

Deepwater Xanthid crabs from French Polynesia (Crustacea, Decapoda, Xanthoidea)

by Peter J. F. DAVIE

Abstract. — A collection of brachyuran crabs of the family Xanthidae, trapped in deepwater in French Polynesia, has been studied. Of a total of 13 species, 10 are described as new, and four new genera are erected : *Alainodaeus* gen. nov. to include *A. akiaki* sp. nov. and *A. rimatara* sp. nov. ; *Epistocavea* gen. nov. to include *E. mururoa* sp. nov. ; *Meriola* gen. nov. to include *M. rufomaculata* sp. nov. ; and *Rata* gen. nov. to include *R. tuamotense* sp. nov. Five species are described in existing genera : *Banareia fatuhiva* sp. nov. ; *Euryozius danielae* sp. nov. ; *Medaeus grandis* sp. nov. ; *Meractaea tafai* sp. nov. ; and *Paraxanthodes polynesiensis* sp. nov. The records of *Demania garthi* Guinot and Richer de Forges, 1981, *Demania mortenseni* (Odhner, 1925), and *Lophozozymus bertonciniae* Guinot and Richer de Forges, 1981, all represent considerable eastwardly range extensions. *Actaea mortenseni* Odhner, 1925, removed from *Actaea* by GUINOT (1976) and subsequently *incertae sedis* is re-described and placed into *Demania* for the first time.

Résumé. — Une collection de crabes de la famille des Xanthidae, capturés en eau profonde, en Polynésie française, au moyen de casiers, est étudiée. Sur un total de 13 espèces, 10 sont nouvelles pour la Science. Quatre genres nouveaux sont créés : *Alainodaeus* pour recevoir *A. akiaki* sp. nov. et *A. rimatara* sp. nov. ; *Epistocavea* pour *E. mururoa* sp. nov. ; *Meriola* pour *M. rufomaculata* sp. nov. ; *Rata* pour *R. tuamotense* sp. nov. Cinq des espèces nouvelles appartiennent à des genres déjà décrits : *Banareia fatuhiva*, *Euryozius danielae*, *Medaeus grandis*, *Meractaea tafai* et *Paraxanthodes polynesiensis*. *Demania garthi* Guinot and Richer de Forges, 1981, *D. mortenseni* (Odhner, 1925) et *Lophozozymus bertonciniae* Guinot and Richer de Forges, 1981, sont signalées pour la première fois en Polynésie française, ce qui étend considérablement, vers l'est, leur aire de distribution. *Actaea mortenseni* Odhner, 1925, exclue du genre *Actaea* par GUINOT (1976) et devenue ainsi un *incertae sedis*, est redécrite et placée, pour la première fois, dans le genre *Demania*.

Key words. — Crustacea, Brachyura, Xanthidae, deepwater fauna, trapping, Pacific Ocean, French Polynesia.

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INTRODUCTION

The last 20 years have considerably improved our knowledge of the crab fauna of the western Pacific Ocean. The MUSORSTOM I, II and III Expeditions, under the direction of Professor Jacques FOREST, in 1976, 1980 and 1985, have led to important studies of the bathyal fauna of the Philippines (FOREST, 1981, 1986 ; SERÈNE and VADON, 1981). The investigation of the bathyal zone of the plateau of the Chesterfield Islands and of New Caledonia has been

undertaken with several cruises *viz.* CHALCAL I and II, BIOCAL, MUSORSTOM IV and V (see RICHER DE FORGES, 1990), and the results of the study of some of the collected material, in particular the Crustacea, has been published as part of the French MUSORSTOM Series.

Along the Australian coast, the deepwater crustacean fauna has been systematically investigated recently by the cruises of CIDARIS I, II, and III, and collections made by R.V. 'Soela'. Papers on crabs by the following authors are beginning to fill the gaps in our knowledge of this poorly known region (GRIFFIN and BROWN, 1976 ; GRIFFIN and TRANTER, 1986 *a, b* ; DAVIE and SHORT, 1989 ; and DAVIE and RICHER DE FORGES (in prep.).

The present study is based on a part of the crab collections made by J. POUPIN of the French Service Mixte de Contrôle Biologique (SMCB). The collections were made from the F.R.V. 'Marara' which has been carrying out a biological survey throughout French Polynesia. Among the fishing activities, traps are set on the outer slopes of the islands in depths ranging from 100 to 1000m. The details of the gear operations and the yields of Pandalidae shrimps are given in POUPIN *et al.* (1990). POUPIN and RICHER DE FORGES (1991) have briefly outlined the study and their report stresses " the richness and high degree of endemicy of this poorly known area ". Photographs taken on board vessel by J. POUPIN have allowed the life colours of several of the species to be described.

The deepwater of the central and southern Pacific Ocean is still a treasure-house of new taxa. GUINOT and RICHER DE FORGES (1981*a, b*) described three new genera and twelve new species of crabs from deepwater in the Indo-Pacific Region, and notably, ten of these species and two of the genera are only represented in the Pacific. Of the present collection of 13 species from just one family, the Xanthidae, 10 are new to science, and four new genera are needed to accommodate them. Of the remaining three species, two had only been described in the aforementioned work of GUINOT and RICHER DE FORGES (1981*a, b*), and only one was known prior to the 1980s. An additional new species of xanthid crab, *Hypocolpus mararae* Crosnier, 1991, was also collected along with the present specimens, but has been reported on separately by Alain CROSNIER.

Abbreviations used in the text are : AM, Australian Museum, Sydney ; MNHN, Muséum national d'Histoire naturelle, Paris ; QM, Queensland Museum, Brisbane ; USNM, Smithsonian Institution, United States National Museum, Washington. The descriptions for this paper were prepared using the DELTA computer system for generating taxonomic descriptions (DALLWITZ and PAINE, 1986).

The abbreviated terminology used for carapace regions is that used by SERÈNE (1984) following DANA (1852). Measurements given in the text are of carapace breadth (measured at the widest point including lateral spines) followed by length. Leg segments were measured along the top margin and so these were not always the maximum possible length, and this should be borne in mind when using the ratios. The exact limits of the width of the hind margin are also sometimes difficult to determine and in this work they were defined by the point at which the lateral carapace suture meets the rear margin.

LIST OF SPECIES OF XANTHIDAE TRAPPED IN DEEPWATER
IN FRENCH POLYNESIA

(* denotes a previous record ; the species is not further discussed in this paper).

Trichiinae De Haan, 1841

Banareia fatuhiva sp. nov.

Xanthinae MacLeay, 1838

Demania garthi Guinot and Richer de Forges, 1981

Demania mortenseni (Odhner, 1925) comb. nov.

Paraxanthodes polynesiensis sp. nov.

Euxanthinae Alcock, 1898

Alainodaeus akiaki gen. nov., sp. nov.

Alainodaeus rimatara gen. nov., sp. nov.

Epistocavea mururoa gen. nov., sp. nov.

* *Hypocolpus mararae* Crosnier, 1991

Medaeus grandis sp. nov.

Actaeinae Alcock, 1898

Meractaea tafai sp. nov.

Rata tuamotense gen. nov., sp. nov.

Zosiminae Alcock, 1898

Lophozymus bertonciniae Guinot and Richer de Forges, 1981

Liomerinae Sakai, 1976

Meriola rufomaculata gen. nov., sp. nov.

Incertae sedis

Euryozius danielae sp. nov.

Family XANTHIDAE MacLeay, 1838

TRICHIINAE De Haan, 1841

***Banareia fatuhiva* sp. nov.**

(Fig. 1 ; pl. 1)

ETYMOLOGY. — The name refers to the Island of Fatu Hiva, in the Marquises Islands, near where the paratypes were collected. It is treated here as a noun in apposition.

TYPE MATERIAL. — The large male (MNHN-B22228) is designated as holotype. The other two specimens are paratypes.

MATERIAL EXAMINED. — **French Polynesia.** SMCB (J. POUPIN) : **Marquises Islands** : Tahuata, Stn 300, 9°54.5'S, 139°07.9'W, trapped 190 m, 1.9.1990 : 1 ♂ 40.4 × 29.9 mm (MNHN-B22228). Fatu Hiva, Stn 306, 10°31.1'S, 138°39.4'W, trapped, 250 m, 4.09.1990 : 1 ♂ 27.4 × 20.5 ; 1 ♀ 27.7 × 20.7 mm (MNHN-B22229).

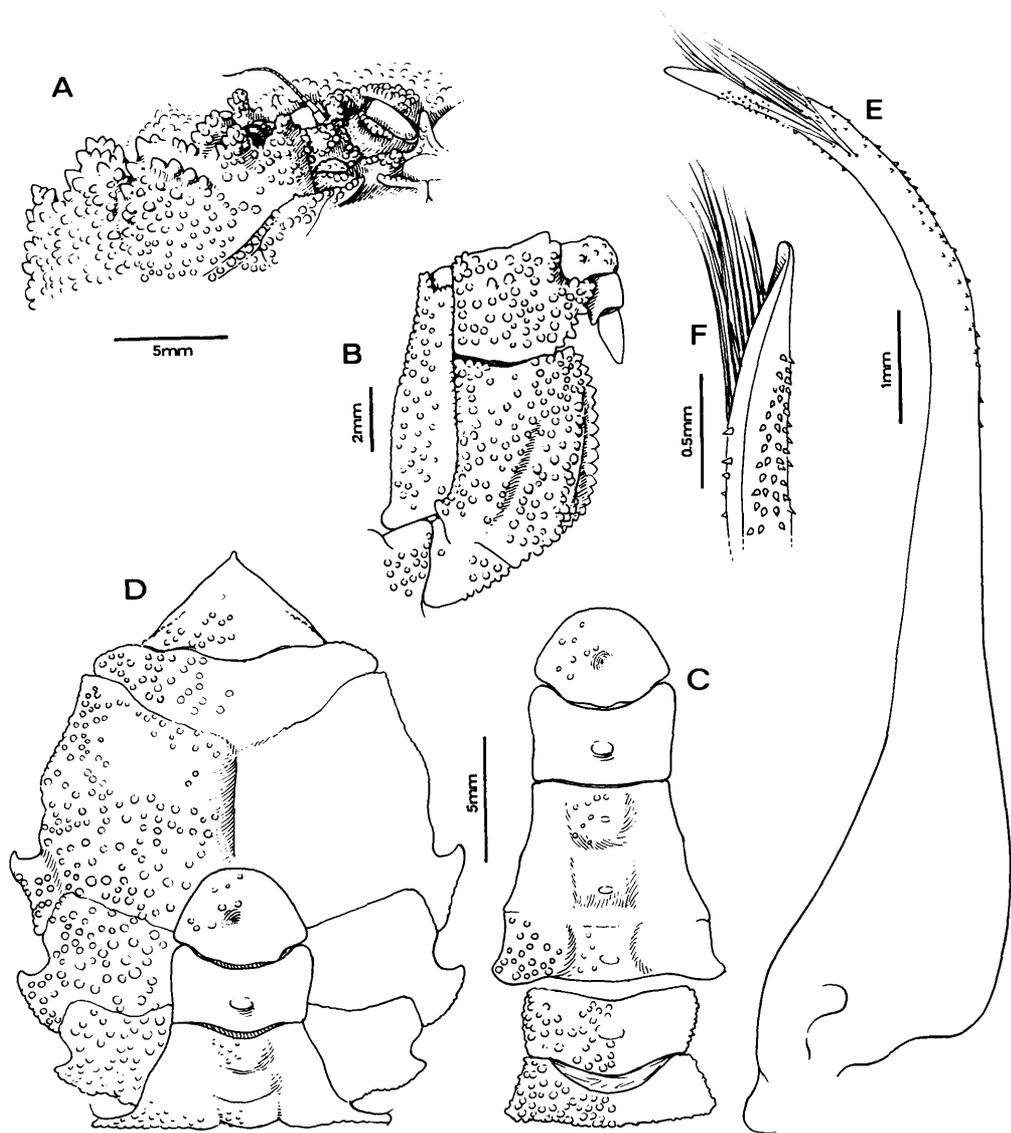


FIG. 1. — *Banareia fatuhiva* sp. nov. Holotype ♂, MNHN-B22228, Tahuata, Marquises Islands. A, frontal view ; B, third maxilliped ; C, abdomen ; D, sternum and abdomen ; E, F, first gonopod.

DESCRIPTION

Carapace sub-globose *c.* 1.34-1.35 times broader than long. Fronto-orbital width *c.* 0.59-0.65 times carapace length. Carapace convex in both directions, but more flattened posteriorly. Regions moderately defined, separated by deep, smooth, narrow grooves ; 1F, 2F and 1M fused ; 1M narrowly obliquely divided from 2M for most of length but connected at

inner posterior corner ; 2M completely separated from 3M ; 2M entire, not subdivided ; 3M with anterior projection very long reaching anteriorly to level with posterior-most point of orbit ; 4M more-or-less clearly separated from 3M ; strong grooves posterior to raised orbital rim ; 2L wide, clearly separated, with raised granular tubercle in anterolateral corner ; lateral regions swollen ; regions behind 2L not strongly demarcated, a narrow groove separating 4L distinct in places, 6L more-or-less well separated ; cardiac region (1P) strongly indicated. Anterolateral margins regularly convex ; granulated ; with four teeth behind the exorbital angle, not strongly projecting ; first tooth an irregularly granular lobe, with posterior granules slightly more prominent ; second and third teeth similar, in the form of granular tubercles ; between teeth 1 and 2, and 2 and 3, are deep, smooth, narrow grooves which continue onto the pterygostome, and meet ventrally so as to describe a triangle ; behind third tooth margin very long, *c.* half total length of anterolateral margin, armed with several strong granules, terminating in a larger granular tubercle at junction with posterolateral margin ; posterolateral margin oblique, slightly concave, rounded. Front *c.* 0.21-0.24 times carapace width ; *c.* 0.49-0.5 times fronto-orbital width ; moderately projecting ; strongly bilobed, with very deep U-shaped sulcus, each tooth roundly triangular ; lateral angles also bluntly acute, strongly separated from medial teeth, but not as strongly projecting. Posterior margin *c.* 0.27-0.3 times carapace width. Carapace surface with granules covering entire surface except for grooves ; granules discrete, on average smaller medially, and larger towards anterolateral margins. Setae of medium length, soft, covering entire surface and give a shaggy appearance. Upper orbital border evenly granular, raised, with strongly projecting tubercular tooth medial to exorbital tooth, separated by smooth narrow grooves ; exorbital tooth granular, also separated by deep narrow grooves. Lower orbital border granular ; armed with two similar, large granular teeth ; sub-orbital and sub-hepatic regions granular, granules becoming coarser dorsally. Antennal flagellum small and entering orbit, reaching just beyond lateral edge of orbit. Basal antennal segment just touching front ; armed distally with small, forwardly projecting, bluntly granular lobe. Antennules folding obliquely ; epistome relatively narrow from side to side, deeply excavated, upper lateral margins with a blunt, granular, medial tooth. Inter-antennular septum narrow.

Third maxilliped : merus distinctly shorter than ischium ; merus wider than long, length *c.* 0.9 times breadth ; inner distal angle below palp produced as sharply granular tooth ; *c.* 0.6 times length of ischium. Ischium rectangular, length *c.* 1.4 times breadth ; inner margin serrated.

Chelipeds subequal ; large and robust. Merus with posterior border granulate ; with broad sub-distal lobe ; lower border granulate ; anterior border sparsely granulate, rounded. Carpus with inner angle not produced, but strongly angular ; inner margin granular ; upper surface and outer margin granular like carapace ; granules present on inner face of carpus just below inner angle. Outer surface of palm entirely covered by thick setae (like carapace) except for distal halves of fingers ; coarsely granular, largest granules arranged in 2-3 more-or-less distinct rows. Inner surface of palm smooth and punctate distally, but with vertical band of large rounded granules proximally. Immobile finger moderately long, with a medial sulcus over proximal two-thirds defined by coarsely granular ridges ; cutting margins bluntly cristate ; fixed finger with 2-3 low teeth in proximal half ; dactyl also with 2-3 proximal teeth but very poorly defined. Length of cutting margin of fixed finger *c.* 0.35 times length propodus. Ventral border of chela concave at base of fixed finger. Dorsal surface of dactyl granular. Fingers pointed ; without a noticeable gape between the cutting margins ; black colouring of fixed finger

continuing onto palm to about two-thirds of distance along ventral margin, proximal edge of colouring oblique on outer face, but more nearly vertical on inner face.

Walking legs : relatively short ; compressed ; broad ; first pair slightly the longest, *c.* 1-1.1 times maximum carapace width. Merus of third leg *c.* 2.2 times as long as wide. Carpus *c.* 1.6 times as long as wide. Propodus *c.* 1.1 times as long as wide. Dactyli longer than propodi ; slender and straight ; terminating in an acute chitinous tip. Merus anterior margin unarmed terminally. Carpus with longitudinal sulcus on upper surface. All segments granular ; thickly covered with soft setae, giving a shaggy appearance.

Male abdomen : third to fifth fused ; third segment slightly the widest. First segment *c.* 0.9 times width third segment. Segments three-five tapering, lateral margin of segment 3 slightly concave. Segment six *c.* 1.8 times wider than long. Telson *c.* 0.8 times longer than wide ; evenly rounded.

Gonopods : G1 long ; slender ; curved ; evenly tapering to pointed tip ; row of long setae present apically on dorsal margin. G2 short ; evenly curved ; tip short.

Sternum : relatively narrow ; granular ; deeply cleft medially on segment 4 ; fused suture line between segments 3 and 4 evident across whole width ; almost entire ventral surface covered with thick shaggy setae like dorsal surface.

REMARKS. — The combination of an entire 3M (not tripartite), the undivided 2M, and the relatively poorly lobulated anterolateral margins, separates *Banareia fatuhiva* sp. nov. from all described species except for *B. banareias* (Rathbun, 1911) and *B. villosa* Rathbun, 1906. *B. fatuhiva* is clearly distinguishable from those species by having much more sharply defined regions ; by having the grooves between the first two anterolateral teeth continuing onto the subhepatic region ; by the very long border between the third and fourth anterolateral teeth ; by the very long narrow median lobe of 3M ; and by the distinctive, very prominent, narrow frontal lobes.

DISTRIBUTION. — Known only from the Marquises Islands, French Polynesia. Bathymetric range : 190-250 m.

XANTHINAE MacLeay, 1838

Demania garthi Guinot and Richer de Forges, 1981

(Fig. 2 ; pl. 2)

Demania garthi Guinot and Richer de Forges, 1981a : 1121-22, pl. I, 2, 2a

MATERIAL EXAMINED. — **French Polynesia.** SMCB (J. POUPIN) : **Society Islands** : Tubuai, Isles Sous le Vent, Stn 417, 16°14.5'S, 151°47.1'E, trapped, 245 m, 13.5.1991 : 2 ♂ 38.6 × 26.7, 49.6 × 33.8 mm (MNHN). — **Tuamotu Archipelago** : Nihuru, 16°42.8'S, 142°52.8'W, trapped, 220 m, 15.11.1989 : 1 ♀ 45.7 × 31.6 mm (MNHN). Mururoa, 21°46.9'S, 138°55.4'W, trapped, 210 m, 30.11.1989 : 1 ♂ 53.4 × 37.1 ; 1 ♀ 51.0 × 36.0 mm (MNHN). Mururoa, 21°48.1'S, 138°55.9'W, trapped, 220 m, 2.12.1989 : 1 ♂ 54.0 × 37.3 mm (USNM). Mururoa, Stn 313, 21°52.3'S, 139°02.2'W, trapped, 140 m, 17.10.1990 : 1 ♀ 45.6 × 32.0 mm (USNM). — **Austral Islands** : Maria, Stn 352, 21°47.6'S, 154°42.9'W, trapped, 120 m, 8.12.1990 : 1 ♂ 56.7 × 40.9 mm (QM W8031). Tubuai, Stn 350, 23°20.7'S, 147°32.4'W, trapped, 200 m, 5.12.1990 : 1 ♀ 52.3 × 37.5 mm (MNHN).

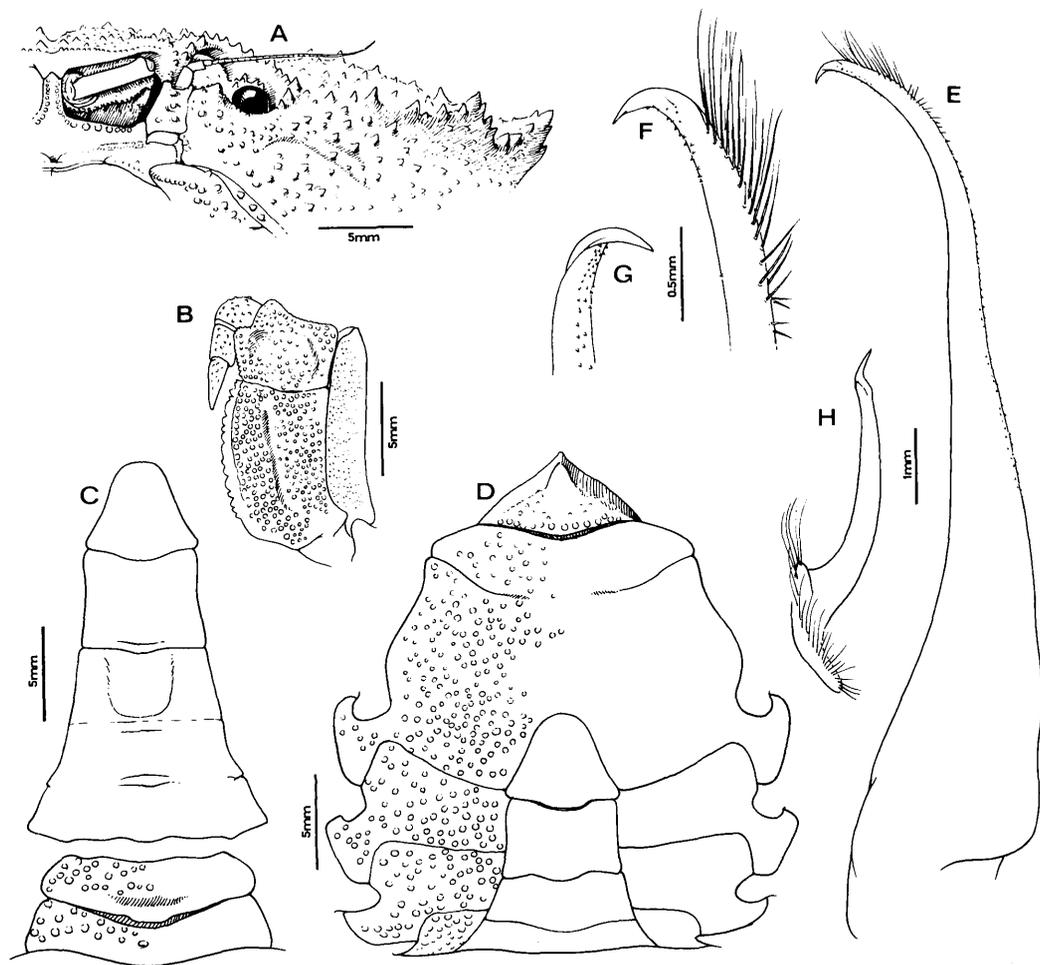


FIG. 2. — *Demania garthi* Guinot and Richer de Forges, 1981. ♂, MNHN-Unreg., Mururoa, Tuamotu Archipelago, 30.11.1989. A, frontal view; B, third maxilliped; C, abdomen; D, sternum and abdomen; E, F, G, first gonopod; H, second gonopod.

REMARKS. — This large distinctive species was described from a single female specimen; therefore an opportunity is taken here to illustrate the male for the first time.

COLOUR. — Predominantly reddish-orange on carapace and pereiopods, with cream to white mainly in the grooves separating the regions, but also lightly speckled elsewhere. Chelae with fingers reddish-orange basally, followed by a broad, brown band, fading to a dirty cream on distal half.

DISTRIBUTION. — Southern Pacific Ocean from New Caledonia (type locality) to French Polynesia. These records mark a considerable easterly range extension. Bathymetric range : 200-245 m.

***Demania mortenseni* (Odhner, 1925) comb. nov.**

(Fig. 3 ; pl. 3)

Actaea mortenseni Odhner, 1925 : 51-52, pl. 5, fig. 9. (?) SAKAI, 1976 : 442-443, pl. 158, fig. 1.
[*Actaea*] *mortenseni* ; GUINOT, 1976 : 204, pl. 19, fig. 4, 4a.

MATERIAL EXAMINED. — **French Polynesia.** SMCB (J. POUPIN) : **Marquises Islands** : Fatu Hiva, Stn 306, 10°31.1'S, 138°39.4'W, trapped, 250 m, 4.09.1990 : 1 ♀ 21.4 × 15.7 mm ; 2 ♂ 20.9 × 15.0, 19.7 × 14.3 mm (MNHN-B22249). — **Society Islands** : Iles Sous le Vent, Mopelia, 16°47.0'S, 153°55.8'W, depth unknown, 9.08.1989 : 1 ♂ 21.5 × 15.0 mm (USNM). — **Tuamotu Archipelago** : Akiaki, 18°32'S, 139°12'W, 250-300 m, in pots, 10.06.1989 : 1 ♂ 19.5 × 14.0 mm (MNHN-B22248) 1 ♂ 18.0 × 12.7 mm (QM W8032). Mururoa, 21°46.8'S, 138°52.1'W, 200 m, caught in pots, 28.11.1989 : 1 ♀ 17.9 × 12.4 mm (MNHN-B22250). Tuamotu Arch., 350 m, caught in pots, 8.07.1985 : 1 ♀ 24.1 × 16.6 mm (USNM).

DESCRIPTION

Carapace transversely ovoid ; *c.* 1.38-1.44 times broader than long. Fronto-orbital width *c.* 0.75-0.8 times carapace length. Carapace convex anteriorly, flat from side to side across postero-branchial regions. Regions well defined, separated by smooth grooves ; 1F and 2F fused ; 1M moderately large, triangular, separated from 2M ; 2M large, broad not subdivided ; 3M entire, medial prolongation narrow, reaching nearly to anterior end of 1M ; 4M distinguishable ; 1L, 2L, and 3L fused into single, broad region ; 4L separated anteriorly from 1L-3L by a shallow groove, fused with 5L laterally ; 6L poorly separated from 5L ; 1P broad, poorly delimited laterally ; 2P also poorly defined, but with ridges slightly raised laterally above posterior margin. Anterolateral margins regularly convex, granular ; with three low teeth behind the exorbital angle ; not strongly projecting ; first tooth about half-way back along anterolateral margin ; in front of first tooth and lateral to orbit, margin rounded, not defined ; second and third teeth evenly spaced, slightly more prominent than first ; greatest carapace width between second pair of teeth ; posterolateral margins convergent, straight. Front *c.* 0.29-0.33 times carapace width ; 0.56-0.6 times fronto-orbital width ; bilobed, margins acutely granular ; lateral angles formed by acute large granules. Posterior margin *c.* 0.35-0.37 times carapace width. Carapace surface covered in rounded granules, except in grooves separating regions ; larger anteriorly, minute posteriorly ; more acute towards margins, especially on smaller specimens ; without setae. Upper orbital border evenly granular ; concave ; orbital fissures obsolete. Lower orbital border irregularly granular. Inner angle of lower orbital border formed by a triangular tooth ; lateral edge of orbit without a notch. Antennal flagellum entering orbit, filamentous, reaching just beyond outer orbital margin. Basal antennal segment just touching front. Basal antennular segment with row of granules along anterior margin and a short row anterolaterally ; palp folds obliquely, first segment moderately long, armed with small sharp granules on outer face ; inter-antennular septum triangular ; superior margins of epistome below antennules with a row of granules, inferior margin projecting.

Third maxilliped : merus of third maxilliped distinctly shorter than ischium. Merus *c.* 0.7

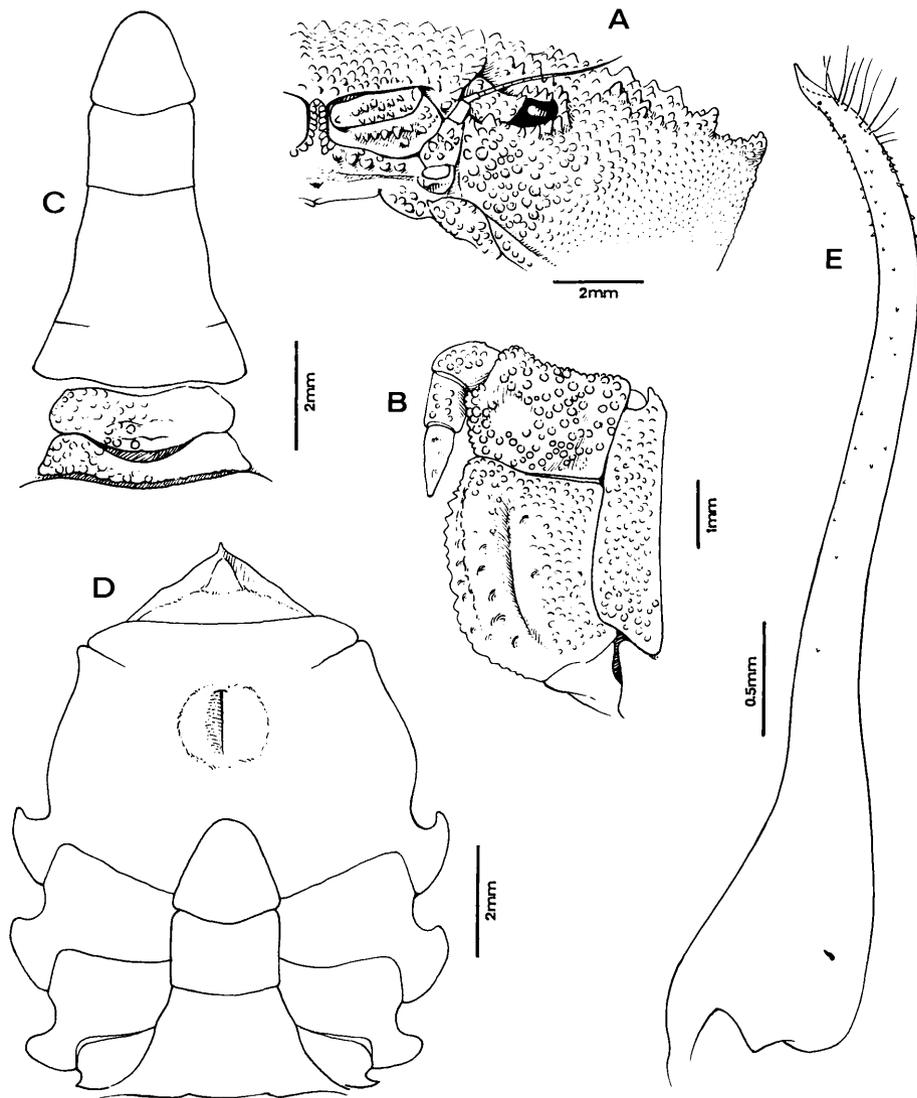


FIG. 3. — *Demania mortenseni* (Odhner, 1925). ♂, MNHN-B22248, Akiaki, Tuamotu Archipelago. A, frontal view; B, third maxilliped; C, abdomen; D, sternum and abdomen; E, first gonopod.

times wider than long; antero-external angle produced, strongly angled, rounded; 0.5-0.6 times length of ischium. Ischium sub-rectangular, length *c.* 1.3-1.5 times width; inner margin granular.

Chelipeds subequal; large and robust, height of palm *c.* 0.55 times length including fixed finger; merus with posterior border granulate, with broad subdistal lobe; lower border

angle, connected by an oblique crest to a small ventral tubercle ; inner margin granular ; upper and outer surfaces covered with conical granules. Outer surface of palm with coarse conical granules. Outer surface of palm without setae. Inner surface of palm sparsely granular, most granules minute, smooth, small patch of larger granules medially. Immobile finger with ventral granular ridge ; moderately short. Length cutting edge *c.* 0.34 times length propodus. Ventral border of chela more-or-less concave at base of fixed finger. Dorsal surface of dactyl granular. Fingers pointed ; a narrow gape between cutting margins basally.

Walking legs of medium length ; compressed ; slender ; first and second pairs sub-equal and longer than others, very slightly longer than third pair. Longest leg *c.* 1.2 times maximum carapace width. Merus of third leg *c.* 2.9-3.3 times as long as wide. Carpus *c.* 2-2.3 times as long as wide. Propodus *c.* 1.6-1.9 times as long as wide. Dactyli *c.* 1.4-1.5 times length of propodus. Dactyli slender and straight ; terminating in an acute chitinous recurved tip. Merus of anterior margin terminating in a pronounced blunt tooth. Superior margins of meri with row of bluntly acute, distally pointed tubercles, appearing serrated ; inferior margins granular, particularly on anterior legs ; carpi and propodi with enlarged, coarse, bluntly acute tubercles on superior margins, reducing in size across upper face, more-or-less arranged in rows ; bearing scattered setae on margins, and forming a conspicuous row on distal inferior margins of propodi and on upper and lower margins of dactyli.

Male abdomen relatively narrow ; five free segments ; third to fifth fused ; first segment subequal in width to third. First segment narrow. Segments three-five tapering. Segment six *c.* 1.2-1.3 times wider than long. Telson longer than segment 6 ; triangular, rounded apically, about as long as wide at base.

Gonopods : G1 long, reaching well past suture between sternites 4 and 5 ; slender ; curved. Setae present ; row of long setae on dorsal margin near tip ; minute conical setae along dorsal margin over distal half, and on ventral margin near tip ; tip pointed, hollowed, gonopore opening subterminally. G2 short ; evenly curved ; tip short, reflexed, pointed.

Sternum smooth, punctate ; with short, deep cleft medially on sternite 4, just behind line of fusion with sternite 3.

REMARKS

The present specimens agree precisely with the published descriptions and figures in ODHNER (1925, pl. 5, fig. 9) and the photograph of the holotype in GUINOT (1976, pl. 19, fig. 4, 4a). The pattern of dorsal carapace regions, the degree of granulation, the shape of the front, and the length and armature of the legs (as can be seen on ODHNER's figure), all leave no doubt that the identification is correct. The record of SAKAI (1976) needs to be confirmed — the shape of the anterolateral margins of the specimen he figured is appreciably different from the holotype and from specimens in the present series. The male has not been previously described, helping to explain why its correct generic placement has been problematical. GUINOT (1976) removed it both from *Actaea* and the Actaeinae without giving it a new generic position, except to say that it was more nearly related to *Xanthias* and its allies. In this I agree, and further suggest that it should rightfully belong to *Demania* Laurie, 1906. This genus has grown enormously in the last 20 years and now includes about 17 species (see NG and YANG, 1989, for a key to currently recognised species). The generic definition is, however, rather broad, and

a careful review of the included species may reveal natural groupings within it, and lead to the splitting of the genus. The type of the genus, *Demania splendida* Laurie, 1906, is very distinctive and there seems to be a natural grouping around it of species, all having the superior margins of the meri of the walking legs smoothly crested. The present species although not part of this group, nevertheless has its closest relatives amongst the currently recognised *Demania* species and is therefore included in this genus.

By having serrated dorsal margins of the meri of the walking legs, by the shape of the carapace and the frontal margin, and by having the dorsal surface of the carapace covered with small pointed granules, *Demania mortenseni* most closely resembles *D. crosnieri* Serène, 1984, *D. serenei* Guinot and Richer de Forges, 1981, *D. garthi* Guinot and Richer de Forges, 1981, and *D. alcocki* Deb, 1986. It is separated from the former two by having region 2M entire, and not longitudinally divided. It differs obviously from *D. alcocki* by having spiniform anterolateral teeth and small, sharp granules covering the carapace and legs. It is closest in appearance to *D. garthi* but it can be separated by several characters : the less prominent anterolateral spines ; the deflexed frontal margin with the evenly convex lobes, whereas on *garthi* the frontal margin is more projecting and the lobes more sinuous ; the walking legs, and in particular the meri are relatively shorter ; the fingers of the chelipeds are shorter ; the male first pleopods differ ; and finally, *mortenseni* is a much smaller species. The regional definition is almost identical on both species, and the shapes of the sternums and male abdomens are very similar. *D. mortenseni* resembles members of the Actaeinae in the shape of the deflexed and rounded frontal margin, and in the relatively short fingers of the chelipeds, but these could be considered convergences, as the other similarities to the Xanthinae are so great.

DISTRIBUTION. — Kei Islands, Micronesia, (5°37'10'S, 132°23'W), type locality, to Tuamotu Archipelago, French Polynesia (21°47'S, 138°52'W). Bathymetric range : 200-350 m.

PARAXANTHODES Guinot, 1968

Paraxanthodes Guinot, 1968a : 723-726 ; 1971 : 1069. SAKAI, 1976 : 432. SERÈNE, 1984 : 208-209.

Paraxanthodes Guinot, 1968, was established to receive two species : *Micropanope obtusidens* Sakai, 1965 (type species), and *Xanthodes cumatodes* McGilchrist, 1905. The description of *Paraxanthodes polynesiensis* sp. nov. brings the total to three. The new species is quite distinctive, differing markedly from the two already known species, but these differences are mostly superficial and not of generic significance. An updated generic diagnosis is given.

DIAGNOSIS. — Carapace transversely oval or hexagonal, c.1.4-1.5 times wider than long ; regions well defined ; 1M fused to inner branch of 2M ; 2M partially divided into three parts by longitudinal grooves, outer groove more-or-less obvious ; 4M more-or-less distinct ; surface may be coarsely granular and roughened, or minutely granular ; front slightly to moderately projecting, bilobed, lobes well separated or abutting for most of length, lateral angles of front projecting ; anterolateral margins with 4 teeth behind exorbital angle, surface adjacent to orbit rugose and granular, first tooth may be connected by granular ridge with orbit (*polynesiensis*) otherwise margin poorly defined and continuing onto sub-hepatic region sometimes with 1-2 larger granular tubercles, posterolateral borders strongly convergent. Merus of third maxilliped with antero-external angle produced. Efferent branchial ridges extending anteriorly to meet

epistome; lacinie of maxilliped 1 with inner expansion relatively short and truncated. Chelipeds moderately unequal, similar in form but smaller cheliped more slender and with fingers longer; fingers pointed. Walking legs moderately long, compressed, with superior margins varying from minutely granular to serrated, and sometimes slightly cristate. Male abdomen relatively narrow, third to fifth segments fused. Telson rounded. Male gonopod 1, long, slender, curved, tip reflexed and more-or-less elongated.

Paraxanthodes polynesiensis sp. nov.

(Fig. 4; pl. 4)

ETYMOLOGY. — Named in reference to Polynesia, from where the only specimens are so far known.

TYPE MATERIAL. — The male, 20.8 × 15.1 mm, from Tuamotu Archipelago, is designated the holotype. All other specimens are paratypic.

MATERIAL EXAMINED. — **French Polynesia**. SMCB (J. POUPIN) : **Marquises Islands** : Tahuata, Stn 300, 9°54.5'S, 139°07.9'W, trapped, 190 m, 1.09.1990 : 2 ♀ 24.4 × 17.5, 22.6 × 16.7; 1 ♂ 32.5 × 23.6 mm (MNHN-B22227). Fatu Hiva, Stn 306, 10°31.1'S, 138°39.4'W, trapped, 250 m, 4.09.1990 : 1 ♀ 19.3 × 14.2 mm (MNHN-B22226). — **Tuamotu Archipelago** : Mururoa, 21°46.8'S, 138°52.1'W, trapped, 200 m, 28.11.1989 : 1 ♂ 20.8 × 15.1 mm (MNHN-B22225)

DESCRIPTION

Carapace transversely ovoid, *c.* 1.38-1.39 times broader than long. Fronto-orbital width *c.* 0.67-0.75 times carapace length. Carapace convex anteriorly, flat from side to side across posterobranchial regions but depressed laterally. Regions well defined : 1F and 2F not demarcated; 1M fused with inner branch of 2M posteriorly, anterior margin prominent, straight, slightly oblique; 2M partially divided by a broad longitudinal groove, outer branch about twice width of inner branch, outer branch itself partly sub-divided by a shallower short, narrow groove with outer part narrower than inner part; 3M entire, reaching to about middle of 1M; 4M not strongly separated; 2L, 4L, and 5L all clearly separated, 4L confluent laterally with third anterolateral tooth; 6L poorly and incompletely separated from 5L by shallow grooves; cardiac region (1P) relatively broad, oval, moderately well defined by shallow grooves; intestinal region narrow. Anterolateral margins regularly convex; cristate; with four teeth behind the exorbital angle; teeth evenly spaced, all of similar size and broadly triangular, third tooth slightly the largest; first tooth well separated from, and slightly behind, orbit, connected to exorbital angle by a bluntly rounded crest; below this crest, lateral to orbit, surface uneven with raised clumps of granules; posterolateral margins oblique, straight, about same length as anterolateral margins. Front *c.* 0.28-0.31 times carapace width; *c.* 0.56-0.57 times fronto-orbital width; not deflexed, strongly projecting; bilobed, lobes straight and oblique laterally, or moderately convex; lobes abutting and fused over most of length but with obvious median incision; lateral angles rounded, narrow, noticeably produced. Posterior margin *c.* 0.4-0.5 times carapace width, relatively wider in females. Carapace surface entirely covered with minute rounded granules except for central part of grooves; without setae. Upper orbital border minutely granular; concave; lateral truncate tooth formed by fused lateral fissures. Lower orbital border of inner angle formed by a triangular tooth; a second, similar-sized tooth laterally; with V-shaped notch at outer edge. Antennal flagellum small and entering orbit, fine, reaching a little beyond outer orbital edge. Basal antennal segment just

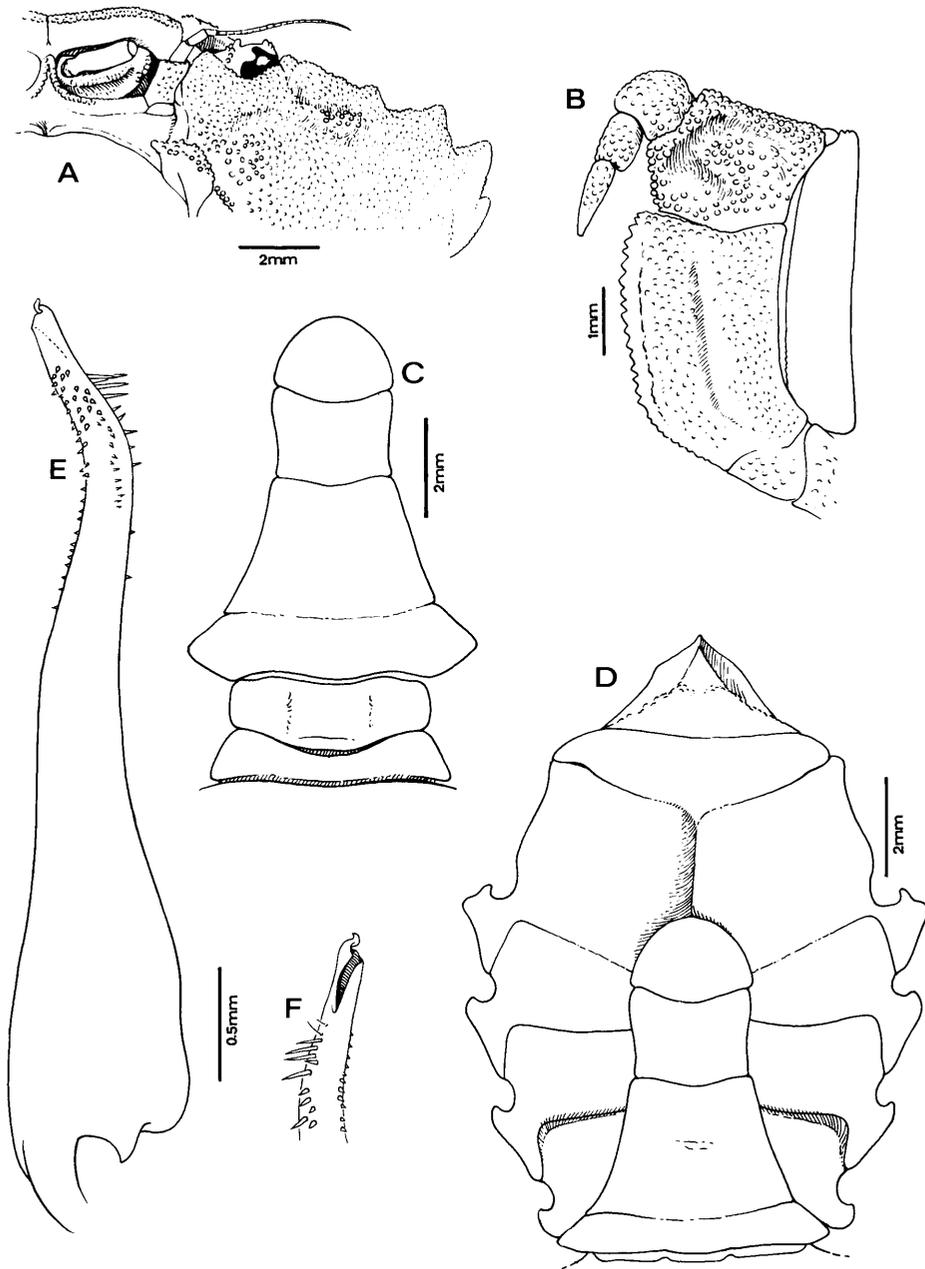


FIG. 4. — *Paraxanthodes polynesiensis* sp. nov. Holotype ♂, MNHN-B22225, Mururoa, Tuamotu Archipelago. A, frontal view; B, third maxilliped; C, abdomen; D, sternum and abdomen; E, F, first gonopod.

touching front. Basal antennular segment relatively broad, with raised minutely granulate rim on superior and lateral margins; first segment of palp moderately long, granulate on outer surface, palp folding obliquely; epistome relatively flat, lower margin not strongly produced; inter-antennular septum triangular, with margins raised and minutely granular.

Third maxilliped: merus distinctly shorter than ischium, wider than long, length *c.* 0.75 times width; outer surface granulate; antero-external angle produced, rounded; 0.5 times length of ischium. Ischium sub-rectangular, length *c.* 1.7 times breadth.

Chelipeds noticeably unequal, either may be larger; large and robust; palm height *c.* 0.5 times length including fixed finger. Merus with posterior border convex, coarsely granulate; lower border microscopically granulate, rounded; anterior border minutely granulate, rounded; carpus with a broad tooth at inner angle; a second, smaller granular tooth, ventro-proximally; inner margin minutely granular; upper and outer surface rugose, minutely granular. Outer surface of palm smooth and punctate ventrally, becoming minutely granular and slightly vertically striated dorsally; a strong, broad, longitudinal, sub-dorsal groove; and a narrow longitudinal groove along superior margin visible from above. Outer surface of palm without setae. Inner surface of palm smooth. Immobile finger long (smaller chela with fingers longer than major chela); with ventral ridge. Length of cutting edge *c.* 0.4 times length of propodus. Ventral border of chela concave at base of fixed finger. Dorsal surface of dactyl smooth, rounded, punctate. Fingers pointed, tips curved; a narrow gape between cutting margins.

Walking legs of medium length; compressed; first three pairs all of similar length, *c.* 1.1-1.2 times maximum carapace width. Merus of third leg *c.* 2.8-3.4 times as long as wide. Carpus *c.* 2.2-2.4 times as long as wide. Propodus *c.* 1.4-1.9 times as long as wide. Dactyli *c.* 1.5-1.9 times length of propodus. Dactyli slender, straight, with a strong, longitudinal, lateral furrow; terminating in an acute chitinous recurved tip. Merus anterior margin terminating in a blunt tooth. Carpus with accessory carinae on upper surface, superior margin of carpus moderately carinate on last leg, but less so on anterior legs. Meri with coarse granules along superior margin, with band of smaller granules on inferior surface; other segments covered in minute granules. Setae mostly sparse and on margins; but forming a thick, short tomentum proximally, and on inferior margin of propodi; and on dactyli except for lateral grooves.

Male abdomen relatively narrow; five free segments; third to fifth fused; third segment the widest. First segment 0.85 times width of third segment. Segments three-five tapering. Segment six *c.* 1.4-1.6 times wider than long. Telson *c.* 0.75 times longer than wide; evenly rounded.

Gonopods: G1 medium length, not quite reaching suture between sternites 4 and 5; moderately stout, moderately compressed, ventro-medially slightly lamelliform; curved; tip slightly recurved, tapering to very fine point; row of stout setae present on dorsal margin behind tip; minute conical setae on distal half of dorsal margin, and ventrally near tip. G2 short; evenly curved; tip short, reflexed, pointed.

Sternum evenly covered in minute granules, male sternum with short medial longitudinal incision on segment four.

COLOURATION. — On preserved material, colour predominantly orange-brown; a broad band of reddish pink on pterygostome above base of chelipeds; fingers blackened, dark colour not extending onto palm.

REMARKS. — *Paraxanthodes polynesiensis* sp. nov. is easily separated from the other two species, *P. obtusidens* (Sakai) and *P. cumatodes* (McGilchrist) by having : the dorsal surface of carapace very finely granular, rather than coarsely granular ; the regions lower and less strongly swollen ; the front less deflexed, more projecting and lamelliform, with the median incision less obvious ; and the unarmed walking legs.

DISTRIBUTION. — Known only from French Polynesia, between the Marques Islands in the north and the Tuamotu Archipelago in the south. Bathymetric range : 190-250 m.

EUXANTHINAE Alcock, 1898

ALAINODAEUS gen. nov.

ETYMOLOGY. — Named in honour of Alain CROSNIER, using his first name in combination with “ daeus ” from *Medaeus*.

TYPE SPECIES. — *Alainodaeus akiaki*, by original designation. Gender is masculine.

DIAGNOSIS. — Carapace transversely ovoid, *c.* 1.4-1.6 times broader than long. Regions moderately defined ; 2M at least partially divided longitudinally, outer branch very broad and rounded. Anterolateral margins with four teeth behind exorbital angle ; margin anterior to first tooth poorly defined. Front *c.* 0.25-0.35 times carapace width ; moderately deflexed, not projecting ; bilobed, with small but obvious, blunt, medial and lateral teeth. Posterior margin *c.* 0.35-0.45 times carapace width. Upper orbital border concave, lateral fissures obvious or only slightly indicated. Lower orbital border with an inner and outer triangular tooth ; with V-shaped notch at outer edge. Antennal flagellum relatively small and entering orbit. Basal antennal segment just touching front. Basal antennular segment relatively broad, with raised granular rim across upper and lateral margins ; second segment relatively long ; palp folding horizontally. Interantennular septum relatively broadly triangular, with lateral margins only slightly concave. Third maxilliped with merus *c.* 0.5 times length of ischium ; wider than long, antero-external angle slightly produced. Palp articulating at inner distal margin of merus. Chelipeds large and robust ; markedly unequal, carpus with a broad spine at inner angle ; 1-3 smaller spines ventro-proximal to major spine. Ventral border of chela concave at base of fixed finger. Fingers pointed, tips recurved ; without a noticeable gap between cutting margins. Walking legs relatively long ; slightly flattened ; slender. Merus of anterior margin terminating in a blunt tooth ; dactyli slender, straight, and flattened, with an acute, chitinous tip. Male abdomen relatively narrow ; five free segments ; third to fifth fused. Male first gonopod of medium length ; stout ; broadly flanged over proximal two-thirds, quickly tapering distally ; without long setae. Sternum relatively broad ; fused sternites 3-4 with deep, median, longitudinal cleft.

REMARKS

The two species included in this new genus are *Alainodaeus akiaki* sp. nov. and *A. rimatara* sp. nov. *Alainodaeus* species are most closely allied to those of *Monodaeus* and *Medaeops*, both in the general form of the carapace and more specifically by the shape of the male first pleopod which has a lateral flange over its proximal two-thirds and then narrows abruptly [see GUINOT, 1967, figs 37 and 40, for *Monodaeus tuberculidens* (Rathbun) and *Medaeops granululosus* (Haswell) respectively].

Alainodaeus differs from both those genera by the following characters : 1, the regions of the carapace are less well defined, and differ in shape — in particular, 2M is much larger and broader, less obviously longitudinally divided, and the outer half is much wider than the inner half ; 2, the frontal margin is not straight but consists of a pair of small median prominences and a pair of broad, moderately convex lateral lobes ; 3, the epistome is different in shape, with the upper margins below the antennules being less concave, so that the inter-antennular septum is more broadly triangular ; 4, the sixth segment of the male abdomen is much broader in comparison to its length (almost 2 times) and the margins are subparallel, whereas in the other two genera it is relatively longer *c.* 1.4-1.6 times, and tends to be noticeably wider distally ; 5, the walking legs are relatively much longer and very slender, a condition approached only by *Monodaeus rouxi* (Capart) ; 6, the fingers of the minor cheliped are very long, noticeably longer than in the related genera ; 7, the male first pleopod lacks long setae terminally.

Besides the above unique characters shared by the two new species, *Alainodaeus* further differs from *Monodaeus* by the shape and size of the lacinia of the endopodite of maxilliped 1. In *Monodaeus* it is large and expanded towards the medial line of the roof of the buccal cavity ; but in *Alainodaeus* (like in *Medaeops*) it is much smaller and confined to the lateral part of the buccal cavity, where it lies against the strongly defined ridge of the efferent branchial channel. This ridge is poorly indicated in *Monodaeus* and also closer to the medial line.

Alainodaeus further differs from *Medaeops* by having the front not or only slightly projecting, and having the second segment of the antennules much longer and folding almost horizontally. *Medaeops* typically has a noticeably projecting frontal margin and the antennules are rather short and fold more obliquely (see for comparison GUINOT, 1967, fig. 21).

Alainodaeus differs from *Paramedaeus* in many characters. In particular, *Paramedaeus* has subequal chelae ; a different type of male first pleopod with the tip bearing long setae (see SERÈNE, 1984, figs 50, 51) ; and much more projecting carapace regions.

***Alainodaeus akiaki* sp. nov.**

(Fig. 5 ; pl. 5)

ETYMOLOGY. — Named after Akiaki Island, part of the Tuamotu Archipelago, in French Polynesia. It is treated here as a noun in apposition.

TYPE MATERIAL. — The male (MNHN-B22243) from Rurutu Island, Austral Islands, is designated holotype. All other specimens examined are paratype.

MATERIAL EXAMINED. — **French Polynesia.** SMCB (J. POUPIN) : **Tuamotu Archipelago** : Akiaki, 18°32'S, 139°12'W, 250-300 m, in pots, 10.06.1989 : 2 ♂ 33.8 × 22.6 mm, 36.7 × 23.6 mm (MNHN-B22241). — **Austral Islands** : Maria, Stn 352, 21°47.6'S, 154°42.9'W, trapped, 120 m, 8.12.1990 : 1 ♂ 32.5 × 20.9 mm (QM W8035). Rurutu, 22°27.8'S, 151°22.9'W, 230-240 m, caught in pots, 10.03.1989 : 1 ♂ 29.2 × 19.4 mm (MNHN-B22243). *Ibid.* 1 ♂ 27.9 × 18.2 mm (MNHN-B22242). Rimatara, 22°38.2'S, 152°49.7'W, 300 m, caught in pots, 11.03.1989 : 1 ♂ 29.2 × 19.4 mm (MNHN-B22240). Raivavae, 23°51.4'S, 147°44.5'W, 350 m, caught in pots, 1.03. 1989 : 1 ♂ 34.4 × 22.2 mm (USNM).

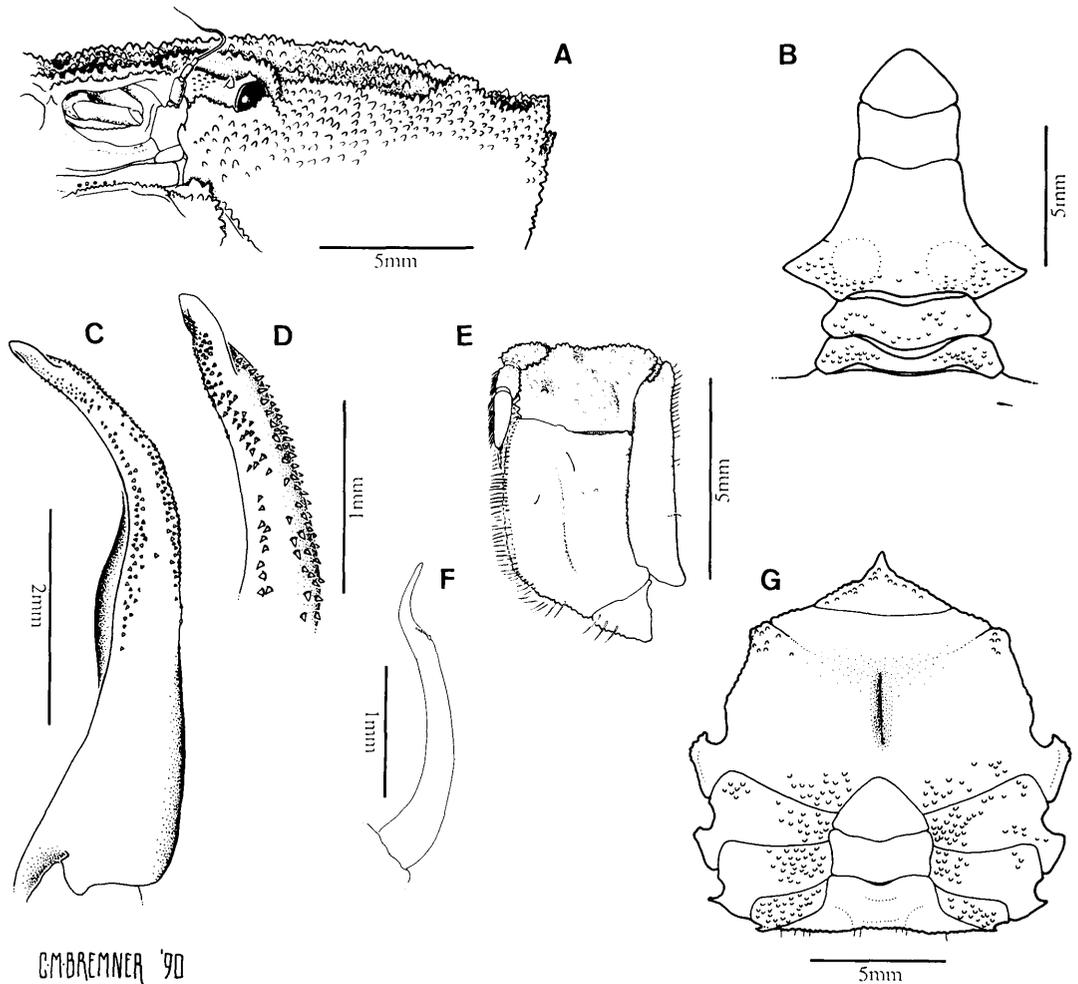


FIG. 5. — *Alai nodaeus akiaki* gen. nov., sp. nov. Holotype ♂, MNHN-B22243, Rurutu, Austral Islands. A, frontal view ; B, abdomen ; C, D, first gonopod ; E, third maxilliped ; F, second gonopod ; G, sternum and abdomen.

DESCRIPTION

Carapace transversely ovoid, *c.* 1.5-1.6 times broader than long. Fronto-orbital width *c.* 0.7 times carapace length. Carapace moderately vaulted ; strongly convex longitudinally over anterior third, only slightly from side to side. Regions moderately defined ; 2M separated from 3M and 2M partially divided longitudinally by a short, shallow, ill-defined groove, outer branch of 2M very broad and rounded, *c.* twice width of internal branch ; 1F and 2F not differentiated ; 1M fused to internal branch of 2M ; 4M not clearly distinguishable ; 1L and 3L

not differentiated ; 2L and 4L distinct ; 5L and 6L also distinct, partially fused ; 1P and 2P more-or-less obvious ; 1R, 2R, 3R not distinguishable. Anterolateral margins regularly convex ; with four teeth behind the exorbital angle ; margins granular, first tooth not prominent, situated a little behind and well separated from orbit ; anterior to first tooth clear marginal definition lost, a slight indication of a granular row connecting with orbit and a second continuing obliquely below orbit ; second tooth broadly triangular, third tooth most prominent and sharply pointed, fourth tooth similar to third, but smaller ; greatest carapace width between third anterolateral teeth, but distance between fourth teeth only slightly less. Front *c.* 0.25 times carapace width ; *c.* 0.55 times fronto-orbital width ; moderately deflexed, not projecting ; bilobed, with small, but obvious, blunt, medial and lateral teeth, convex between ; pre-orbital teeth present, bluntly granular. Posterior margin *c.* 0.35-0.4 times carapace width. Surface of carapace granulate except in furrows separating regions ; granules slightly larger and more widely spaced anteriorly ; without setae. Upper orbital border concave, evenly granular, lateral fissure obsolete, slightly indicated. Lower orbital border evenly granular ; inner angle formed by a triangular tooth ; a second, bluntly granular tooth laterally ; with V-shaped notch at outer edge. Antennal flagellum small and entering orbit, reaching slightly farther than lateral edge of orbit. Basal antennal segment just touching front. Basal antennular segment relatively broad, with raised granular rim across upper and lateral margins ; second segment relatively long ; palp folding horizontally. Inter-antennular septum moderately wide basally ; inner margins of antennular fossae oblique and only moderately concave ; interantennular septum relatively broadly triangular ; lower margin of epistome slightly projecting as thin rim.

Third maxilliped : merus *c.* 0.5 times length of ischium ; wider than long, length *c.* 0.7 times width ; antero-external angle slightly produced, rounded. Ischium rectangular ; inner margin granular. Palp articulating at inner distal margin of merus.

Chelipeds large and robust ; markedly unequal, right cheliped the larger on all present specimens ; minor cheliped of similar form but more slender and with longer fingers ; merus with posterior border sharply granulate ; without distinct subdistal spine ; lower border armed with spinules ; frontal face of merus armed with sharp granules ; small spines especially near upper and lower margins ; carpus with a broad spine at inner angle ; inner margin armed with small spines, at least 1 and sometimes 2-3 smaller prominent spines ventro-proximal to major spine ; outer margin and upper surface granular. Outer surface of palm coarsely granular ; without setae. Inner surface of palm granular, granules finer than on outer surface ; also with a row of 4-6 inwardly directed spines on inner edge of superior margin ; and an uneven row of more numerous spines on ventral margin continuing along bottom edge of fixed finger nearly to beginning of darker colouring ; a third longitudinal row of more prominent sharp granules below middle of inner surface. Immoveable finger long, rounded on outer surface ; with ventral ridge extending from base to tip ; length of cutting edge *c.* 0.4 times length of propodus on major chela, *c.* 0.5 on minor chela. Ventral border of chela concave at base of fixed finger. Dorsal surface of dactyl finely granular. Fingers pointed, tips fine and markedly recurved ; cutting margin of immoveable finger with 4 prominent triangular teeth, evenly spaced, sharply pointed on minor chela, blunt on major chela ; cutting margin of dactyl with 3 prominent triangular teeth in the proximal half and a fourth less clearly differentiated tooth in distal half, teeth better developed on major chela ; without a noticeable gape between the cutting margins.

Walking legs relatively long ; slightly flattened ; slender ; second and third pairs sub-equal, longer than others, *c.* 1.3 times maximum carapace width. Merus of third leg *c.* 4-4.6 times as

long as wide. Carpus *c.* 2.5-3 times as long as wide. Propodus *c.* 2.3-2.7 times as long as wide. Dactyli *c.* 1.2 times length of propodus. Dactyli slender, straight, and flattened; terminating in an acute chitinous tip. Merus anterior margin terminating in a blunt tooth. Carpus with accessory carinae on upper surface. All segments granular, with slightly more prominent row of spinules along upper margins of meri, and on antero-ventral borders, particularly of first two pairs; granules generally sharper on carpi and propodi; setae generally lacking, but very short, sparse setae between granules on carpi and propodi, which become slightly longer and thicker and completely cover dactyli.

Male abdomen relatively narrow; five free segments; third to fifth fused; third segment widest. First segment *c.* 0.8 times width third segment. Segments three-five tapering. Segment six *c.* 1.8-1.9 times wider than long. Telson *c.* 0.65-0.7 times longer than wide; slightly longer than sixth segment; bluntly pointed and triangular.

Gonopods: G1 medium length; stout; broadly flanged over proximal two-thirds, quickly tapering distally to a bluntly acute, slightly twisted tip; without long setae, bearing only minute bristles on distal half. G2 moderately long; evenly curved; tip short, recurved.

Sternum relatively broad; fused sternites 3/4 with deep median, longitudinal cleft.

DISTRIBUTION. — Known only from French Polynesia, from Tuamotu Archipelago, 18°32'S, 139°12'W, to the Austral Islands, 23°51.4'S, 147°44.5'W. Bathymetric range: 230-350 m.

***Alainodaeus rimatara* sp. nov.**

(Fig. 6; pl. 6)

ETYMOLOGY. — Named after Rimatara, part of the Austral Islands Group, in French Polynesia. It is treated here as a noun in apposition.

TYPE MATERIAL. — The male 22.4 × 15.3 mm (MNHN-B22244) is the holotype. All other specimens listed are paratypes.

MATERIAL EXAMINED. — **French Polynesia.** SMCB (J. POUPIN): **Tuamotu Archipelago:** Takapoto, 14°40.0'S, 145°15.2'W, trapped, 250 m, 7.06.1989: 1 ♂ 15.9 × 12.0 mm, 1 ♀ 17.4 × 12.1 mm (USNM). Hao, Stn 246, 18°04.5'S, 141°01.6'W, trapped, 90 m, 2.06.1990: 1 ♂ 14.6 × 10.0 mm (QM). Akiaki, 18°32'S, 139°12'W, trapped, 250-300 m, 10.06.1989: 1 ♂ 22.4 × 15.3 mm (MNHN-B22244). Fangataufa, Stn 231, 22°12.0'S, 138°45.9'W, trapped, 270 m, 21.05.1990: 1 ♀ 16.2 × 11.4 mm (MNHN-B22245). — **Austral Islands:** Rimatara, 22°38.2'S, 152°49.7'W, trapped, 300 m, 11.03.1989: 1 ♂ 21.8 × 14.6 mm (MNHN-B22247). Raivavae, 23°51.4'S, 147°44.5'W, trapped, 350 m, 1.03.1989: 1 ♀ 18.0 × 13.2 mm (MNHN-B22246)

DESCRIPTION

Carapace transversely ovoid; *c.* 1.44-1.5 times broader than long. Fronto-orbital width *c.* 0.89-0.93 times carapace length. Carapace moderately vaulted; convex longitudinally especially over anterior third, only slightly from side to side. Regions moderately defined; slightly raised transverse granular rim behind frontal margin, otherwise 1F and 2F not differentiated; 1M

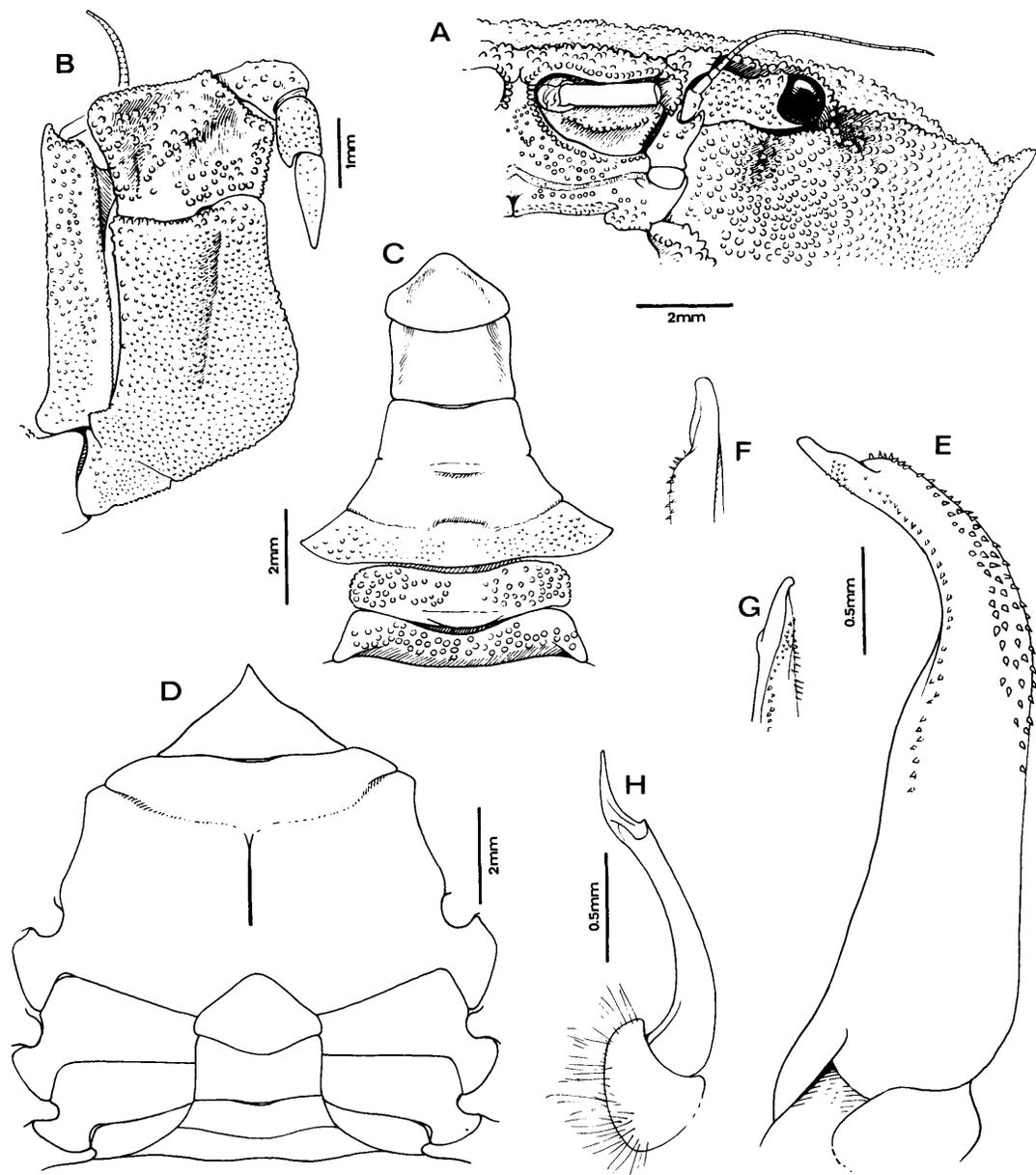


FIG. 6. — *Alaiodaeus rimataru* gen. nov., sp. nov. Holotype ♂, MNHN-B22244, Akiaki, Tuamotu Archipelago. A, frontal view; B, third maxilliped; C, abdomen; D, sternum and abdomen; E, F, G, first gonopod (F, abdominal view of tip; G, sternal view of tip); H, second gonopod.

fused to internal branch of 2M ; 2M separated from 3M ; 2M partially longitudinally divided by a short, shallow ill-defined groove, scarcely apparent on some specimens, outer branch very broad and rounded, *c.* twice width of internal branch ; 4M not clearly distinguishable on most specimens, sometimes present as slightly raised narrow transverse strip on posterior of 3M ; 1L and 3L not differentiated ; 2L and 4L distinct ; 5L and 6L also distinct, partially fused ; 1P and 2P more-or-less obvious ; 1R and 2R not clearly distinct, separated from 3R by shallow groove. Anterolateral margins regularly convex ; with four teeth behind the exorbital angle ; margins granular ; first tooth barely distinct, marked only by slightly raised granules medially on broad convexity lateral to orbit ; margin anterior to first tooth poorly defined, but continuing towards outer edge of orbit ; an area of slightly larger sharper granules continuing obliquely below orbit towards mouth frame ; second anterolateral tooth sharply pointed, forwardly directed ; third tooth more evenly triangular, pointed laterally ; greatest carapace distance between third teeth ; fourth tooth smaller, narrower, set relatively close behind third tooth. Front *c.* 0.33-0.36 times carapace width ; *c.* 0.55 times fronto-orbital width ; moderately deflexed, not projecting ; bilobed, with small but obvious, blunt, medial and lateral teeth ; pointed, granular, pre-orbital teeth present. Posterior margin *c.* 0.37-0.44 times carapace width. Carapace surface granulate except in smooth furrows separating regions ; without setae. Upper orbital border evenly granular, concave, median and lateral fissures obviously indicated. Lower orbital border evenly granular ; inner angle formed by a bluntly pointed, granular lobe ; with second, lower, broader lobe laterally ; with V-shaped notch at outer edge. Antennal flagellum entering orbit, fine, reaching laterally almost to level of second anterolateral tooth. Basal antennal segment just touching front. Basal antennular segment relatively broad, with raised granular rim across upper and lateral margins, upper margin concave, leaving gap when palp folded ; second segment relatively long, palp folding horizontally. Inter-antennular septum moderately wide basally ; inner margins of antennular fossae oblique and only moderately concave ; interantennular septum relatively broadly triangular ; lower margin of epistome slightly projecting as thin rim.

Third maxilliped : merus distinctly shorter than ischium ; wider than long, length *c.* 0.75 times width ; antero-external angle slightly produced, rounded ; *c.* 0.5 times length of ischium. Ischium rectangular ; inner margin minutely granular. Palp articulating at inner distal margin of merus.

Chelipeds large and robust ; markedly unequal, right cheliped normally the larger but on holotype, the left ; minor cheliped of similar form but more slender and with longer fingers. Merus with posterior border tuberculate ; without distinct subdistal spine ; lower border granulate distally ; anterior border coarsely granulate. Carpus with a broad spine at inner angle, armed with accessory spinules ; a second similar but slightly smaller spine ventro-proximal to major spine, finer and more acute, also armed with accessory spinules ; outer margin and upper surface granular. Outer surface of palm appearing smooth but microscopically granular ventrally and medially, granules becoming more coarse dorsally and proximally. Outer surface of palm naked. Inner surface of palm appearing smooth, but microscopically granular ; with row of 3-5 inwardly directed small spines on inner edge of superior margin, very obvious in dorsal view. Immovable finger long, rounded on outer surface ; with ventral ridge extending from base to tip ; length cutting edge *c.* 0.4 times length propodus on major chela, *c.* 0.5 on minor chela. Ventral border of chela concave at base of fixed finger. Dorsal surface of dactyl very finely granular, coarser near base. Fingers pointed,

recurved ; minor chela with cutting margins cristate, fixed finger with 3-4 prominent triangular teeth, dactyl with teeth poorly differentiated ; major chela similarly armed but teeth becoming molariform proximally, dactylar teeth well defined, with large, rounded, backwardly directed, peg-like tooth at base ; without a noticeable gape between the cutting margins.

Walking legs relatively long ; compressed ; slender ; third pair the longest, slightly longer than second, *c.* 1.3-1.4 times maximum carapace width. Merus of third leg *c.* 4-4.5 times as long as wide. Carpus *c.* 2.8 times as long as wide. Propodus *c.* 2.7-2.9 times as long as wide. Dactyli *c.* 1.3 times length of propodus. Dactyli slender, straight, flattened ; terminating in an acute chitinous tip. Anterior margin of merus terminating in a blunt tooth. Carpus with accessory carinae on upper surface. All segments granular, with 2 rows of spinules, or sharp granules, along upper borders of meri, anterior row more prominent ; a similar row along anteroventral borders of meri, most obviously on first two pairs ; granules generally sharper on carpi and propodi ; occasional fine setae on borders of segments, more common distally ; short setae on upper and lower borders of propodi and dactyli.

Male abdomen relatively narrow ; five free segments ; third to fifth fused ; third segment the widest. First segment *c.* 0.85 times width third segment. Segments three-five tapering. Segment six *c.* 1.75-1.85 times wider than long. Telson *c.* 0.65 times longer than wide, very slightly longer than sixth segment ; bluntly pointed, rounded.

Gonopods : G1 medium length ; stout, broadly flanged over proximal two-thirds, quickly tapering distally to a bluntly acute, slightly twisted tip ; without long setae, bearing only minute bristles on distal half. G2 moderately long ; evenly curved ; tip short, recurved.

Sternum relatively broad ; fused sternites 3/4 with deep median longitudinal cleft ; surface finely granular.

REMARKS. — *Alainodaeus rimatara* sp. nov. differs from *A. akiaki* sp. nov. in several obvious characters. The frontal margin is slightly more prominent and the frontal region less convex ; the first anterolateral tooth is almost obsolete ; the outer face of palm of cheliped bearing only dorsal granulation but otherwise smooth, whereas in *A. akiaki* the outer face is completely covered with granules ; and, similarly, the inner face of the cheliped palm is smooth below the inner dorsal row of spines, and lacks both the median and ventral rows of spinules characteristic of *A. akiaki*.

DISTRIBUTION. — Known only from French Polynesia, from Tuamotu Archipelago, 14°40.0'S, 145°15.2'W, to the Austral Islands, 23°51.4'S, 147°44.5'W. Bathymetric range : 90-350 m.

EPISTOCAVEA gen. nov.

ETYMOLOGY. — From 'epistome' and the latin *cavea* meaning an excavated hollow place. Gender is feminine.

TYPE SPECIES. — *Epistocavea mururoa* sp. nov., here designated.

DIAGNOSIS. — Carapace transversely ovoid, *c.* 1.4-1.5 times broader than long. Regions moderately defined. Anterolateral margins regularly convex ; more-or-less carinate ; divided into 4 teeth ; continue in

an arc below orbit to meet anterolateral corner of buccal frame; meri of third maxillipeds sharply angled backwards over distal third, forming a concave shelf, and fitting against epistome, completely sealing buccal cavity; with maxillipeds in place a continuous convex arc formed with anterolateral margins; whole region across front from below orbits deeply excavated. Front moderately projecting, with medial notch. Posterior margin *c.* 0.4 times carapace width. Upper orbital border concave; orbital fissures obsolete. Inner angle of lower orbital border formed by a triangular tooth. Basal segment of antenna broadly in contact with front; antennal flagellum entering orbit. Basal antennular segment triangular, flagellum folding obliquely. Inter-antennular septum narrow. Chelipeds markedly unequal, large and robust; carpus with a broad tooth at inner angle and on inner face below inner angle; ventral border of chela concave at base of fixed finger; fingers pointed; a narrow gape between cutting margins. Walking legs of medium length; flattened; moderately slender; second pair the longest; dactyli stout, straight, and flattened, terminating in an acute, chitinous tip; anterior margin of merus unarmed terminally. Male abdomen relatively narrow; five free segments; third to fifth fused. Male first gonopod of medium length, slender, curved. Sternum relatively broad.

REMARKS

Epistocavea clearly belongs to the Euxanthinae because the anterolateral margins do not meet the exorbital angle but continue below the orbit across the sub-hepatic region to meet the buccal frame. It must be placed closest to those genera that have the posterolateral borders relatively longer, less strongly convergent and not strongly hollowed out to receive the walking legs i.e. *Medaeops*, *Medaeus*, *Monodaesus*, *Paramedaeus*. It lacks the strongly defined 4M of *Medaeus*, the relatively slender legs of *Monodaesus*, and has shorter anterolateral margins than *Paramedaeus*.

In overall conformation of the carapace and chelipeds *Epistocavea* most closely resembles species of *Medaeops*. It is easily separated from all related genera by the broad, deeply concave epistome and sub-hepatic regions, and the peculiar shape of the meri of the third maxillipeds.

Epistocavea mururoa sp. nov.

(Fig. 7; pl. 7)

ETYMOLOGY. — Named in reference to the Polynesian name of the type locality. It is treated here as a noun in apposition.

TYPE MATERIAL. — The male 29.8 × 20.7 mm from Mururoa Island (MNHN-B22235) is designated the holotype; all other specimens are paratypes.

MATERIAL EXAMINED. — **French Polynesia.** SMCB (J. POUPIN) : **Society Islands** : Bora Bora, Stn 275, 16°26.5'S, 151°46.2'W, trapped, 190 m, 25.06.1990 : 2 ♂ 28.9 × 20.7, 32.9 × 23.3 mm (MNHN-B22237). — **Tuamotu Archipelago** : Vanavana, Stn 331, 20°45.7'S, 139°10.1'W, trapped, 240 m, 28.10.1990 : 2 ♀ 32.1 × 22.3, 30.0 × 19.7 mm (MNHN-B22236). Mururoa, 21°46.9'S, 138°55.4'W, trapped, 210 m, 30.11.1989 : 1 ♀ 32.0 × 22.8 mm (MNHN-B22234). Mururoa, Stn 222, 21°51.1'S, 138°58.7'W, trapped, 100 m, 15.05.1990 : 1 ♂ 29.8 × 20.7 mm (MNHN-B22235). — **Austral Islands** : Rurutu, Stn 337, 22°28.6'S, 151°21.8'W, trapped, 125 m, 27.11.1990 : 1 ♀ 33.8 × 23.4; 4 ♂ 35.6 × 25.3, 38.0 × 27.1, 37.5 × 26.0, 38.3 × 26.6 mm (MNHN-B22239). *Ibid.* 1 ♀ 35.5 × 24.6; 2 ♂ 32.4 × 23.3, 41.9 × 28.5 mm (USNM). *Ibid.* 1 ♀ 32.6 × 22.6; 2 ♂ 38.2 × 27.4, 39.6 × 27.5 mm (QM). Tubai, Stn 349, 23°20.7'S, 149°31.9'W, trapped, 135 m, 5.12.1990 : 1 ♂ 30.1 × 20.9 mm (MNHN-B22238). Raevavae, Stn 346, 23°50.6'S, 147°42.5'W, trapped, 100 m, 3.12.1990 : 1 ♂ 34.2 × 23.9 mm (MNHN-B22233).

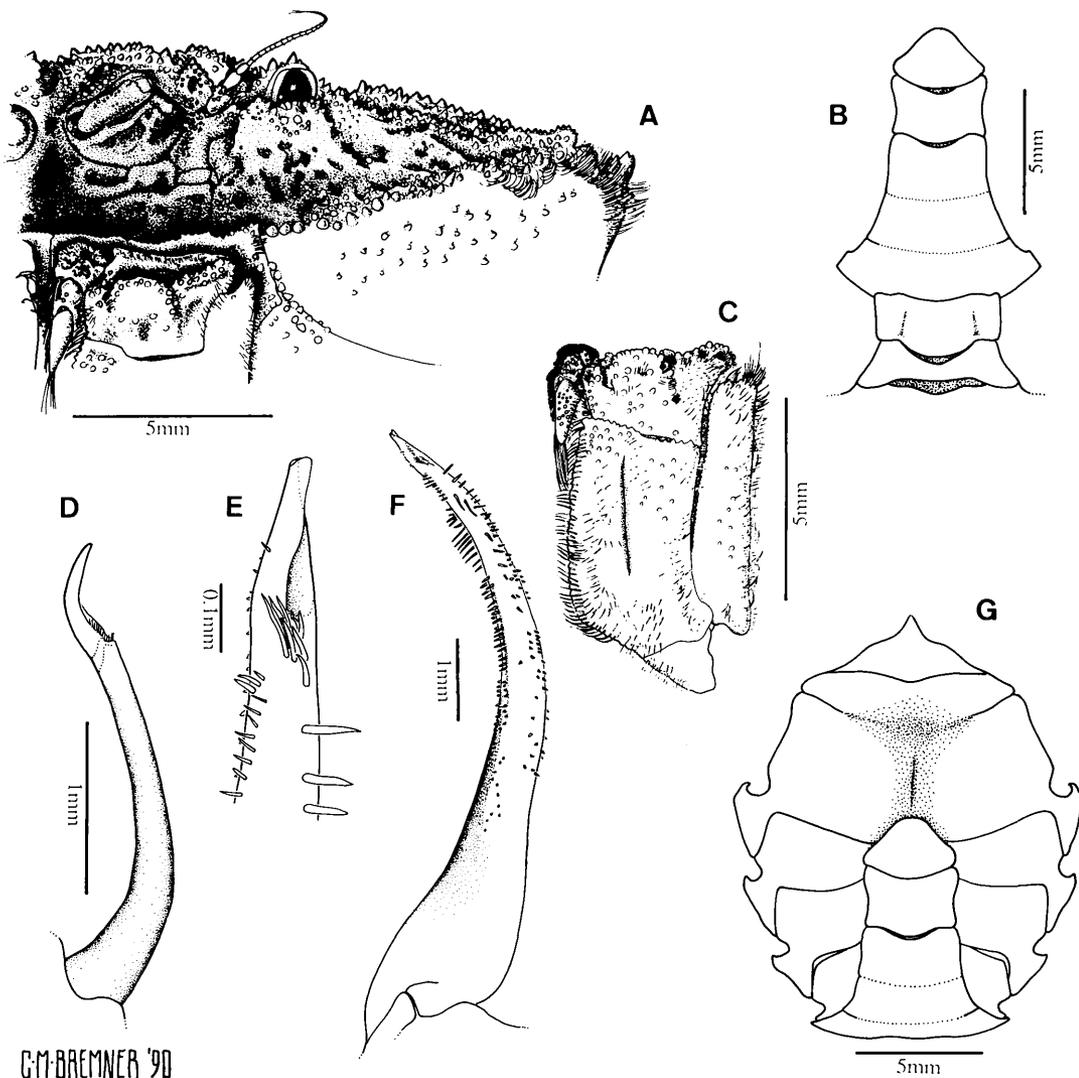


FIG. 7. — *Epistocavea mururoa* gen. nov., sp. nov. Holotype ♂, MNHN-B22235, Mururoa, Tuamotu Archipelago. A, frontal view; B, abdomen; C, third maxilliped; D, second gonopod; E, F, first gonopod; G, sternum and abdomen.

DESCRIPTION

Carapace transversely ovoid, *c.* 1.4-1.45 times broader than long. Fronto-orbital width *c.* 0.66-0.68 times carapace length. Carapace slightly convex in both directions, particularly over anterior third longitudinally. Regions moderately defined; 1F and 2F fused; 1M separated from 2F; 2M partially longitudinally divided, internal branch of 2M fused with 1M, outer

branch also partially divided anteriorly ; 2M separated from 3M ; 4M indistinct ; 1R and 2R fused, separated from 3R by shallow furrow ; 1P and 2P shallowly defined ; 2L and 3L fused. Anterolateral margins regularly convex ; slightly cristate ; divided into 4 teeth. Anterolateral teeth triangular, bluntly acute, second tooth the largest, followed by third ; first and fourth slightly smaller ; first tooth adjacent to lateral edge of orbit but well separated ; anterolateral margins continuing in an arc below orbit, meeting the anterolateral corner of the buccal frame, continuous with concave lower margin of epistome ; epistome projecting forward as a fine rim ; meri of third maxillipeds sharply angled to fit against epistome, thus completely sealing buccal cavity ; forming, with maxillipeds in place, a continuous convex arc with anterolateral margins ; whole region across front from below orbits deeply excavated, and surface markedly corrugated and pitted. Front *c.* 0.3 times carapace width ; *c.* 0.6 times fronto-orbital width ; moderately projecting, medially, with V-shaped medial notch, laterally oblique, slightly concave, lateral teeth blunt, slightly projecting ; pre-orbital granular shoulder ; lateral margins diverging posteriorly. Posterior margin *c.* 0.4 times carapace width. Carapace surface granulate, granules larger anteriorly, coalescing into irregular rows anterolaterally, especially below orbits. Setae short, covering entire surface. Upper orbital border evenly granular ; concave ; orbital fissures obsolete. Lower orbital border irregularly granular. Inner angle of lower orbital border formed by a triangular tooth. Antennal flagellum small and entering orbit ; flagellum very fine, reaching about half distance to lateral margin ; without accessory setae. Basal antennal segment broadly in contact with front ; granular ; with small outer lobe lying against inner tooth of orbit. Basal antennular segment triangular, excavated medially, flagellum folding obliquely. Inter-antennular septum narrow.

Third maxilliped : merus distinctly shorter than ischium ; merus wider than long ; upper third of merus sharply angled backwards, forming a concave shelf ; seen from antero-ventral position merus having antero-medial margin bilobed, with outer lobe produced laterally to form anterolateral angle. Ischium rectangular, *c.* 1.7 times longer than wide ; inner margin granular. Palp articulating at inner distal margin of merus ; carpus and propodus with small ridges and projections.

Chelipeds markedly unequal, right usually larger but sometimes left ; large and robust, smaller chela of similar form but less massive than large chela ; merus with posterior border bearing large granules ; otherwise surfaces covered with small granules, but margins unarmed ; carpus with a broad tooth at inner angle ; a tooth present on inner face of carpus slightly below inner angle ; outer margin granular, granules on upper surface coalescing to form deep corrugations and pits. Outer surface of palm sparsely granular, smooth ventrally, becoming progressively more granular towards dorsal margin ; upper surface with two longitudinal rows of fused granules connected to each other and to posterior margin by meshwork of short granular ridges ; inner proximal edge moderately produced as rounded lobe. Outer surface of palm naked. Inner surface of palm microscopically granular, with a few larger granules ventro-proximally. Immobile finger with ventral ridge ; moderately long. Length cutting edge *c.* 0.37-0.41 times length propodus (major chela). Ventral border of chela concave at base of fixed finger. Dorsal surface of dactyl smooth, rounded. Fingers pointed ; a narrow gape between cutting margins.

Walking legs of medium length ; flattened ; moderately slender ; second pair the longest, *c.* 1.25 times maximum carapace width. Merus of third leg *c.* 3.1-3.3 times as long as wide. Carpus *c.* 2.2-2.4 times as long as wide. Propodus *c.* 1.5-1.7 times as long as wide. Dactyli *c.*

1.7-1.8 times length of propodus. Dactyli stout, straight, and flattened ; terminating in an acute chitinous tip. Merus of anterior margin with a small sub-distal shoulder ; anterior margin unarmed terminally. Carpus with accessory carinae on upper surface. All segments generally smooth ; setae short, almost covering entire surface ; longer setae fringing margins.

Male abdomen relatively narrow ; five free segments ; third to fifth fused ; third segment the widest. First segment *c.* 0.75 times width third segment. Segments three-five tapering. Segment six *c.* 1.5-1.6 times wider than long. Telson *c.* 0.7 times longer than wide ; bluntly pointed.

Gonopods : G1 medium length ; slender ; curved. Setae present ; short ; arranged as on figure. G2 short ; evenly curved ; tip short, recurved.

Sternum relatively broad ; segments 3 and 4 fused, but suture line evident except medially.

DISTRIBUTION. — Only known from French Polynesia, from the Society Islands, 16°26.5'S, 151°46.2'W, to the Austral Islands, 23°50.6'S, 147°42.5'W. Bathymetric range : 100-240 m.

***Medaeus grandis* sp. nov.**

(Fig. 8 ; pl. 8)

ETYMOLOGY. — Named in reference to its very large size compared to other known species of *Medaeus*.

TYPE MATERIAL. — The large male 37.2 × 24.6 (MNHN-B22218) is designated as holotype. The other two specimens are paratypes.

MATERIAL EXAMINED. — **French Polynesia.** SMCB (J. POUPIN) : **Tuamotu Archipelago** : Mururoa, 21°46.9'S, 138°55.4'W, trapped, 210 m, 30.11.1989 : 1 ♂ 37.2 × 24.6 mm (MNHN-B22218). *Ibid.* 1 ♂ 33.4 × 22.3 mm (MNHN-B22219). Hao, St 246, 18°04.5'S, 141°01.6'W, trapped, 90 m, 2.06.1990 : 1 ♀ 21.2 × 14.7 mm (MNHN-B22220).

DESCRIPTION

Carapace transversely ovoid ; *c.* 1.5 times broader than long (1.44 in female). Fronto-orbital width *c.* 0.7 times carapace length (0.76 in female). Carapace convex in both directions, especially longitudinally over anterior third, but only slightly from side to side. Regions well defined, elevated, separated by strong furrows ; 1F and 2F fused, slightly elevated ; 1M separated from 2M ; 2M completely divided longitudinally and outer lobe partially divided anteriorly ; 3M slightly bilobed posteriorly ; 4M very strongly elevated and separated from 3M ; all anterolateral regions defined, 2L divided into 3 equal-sized lobes, 5L and 6L divided in halves by horizontal and oblique furrows, respectively, 5L not completely ; 1R and 2R not separated, divided from 3R by a broad oblique furrow ; 1P with strongly elevated transverse ridge, only slightly narrower than posterior margin, with 2 very short, irregular granular crests above and below, slightly beyond its lateral edge ; 2P with a transverse granular row, elevated laterally, barely distinguishable medially ; posterior margin costate, with a raised granular rim ;

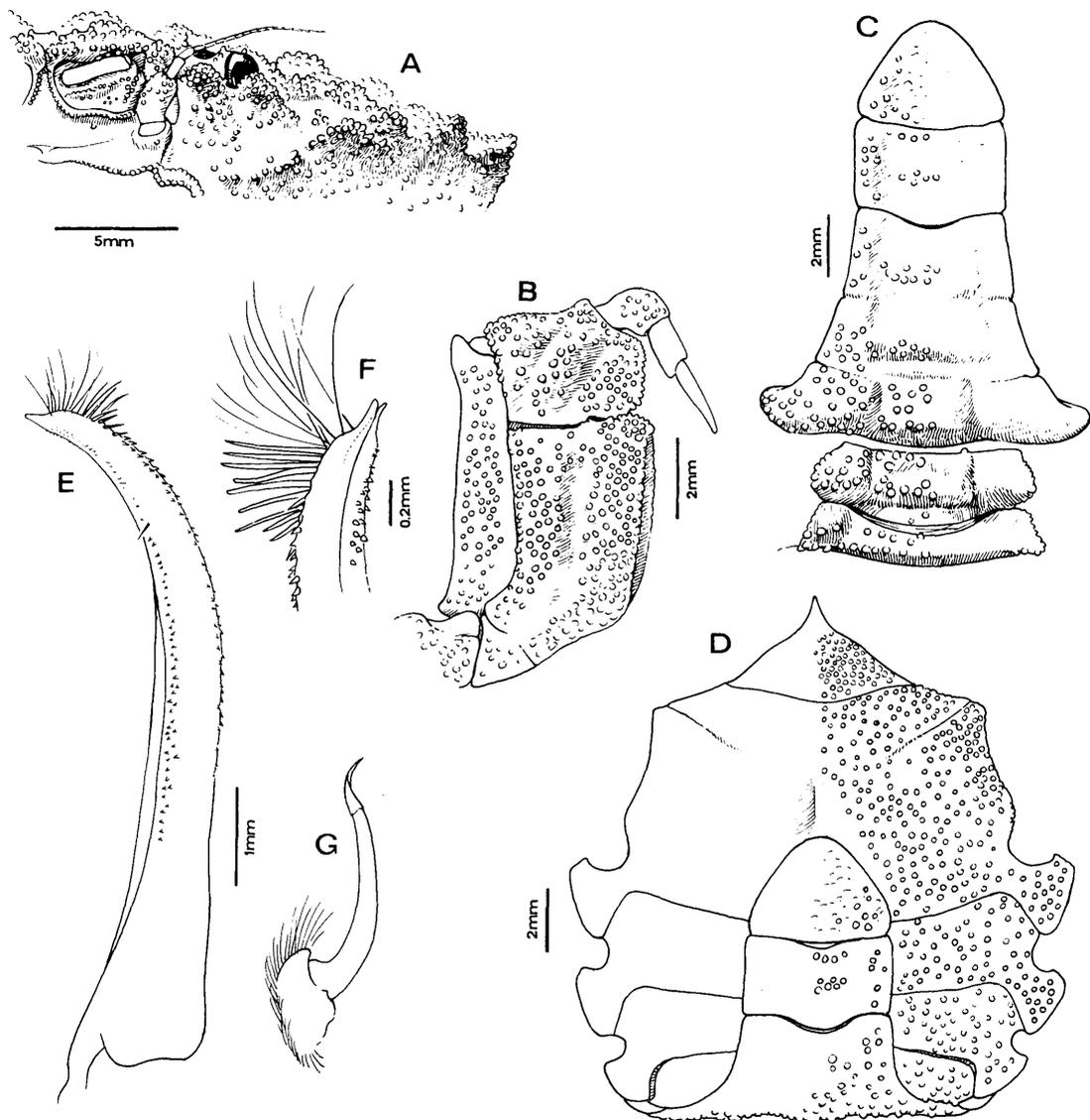


FIG. 8. — *Medaeus grandis* sp. nov. Holotype ♂, MNHN-B22218, Mururoa, Tuamotu Archipelago. A, frontal view ; B, third maxilliped ; C, abdomen ; D, sternum and abdomen ; E, F, first gonopod ; G, second gonopod.

posterolateral margins swollen and slightly convex at 1R/2R, then straight. Anterolateral margins regularly convex ; with five teeth behind the exorbital angle ; margins granular, first tooth the smallest, well separated from orbit, and situated lateral to, and well below, level of orbit seen in frontal view ; anterior to first tooth an ill-defined oblique granular row continuing

on towards anterolateral corner of buccal frame ; second to fifth teeth increasing in size ; second tooth relatively close to first tooth ; all teeth triangular, bluntly pointed ; greatest carapace width (across fifth teeth). Front *c.* 0.26-0.31 times carapace width ; 0.7 times fronto-orbital width (0.76 on female) ; not deflexed and moderately projecting, granular ; slightly more prominent, narrow medial projections separated by V-shaped notch ; laterally receding, more-or-less straight ; with more prominent blunt lateral projections ; pre-orbital bluntly granular shoulder. Posterior margin *c.* 0.33-0.35 times carapace width (0.4 in female). Carapace surface granulate except in smooth furrows separating regions ; almost entirely covered in very short setae which are lower than the granules. Upper orbital border concave, evenly granular ; pair of shallow smooth furrows marking presence of broad truncate lateral tooth. Lower orbital border of inner angle formed by a triangular, granular, bluntly pointed tooth ; laterally with a second smaller blunt granular lobe ; with V-shaped notch laterally. Antennal flagellum small and entering orbit, fine, without accessory setae, reaching beyond orbit about half distance to first anterolateral tooth. Basal antennal segment broadly in contact with front, granular, rectangular, unarmed. Basal antennular segment with raised granular rim across upper and lateral margins, palp folding slightly obliquely. Inter-antennular septum moderately narrow, margins convex basally, outer edge of floor of antennular fossa, granular, more-or-less flat, slightly convex medially ; lower margin of epistome projecting as thin rim.

Third maxilliped : merus distinctly shorter than ischium, width of merus *c.* 0.7 times length ; antero-external angle produced, slightly rounded ; *c.* 0.5 times length of ischium. Ischium sub-rectangular *c.* 1.7 times longer than wide.

Chelipeds markedly unequal ; large and robust, left cheliped the larger on all present specimens ; minor cheliped of similar form but with longer, more slender fingers. Merus with posterior border tuberculate ; lower border granulate ; anterior border tuberculate, slightly smaller tubercles than posterior border. Carpus with a broad tooth at inner angle ; inner margin sharply granular ; a tubercle with a row of sharp granules proximal to it present on inner face of carpus slightly below inner angle ; outer margin granular and rugose. Outer surface of palm coarsely granular and coarsely rugose dorsally. Outer surface of palm without setae. Inner surface of palm granular. Immovable finger short (on major chela), with ventral ridge, and second longitudinal groove below cutting margin. Length of cutting edge *c.* 0.34 times length of propodus. Ventral border of chela slightly concave at base of fixed finger. Dorsal surface of dactyl minutely granular ; dactyl very broad, bearing 3 longitudinal grooves on outer face, running most of length. Fingers pointed, recurved ; cutting margins of both fingers with 3 large, molariform teeth over proximal two-thirds ; without a noticeable gap between the cutting margins.

Walking legs of medium length ; compressed ; slender ; first three pairs all of similar length, *c.* 1.1 times maximum carapace width. Merus of third leg *c.* 3.8-4.1 times as long as wide. Carpus *c.* 2.3-2.4 times as long as wide. Propodus *c.* 2-2.1 times as long as wide. Dactyli *c.* 1.3 times length of propodus. Dactyli slender, straight, and flattened ; terminating in an acute chitinous tip. Merus of anterior margin terminating in a blunt tooth. Carpus with accessory carinae on upper surface. All segments granular, with a more prominent row of tubercles along upper margins of meri, and on antero-ventral borders, particularly of first two pairs ; short setae cover entire surface, as on carapace, shorter than granules, longer on inside margins of dactyli.

Male abdomen relatively narrow ; five free segments ; third to fifth fused ; third segment the widest. First segment *c.* 0.75 times width third segment. Segments three-five tapering. Segment six not elongated, 1.7 times wider than long. Telson *c.* 0.7-0.75 times longer than wide ; evenly rounded.

Gonopods : G1 medium length, moderately stout, curved, tip finely pointed ; bearing row of long setae distally on dorsal margin behind apex. G2 moderately long, evenly curved, tip short, recurved.

Sternum relatively broad, granular, covered in very fine, very short setae.

DISTRIBUTION. — Known only from French Polynesia. Bathymetric range : 90-210 m.

REMARKS

This species belongs without doubt in *Medaeus* according to the modern diagnosis given by GUINOT (1967). Comparisons were also made with specimens of the other two species presently included in the genus — *Medaeus ornatus* Dana, 1852, and *M. elegans* A. Milne Edwards, 1867 — housed in the Muséum National d'Histoire Naturelle in Paris, and previously reported on by GUINOT (1967). *Medaeus ornatus* is much spinier than *M. grandis* and, in particular, the fourth anterolateral teeth are the most prominent and form the greatest carapace breadth ; the anterolateral teeth are also, in general, more upturned ; the median and lateral lobes of the front are much more projecting ; the margins of the leg segments are much spinier ; the dorsal surface of the palm of the cheliped has two rows of large granular lobes, and the dorsal margin of the dactyl has sharp tubercles. On *M. grandis* the palm of the chela lacks large lobules and the dactyl is only microscopically granular. There are also differences in male abdomen and pleopod shapes (GUINOT, 1967, fig. 39).

In general form *M. grandis* looks more like *M. elegans* but can be separated by having longer, slimmer legs ; a less medially protruding frontal margin ; a more granular carapace surface ; region 2L divided into three parts ; margins of each of the fused male abdominal segments 3-5 evenly tapering, not concave as in *M. elegans*, and by the shape of the male pleopod (GUINOT, 1967, fig. 38).

ACTAEINAE Alcock, 1898

MERACTAEA Serène, 1984

Meractaea Serène, 1984 : 103.

TYPE SPECIES. — *Meractaea brucei* Serène, 1984, by original designation.

DIAGNOSIS. — Carapace wider than long and transversely oval. Frontal border four-lobed with a rounded medial groove. Anterolateral borders of carapace regularly convex, bearing four teeth or lobes behind rounded exorbital lobe, tooth N being the largest. Dorsal surface of carapace longitudinally convex over anterior third but flattened from side to side ; completely lacking setae. Regions well separated by

smooth grooves bearing bulging granules of irregular size, some joined but most separated. Third maxilliped with bulging, rounded tubercle on outer medial face of merus. Chelipeds subequal; same ornamentation as dorsal carapace regions. Fingers of chelipeds distally pointed; crossing when closed. Walking legs narrow, smooth and naked except for some isolated long setae and rows of short setae on ventral borders of propodi and dactyli. First and second male pleopods are of same type as those of the Actaeinae. (Modified after SERÈNE, 1984.)

REMARKS

Meractaea Serène, 1984, has until now only contained the single species, *M. brucei* Serène, 1984, from Kenya, East Africa. The discovery of the present new species justifies its generic rank and marks it as a widespread Indo-West Pacific genus. The two species are remarkably similar, indeed, the presence of a large bulging tubercle on the outer face of the merus of the third maxilliped which was considered by SERÈNE (1984) to probably be a specific character, is also present on *Meractaea tafai* sp. nov. and I have therefore included it in the generic diagnosis.

Meractaea and *Rata* gen nov. (described later) are unique among the Actaeinae in having relatively long, slender walking legs. SERÈNE (1984) felt that only *Forestia* approached *Meractaea* in this regard, but even on *Forestia* the legs are closer to typical genera of Actaeinae than to either *Meractaea* or *Rata*. *Meractaea* is immediately identifiable by the characteristic pattern of carapace regions; the bulging tubercles on carapace and pereopods; and the lack of dorsal carapace setae.

***Meractaea tafai* sp. nov.**

(Fig. 9; pl. 9)

ETYMOLOGY. — Named in reference to a legendary Tahitian hero who was reputed to have red skin.

TYPE MATERIAL. — The larger male (23.9 × 15.7 mm) is designated holotype; the other specimens are paratypes.

MATERIAL EXAMINED. — **French Polynesia.** SMCB (J.Poupin) : **Tuamotu Archipelago** : Stn 240, Acteons Maria, 22°01.8'S, 136°12.4'W, trapped, 150 m, 30.05.1990 : 1 ♂ 23.9 × 15.7 mm (MNHN-B22216). *Ibid.* 1 ♂ 14.0 × 9.0 mm; 2 ♀ 32.0 × 21.0, 30.3 × 19.6 mm (MNHN-B22224).

DESCRIPTION

Carapace ovoid, *c.* 1.5-1.6 times broader than long. Fronto-orbital width *c.* 0.8 times carapace length. Carapace convex anteriorly, flat from side to side across postero-branchial regions. Regions distinct and well separated by narrow furrows, each taking the form of rounded bulges of various shapes, with uneven surfaces; 1F and 2F fused, rising abruptly from just behind frontal margin; 1M separated from 2F; 1M separated from 2M; 2M separated from 3M; 2M longitudinally divided; 3M divided basally into three parts, a narrow anterior projection and two basal rounded lobes; 4M consisting of a row of 3 rounded tubercles, medial

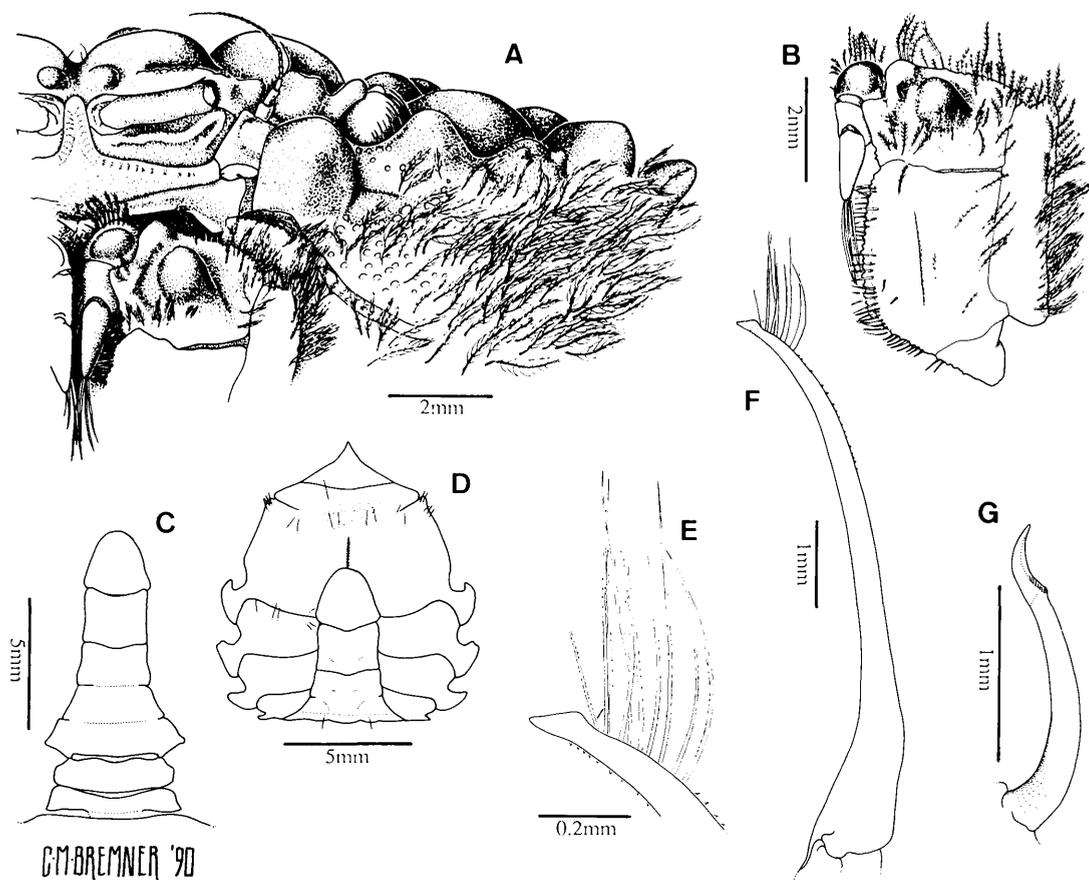


FIG. 9. — *Meractaea tafai* gen. nov., sp. nov. Holotype ♂, MNHN-B22216, Acteons Maria, Tuamotu Archipelago. A, frontal view; B, third maxilliped; C, abdomen; D, sternum and abdomen; E, F, first gonopod; G, second gonopod.

one largest; 1P divided longitudinally, with small rounded medial tubercle posteriorly; 2P with two strong transverse crests, the anterior one divided medially; postero-branchial regions with rounded granules and shallow furrows. Anterolateral margins regularly convex; consisting of 5 evenly separated teeth including bluntly rounded orbital lobe; second tooth much smaller, partially divided into 2 rounded granules; third tooth longest, broad, bluntly pointed; fourth tooth also large, narrower; fifth tooth smaller, pointing postero-laterally. Front *c.* 0.3 times carapace width; *c.* 0.55 times fronto-orbital width; strongly sinuous, frontal margin with pair of narrow projecting, medial lobes and pair of equally projecting, but broad, lateral lobes; lateral angles rounded, similarly projecting; upper orbital border framed by three large rounded lobes, medial one smaller, lateral one equivalent to region 1L; lower orbital border

concave medially, with large rounded inner lobe. Posterior margin *c.* 0.35 times carapace width. Antennal flagellum small and entering orbit. Basal antennal segment just touching front; unarmed except for swollen, rounded medial tubercle. Basal antennular segment normal, flagellum folding almost transversely. Inter-antennular septum narrow.

Third maxilliped : merus distinctly shorter than ischium, *c.* 0.85 times wider than long, with a single large bulbous tubercle on outer face; 0.6-0.65 times length of ischium. Ischium rectangular, *c.* 1.5 times longer than wide. Palp articulating at inner distal margin of merus.

Chelipeds subequal; robust, moderately large; height of palm *c.* 0.5 times length of palm including fixed finger. Merus with posterior border granulate; with larger small, sharp granule subdistally; armed with rounded tubercle terminally; lower border granulate; anterior border microscopically granular. Carpus with inner angle produced as a broad rounded tubercle; upper surface of carpus covered with large, rounded, well-separated tubercles; a tooth present on inner face of carpus slightly below inner angle. Outer surface of palm coarsely granular, granules arranged in 7 major rows; uppermost two rows formed by very large, swollen, rounded tubercles as on carpus and carapace; ventral two rows continuing onto fixed finger as strong, more-or-less smooth ridges, reaching to tip. Outer surface of palm naked. Inner surface of palm granular, with larger coarse granules medially; bearing long setae below upper margin; brown colouring of fixed finger extending proximally to about middle of palm as large rounded plume, on outer face colouring ending obliquely and not extending far onto palm. Length cutting edge *c.* 0.35 times length propodus. Ventral border of chela concave at base of fixed finger. Dorsal surface of dactyl microscopically granular; with large bulbous tubercle basally. Fingers pointed; without a noticeable gape between the cutting margins.

Walking legs relatively long; flattened; slender; second pair the longest, *c.* 1.4 times maximum carapace width. Merus of third leg *c.* 3-3.2 times as long as wide. Carpus *c.* 2.5-2.6 times as long as wide. Propodus *c.* 2-2.1 times as long as wide. Dactyli *c.* 1.3-1.4 times length of propodus. Dactyli straight; terminating in an acute chitinous recurved tip. Merus anterior margin unarmed terminally, upper margin armed with a row of small, semi-acute, distally pointing tubercles; lower margin unarmed. Carpus with accessory carinae on upper surface. Upper margins of leg segments of carpus and propodus bearing row of larger blunt tubercles, appearing coarsely serrated; otherwise surface of segments microscopically granular. Legs with scattered setae, and with fringe of very short setae on ventral margins of propodi and dactyli.

Male abdomen relatively narrow; five free segments; third to fifth fused. First segment broad, subequal in breadth to third. Segments three-five tapering. Segment six *c.* 1.1 times wider than long. Telson longer than sixth segment; 0.95 times longer than wide; evenly rounded.

Gonopods : G1 long, slender, curved; long, feathered, setae present on distal dorsal margin. G2 short, evenly curved; tip short, recurved.

Sternum relatively broad; telson reaching *c.* half length of fused sternites 3 and 4; female abdomen relatively narrow, not covering sternum.

COLOURATION. — Furrows between regions, over anterior third of carapace, coloured dark reddish purple, becoming pale greenish blue posteriorly; upper surfaces of bulbous regions orange. Upper surfaces of chelipeds coloured like carapace; outer faces of palms becoming off-white ventrally. Each leg with an orange band proximally and distally on merus, and a medial band on carpus, propodus, and dactylus.

DISTRIBUTION. — Known only from the type locality in French Polynesia.

REMARKS. — *Meractaea tafai* sp. nov. is separable from the only other species in the genus, *M. brucei*, by several points. 1. The male first pleopod has the tip more truncated in *M. tafai*; and the setation also differs with *M. tafai* having more long feathered setae and lacking the short, more proximal bristles of *M. brucei*. 2. The dorsal carapace regions of *M. tafai* are even more strongly bulging and sharply defined, and although their surfaces are uneven, they are not granular as in *M. brucei*. 3. The upper margins of the meri of the walking legs are more coarsely granular in *M. tafai*.

RATA gen. nov.

ETYMOLOGY. — Named after a mythological Polynesian nautical hero, who was a grandson of Tafai. Gender is neuter.

TYPE SPECIES. — *Rata tuamotense* sp. nov., here designated.

DIAGNOSIS. — Carapace transversely ovoid, 1.4-1.5 times broader than long. Regions well defined. Anterolateral margins regularly convex; with four teeth behind the exorbital angle; a more-or-less distinct row of granules below first tooth running from second tooth to just short of lateral edge of orbit. Posterolateral margins convergent, not sharply defined, moderately cut-away to receive meri of last pair of legs. Front *c.* one-third carapace width; 0.5-0.6 times fronto-orbital width; not projecting, with a pair of broad lateral lobes and a pair of blunt tubercular projections medially. Upper orbital border concave; lower orbital border with inner angle formed by a triangular tooth, with V-shaped notch laterally. Antennal flagellum small and entering orbit; basal antennal segment just touching front. Basal antennular segment moderately broad, flagellum folds almost transversely, first segment of flagellum relatively slender and elongated. Inter-antennular septum moderately narrow, with a longitudinal furrow. Third maxilliped with merus distinctly shorter than ischium; merus wider than long, antero-external angle produced. Chelipeds subequal; large and robust; fingers pointed. Walking legs relatively long; compressed; moderately slender; dactyli slender and straight. Male abdomen relatively narrow; five free segments; third to fifth fused; first segment subequal in width to third, narrow. Gonopods: G1 long, slender, curved, reaching to suture between sternites 4 and 5; G2 short, evenly curved; tip short, reflexed, pointed.

REMARKS

Rata appears most closely related, amongst the Actaeinae, to *Forestia* Guinot, 1976. Only *Forestia* and *Meractaea* Serène, 1984, of all the Actaeinae genera, have the walking legs relatively elongated. *Meractaea* as discussed elsewhere in this paper is extremely unusual in many ways and not a close relative of *Forestia* or *Rata*. *Forestia* was originally erected to accept three species, *F. depressa* (White, 1847), *F. scabra* (Odhner, 1925) and *F. abrolhensis* (Montgomery, 1931). Subsequently, *F. pascua* Garth, 1985, has been described from Easter Island, but is known only from the single female type specimen.

Rata differs from *Forestia* in many characteristics.

1. The structure of the antennules and interantennular septum differ. In *Forestia* the first segment of the palp of the antennule is short and swollen and folds obliquely, whereas in *Rata* it is slender and elongated and folds almost transversely. The interantennular septum in *Forestia* is very narrow and sharp but in *Rata* it is noticeably wider and bears a vertical medial furrow.

2. The width of the front in *Forestia* (measured from the outer edge of the lateral teeth) is about one fourth of the carapace breadth. In *Rata* the frontal width is about one-third of the carapace breadth.

3. The frontal margin of *Forestia* is formed by two large convex lobes which are strongly produced and moderately depressed partly hiding the antennules in frontal view. In *Rata* the frontal margin is not at all produced, there is a small blunt tooth on either side of the medial line followed by slightly convex lateral lobes, and the antennules are not hidden in frontal view.

4. The walking legs in *Rata* are even more elongated and slender, and, in particular, the dactyli are very long and slender.

5. In *Forestia* the first segment of the male abdomen is relatively long, about the same length as segment 2, and flattened. In *Rata* the first segment is very narrow and not flattened.

6. In *Rata* the anteroexternal angle of the merus of the third maxilliped is strongly produced laterally, whereas in *Forestia* it is more nearly quadrate.

I have examined all the *Forestia* species except *F. pascua* (Garth). *F. pascua* appears somewhat different from the other three species and close to *Rata tuamotense* sp. nov. but unfortunately the description is not sufficient to be certain if it is really a true *Forestia*. The shape of the carapace, the wide, non-protruding front, the carapace regions and granulation, all strongly suggest the appearance of *Rata*. The antero-external angle of the third maxilliped is produced a little more than in typical *Forestia* species, but not as much as in *Rata tuamotense*. A careful examination of the frontal region is necessary to be sure of its correct generic placement. The two species can be easily separated because *F. pascua* has broader, more prominent anterolateral teeth, and the carapace region 2M is completely subdivided.

The differences between *Rata* and some of the genera of Xanthinae are not very great, and its placement in the Actaeinae is largely on subjective criteria, and on an assessment of its closest relatives. GUINOT (1976) in an excellent study on the Actaeinae cleared up many problems but did not provide an assessment of the characters that are unique to the subfamily. A clear definition of the Actaeinae is still needed.

***Rata tuamotense* sp. nov.**

(Fig. 10 ; pl. 10)

ETYMOLOGY. — The name refers to the Island group in French Polynesia where the holotype was collected.

TYPE MATERIAL. — The male of 20.9 × 14.5 mm (MNHN-B22231), from Fangataufa, is designated the holotype. All remaining material is paratypic.

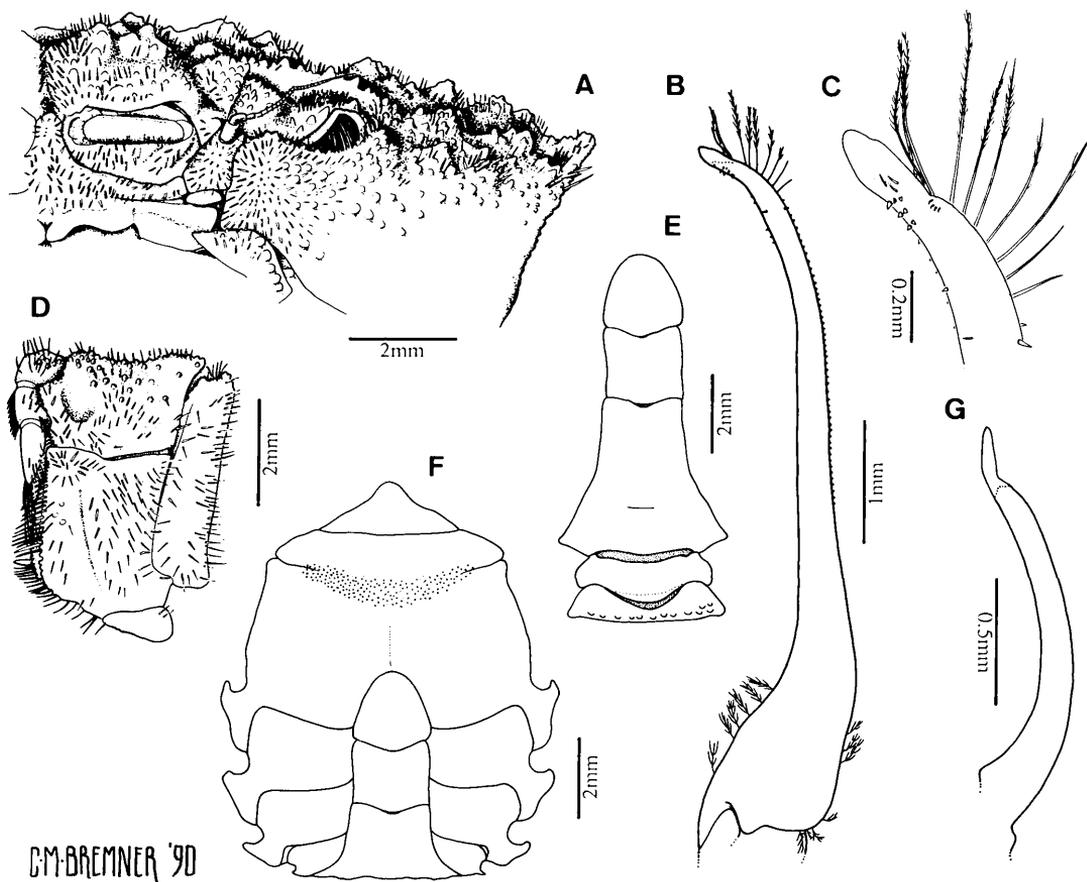
MATERIAL EXAMINED. — **French Polynesia** SMCB (J. POUPIN) : **Marquises Islands** : Tahuata, Stn 300, 9°54.5'S, 139°07.9'W, trapped, 190 m, 1.09.1990 : 1 ♀ 19.6 × 14.0 mm (USNM). — **Tuamotu Archipelago** : Tematangi, Stn 328, 21°40.6'S, 140°30.5'W, trapped, 270 m, 27.10.1990 : 1 ♂ 29.6 × 20.1 mm (MNHN-B22230). Fangataufa, Stn 231, 22°12.0'S, 138°45.9'W, trapped, 270 m, 21.05.1990 : 1 ♂ 20.9 × 14.5 mm (MNHN-B22231). Fangataufa, Stn 234, 22°15.0'S, 138°46.0'W, trapped, 250 m, 22.05.1990 : 1 ovig. ♀ 16.8 × 11.8 mm (MNHN-B22232)

DESCRIPTION

Carapace transversely ovoid, *c.* 1.4-1.47 times broader than long. Fronto-orbital width *c.* 0.82-0.86 times carapace length. Carapace convex anteriorly, flat from side to side across postero-branchial regions. Regions well defined, separated by broad, deep smooth grooves; 1F and 2F not separated; 1M distinct, anterior margin laterally oblique; a small raised granular patch lateral to 1M and above middle of 2M; 2M distinct, longitudinally divided for anterior three-quarters, with raised tubercle on either side of anterior end of dividing groove, outer branch much wider than inner branch; 3M entire, anterior extension very narrow, reaching nearly to middle of 1M; 4M distinct; broad, smooth groove posterior to raised orbital rim; 2L and 3L fused, armed with 3 or 4 larger granular tubercles; 4L, 5L and 6L all distinct, armed with coarse tubercles of various size; sub-parallel cardiac-intestinal grooves present, but cardiac region (1P) not clearly separated from 3R anterolaterally, and cardiac and intestinal regions not clearly separated from each other; 2P with slightly raised, blunt ridges laterally above posterior margin. Anterolateral margins regularly convex; with four teeth behind the exorbital angle; first tooth in form of strong tubercle displaced slightly onto anterior surface; below first tooth surface irregularly granular with a more-or-less distinct row of granules (of which one or two may form prominent tubercles) running from second tooth nearly to lateral edge of orbit, level with lower orbital margin; second tooth broadly triangular, armed with accessory granules; third tooth similar to second; fourth similar but narrower; carapace breadth slightly greater between third anterolateral teeth than fourth; posterolateral margins convergent, not sharply defined, moderately cut-away to receive meri of last pair of legs. Front *c.* 0.3-0.33 times carapace width; *c.* 0.52-0.56 times fronto-orbital width; strongly sinuous in anterodorsal view; in dorsal view not at all projecting, with a pair of broad lateral lobes and a pair of blunt tubercular projections medially; lateral angles also moderately produced and armed with a few acute granules. Posterior margin *c.* 0.3 times carapace width in males; 0.36 in females. Upper surface of carapace regions granular, granules unevenly sized, with larger, rounded tubercles laterally on regions 2L-5L; each granule bearing semi-circlet of short stiff setae anteriorly; setae thus forming a conspicuous covering. Upper orbital border evenly granular; concave; lateral fissures fused, evident as smooth grooves interrupting margin. Lower orbital border sinuous; evenly granular; inner angle formed by a triangular tooth; with V-shaped notch laterally. Antennal flagellum small and entering orbit, fine, just reaching to outer edge of orbit. Basal antennal segment just touching front. Basal antennular segment moderately broad, flagellum folds almost transversely, first segment of flagellum relatively slender and elongated; anterolateral margins of epistome granular, lower margin strongly projecting, sinuous, and deeply cleft. Inter-antennular septum moderately narrow, with a longitudinal furrow.

Third maxilliped: merus distinctly shorter than ischium; merus wider than long, length *c.* 0.7 times width; antero-external angle produced, rounded; *c.* 0.6 times length of ischium. Ischium rectangular, length *c.* 1.4 times width.

Chelipeds subequal; large and robust; height of palm 0.55-0.6 times length including fixed finger. Merus with posterior border granulate, with broad subdistal lobe; lower border minutely granulate, rounded; anterior border minutely granulate. Carpus with inner angle produced, bluntly rounded; connected by an oblique granular crest to a more-or-less produced, rounded, ventral tooth; inner margin granular; upper and outer surfaces covered



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FIG. 10. — *Rata tuamotense* gen. nov., sp. nov. Holotype ♂, MNHN-B22231, Fangataufa, Tuamotu/Gambier Archipelago. A, frontal view; B, C, first gonopod; D, third maxilliped; E, abdomen; F, sternum and abdomen; G, second gonopod.

in large, rounded, well-separated tubercles. Outer surface of palm coarsely granular, mostly arranged in 6-7 irregular rows; densely covered by fine, stiff setae, not obscuring surface, longer on superior and inferior margins and around base of fingers. Inner surface of palm minutely granular on upper half; more coarsely behind fixed finger. Immobile finger with ventral ridge; moderately long; length cutting edge *c.* 0.36 times length propodus. Ventral border of chela concave at base of fixed finger. Dorsal surface of dactyl granular. Fingers pointed; without a noticeable gape between cutting margins.

Walking legs relatively long; compressed; moderately slender; first three pairs of similar length; *c.* 1.1 times maximum carapace width. Merus of third leg *c.* 2.7-2.8 times as long as wide. Carpus *c.* 2.2-2.3 times as long as wide. Propodus *c.* 1.7-1.8 times as long as wide. Dactyli *c.* 1.5-1.6 times length of propodus. Dactyli slender and straight; terminating in an acute,

chitinous, recurved tip. Merus bearing small sharp granules along superior border ; a sub-distal tubercle ; terminating in an acute tooth ; blunt granules along inferior border. Carpus with a longitudinal sulcus on upper surface bordered by two rows of sharp tubercles. Propodus also with two rows of smaller, but relatively coarse, sharp tubercles. All segments covered with short setae, and fringed with longer stiff setae.

Male abdomen relatively narrow ; five free segments ; third to fifth fused ; first segment subequal in width to third, narrow. Segments three-five tapering. Segment six moderately elongated, *c.* 1.1 times wider than long. Telson about as long as wide ; triangular, rounded apically.

Gonopods : G1 long, reaching to suture between sternites 4 and 5 ; slender ; curved ; long, feathered setae on dorsal margin near tip ; small, conical setae along dorsal margin over distal half, and on ventral margin near tip ; tip hollowed ; gonopore subterminal ; bluntly pointed (as in figure) or more acute in large male. G2 short, evenly curved ; tip short, reflexed, pointed.

COLOURATION. — In life, background colour porcelain white with orange highlighting. Orange particularly strong : on frontal region and 1M ; towards anterior parts of other regions ; on anterolateral margins ; on distal border of carpus behind articulation with palm ; on superior inner margin of palm, and on the base of dactyl. Fingers blackened, but black colouration of fixed finger not extending backwards onto palm.

DISTRIBUTION. — Known only from French Polynesia, between the Marquises Islands (9°54'S) and Tuamotu/Gambier Archipelago (22°15'S). Bathymetric range : 190-270 m.

ZOSIMINAE Alcock, 1898

***Lophozozymus bertonicinae* Guinot and Richer de Forges, 1981**

(Pl. 11)

Lophozozymus bertonicinae Guinot and Richer de Forges, 1981a : 1123-1127, fig. 2 A-D, pl. I, 5, 5a.

MATERIAL EXAMINED. — **French Polynesia.** SMCB (J. POUPIN) : **Marquises Islands** : Tahuata, Stn 297, 9°54.3'S, 139°07.3'W, 100 m, trapped, 31.08.1990 : 1 ♀ 56.1 × 34.9, 1 ♂ 61.0 × 38.5 mm (MNHN). Hiva-Oa, 9°49.7'S, 139°09.1'W, 100 m, September 1989 : 2 ♀ 58.1 × 36.2, 60.0 × 37.1, 1 ♂ 64.7 × 41.0 mm (QM W8030). — **Tuamotu Archipelago** : Tenarunga, 21°21.0'S, 136°32.0'W, 160 m, trapped, 19.11.1989 : 1 ♀ 81.5 × 48.3 mm (MNHN). Mururoa, Stn 228, 21°51.9'S, 139°01.6'W, 200 m, trapped, 19.05.1990 : 1 ♀ 72.2 × 45.8, 1 ♂ 78.0 × 47.4 mm (USNM). — **Austral Islands** : Maria, Stn 420, 21°47.3'S, 154°42.4'W, trapped, 7.08.1991 : 1 ♀ 90.8 × 57.0 mm (MNHN). — **New Caledonia.** Collected by Mr. BARRO : passe de Boulan, 200 m, 4.06.1978 : 1 ♂ 65.1 × 39.5 mm (MNHN).

REMARKS

Lophozozymus bertonicinae Guinot and Richer de Forges, 1981, was well separated from most of its congeners as part of the original description. It seems that it is most closely related to *L. superbus* (Dana, 1852) and some confusion has persisted in separating the two species.

I have examined two specimens that can be attributed to *L. superbus*, one immature female (30.7 × 18.7 mm) in the MNHN previously mentioned by GUINOT (1977) from the type area (Tuamotu Arch.), and one larger male (40.7 × 24.8 mm) from Wreck Reef, southern Coral Sea, in the collections of the Queensland Museum. A neotype will need to be erected to firmly establish the identity of *L. superbus* as DANA's type specimen can be presumed destroyed as it has not been listed amongst DANA's surviving material. This action will be deferred awaiting additional material from the Tuamotus. Characters which can be used to separate the two species are given in the following. 1. The male abdomens differ in shape; in *bertonciniae* the fused segments 3-5 have the sutures still quite strongly marked and the lateral borders of each original segment are produced laterally at their proximal ends; whereas in *superbus* the sutures are hardly evident and the lateral margins are almost evenly tapering. 2. The inner lower orbital tooth in *bertonciniae* is somewhat flared outwards and projects strongly beyond the outer distal angle of the basal antennal segment, which is subquadrate; in *superbus*, the inner lower orbital tooth is not flared outwards and does not project very far past the outer distal angle of the basal antennal segment, which itself is markedly produced and lies against the inner orbital tooth. 3. In *bertonciniae* the first anterolateral tooth is sharply cristate, and obliquely projecting upwards, with its ventral surface flat; in *superbus*, the tooth is slightly deflexed ventrally, with its edge rolled in such a way that it overhangs and forms a groove below it. These differences also apply in less marked degree to the second anterolateral tooth. 4. In *superbus* the dorsal carapace surface is evenly covered with many punctations, each with a small tuft of short setae; in *bertonciniae* the upper surfaces of the regions mostly lack punctations, and are smooth and glabrous.

Lophozozymus superbus is apparently a shallow water coral reef species, but *L. bertonciniae* seems to prefer deeper water with all records between 100 and 200 m.

DISTRIBUTION. — Southern Pacific Ocean, from New Caledonia (type locality) to French Polynesia. These records mark a major range extension. Bathymetric range: 100-200 m.

LIOMERINAE Sakai, 1976

MERIOLA gen. nov.

ETYMOLOGY. — Formed by re-arranging the letters of *Liomera*. Gender is feminine.

TYPE SPECIES. — *Meriola rufomaculata* sp. nov., here designated.

DIAGNOSIS. — Carapace transversely ovoid; *c.* 1.5-1.6 times broader than long. Regions moderately defined; orbital margin swollen. Anterolateral margins regularly convex; with four teeth behind the exorbital angle; margins bluntly crested. Front *c.* one-quarter carapace width; moderately projecting; bilobed; lateral angles bluntly prominent. Posterior margin *c.* 0.4 times carapace width. Upper orbital border concave. Basal antennal segment just touching front; flagellum small and entering orbit. Basal antennular segment moderately broad, palp folding almost transversely. Inter-antennular septum narrow. Merus of third maxilliped wider than long, distinctly shorter than ischium. Chelipeds large and robust; ventral border of chela concave at base of fixed finger; fingers spooned; a narrow gape between cutting

margins on male. Walking legs relatively long ; compressed ; slender ; all four pairs of similar length, dactyli straight and flattened ; terminating in an acute, chitinous tip ; anterior margin of merus unarmed terminally. Male abdomen of five free segments ; third to fifth fused. Male first gonopod long, moderately stout, curved ; tip shaped like " swans head ". Long setae present on dorsal margin and continuing along lower edge of hollowed tip. Sternum relatively broad.

REMARKS

Meriola is considered here to contain two species, the type *M. rufomaculata* sp. nov., and *M. acutidens* (Sakai, 1969). *M. acutidens* was originally described as a *Neoliomera* by SAKAI, but was clearly aberrant within that genus. SERÈNE (1977) transferred it to *Liomera* (*Bruciana*), his new subgenus, as it seemed to him most closely related to *Liomera pediger* Alcock, 1898, which he had made the type for *Bruciana*.

The specimens of *Liomera* (*Bruciana*) *pediger* at the MNHN, Paris, identified by SERÈNE, were compared with *Meriola rufomaculata*, and they are clearly not congeneric. I, like SERÈNE, have also not examined material of SAKAI's *acutidens*, but the similarities between it and the present new species are striking. These include the shape and long length of the walking legs ; the degree and pattern of regionation ; and the shape of the carapace which has relatively very long posterolateral margins that are not as sharply oblique as is typical of *Liomera* and *Neoliomera*. Within *Liomera* and *Neoliomera* the pattern of regions and their degree of development varies considerably, but the very long, thin legs and the shape of the carapace are more than enough to exclude the species here placed into *Meriola*.

The subgenus *Bruciana* as characterised by *Liomera* (*Bruciana*) *pediger* is of a much more typical *Liomera* appearance. It differs from *Meriola* in a number of features : 1, the carapace regions are all strongly and clearly defined ; 2, the walking legs, while being longer than a typical *Liomera*, are still quite short, have the meri convex, and are quite different from the very long, slender legs of *Meriola* ; 3, the first anterolateral tooth is clearly marked and separate from the orbit ; 4, the shape of the epistome, antennae and antennules is different. In *L. pediger* the basal segment of the antenna is relatively elongated and lies very obliquely (c. 45°), forming the outer half of the floor of the antennular fossa ; and in conjunction with this the epistome is unusually narrow. The basal antennal segment of *Meriola rufomaculata* is more usual in form, being quite short and only slightly oblique, so that the epistome forms most of the floor of the antennular fossa (compare figs 11 A and 11 I).

The taxonomic position of *Meriola* is not completely clear. It largely satisfies the definition of the Liomerinae given in the key of SERÈNE (1984) although none of the characters is exclusively definitive for the subfamily. In its general shape and conformation of the front it shows similarities with some members of the Xanthinae, in particular *Xanthias*, but the unguulate tips of the fingers exclude it from almost all genera of Xanthinae except for *Leptodius* and *Macromedaeus*, neither of which it resembles at all. Until a more rigorous examination of subfamilial relationships is undertaken it is placed in the Liomerinae.

***Meriola rufomaculata* sp. nov.**

(Fig. 11A-H; pl. 12)

ETYMOLOGY. — The name refers to the pattern of large red patches on the dorsal surface of the carapace.

TYPE MATERIAL. — The male is designated the holotype, and the female a paratype.

MATERIAL EXAMINED. — **French Polynesia. SMCB (J. POUPIN) : Tuamotu Archipelago : Vanavana, Stn 331, 20°45.7'S, 139°10.1'W, trapped, 240 m, 28.10.1990 : 1 ♂ 32.0 × 20.4 mm (MNHN-B22223). Fangataufa, Stn 231, 22°12.0'S, 138°45.9'W, trapped, 270 m, 21.05.1990 : 1 ♀ 31.8 × 20.3 mm (MNHN-B22222)**

DESCRIPTION

Carapace transversely ovoid ; *c.* 1.57 times broader than long. Fronto-orbital width *c.* 0.7 times carapace length. Carapace evenly convex longitudinally, flat from side to side. Regions moderately defined ; 1F marked by swollen rounded ridge parallel to frontal margin ; 2F not distinct ; 1M moderately swollen and separated by broad, shallow groove from inner branch of 2M ; 2M partially longitudinally divided anteriorly by broad, shallow groove, outer branch of 2M wider than inner branch ; 2M separated from 3M ; orbital margin swollen and separated from posterior regions by strong groove ; 1L, 2L and 3L fused, delimited posteriorly by strong, oblique, slightly concave groove originating on lateral margin between second and third anterolateral teeth ; a similar, much shorter groove between third and fourth teeth ; cardiac and intestinal regions defined by diffused grooves. Anterolateral margins regularly convex ; with four teeth behind the exorbital angle ; margins bluntly crested ; first tooth lateral to orbit, well separated, connected by straight, slightly oblique margin very poorly defined in frontal view ; ill defined, granular, slightly flattened area running from first tooth obliquely below orbit ; second tooth broad, rounded ; third tooth narrower, slightly more prominent, blunt ; fourth tooth similar to third but smaller ; carapace width between fourth teeth slightly more than, or subequal to, distance between third teeth. Front *c.* 0.26 times carapace width ; *c.* 0.57-0.58 times fronto-orbital width ; moderately projecting ; bilobed ; lateral angles bluntly prominent ; pre-orbital teeth represented as blunt shoulder. Posterior margin *c.* 0.37-0.4 times carapace width. Carapace surface smooth and shining, finely punctate, finely wrinkled and roughened anteriorly ; without setae. Upper orbital border concave, smooth, granular laterally. Lower orbital border granular laterally ; inner angle formed by a rounded lobe. Antennal flagellum small and entering orbit, not reaching beyond orbit. Basal antennal segment just touching front. Basal antennular segment moderately broad, palp folds almost transversely. Inter-antennular septum narrow.

Third maxilliped : merus distinctly shorter than ischium, wider than long, length *c.* 0.7-0.8 times breadth ; *c.* 0.4 times length of ischium. Ischium rectangular, length *c.* 1.6 times breadth ; inner margin smooth.

Chelipeds markedly unequal on male holotype, but subequal on female paratype (probably regenerating) ; large and robust ; merus with posterior border granulate ; lower border

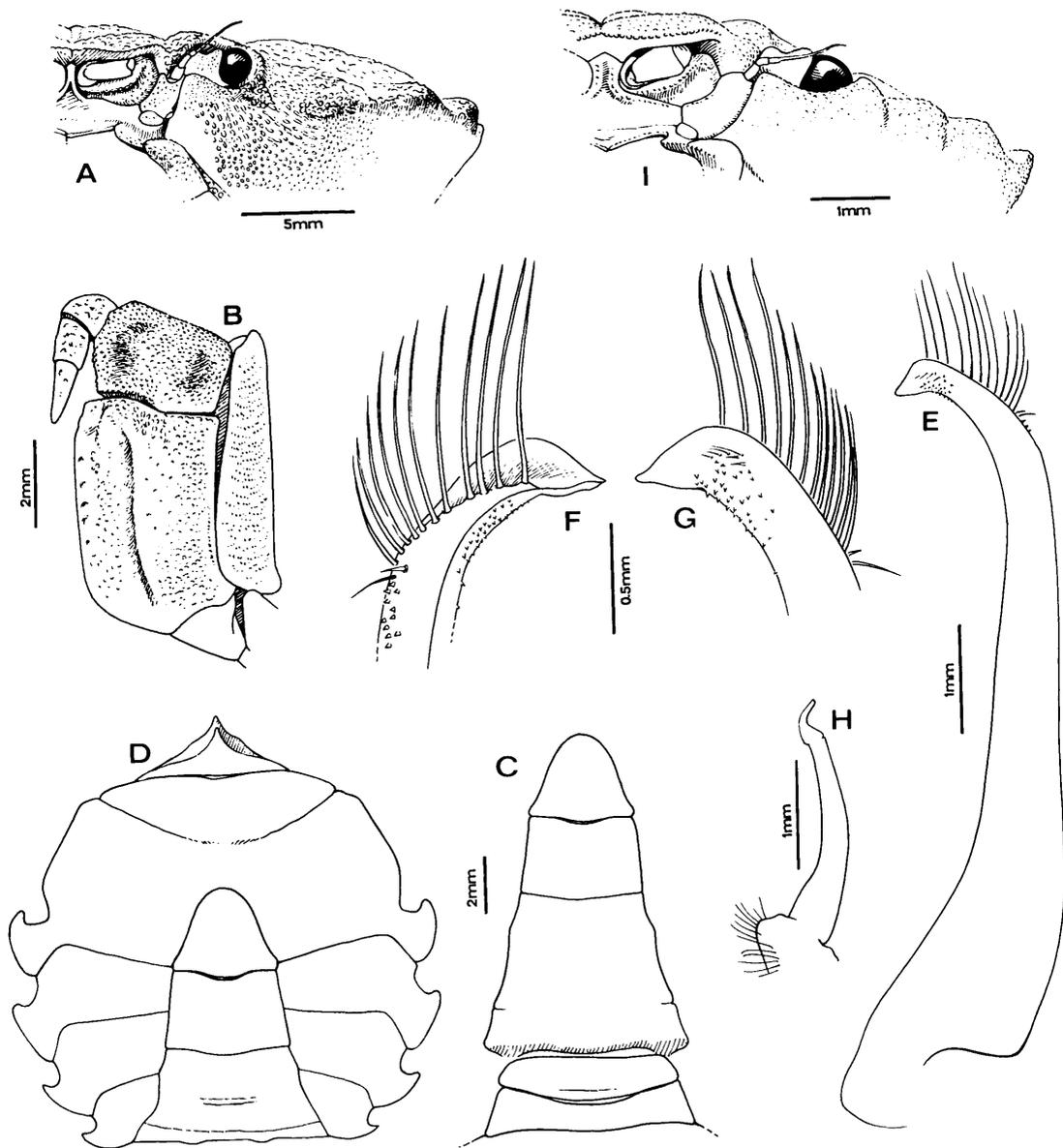


FIG. 11. — A-H, *Meriola rufomaculata* gen. nov., sp. nov. Paratype ♀, MNHN-B22222, Fangataufa, Tuamotu/Gambier Archipelago. A, frontal view; B, third maxilliped; C, abdomen; D, sternum and abdomen; E, F, G, first gonopod; H, second gonopod. I, *Liomera (Bruciana) pediger* (Alcock, 1898): frontal view.

granulate ; anterior border minutely granulate ; carpus with two bluntly rounded teeth at inner angle ; outer margin and upper surface smooth, finely punctate. Outer surface of palm appearing smooth, but microscopically granular and punctate ; without setae. Inner surface of palm microscopically granular. Immobile finger moderately long, with ventral ridge extending a short distance on palm ; length of cutting edge *c.* 0.32-0.36 times length of propodus. Ventral border of chela concave at base of fixed finger. Dorsal surface of dactyl smooth, rounded. Fingers spooned ; a narrow gape between cutting margins on male.

Walking legs relatively long ; compressed ; slender ; all four pairs of similar length, *c.* 1.2 times maximum carapace width. Merus of third leg *c.* 4.2 times as long as wide. Carpus *c.* 2.4 times as long as wide. Propodus *c.* 2.5-2.6 times as long as wide. Dactyli *c.* 1.3 times length of propodus. Dactyli straight and flattened ; terminating in an acute chitinous tip. Merus anterior margin unarmed terminally. Carpus without accessory carinae on upper surface, but sometimes with slight distal depression. All segments smooth ; without setae.

Male abdomen : five free segments ; third to fifth fused ; first and third segments subequal in width. Segments three-five tapering. Segment six *c.* 1.5 times wider than long. Telson *c.* 0.9 times longer than wide ; evenly rounded, slightly longer than segment 6.

Gonopods : G1 long ; moderately stout ; curved ; tip shaped like " swans head ". Long setae present on dorsal margin and continuing along lower edge of hollowed tip. G2 short ; evenly curved ; tip short.

Sternum relatively broad, smooth, noticeably punctate.

COLOURATION. — Male specimen strongly marked with large, symmetrical orange/red patches on the dorsal surface of carapace on the following regions : on 1F-1M ; on outer half of 2M ; anterolaterally on 1L-3L ; small patch on 4L ; on 5L ; on 3M ; round patch on cardiac ; and a round patch posterolaterally above bases of last walking legs. Legs with sub-proximal and sub-distal bands on meri, and a single band more-or-less medially on other segments. Base colour of carapace (after preservation) is a light blue-gray ; legs creamy yellow. Fingers dark, as usual, with the colour of fixed finger extending obliquely backwards a short distance onto the palm.

Incertae sedis

EURYOZIUS Miers, 1886

Pseudozius (*Euryozius*) Miers, 1886 : 141-142.

Euryozius ; GUINOT, 1968b : 325-330.

Gardineria Rathbun, 1911 : 236. GUINOT, 1968b : 325-330.

TYPE SPECIES. — *Pseudozius bouvieri* A Milne Edwards, 1869.

DIAGNOSIS. — Carapace transversely oval ; anterolateral margin directed obliquely downward to the angle of the buccal cavity and furnished with a stridulating mechanism. Orbit sub-entire, pear-shaped. Antennules large, nearly transverse. Peduncular segments of antennae narrow ; basal segment falling far

short of front, following segment just touching front ; flagellum standing in orbital hiatus. Efferent ridge well developed posteriorly but not reaching anterior edge of buccal cavity. Merus of maxillipeds expanded at outer angle. Chelipeds stout, smooth. Legs slender, flattened (after RATHBUN, 1911).

REMARKS. — GUINOT (1968*b*) discussed the relationships of *Gardineria* and *Euryozius* Miers, 1886, at some length. At that time she elected to maintain them as separate genera because, even though they are clearly closely allied, *G. canora* is only known from a single female and she felt the structure of the male pleopods may be important in determining their true status. CROSNIER (in SERÈNE, 1984) put *Gardineria* into the synonymy of *Euryozius* by placing *G. canora* into *Euryozius*. After examining specimens of *Euryozius bouvieri* at the MNHN I concur with CROSNIER's action.

Euryozius is now considered to have three species : *E. bouvieri* (A. Milne Edwards, 1868) from the Western Atlantic ; *E. canorus* (Rathbun, 1911) from the Seychelles, in the Indian Ocean ; and *E. danielae* sp. nov. from French Polynesia, in the Pacific Ocean. The latter two are known only from single females.

***Euryozius danielae* sp. nov.**

(Fig. 12 ; pl. 13)

ETYMOLOGY. — This elegant crab is named in honour of Dr Danièle GUINOT of the MNHN Paris, for her work on resolving the problems of this group.

MATERIAL EXAMINED. — **French Polynesia.** SMCB (J. POUPIN) : **Society Islands** : Maupiti, Stn 272, 16°25.6'S, 152°17.5'W, trapped, 110 m, 24.06.1990 : 1 ♀ 26.7 × 16.3 mm (holotype, MNHN-B22217)

DESCRIPTION

Carapace transversely ovoid ; *c.* 1.65 times broader than long. Fronto-orbital width *c.* 0.9 times carapace length. Carapace convex anteriorly, flat from side to side. Regions poorly defined ; cardiac indistinct ; intestinal indistinct, defined laterally by branchio-intestinal grooves. Anterolateral margins regularly convex ; cristate, slightly raised, appearing granular from above ; ending posteriorly in 2 projecting, spinous teeth, first forming widest point of carapace, second with short oblique inwardly directed ridge. Anterolateral margins not connected with outer edge of orbit ; ventral edge of margins finely striated, forming a long stridulatory ridge, anteriorly curving beneath orbit but stopping clearly short of anterolateral corner of buccal frame. Front *c.* 0.25 times carapace width ; *c.* 0.45 times fronto-orbital width ; moderately deflexed ; bilobed with deep median incision ; lateral angles rounded, projecting ; lateral margins diverging posteriorly. Posterior margin *c.* 0.25 times carapace width. Carapace surface smooth, shining, punctate, surface coarsened with fine punctations in band across front and behind anterolateral margins ; without setae. Upper orbital border irregularly granular laterally ; concave ; inner angle rounded. Lower orbital border irregularly granular, outer edge of orbit marked by a single prominent tubercle ; a second, similar, below middle of cornea, then 3-4 tubercles along inner part. Antennal flagellum small, entering orbit, reaching just short of end of cornea. Orbital hiatus open. Basal antennal segment short, not touching front ;

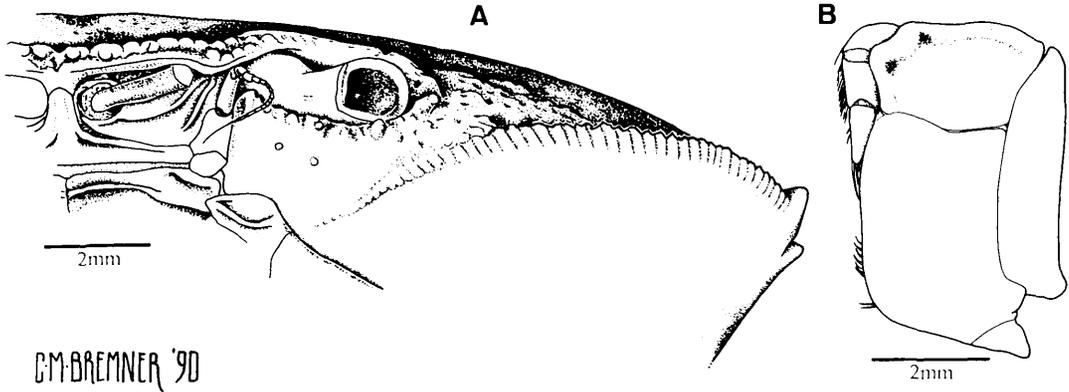


FIG. 12. — *Euryozius danielae* sp. nov. Holotype ♀, MNHN-B22217, Maupiti, Society Islands. A, frontal view ; B, third maxilliped.

unarmed ; subrectangular. Basal antennular segment triangular, with anterior and lateral edges raised to form a rim ; palp folding obliquely. Inter-antennular septum narrow.

Third maxilliped : merus distinctly smaller than ischium ; *c.* 0.6 times wider than long ; antero-external angle produced, rounded ; *c.* 0.5 times length of ischium. Ischium subtriangular, *c.* 1.6 times longer than wide ; inner margin smooth, upper surface punctate. Maxillipeds without fringing setae. Palp articulating at inner distal margin of merus.

Chelipeds large and robust ; markedly unequal, left the larger on present specimen (ratios for major cheliped) ; height of palm *c.* 0.5 times length, palm relatively elongated with dactyl *c.* 1.2 times length of superior margin. Merus with posterior border smooth, bearing small subdistal lobe, produced medially as strong rounded triangular lobe ; lower border smooth, evenly rounded without a border marked ; anterior border smooth, with small, blunt, ischio-meral tooth basally. Carpus with broad tooth at inner angle, inner margin produced as a long, microscopically granular crest that rubs against the stridulatory crest on the carapace ; outer margin smooth. Outer surface of palm smooth and punctate especially dorsally. Outer surface of palm naked. Inner surface of palm smooth. Immobile finger moderately long ; rounded on outer surface ; with low ventral ridge and with a series of spaced punctations in furrow, extending posteriorly to level of insertion of dactyl. Length cutting edge *c.* 0.4 times length propodus. Ventral border of chela straight. Dorsal surface of dactyl smooth, rounded. Fingers pointed, crossing ; without a noticeable gape between the cutting margins

Walking legs relatively long ; flattened ; slender ; third pair the longest, *c.* 1.25 times maximum carapace width. Merus of third leg *c.* 4.5 times as long as wide. Carpus *c.* 2.7 times as long as wide. Propodus *c.* 4.1 times as long as wide. Dactyli longer than propodi ; slender, straight, and flattened ; terminating in an acute chitinous recurved tip. Anterior margin of merus with a sub-distal shoulder ; anterior margin unarmed terminally. Carpus without accessory carinae on upper surface. All segments smooth ; naked except for a few fine setae on margins, particularly on inner edge of dactyli.

Sternum and abdomen : Sternum relatively broad. Female abdomen relatively narrow, not covering sternum ; telson large and triangular, much longer than other segments.

REMARKS. — *Euryozius danielae* sp. nov. is separable from *E. canorus* (Rathbun) in the following respects : 1, the width to length ratio is markedly different (1.65 in *danielae*, 1.45 in *canorus*) ; 2, the two lateral teeth are much more prominent and projecting in *danielae* ; 3, the fingers of the chelipeds are almost entirely coloured black in *danielae*, but coloured like the palm and only darkening distally in *canorus* ; 4, the frontal margin is not as strongly deflexed as it is in *canorus*, and can be seen from above ; in particular the median incision is marked and easily observed in *danielae*. Both the above species are easily separable from *E. bouvieri* (A. Milne Edwards, 1869) by having the meri of the walking legs noticeably longer and more slender.

DISTRIBUTION. — Known only from the type locality in Society Islands in French Polynesia, from a depth of 110 m.

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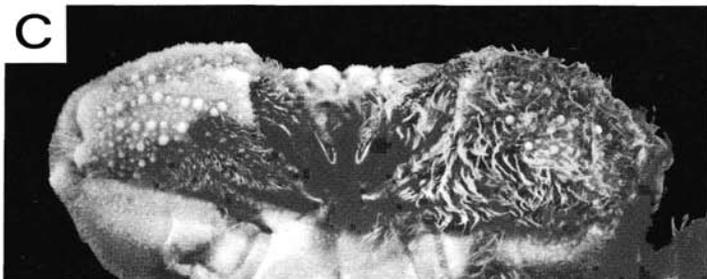


PLATE 1. — *Banareia fatuhiva* sp. nov. Holotype ♂, MNHN-B22228, Tahuata, Marquises Islands. A, dorsal view; B, ventral view; C, frontal view, showing chelipeds. Specimen partially denuded. Scale in mm.

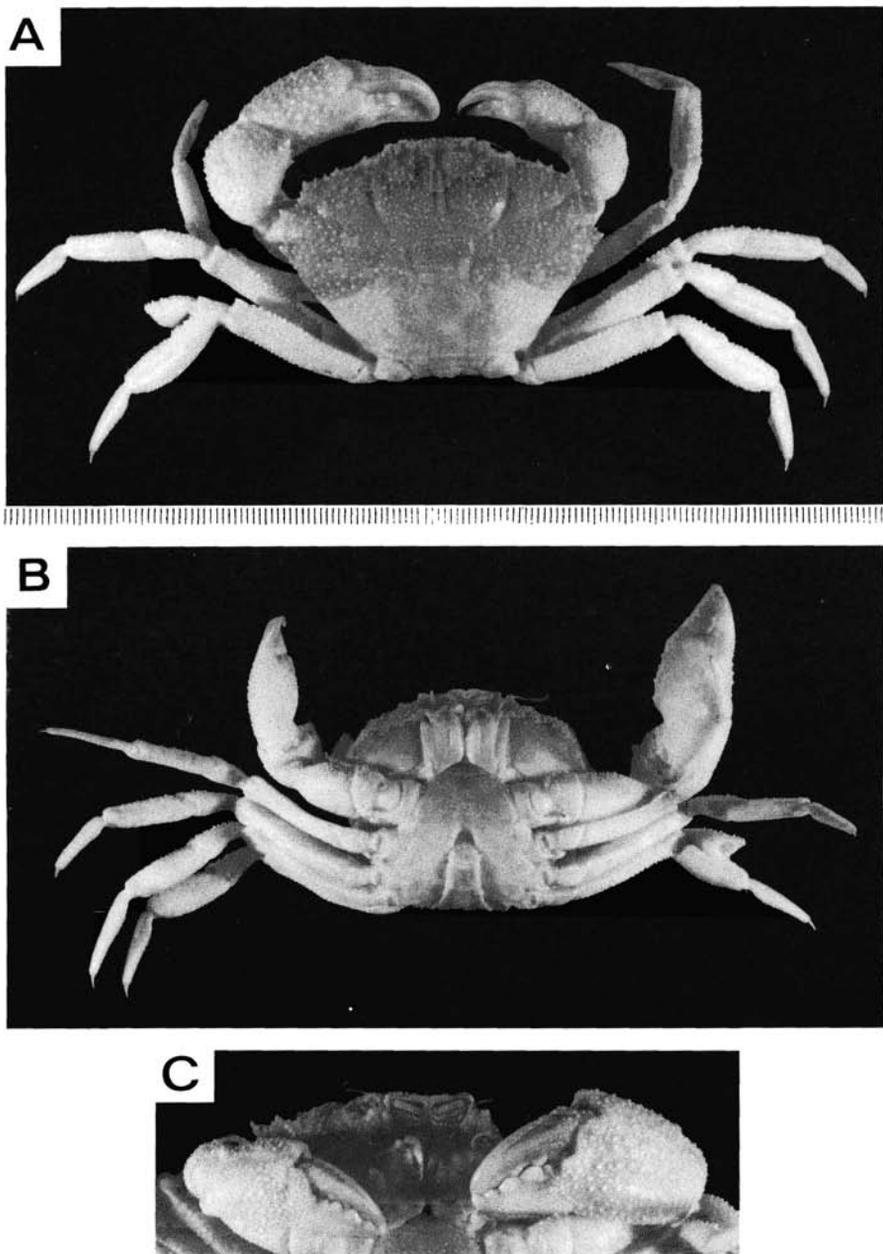


PLATE 2. — *Demania garthi* Guinot and Richer de Forges, 1981. ♂, MNHN-Unreg., Mururoa, Tuamotu Archipelago, 30.11.1989. A, dorsal view; B, ventral view; C, frontal view, showing chelipeds. Scale in mm.

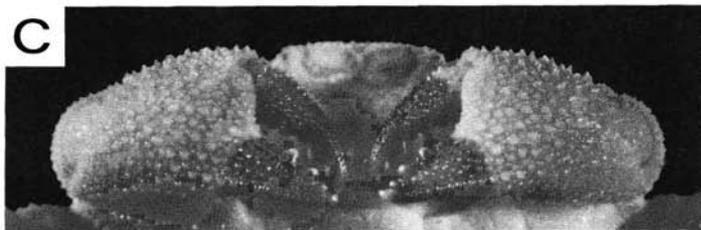


PLATE 3. — *Demania mortenseni* (Odhner, 1925). ♂, MNHN-B22248, Akiaki, Tuamotu Archipelago. A, dorsal view ; B, ventral view ; C, frontal view, showing chelipeds. Scale in mm.

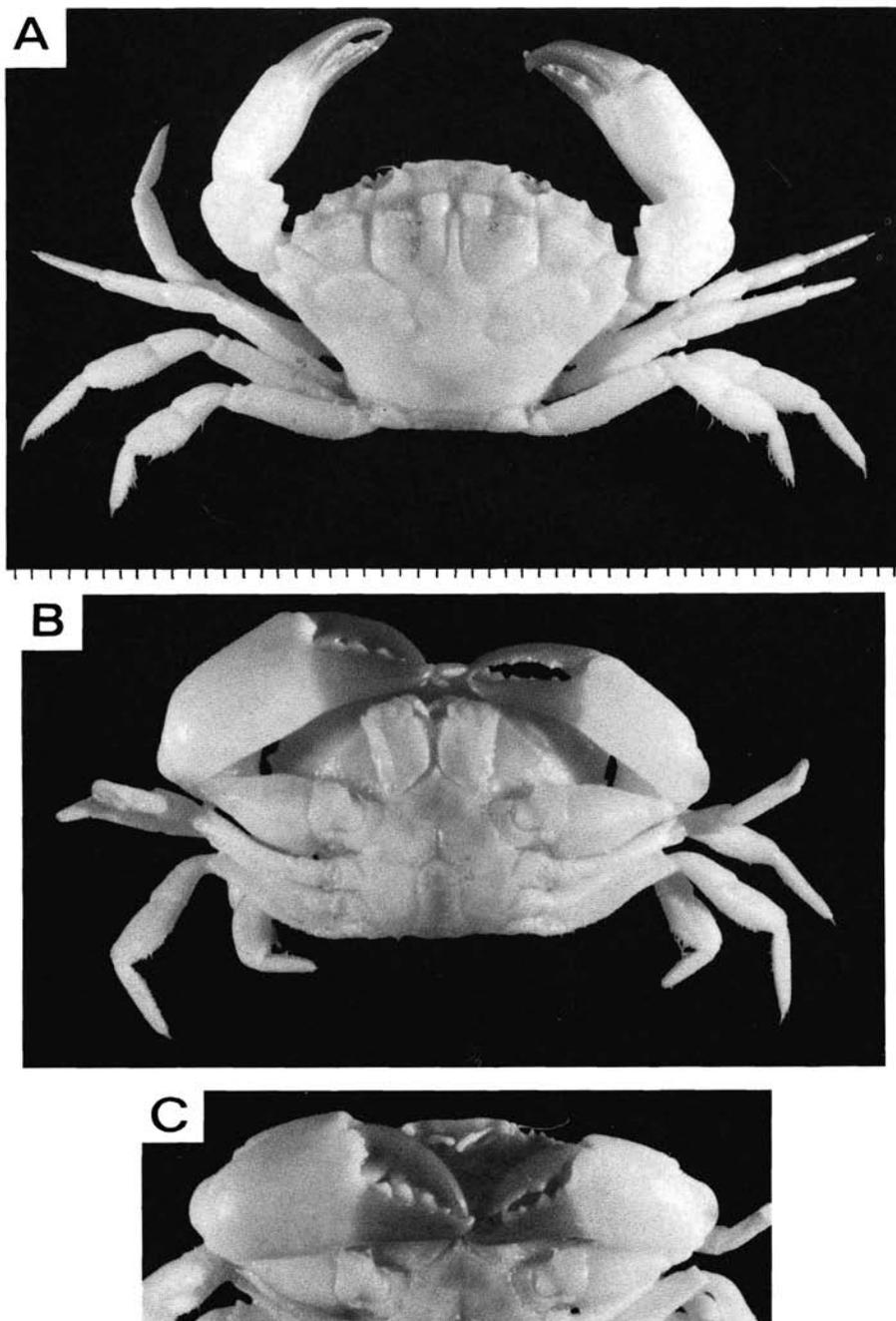


PLATE 4. — *Paraxanthodes polynesiensis* sp. nov. Holotype ♂, MNHN-B22225, Mururoa, Tuamotu Archipelago. A, dorsal view; B, ventral view; C, frontal view, showing chelipeds. Scale in mm.

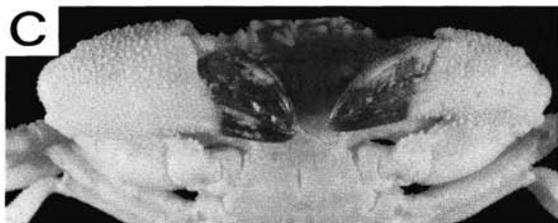
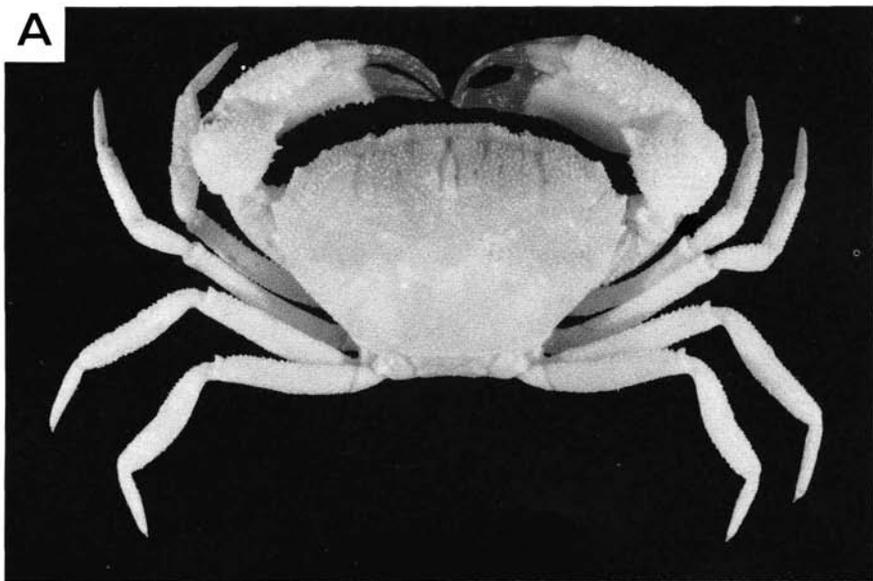


PLATE 5. — *Alainodaeus akiaki* gen. nov., sp. nov. Holotype ♂, MNHN-B22243, Rurutu, Austral Islands. A, dorsal view; B, ventral view; C, frontal view, showing chelipeds. Scale in mm.

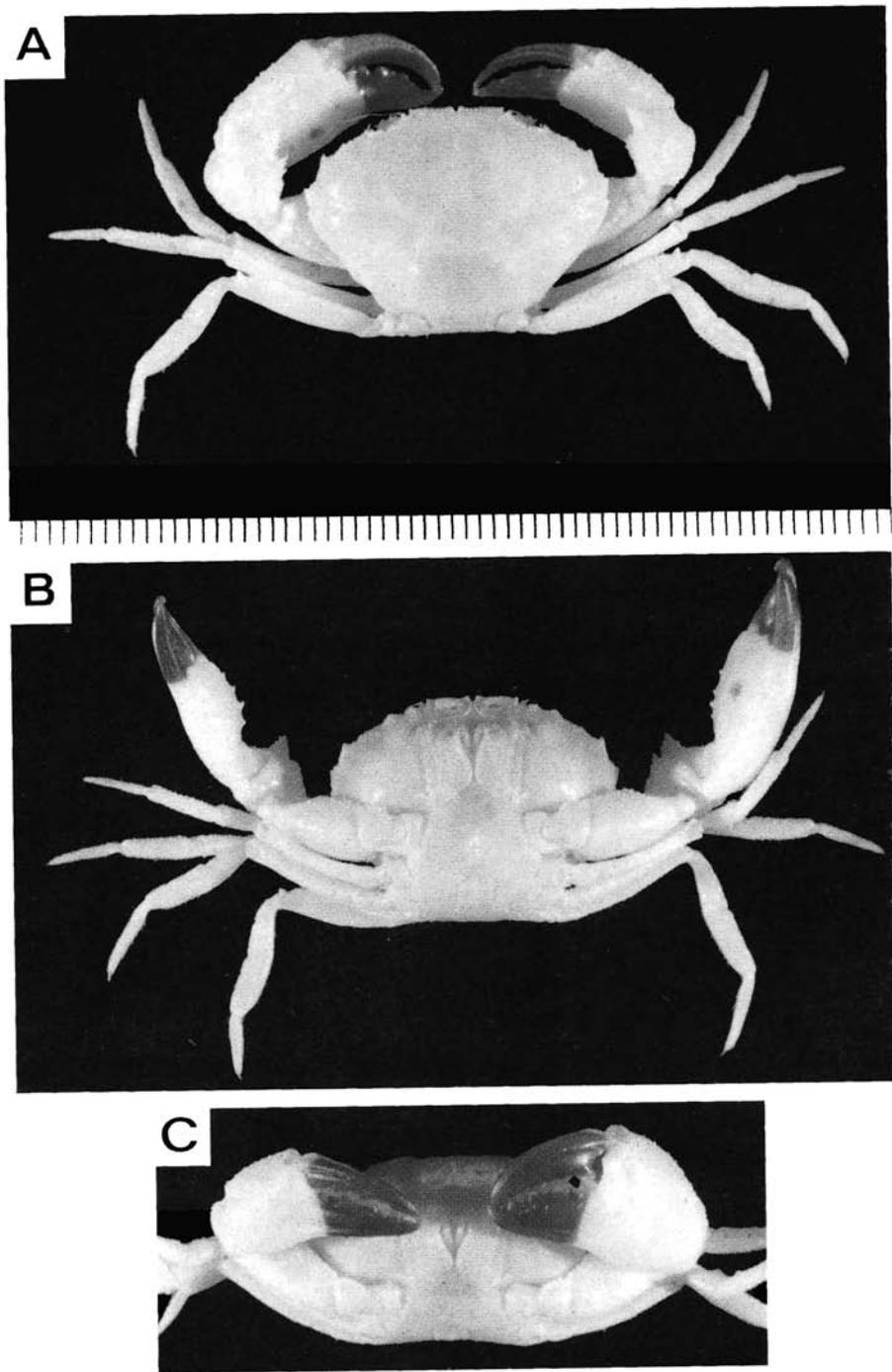


PLATE 6. — *Alainodaeus rimatara* gen. nov., sp. nov. Holotype ♂, MNHN-B22244, Akiaki, Tuamotu Archipelago. A, dorsal view; B, ventral view; C, frontal view, showing chelipeds. Scale in mm.

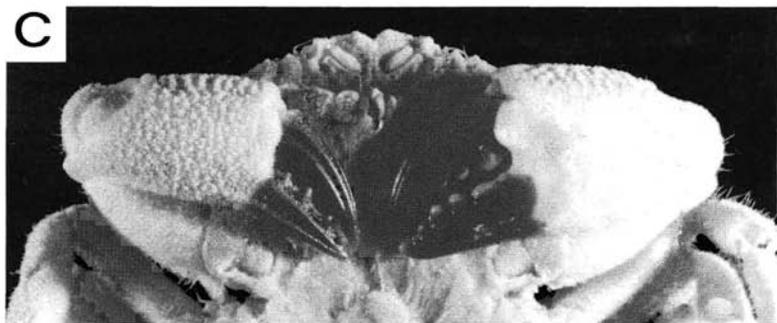


PLATE 7. — *Epistocavea mururoa* gen. nov., sp. nov. Paratype ♀, MNHN-B22234, Mururoa, Tuamotu Archipelago. A, dorsal view; B, ventral view; C, frontal view, showing chelipeds. Scale in mm.

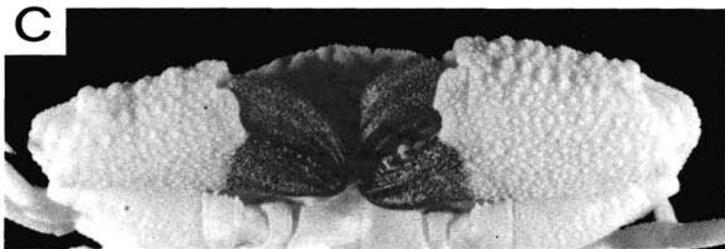
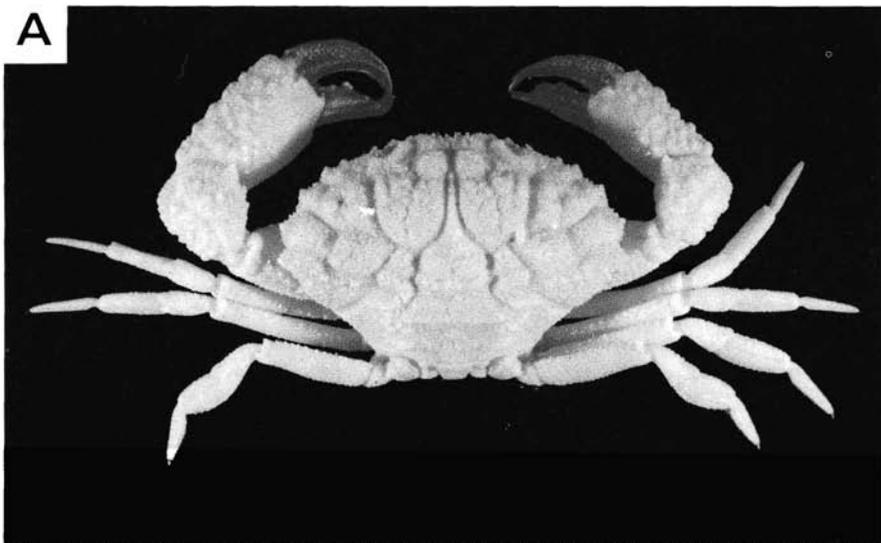


PLATE 8. — *Medaeus grandis* sp. nov. Holotype ♂, MNHN-B22218, Mururoa, Tuamotu Archipelago. A, dorsal view ; B, ventral view ; C, frontal view, showing chelipeds. Scale in mm.

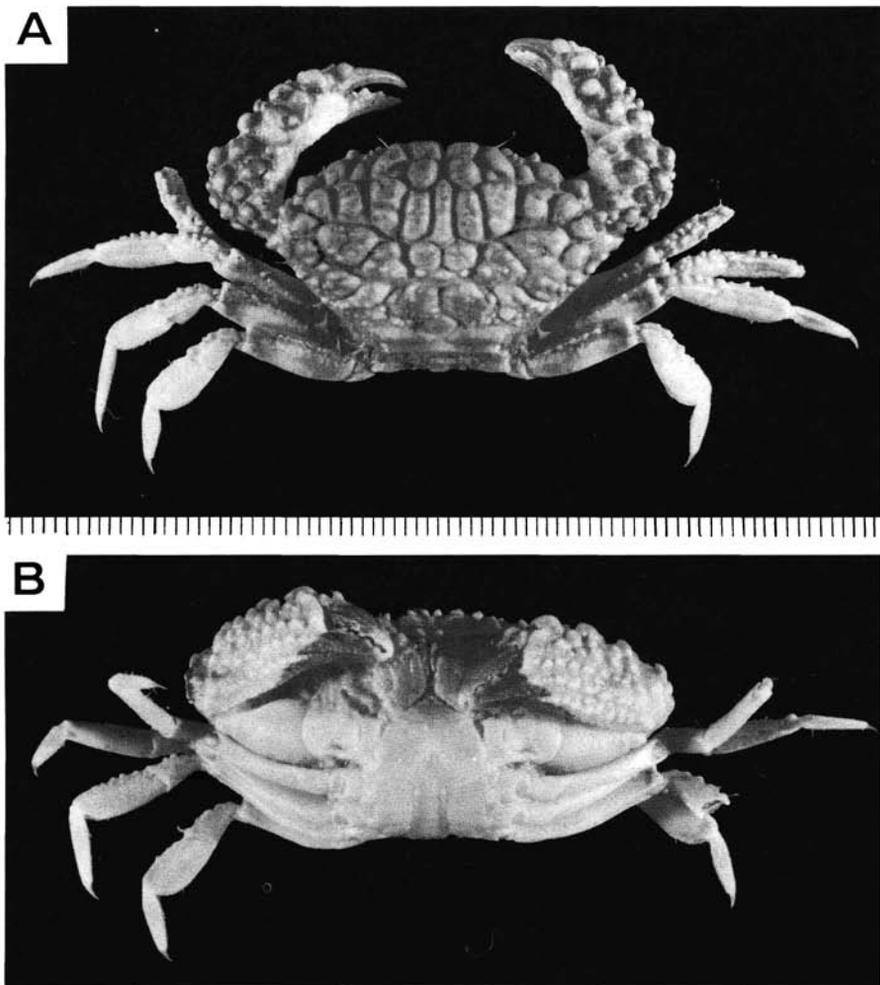


PLATE 9. — *Meractaea tafai* gen. nov., sp. nov. Holotype ♂, MNHN-B22216, Acteons Maria, Tuamotu Archipelago.
A, dorsal view ; B, ventral view. A, dorsal view ; B, ventral view. Scale in mm.

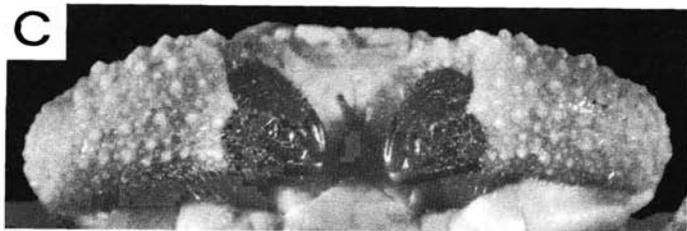
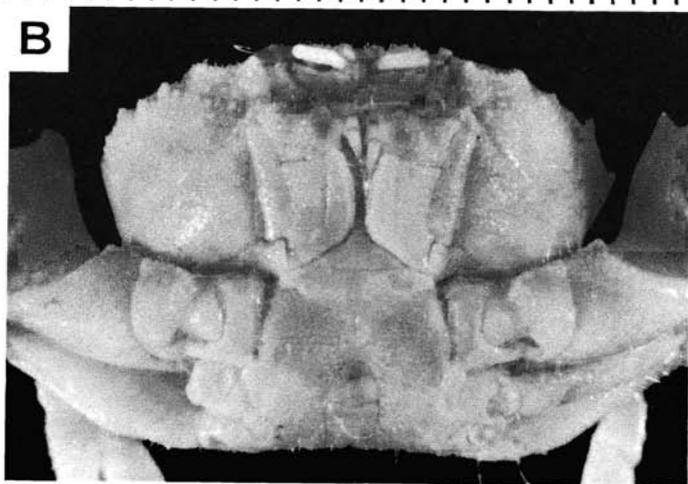


PLATE 10. — *Rata tuamotense* gen. nov., sp. nov. Holotype ♂, MNHN-B22231, Fangataufa, Tuamotu/Gambier Archipelago. A, dorsal view; B, ventral view; C, frontal view, showing chelipeds. Scale in mm.

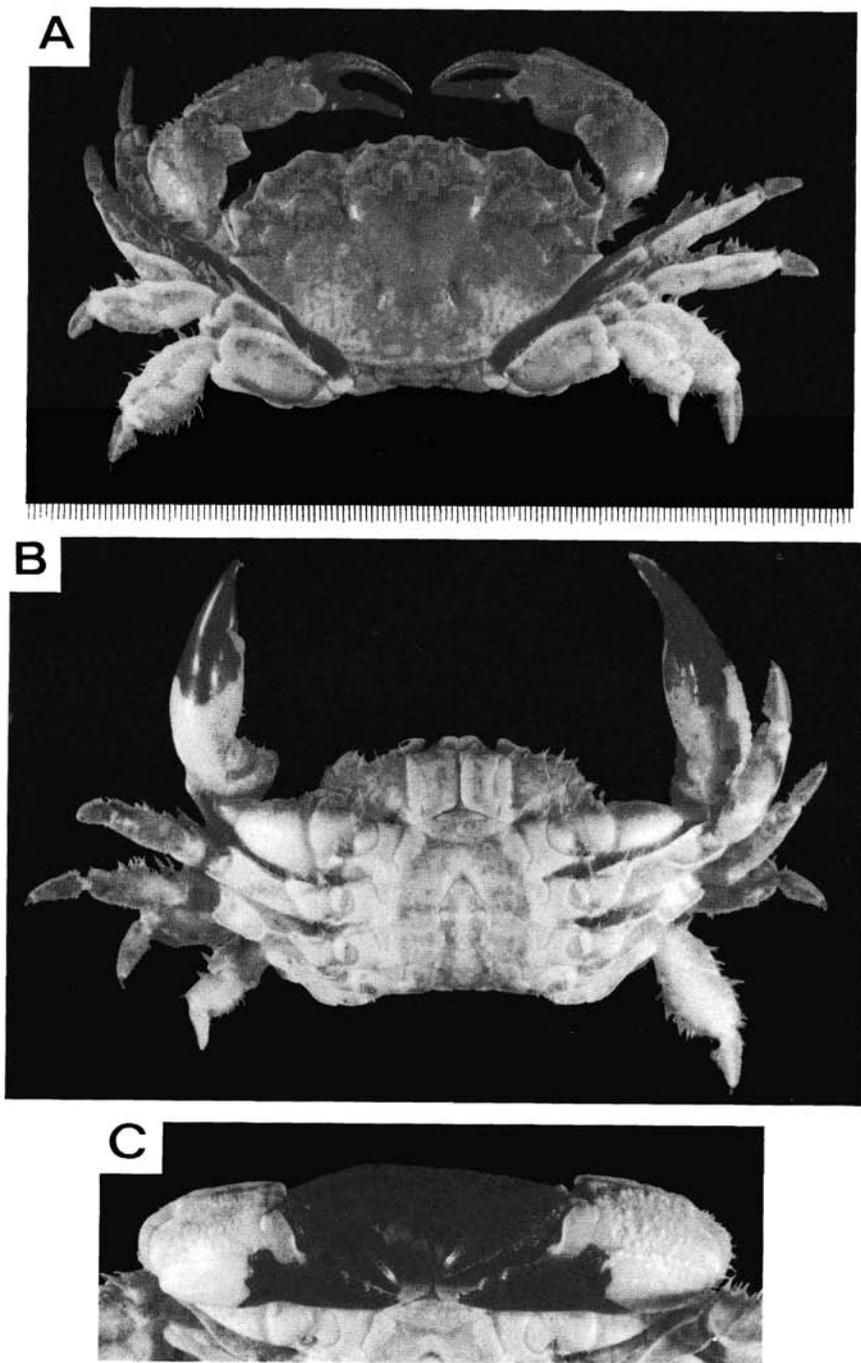


PLATE 11. — *Lophozozymus bertonciniae* Guinot and Richer de Forges, 1981. ♂, QM W8030, Hiva-Oa, Marquises Archipelago. A, dorsal view; B, ventral view; C, frontal view, showing chelipeds. Scale in mm.

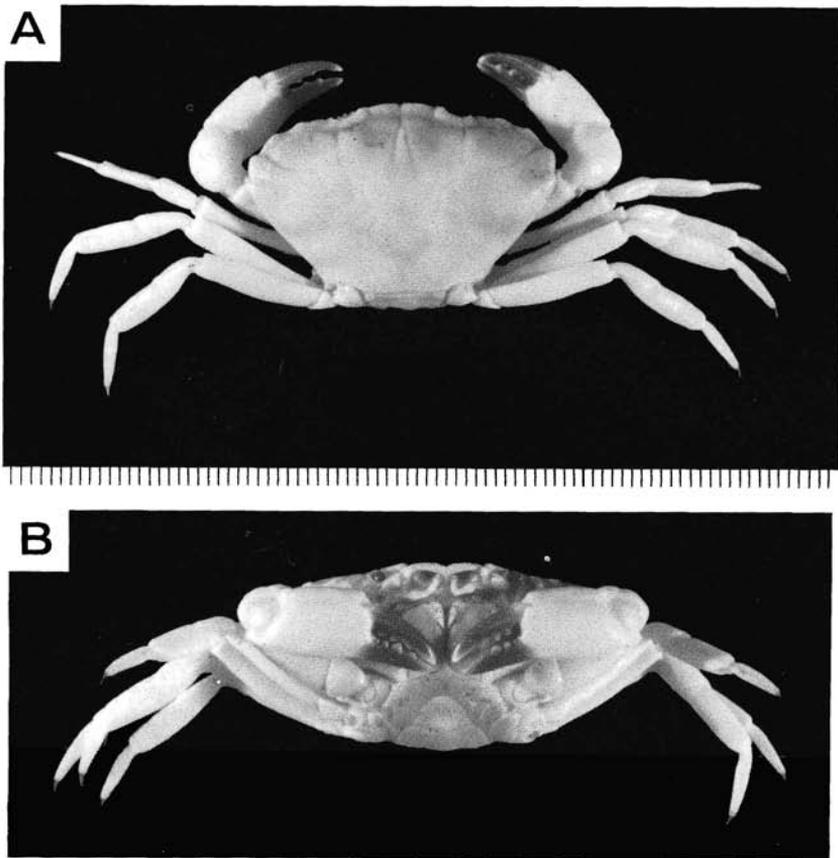


PLATE 12. — *Meriola rufomaculata* gen. nov., sp. nov. Paratype ♀, MNHN-B22222, Fangataufa, Tuamotu/Gambier Archipelago. A, dorsal view; B, frontal view. Scale in mm.

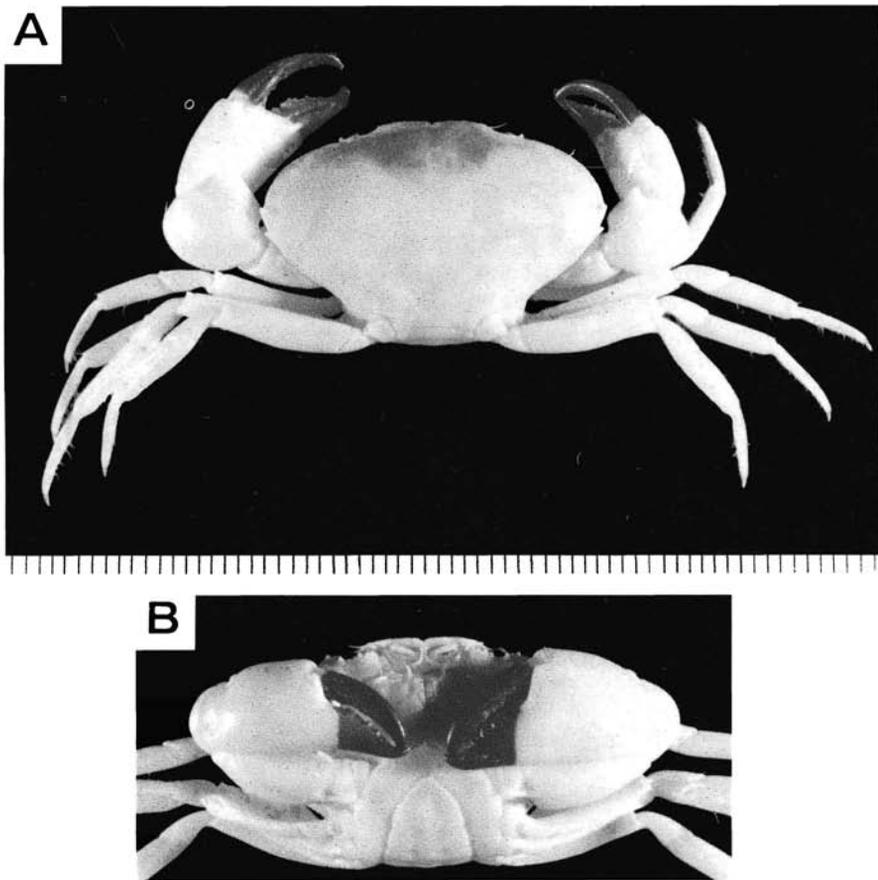


PLATE 13. — *Euryozius danielae* sp. nov. Holotype ♀, MNHN-B22217, Maupiti, Society Islands. A, dorsal view ; B, frontal view. Scale in mm.

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