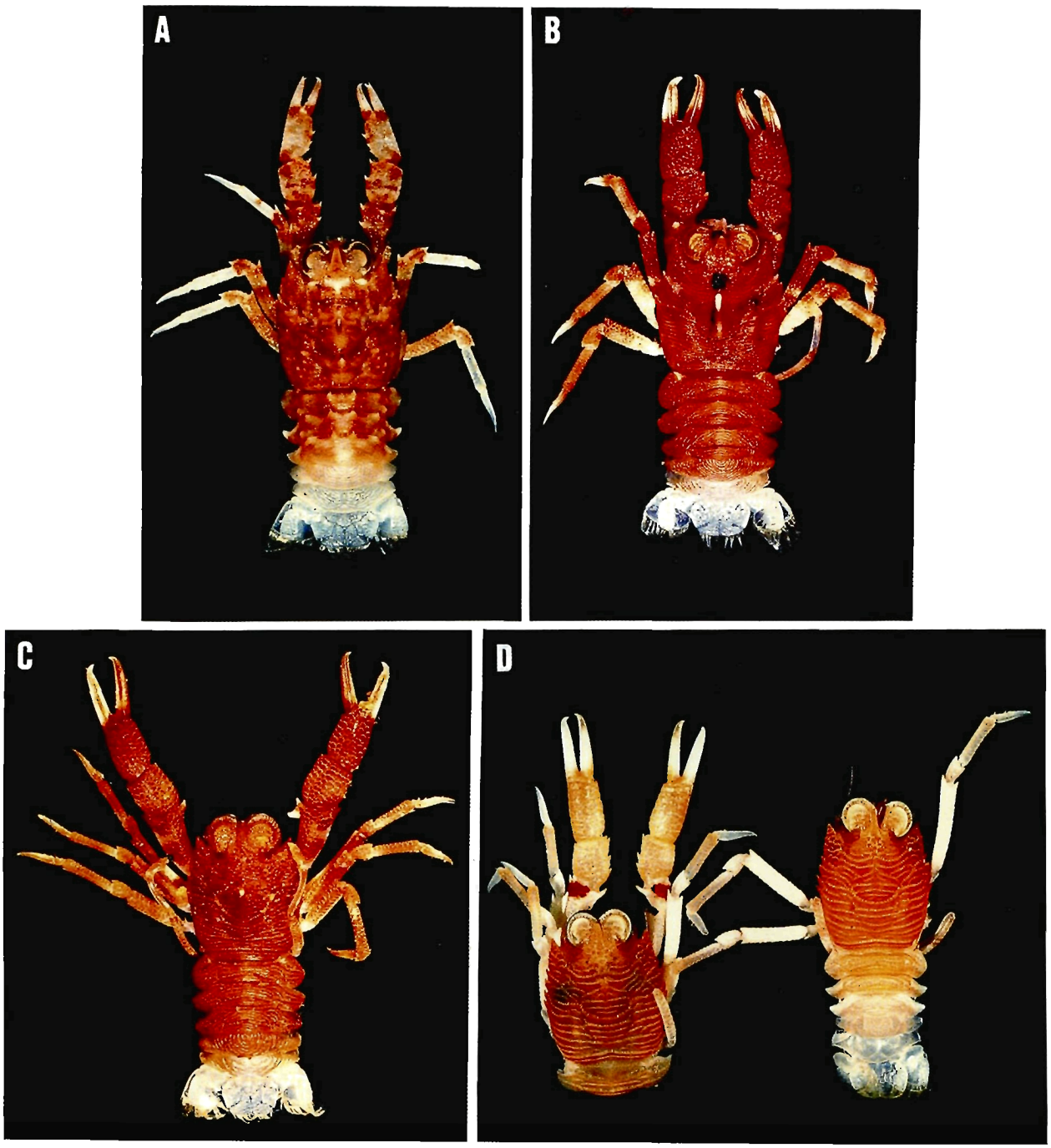

FIG. 34. — **a**, *Neonida grandis* sp. nov., male holotype (MNHN-Ga 3771) from MUSORSTOM 8, Stn CP 1107; **b**, *Onconida tropis* sp. nov., ovigerous female paratype 6.2 mm (MNHN-Ga 3773) from MUSORSTOM 7, Stn DW 594; **c**, *O. gemini* sp. nov., ovigerous female holotype 5.2 mm (MNHN-Ga 3774) from GEMINI, Stn DW 51; **d**, *O. prostrata* sp. nov., left, male holotype 6.2 mm (MNHN-Ga 3608) from MUSORSTOM 7, Stn DW 594; right, female paratype 6.3 mm (MNHN-Ga 3609).