Bull. Natn. Sci. Mus., Tokyo, Ser. A, 8 (3), September 22, 1982

Deep-Sea Galatheidean Crustacea (Decapoda, Anomura) Taken by the R/V *Soyo-Maru* in Japanese Waters

II. Family Galatheidae

By

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(Communicated by Yoshihiko KUROSAWA)

This is the second part of the report on the galatheidean Crustacea taken by the R/V *Soyo-Maru* in the deeper parts of the Japanese waters. The collection of the Galatheidae comprises 9 species, two of which are new and five of which are recorded for the first time from the Japanese waters. The reader is referred to the introduction of the previous article (BABA, 1981) for the source of material and the brief notes on the distribution of the Japanese deep-sea Galatheidae as well as the Chirostylidae. I thank Dr. T. OKUTANI and Dr. M. TAKEDA of the National Science Museum, Tokyo, for making this collection available to me; Dr.F. A. CHACE, Jr. of the Smithsonian Institution, Washington, D. C., for kindly allowing me to have access to the identified specimens deposited in the Crustacea Division of the National Museum of Natural History; Dr. R. B. MANNING of the same Institution, for arranging at my request the loan of the Atlantic specimens of *Munida microphthalma*, providing me with copies of the paper by FILHOL (1884), and suggesting to me the correct original citation of *Munidopsis antonii*; Dr. L. B. HOLTHUIS of the Rijksmuseum van Natuurlike Historie, Leiden, for answering my inquiry about the original citation of *M. antonii*.

Family Galatheidae

Munida andamanica ALCOCK, 1894

Munida militaris var. *andamanica* ALCOCK, 1894: 321 (type-locality: Andaman Sea); ALCOCK & ANDERSON, 1895: pl. 13, fig. 2.

Munida andamanica: ALCOCK, 1901: 242; DOFLEIN & BALSS, 1913: 143, BALSS, 1913: 17; PARISI, 1917: 1; YOKOYA, 1933: 63; YANAGITA, 1943: 29; TIRMIZI, 1966: 198; figs. 17–19.

Munida curvatura BENEDICT, 1902: 253, fig. 5 (type-locality: off Honshu, Japan).

Material. *Soyo-Maru* Sta. T10; 35°04.7′ N, 139°08.8′ E; 450 m; 24 Nov. 1972–1 ♀ without eggs.

Measurements. Carapace length of nonovigerous female, 25.1 mm.

Remarks. A trace of the faded band is evident at the base of the rostrum. Color record of fresh specimens are available to me (unpublished), and those specimens have

been taken from Tosa Bay in 250–350 m and are now deposited in the Zoological Laboratory, Kyushu University, Fukuoka, under the catalogue numbers, ZLKU 14276 and 14277. The carapace and appendages are pink and the abdomen whitish, as described by ALCOCK (1901) for living specimens, and the base of the rostrum and the tips of all pereopods but the last one are reddish.

Examination of one male of *Munida andamanica* of the *Investigator* collection from the Andaman Sea in 173 fathoms and the type of *Munida curvatura* BENEDICT, both deposited in the National Museum of Natural History, Smithsonian Institution, confirmed to my satisfaction that they are identical, as has previously been pointed out only in synonymy (DOFLEIN & BALSS, 1913).

Distribution. Previously known from the east coast of Africa, Arabian Sea, the Maldives, Java Sea, west of Sumatra, Andaman Sea and Japan from Sagami Bay southward to the east coast of Kyushu; in 141–1,079 m.

Munida parvioculata n. sp.

(Figs. 1, 2b)

Material. Soyo-Maru Sta. B2; 34°00.6′ N, 140°02.4′ E; 1,105 m; 10 Oct. 1969–1 ♀ without eggs, holotype, NSMT-Cr. 6182. *Soyo-Maru* Sta. B3; 33°07.6′ N, 139°58.5′ E; 430 m; 5 Jul. 1967–1 ovig. ♀. *Soyo-Maru* Sta. B4; 32°11.3′ N, 140°01.5′ E; 1,400 m; 13 Oct. 1969–1 ♀ without eggs.

Diagnosis. Carapace with interrupted, granulate transverse ridges. Two well-developed and several tubercular epigastric spines. Postcervical and posterior strial spines absent. Small or tubercular spines behind bifurcation of cervical groove. Front margin oblique. Lateral margin with 7 spines convex. Rostrum spiniform and horizontal; supraoculars barely half as long as rostrum, directing outward, Second abdominal segment with 2 to 4 spines anteriorly. Eyes small, not dilated nor depressed distally. Inner terminal spine of antennular basal segment much smaller. Fourth thoracic sternum triangular, anterior margin much narrower than preceding sternum. Cheliped spinose, covered with fine plumose setae. Walking legs pilose; much stouter merus uniform in width from end to end, disto-posterior marginal spine not extremely prolonged. Two pairs of male gonopods.

Description of holotype. Carapace excluding rostrum longer than broad, dorsally moderately convex, rugose with interrupted, minutely granulate transverse ridges; gastric region separated from anterior branchial region by distinct cervical groove, armed with row of 9 spines anteriorly: 2 behind supraoculars pronounced, others much smaller; anterior branchial region without distinct striae, armed with small spine behind bifurcation of cervical groove. Mid-transverse groove distinct. No postcervicals. Cardiac region with anterior transverse ridge elevated. Posterior transverse ridge lacking spines. Front margin oblique. Lateral margins moderately convex with 7 spines: 2 prominent in front of cervical groove and 5 well-developed behind it.

Rostrum spiniform, almost horizontal, 0.37 as long as remaining carapace when

measured from tip to between angles formed by rostrum and supraoculars, dorsally crenulate minutely. Supraocular spines barely half as long as rostrum, widely separated from each other, directing distinctly outward and dorsad.

Second to 4th abdominal segments with 2 transverse ridges distinctly elevated; anterior ridge of 2nd segment with pair of spines.

Eyes small, not depressed nor dilated distally, terminating in proximal 1/3 of rostral length; cornea shorter than eyestalk; eyelashes of few, short setae.

Basal segment of antennule with 2 lateral and 2 terminal spines, inner terminal one

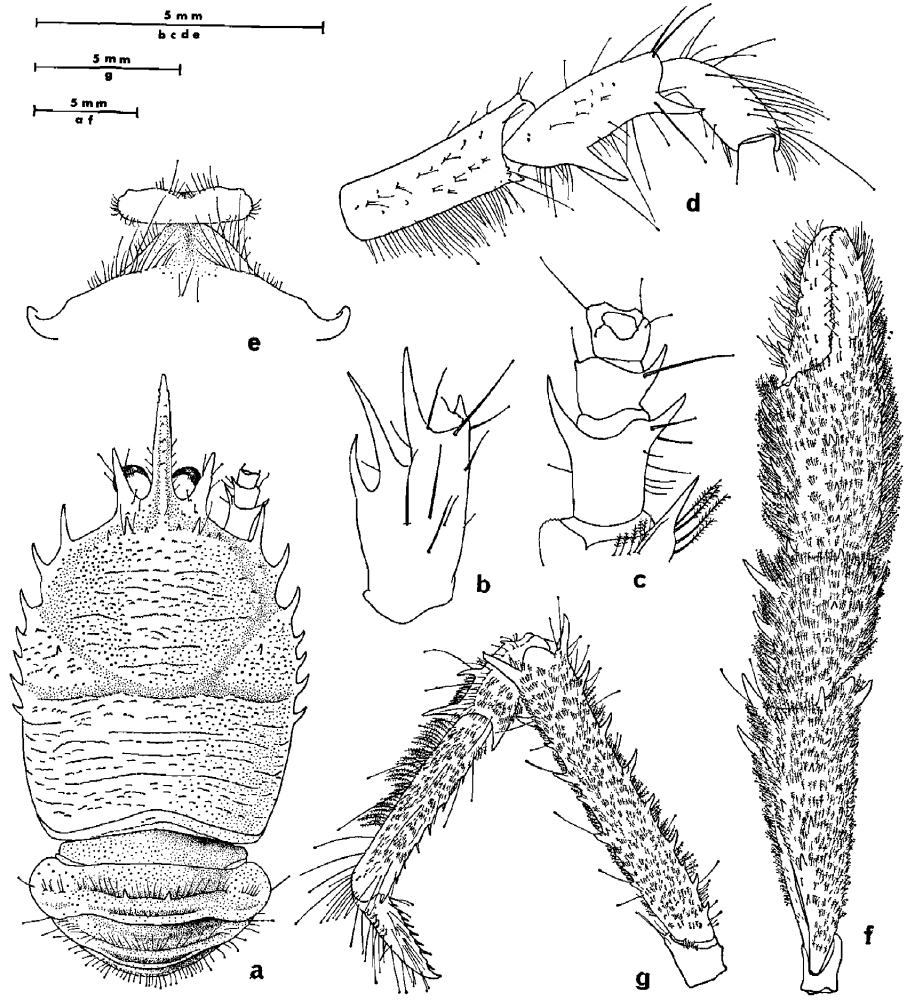

Fig. 1. *Munida parvioculata* n. sp., female holotype. a, carapace and abdomen; b, basal segment of right antennule; c, right antennal peduncle; d, endopod of right 3rd maxilliped; e, anterior part of sternal segments; f, right cheliped; g, left lst walking leg.

reduced to small size. First segment of antennal peduncle acutely produced at disto-inner margin; 2nd segment with outer and inner terminal spines, both much pronounced; 3rd segment with inner terminal marginal spine only.

Third maxilliped moderately setose; ischium as long as merus, minutely produced on both distal margins, inner toothed ridge with 30 (left) or 28 (right) denticles; merus elongate with 2 prominent inner marginal spines of subequal size: one distal and another proximal to midlength; outer margin unarmed.

Third thoracic sternum laterally expanded, anterior margin weakly sinuous; following sternum triangular, anteriorly depressed, anterior margin narrow, barely 1/3 as wide as preceding sternum.

Chelipeds relatively stout, 1.8 times as long as carapace including rostrum, thickly covered with fine plumose setae, armed with spines partly invisible for thickly beset setae; inner marginal spines prominent as illustrated; palm twice as long as broad, slightly longer than movable finger; fingers not gaping, opposable margins tuberculate, touching straightly with each other, crossing at tip.

Walking legs comparatively stout, similar, but prosteriorly smaller and more or less reduced in armature. First leg covered with fine setae excepting dactylus; merus with about 10 anterior marginal and 8 posterior marginal spines of irregular size, and spinules along and dorsal to posterior margin; disto-posterior marginal spine slightly larger than disto-anterior one; carpus terminally produced acutely into spine, with another 2 anterior marginals; propodus straight, 6 times as long as broad, twice as long as dactylus; anterior margin unarmed, thickly furnished with plumose setae in proximal 2/3 of length; posterior margin with 7 spinelets; coarse setae on dactylus and distal portion of propodus; dactylus relatively stout, almost straight, ending in spine curving inward; posterior margin serrate with 8 movable spinelets.

Measurements of holotype. Length of carapace including rostrum, 22.0 mm; width of carapace, 13.4 mm; length of cheliped (right), 39.7 mm; of palm, 8.7 mm; of movable finger, 8.0 mm.

Measurements of paratypes. Carapace length of ovigerous female, 16.4 mm; of nonovigerous female, 12.1 mm; diameters of ova, 0.48-0.52 mm.

Variation. Larger epigastric spines paired behind supraoculars, post-supraoculars called here for the convenience' sake, are constantly present; however, the remaining epigastrics are reduced to tubercular processes in the two female paratypes; and further, in the ovigerous female paratype the tubercles are absent from outside of each post-supraocular spine. The second abdominal segment in the non-ovigerous female paratype bears an additional tubercular process left to mesial pair on the anterior transverse ridge.

Remarks. This species is rather near *Munida microps* ALCOCK from the Andaman and Arabian Seas and the southeastern Australia, especially in having small eyes. Available descriptions and illustrations of *M. microps* (ALCOCK, 1894; ALCOCK & ANDERSON, 1895; TIRMIZI, 1966; HAIG, 1973) as well as examination of the *Investigator* specimen (male, 28.0 mm, from the Andaman Sea in 480-640 fathoms) now deposited

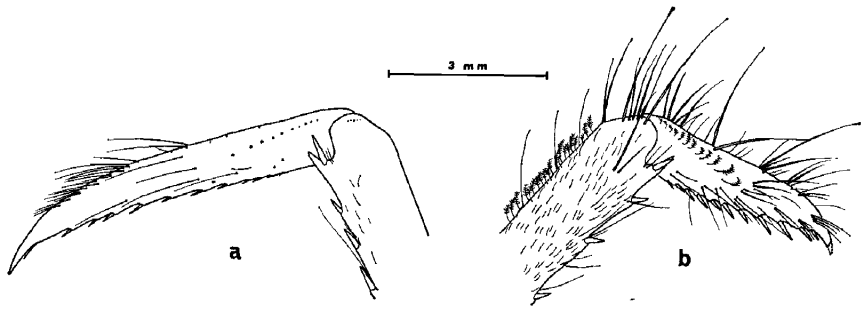

Fig. 2. Distal segments of lst walking legs. a, *Munida microphthalma*, male from *Albatross* Sta. 2117; b, *Munida parvioculata* n. sp., female holotype.

in the National Museum of Natural History, Smithsonian Institution, clearly show that the known species is characterized by the following peculiarities: 1) The transverse ridges on the carapace are more distinctly elevated and not granulate; 2) the carapace bears several spines in addition to the pronounced epigastric row, i. e., post-cervicals and parahepatics; 3) the second abdominal segment bears more numerous spines, 6–10 in number; 4) the chelipeds are much more slender, the inner distal marginals of both the arm and the wrist being not so prominent as in *M. parvioculata*; and 5) the walking legs are also slender like cheliped, the merus bearing much pronounced posterior marginal spines, especially the terminal one more strongly developed.

More closely related to the new species, however, is *Munida microphthalma* A. MILNE EDWARDS widely known from the Atlantic. Direct comparison with two males of *M. microphthalma* taken by the *Albatross* Sta. 2117 near Aves Island, New Jersey, in 683 fathoms, and kindly made available by R. B. MANNING, disclosed that, in addition to the differences apparent in the striation of the carapace, the presence or absence of a spine behind the bifurcation of the cervical groove, and the number of spines on the second abdominal segment, the new species is distinct in having much stouter chelipeds and walking legs, especially the dactylus of the latter (Fig. 2).

Type-locality. Southeast of Miyake-jima (34°00.6′ N, 140°02.4′ E); 1,105 m.

Munida crassa n. sp.

(Fig. 3)

Material. Soyo-Maru Sta. 60; 30°52.0′ N, 128°39.5′ E; 770–800 m; 3 Feb. 1972–1 ♂, 1 ovig.♀ (ovig. female is holotype, NSMT-Cr. 6180). *Soyo-Maru* Sta. 36; 28°52.6′ N, 128°08.5′ E; 950 m; 5 Feb. 1964–1 ♂.

Diagnosis. Carapace with distinct transverse ridges; epigastric row of paired, well-developed post-supraoculars and tubercular processes or spinules. Postcervical and posterior strial spines absent. Front margin oblique. Lateral margin with 7 spines. Rostrum almost horizontal, supraocular spines comparatively stout and short.

Second abdominal segment with 6-8 spines on anterior ridge. Eyes moderately developed, cornea indistinctly dilated, Inner terminal spine of basal antennular segment smaller than outer. Merus of 3rd maxilliped with 2 inner marginal spines, distal smaller; outer margin unarmed. Fourth thoracic sternum anteriorly narrowing, almost triangular. Cheliped thickly setose and acutely spinose, inner terminal marginal spines of arm and wrist extremely developed. Walking legs relatively slender, posterior terminal marginal spine of merus prolonged. Two pairs of male gonopods.

Description of holotype. Carapace excluding rostrum 1.3 times as long as wide; dorsal surface distinctly striated; cervical and mid-transverse grooves distinct. Gastric region moderately convex, anterior border distinctly elevated from level of rostrum, with prominent post-supraoculars, each accompanying smaller spine outside and few tubercular, small processes inside. Postcervical and posterior strial spines absent. Front margin oblique. Lateral margins almost subparallel with 7 spines: 2 in front of cervical groove and 5 behind it.

Rostrum 0.37 as long as remaining carapace, spiniform, relatively stout, dorsally crenulate, almost horizontal but distally curving dorsad. Supraocular spines as broad as rostrum at base, directing dorsad and slightly outward, barely half as long as rostrum. Base to both rostrum and supraoculars relatively broad and more or less elongate.

Second segment of abdomen with row of 8 spines anteriorly; following segments unarmed.

Eyes relatively small, cornea almost reaching to tip of supraocular spine, moderately depressed but not dilated; eyestalk indistinctly narrowing proximally.

Antennular basal segment typical as in most *Munida* species, not so elongate, armed with 2 terminal and 2 lateral spines; inner one of terminals much smaller, distal of laterals extending slightly beyond tip of outer terminal. Basal segment of antennal peduncle with acute, elongate, inner spine; following segment with inner and outer terminal spines of subequal size; 3rd segment unarmed.

Third maxilliped moderately setose; ischium as long as merus, inner terminal margin minutely produced, inner toothed ridge with about 23 denticles; merus with 2 inner marginal spines, distal much smaller; outer margin unarmed; carpus also spineless.

Third thoracic sternum laterally expanded, anterior margin minutely dentate, feebly concave medially, posterior margin convex; 4th thoracic sternum triangular.

Chelipeds relatively stout, 1.6 times as long as carapace including rostrum, dorsally flattish, ventrally convex, covered with fine plumose setae and prominently spinose marginally and dorso-mesially; inner terminal marginal spines of wrist and arm prolonged. Palm as long as finger, less than twice as long as broad. Fingers not gaping, distally crossing.

Two walking legs present but detached from body; fringed with fine plumose setae on anterior margin; larger leg, lst or 2nd walking leg, slightly shorter than cheliped; merus 9 times as long as wide, spinose on both margins, anterior margin with 12 spines, distal one greatest and prolonged; carpus with 2 anterior marginal and small disto-

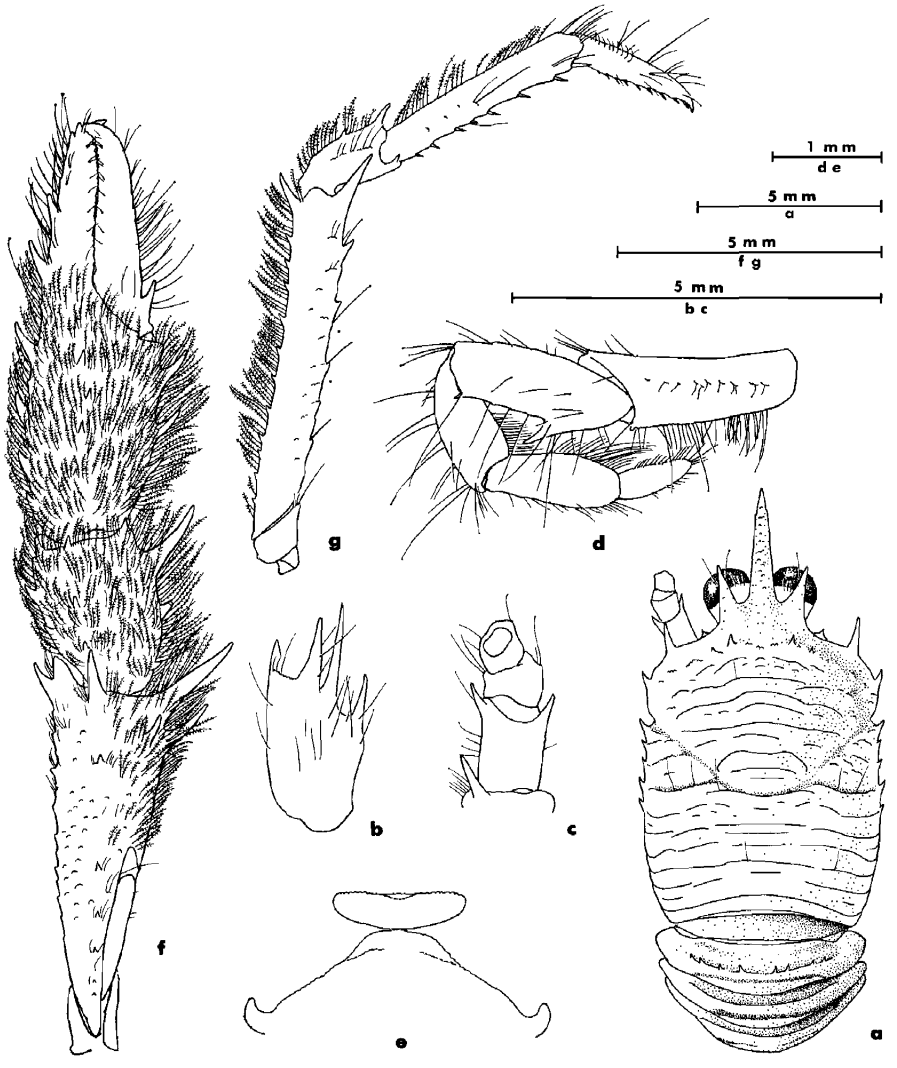

Fig. 3. *Munida crassa* n. sp., ovigerous female holotype. a, carapace and abdomen; b, basal segment of left antennule; c, left antennal peduncle; d, endopod of left 3rd maxilliped; e, anterior part of sternal segments; f, left cheliped; g, detached right walking leg.

posterior marginal spines; propodus about 6 times as long as wide, less than twice as long as dactylus, posterior margin with 8 spinelets; dactylus slightly curving inward, with 9 seta-like spinelets arising from bases of very low teeth. Smaller leg, 3rd walking leg, with distal 3 segments subequal to those of larger leg in size; merus 0.78 as long as that of larger leg, with spinules slightly dorsal to proximal 1/3 of anterior margin, in addition to smaller anterior marginal spines; propodus with 5 posterior marginal

spinelets.

Measurements of holotype. Length of carapace including rostrum, 11.7 mm; width of carapace, 6.4 mm; length of cheliped (left), 18.9 mm; of palm, 4.2 mm; of movable finger, 4.2 mm; diameter of ovum, 0.52 mm.

Measurements of paratypes. Carapace lengths of males, 15.1 and 6.1 mm.

Description of paratypes. Two pairs of copulatory pleopods present in both male paratypes. Smaller male immature; lateral margins of carapace converging posteriorly, post-supraocular spines rudimentary; 2nd abdominal segment lacking dorsal row of spines. Larger male with 6 spines on 2nd abdominal segment; cheliped much more thickly setose than in holotype; inner terminal spine of antennular basal segment indistinctly spiniform.

Remarks. This species is most closely related to the preceding *Munida parvioculata.* The correlated characters are subtly different but I believe that the following peculiarities in this species are constant: The carapace bears distinct, non-granulate striae; the supraocular spines are much stouter; the eyes are relatively larger; the second abdominal segment bears more numeruous spines; and notably the walking leg is much more slender, the disto-posterior marginal spine of the merus being noticeably prolonged.

Type-locality. East China Sea west of Osumi-gunto (30°52.0′ N, 128°39.5′ E); 770-800 m.

Munida proxima HENDERSON, 1885

(Fig. 4)

Munida proxima HENDERSON, 1885: 410 (type-locality: north of Admiralty Islands); —1888: 135, pl. 13, fig. 2; TIRMIZI, 1975: 305, figs. 1–8.

Material. Soyo-Maru Sta. B3; 33°05.4′ N, 139°58.7′ E; 430 m; 3 Mar. 1960–2 ovig. ♀.

Measurements. Carapace lengths of ovigerous females, 9.6 and 12.6 mm; diameter of ovum, 0.40 mm.

Remarks. HENDERSON (1885, 1888) described this species based upon three adult females from the *Challenger* collection. Recently TIRMIZI (1975) selected the ovigerous female lectotype, redescribed and illustrated it in detail. Her figure, however, pauses a question whether the walking leg is precisely depicted, for the dactylus in her figure, in contradiction to HENDERSON's definition, is much stouter, also than in the original illustration.

The larger female in the present material has two right walking legs detached from the body; their propodi, showing equal size, suggest that they are the first and second legs; this segment in *Munida scabra* and its allies is usually shorter in the first leg; presumably the leg illustrated by TIRMIZI is the first leg; however, the walking leg of our material seems more slender and much nearer HENDERSON's species account.

There are also some minor differences between the ovigerous female lectotype and our material. In our specimens, the inner terminal small spine of the antennular

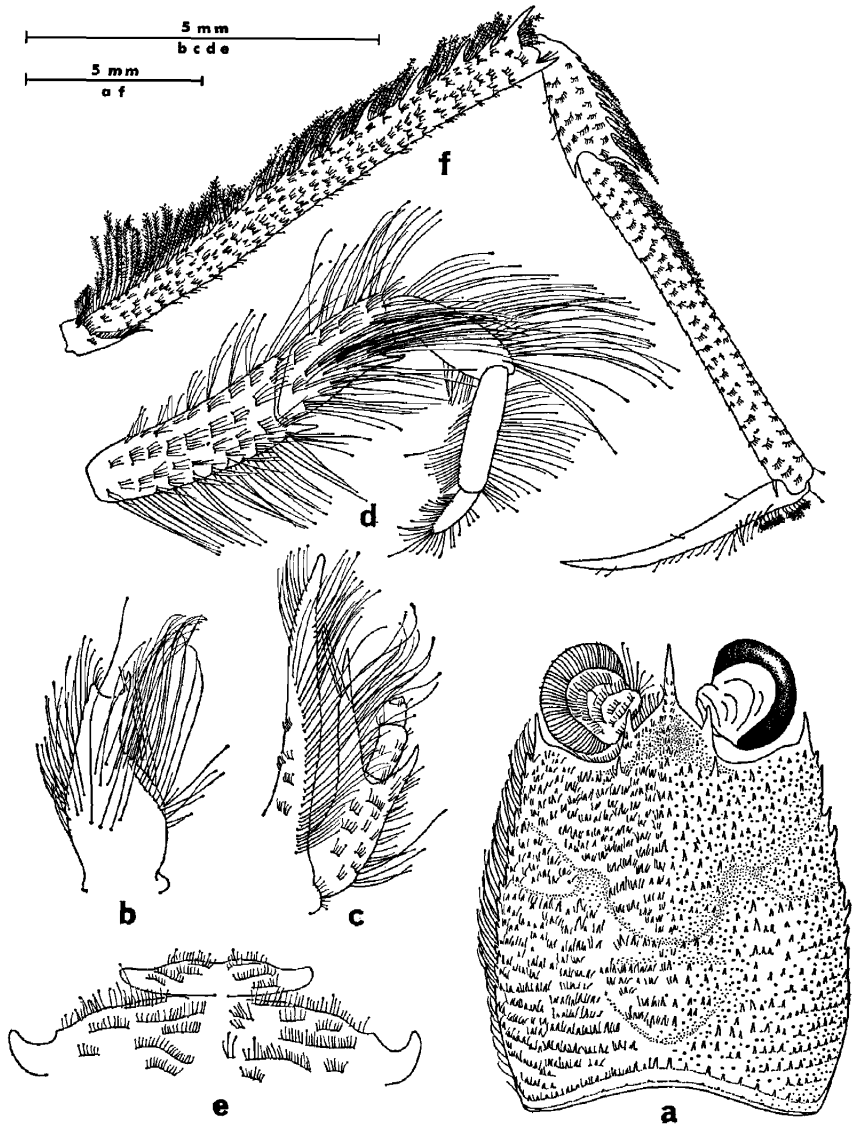

Fig. 4. *Munidaproxima* HENDERSON, origerous female from *Soyo-Maru* Sta. B3, 1960. a, carapace, dorsal view; b, basal segment of left antennule; c, left antennal peduncle; d, endopod of right 3rd maxilliped; e, anterior part of sternal segments; f, detached right walking leg.

basal segment is barely discernible; the third thoracic sternum is much expanded laterally, the median notch being less prominent; the merus of the walking leg bears much more numerous spines on the anterior margin.

Distribution. This is the first record for the species since that of the three male

types from the north of Papua in 275 m.

Munidopsis rostrata (A. MILNE EDWARDS, 1880)

Galacantha rostrata A. MILNE EDWARDS, 1880: 52 (type-locality: Bequia); TIRMIZI, 1966: 206, figs. 23, 24; KENSLEY, 1968: 292.
Munidopsis rostrata: CHACE, 1942: 75.

Material. Soyo-Maru Sta. B4; 32°00.9′ N, 140°23.0′ E; 2,020 m; 4 Dec. 1964–1 ♀. *Soyo-Maru* Sta. B4; 31°51.5′ N, 140°56.0′ E; 2,670 m; 25 Jul. 1971–3 ♂, 1♀. *Soyo-Maru* Sta. B4; 31°37.9′ N, 140°47.0′ E; 2,800 m; 15 Nov. 1973–1 ♂. *Soyo-Maru* Sta. B5; 31°16.5′ N, 140°21.4′ E; 1,940 m; 24 May 1963–1 ♂. *Soyo-Maru* Sta. B5; 30°58.2′ N, 140°38.5′ E; 2,310 m; 2 Jun. 1962–1 ovig. ♀. *Soyo-Maru* Sta. B5; 30°39.4′ N, 140°36.8′ E; 1,950 m; 3 Dec. 1968–1 ♂.

Measurements. Carapace lengths of males, 21.0–29.2 mm; of ovigerous female, 28.9 mm; of nonovigerous female, 26.8 mm; diameter of ovum, 2.6×2.8 mm.

Remarks. Synonymized with this species are 6 different names (CHACE, 1942), widely known from the Atlantic and the Pacific. Chace conclusively mentioned that "Possibly a comparative examination of the 35 or 40 specimens known from all parts of the worlds would reveal minute distinctions by which valid races might be recognized, but it is probable that when additional material is found, these forms will all tend to merge into one variable species."

I have examined several specimens now deposited in the National Museum of Natural History, Smithsonian Institution: 1 male from *Albatross* Sta. 2084, off Martha's Vineyard in 1,290 fm; 1 male from *Blake* Sta. 340, off New Jersey in 1,394 fm; 1 male from *Albatross* Sta. 2571, southeast of Georgia Bank in 1,356 fm; 1 male from *Albatross* Sta. 3362, off Cocos Island in 1,175 fm (determined by FAXON and latter named *Galacantha faxoni* by BENEDICT); 1 ovig. female from *Albatross* Sta. 2052, off Nantucket Shoals in 1,098 fm; 1 male and 1 female from *Albatross* Sta. 5609 and 5670, both off Celebes in 1,092 and 1,181 fm. Details of these will be reported elsewhere, but it is to be noted here that I failed to find any marked differences to thwart CHACE's conclusion.

Distribution. Two more localities in the western Indian Ocean are recently recorded (TIRMIZI, 1966) since the review of CHACE (1942) to which the reader is referred for the distribution. This is an absolutely lower bathyal form, as has previously been taken in 1,650–2,910 m; and it is for the first time recorded in the Japanese waters.

Munidopsis valdiviae (DOFLEIN et BALSS, 1913)

(Pl. 1, fig. 1)

Galacantha valdiviae DOFLEIN & BALSS, 1913: 147, fig. 15; pl. 16, fig. 2 (type-locality: east coast of Africa).

Material. Soyo-Maru Sta. 44; 33°53.2′ N, 136°51.2′ E; 1,120–1,160 m; 7 Mar. 1967–2 ♀.

Measurements. Carapace lengths of nonovigerous females, 22.2 and 24.3 mm.

Remarks. The specimens listed above agree well with the definition of *Galacantha valdiviae*, which is here transferred to the genus *Munidopsis*, according to CHACE's opinion (CHACE, 1942). This species is characterized by having 1) granulate, setiferous scales on the carapace armed with abnormally developed gastric and cardiac spines; 2) the lateral margins of the carapace subparallel, with a strong anterolateral spine and a medium-sized one slightly anterior to midlength; 3) the abdomen not granulate but smooth, covered with fine setae, bearing pronounced mesial spines on the second, third and fourth segments.

The basal segment of the antennule bears two prominent outer terminal spines, the disto-internal margin being minutely produced in one appendage and moderately spiniform in the remaining, instead of being acutely produced as in the holotype.

Distribution. This is the first subsequent record since the male holotype taken from the east coast of Africa in 1,644 m.

Munidopsis antonii (FILHOL, 1884)

(Pl. 1, fig. 2)

Galathodes Antonii FILHOL, 1884: 231, fig. 2; A. MILNE EDWARDS & BOUVIER, 1894: 198, figs. 5, 26.
Munidopsis antonii: HENDERSON, 1888: 151, pl. 18, fig. 1; A. MILNE EEWARDS & BOUVIER, 1900: 321, pl. 4, fig. 2; pl. 30, figs. 20–24; HANSEN, 1908: 38, pl. 3, figs. 3a, 3b.

Material. *Soyo-Maru* Sta. B4; 32°21.5′ N, 141°05.0′ E; 3,580–3,960 m; 24 Nov. 1974–1 ♀. *Soyo-Maru* Sta. B4; 32°08.5′ N, 141°05.4′ E; 3,420 m; 21 Jul. 1974–1 ♀.

Measurements. Carapace lengths of females, 34.5 and 43.5 mm.

Remarks. At my request R. B. MANNING and L. B. HOLTHUIS kindly looked into the problem of the original citation of this species. BENEDICT (1902) and HANSEN (1908) may be correct in thinking that the first valid account is in FILHOL (1884), but the authorship indicated as "*Galathodes antonii* A. MILNE EDWARDS, in FILHOL" is incorrect, because the article by FILHOL includes no indication of the author of the species. As will be seen in A. MILNE EDWARDS & BOUVIER (1900), the species was recognized earlier, but it was not published before the name dated from the figure in FILHOL. FILHOL (1884) did not show the exact locality but the depth (4,100 m) for the species, the material being the *Talisman* collection made off the northwestern Africa. The biological data for the *Talisman* material are provided by A. MILNE EDWARDS & BOUVIER (1900) for two lots, the second of which is apparently referable to that appeared in Filhol. It is taken from the northeast of Azores in 4,010 m.

One of the syntypes, an ovigerous female 43.5mm in carapace length, of *Munidopsis antonii* taken by the *Talisman* from the northeast of Azores in 4,010 m, and now deposited in the National Museum of Natural History, Smithsonian Institution, was examined. In the present material, the merus of the third maxilliped is much more denticulate on the outer margin, and the carpus and merus of the walking leg are also more spinous. These differences, however, seem to fall within the limits of varia-

tion when additional material is found.

The epipod is present on the cheliped.

Distribution. Previously known from the northeast or north of Azores, southern part of Davis Strait, west of Valparaiso and southwest of Australia, in 2,520–4,010 m.

Munidopsis ciliata WOOD-MASON, 1891

(Pl. 2, fig. 1)

Munidopsis ciliata WOOD-MASON in WOOD-MASON & ALCOCK, 1891: 200 (type-locality: Bay of Bengal); FAXON, 1895: 84, pl. 18, fig. 3; ALCOCK & ANDERSON, 1895: pl. 11, figs. 3, 3a; BENEDICT, 1902: 318.

Munidopsis brevimana HENDERSON, 1885: 414 (type-locality: off the Arrout Islands [=off Kepulauan Aru]; between Papua and the Admiralty Islands); — 1888: 154, pl. 17, figs. 1, 2.

Munidopsis (Orophorhynchus) ciliata: ALCOCK, 1901: 267; MacGILCHRIST, 1905: 248; TIRMIZI, 1966: 216, fig. 31.

Material. *Soyo-Maru* Sta. B4; 32°04.0′ N, 140°21.5′ E; 1,940–1,980 m; 10 Oct. 1965–1♂.

Measurements. Carapace length, 27.2 mm.

Remarks. The exquisite illustration of this species is represented by ALCOCK & ANDERSON, (1895: pl. 11, fig. 3). The rostrum is as illustrated by ALCOCK & ANDERSON, but the dorso-mesial ridge is indistinct; the disto-lateral serration described for the *John Murray* material (TIRMIZI, 1966) is absent. The eyestalk bears anterior and posterior terminal spines, the posterior one being smaller and in this specimen abnormally bifid dorsoventrally.

Distribution. Known in the Indo-West Pacific from the Gulf of Aden, the Bay of Bengal, off Kepulauan Aru, between Papua and the Admiralty Islands, and in the eastern Pacific from the tropical west coast of America; in 1,270–2,400 m. This constitutes a new locality record and the range is now extended north to Japan.

Munidopsis subsquamosa HENDERSON, 1885

(Fig. 5; Pl. 2, fig. 2)

Munidopsis subsquamosa HENDERSON, 1885: 414 (type-locality: off the Japanese coast [=southeast of Nojima-zaki, Chiba]); — 1888: 152, pl. 17, fig. 4; FAXON, 1895: 85; GORDON, 1955: 244, figs. 1B, 2D.

Material. *Soyo-Maru* Sta. B4; 32°21.5′ N, 141°05.0′ E; 3,580–3,960 m; 24 Nov. 1974–1 ovig. ♀. *Soyo-Maru* Sta. B4; 31°51.5′ N, 140°56.0′ E; 2,670 m; 25 Jul. 1971–1 ♂.

Measurements. Carapace length of male, 40.2+ mm; of ovigerous female, 55.2 mm; diameter of ovum, 2.2×2.3 mm.

Remarks. The material agrees well with the species account given by HENDERSON (1888) only apart from that, as pointed out by FAXON (1895), the rostrum is gently curving dorsad instead of being almost horizontal as in the male type which afterwards was selected as the lectotype (GORDON, 1955). The rostrum in the present ovigerous female bears two disto-lateral spinules on each side, as seen in *Munidopsis crassa*

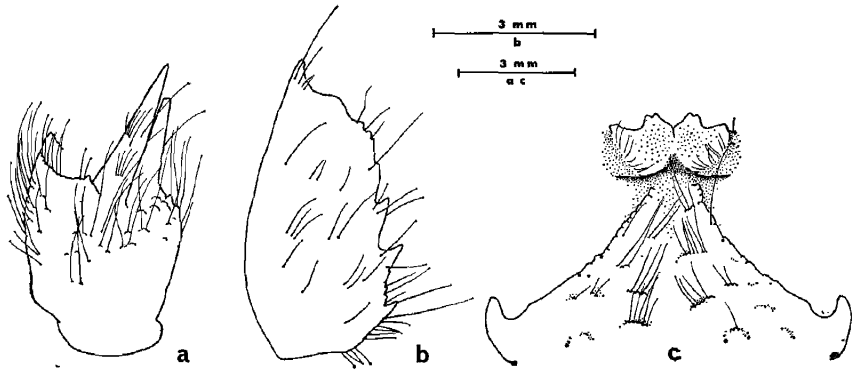

Fig. 5. *Munidopsis subsquamosa* HENDERSON. a, basal segment of left antennule, ovigerous female from *Soyo-Maru* Sta. B4, 1974; b, merus of right 3rd maxilliped, male from *Soyo-Maru* Sta. B4, 1971; c, anterior part of sternal segments, same.

(GORDON, l. c., Fig. 1A), which spinules, however, are totally absent from the male specimen.

The basal segment of the antennule, the merus of the third maxilliped and the anterior part of sternal segments are as illustrated. The epipod is present on the cheliped.

Previously known are two subspecies as distinct from the typical *M. subsquamosa: M. subsquamosa pallida* ALCOCK from the Bay of Bengal and off Zanzibar in 2,959–3,300 m and *M. subsquamosa aculeata* HENDERSON from between Marion Island and the Crozets off the west coast of Patagonia and the Gulf of Panama in 2,520–3,280 m. These two subspecies are shifted to a specific level in the list of BENEDICT (1902). There may be little justification for such discrimination, however, for the two gastric spines and the greater distinctness of the cardiac region characterized for *M. subsquamosa pallida*, are much like those of the present male specimen; and the examination of a male specimen of *M. subsquamosa aculeata* reported by FAXON from the *Albatross* Sta. 3382 in the Gulf of Panama and now deposited in the National Museum of Natural History, Smithsonian Institution, reveals that there is no distinct correlated character other than the gastric spinules; and furthermore, in her discussion on the relationships of *M. crassa* and its allies, GORDON (1955) enumerated several minor distinctions among *M. crassa*, *M. subsquamosa* and its subspecies, and suggested that they may prove to be a variable and widely distributed species. This problem awaits the discovery of more material.

Distribution. Previously recorded from both sides of the Pacific, off Japanese coast and the Gulf of Panama, in 2,690–3,430 m.

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Explanation of plates

Plate 1

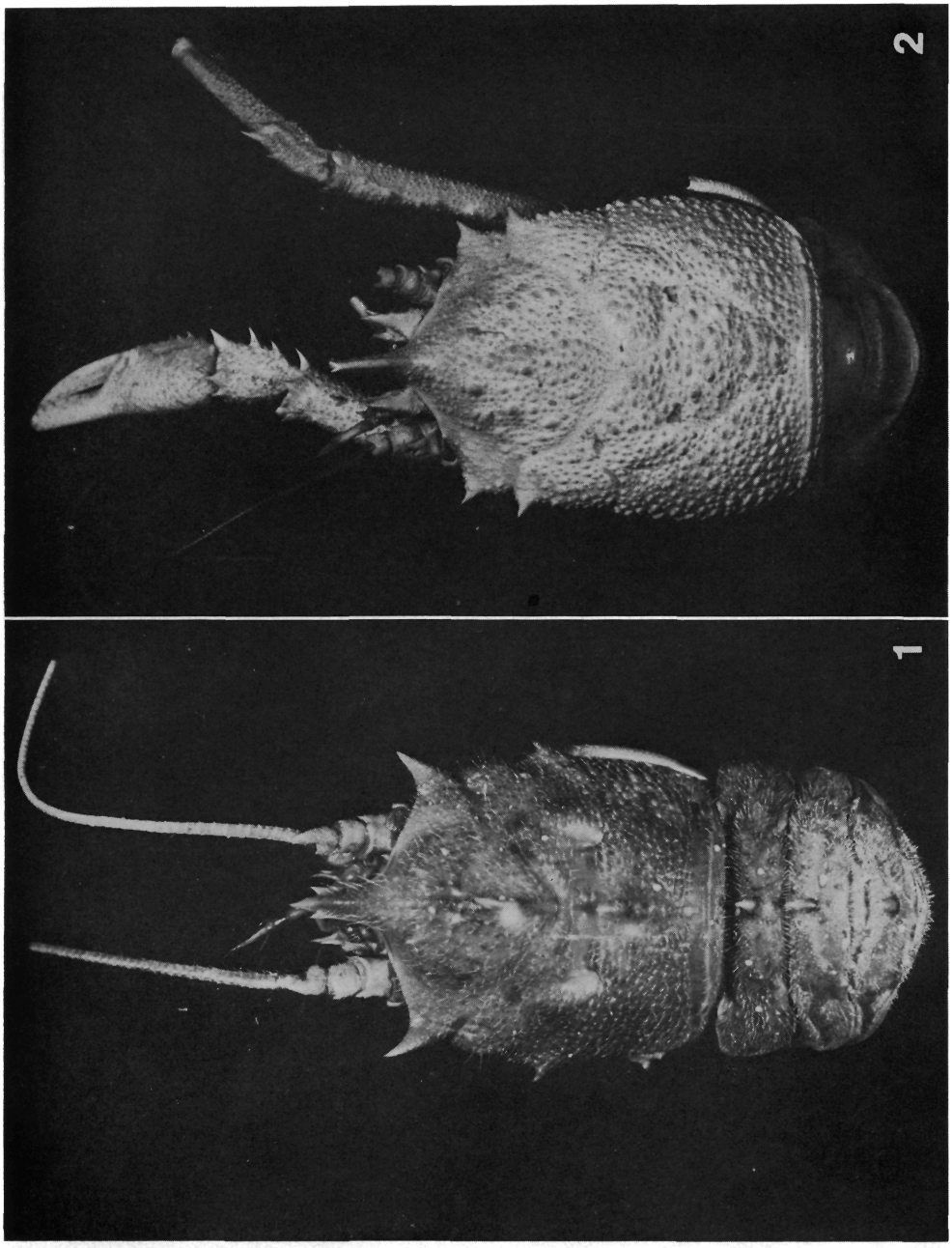
Fig. 1. *Munidopsis valdiviae* (DOFLEIN & BALSS), female from *Soyo-Maru* Sta. 44, 1967; carapace length, 24.3 mm.

Fig. 2. *Munidopsis antonii* (FILHOL), female from *Soyo-Maru* Sta. B4, 1974; carapace length, 43.5 mm.

Plate 2

Fig. 1. *Munidopsis ciliata* WOOD-MASON, male from *Soyo-Maru* Sta. B4, 1965; carapace length, 27.2 mm.

Fig. 2. *Munidopsis subsquamosa* HENDERSON, male from *Soyo-Maru* Sta. B4, 1971; carapace length, 40.2 mm.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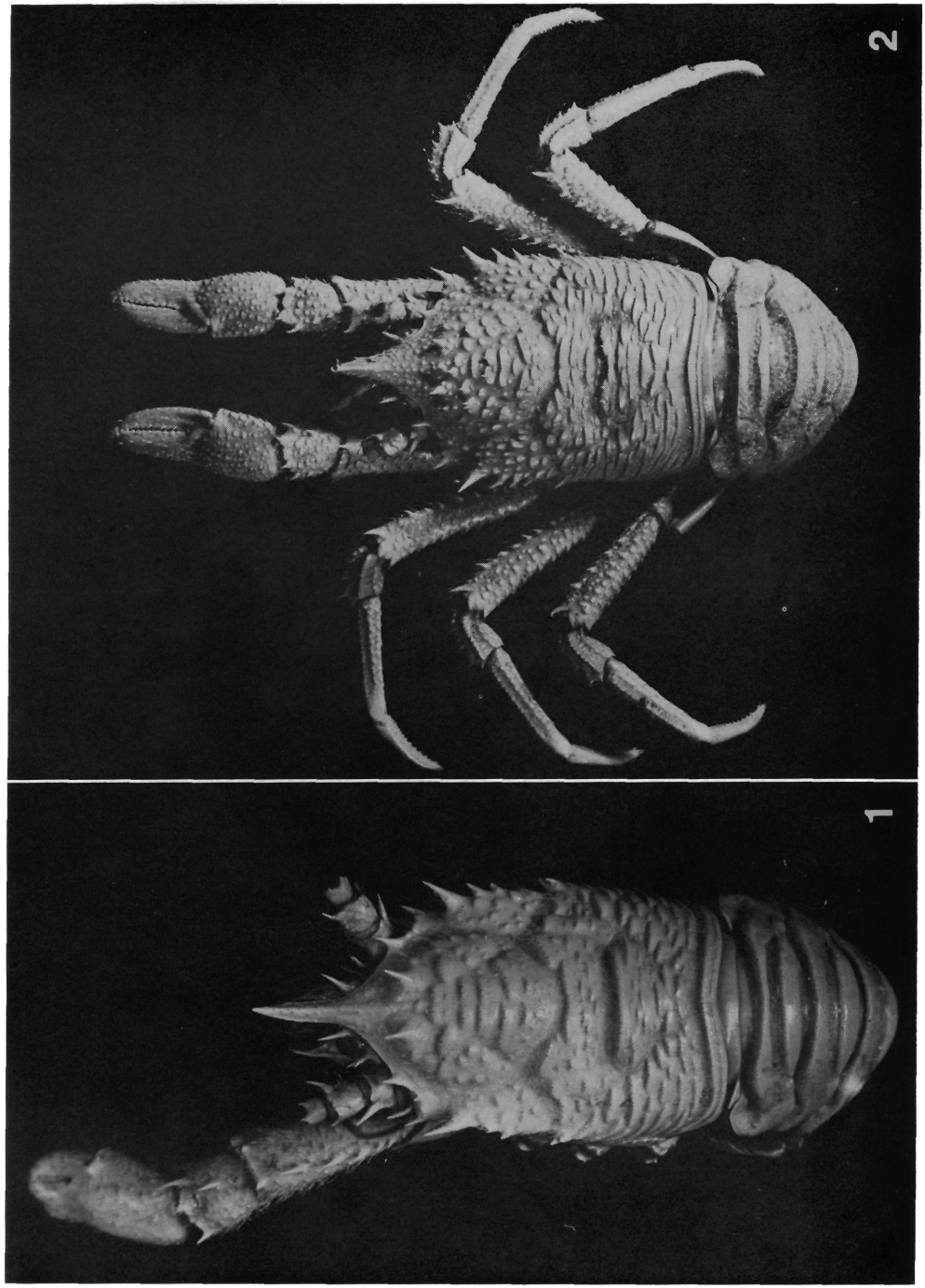
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