A revision of the genus *Matuta* Weber, 1795 (Crustacea: Brachyura: Calappidae)

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Key words: Crustacea; Decapoda; Brachyura; Calappidae; *Matuta*; taxonomy; new species; new genus.
Matuta Weber, 1795 is revised, three new genera and two new species are established, detailed synonymies are listed, all taxa are described and illustrated and a key is provided.

Introduction

Amid the gaudily-coloured parade of tropical crabs few are more splendidly patterned than the matutine genera. But the patterns decorating these species brought about taxonomic disarray and from the very beginning they baffled their researchers. Already in 1817 Leach remarked: "the characters which distinguish the species are very obscure". MacLeay (1838) wrote in exasperation: "there are many species confounded together under the name *Matuta victor*, I do not consider the above names of the family and genus to possess any authority". Stebbing (1905) concurred: "From the interminable discussion of minute differences, as to the importance of which distinguished authors neither agree one with another nor always with themselves, it seems safe to conclude that most of the specific names which have been coined for this genus may be dispensed with".

Taxonomists, finding "the differences in armature and coloration of the carapace and anterior legs so slight and so numerous" (Miers, 1877), were inclined either to admit a single species (with several varieties) (de Haan, 1841; Ortmann, 1892; Doflein, 1902) or two (A. Milne Edwards, 1874) or, exulting in the variety of the exuberantly colourful specimens, described many new species and varieties (Miers, 1877). Thus, Henderson (1877) found that: "there are few groups of Decapod Crustacea in which authorities have differed more as to the specific or varietal value of forms".

A study of the extensive collections of The Natural History Museum, London (NHM) and Nationaal Natuurhistorische Museum, Leiden (formerly Rijksmuseum van Natuurlijke History (RMNH)), together with material made available by the American Museum of Natural History, New York (AMNH), Firenze University (MF), Muséum National d'Histoire Naturelle, Paris (MNHN), National University, Singapore (NUS), Queensland Museum (QM), Senckenberg Museum, Frankfurt (SM), Tel Aviv University (TAU), National Museum of Natural History, Smithsonian Institution, Washington (USNM), and the Zoologisk Museum, Copenhagen (ZM) have enabled re-examination of most type specimens and much of the published material.

The present study divided the matutine species between *Matuta* Weber, 1795 and three new genera and describes two new species. Descriptive and distributional

information is given here as well as detailed references to literature. All taxa have been illustrated and photographed, and a key is presented for their identification.

Abbreviations used, coll.= collected, pres.= presented, det.= determined by, redet.= redetermined, purch.= purchased by, stn= station, juv.= juvenile, Exped.= Expedition, reg.= registration number. Measurements given refer to carapace length.

Ashtoret gen. nov.

Type species: *Matuta picta* Hess, 1865.

Diagnosis.— Carapace subcircular, slightly convex, bearing tubercles centrally, regions undefined. Front wider than orbit, trilobate, median lobe projecting, anteriorly emarginate. Anterolateral margin of carapace arcuate, tuberculate. Posterolateral margin sharply convergent, carinate. Lateral spine acute. Antennae rudimentary, inferior to antennular basal segment. Orbits obliquely cut, communicating with antennular fossa. Eye stalk elongate, densely covered with long plumose setae on inferior surface. Internal orbital tooth rounded, apparent in dorsal view. Outer orbital angle produced. Suborbital margin tuberculate, laterally interrupted by curved inhalant canal with setose margins. Subhepatic and pterygostomial regions minutely granulate, laterally set with plumose setae. Pterygostomial region with several rows of elliptoid tubercles serving as stridulating organ. Outer maxilliped elongate, extending nearly to anterior margin of carapace.

Chelipeds subequal. Merus short, trigonal, lower margin tuberculate, a fringe of long plumose setae on posterior margin, short setae on anterior margin. Carpus with anterior angle produced. Length of palm nearly twice its height, external surface sculptured. Upper margin of palm cut into three teeth, diminishing in size distally, two proximalmost interiorly striate. Upper external surface with two rows of tubercles. Mid-palm, a series of tubercles and spines parallel to lower margin. Lower margin with row of obtuse tubercles on external surface and conical tubercles on margin itself. Lower finger, in male, with three teeth proximally and cusp-like depression distally, in female five teeth. Dactylus basally setose on carinate upper margin, five teeth on cutting margin. External surface of dactylus in male bearing a finely milled ridge distally, absent in female. Ambulatory legs with first propodus bearing triangular tooth on inferior margin, penultimate carpus bicarinate, ultimate propodus greatly extended posteriorly.

Sternum anteriorly ogival. Male abdomen tapering, five-segmented, telson one and half as long as wide at base, prominently tuberculate carina on third abdominal tergite. Inner surface of first male pleopod with tuft of long setae subdistally, bearing funnel-shaped appendage.

Remarks.— *Ashtoret* gen. nov. comprises eight species - *A. granulosa*, *A. lunaris*, *A. maculata*, *A. miersii*, *A. picta*, *A. obtusifrons* and two new species. These species are characterized by bicarinate penultimate carpus, mid palmar ridge parallel with lower margin, and dactylar ridge distally milled or smooth whereas the closely related *Matuta* spp. possess unicarinate penultimate carpus, oblique mid palmar ridge and dactylar ridge strongly milled throughout.

Etymology.— Ashtoret, Phoenician great mother, goddess of fertility and water, also represented as moon goddess. Gender feminine.

Ashtoret lunaris (Forskål, 1775) comb. nov.
(fig. 1a-b, pl. 1a-b)

Cancer lunaris Rumphius, 1741: 11, pl. 7(s). (pre-Linnaean); Forskål, 1775: 91 (part).
Matuta banksii Leach, 1817: 14; Miers, 1877: 245, pl. 40(1, 2); 1880: 315; de Man, 1881: 115; Miers, 1886: 295; Walker, 1887: 111; de Man, 1888: 389; Zehntner, 1894: 183, pl. 8(15); Alcock, 1896: 158 (part); de Man, 1896: 363; Nobili, 1899: 250 (part); Lanchester, 1900: 762; 1901: 552 (part); Nobili, 1906: 149; Rathbun, 1907: 68; 1910: 15; Parisi, 1914: 291; Balss, 1922: 125; Buitendijk, 1939: 231; Ward, 1941: 1; Romimohtarto, 1967: 5, figs 1a, 2a; 1972: 13, figs 7,10,27-32, pls 1c, 3c (part); Takeda & Nunomura, 1976: 65; Miyake, 1983: 200 (list); Dai et al., 1986: 99, textfig. 56.1 pl. 12(6).
Matuta victor; Desmarest, 1825: 101, pl. 7(2); White, 1847: 46 (part).
Matuta lessueri; Rüppell, 1830: 7 (part).
Matuta lunaris; White, 1847: 46 (part).
Matuta banksi; Ortmann, 1892: 573; Ihle, 1918: 185 (part); Tyndale-Biscoe & George, 1962: 71, fig. 4.1; Sakai, 1976: 141, pl. 44(3), pl. 45(1) (part); Takeda, 1982: 110, fig. 322; Nagai & Nomura, 1988: 21.

Material.— **Australian seas**. Banks' coll., det. Leach, as *M. banksii* syntypes (part); redet. *M. victor* White, 1847, ♂ 55 mm lectotype, ♀ 51 mm paralectotype (NHM 1993.26). **Red Sea**. coll. Hartnoll, ♀ 39 mm (NHM 1962.9.12.1). **Aden**. pres. Capt. Shoplaced, 2 juv. 27 mm, 35 mm (NHM 1894.2.23.1/2). **Indian Ocean**. pres. General Th. Hardwicke, det. A. White, ♂ 44 mm (NHM 1993.71); ♀ 35 mm (NHM 1993.24). **Malaysia**. Melaka, pres. Bedford & Lanchester, 4 ♂♂ 42-52 mm (NHM 1900.10.22.328-331); Sabah, Kota Kinabalu, 30.x.1986, coll. L. Nyanti, ♀ 20.9 mm (NUS 1987.22); Pasir Panjang, -.xi.1934, ♀ 24.6 mm (NUS 1965.10.13.1). **Singapore**. Siglap, -.xii.1933, ♂ 36.3 mm, ♀ 31.9 mm (NUS 1965.10.13.2-3). **Indonesia**. Molucca Id., Amboina. purch. E. Gerrard, ♀ 32 mm (NHM 1880.6); vii-ix.1885, coll. Brock, 6 ♂♂ 23.1-34.5 mm, 2 ♀♀ 24.2 mm, 25.1 mm (SM 637a); Borneo, -.viii.1894, coll. Ch. Hose, ♂ 42 mm (NHM 1895.7.30.3); Bali, purch. E. Gerrard, ♀ 41 mm (NHM 1880.6); Celebes, purch. E. Gerrard, ♂ 43 mm (NHM 1880.6). **Philippines**. purch. H.J. Veitch, ♀ 41 mm (NHM 1872.7); Mindanao, Zamboanga, coll. P.W. Bassett-Smith, ♂ 40 mm, ♀ 42 mm (NHM 1892.4.18.186-7); 18 m, HMS "Challenger", ♂ 37 mm, ♀ 36 mm (NHM 1884.31). **New Guinea**. purch. E. Gerrard, ♂ 46 mm (NHM 1880.6). **Australia**. coll. Godeffroy, Bros, ♂ 42 mm (NHM 1955.1.5.96).

Description.— Surface of carapace minutely granulate, coarser granules laterally and around six dorsal tubercles, largest granules sorrounding mesogastric tubercle. Front with straight lobes laterally and a slightly emarginate rostrum medially. Exognath and ischium of third maxilliped tuberculate.

Anterolateral margins of carapace crenulate with five small tubercles followed by three large triangular tubercles, middle tubercle smallest. Lateral spine 0.2 carapace width. Posterolateral margin oblique, with granulate carina not quite reaching base of lateral spine. Tubercle at mid posterolateral margin strongly marked.

Upper external surface of palm with two rows of granulate tubercles, proximalmost in lower row largest. Mid palm a five-lobed ridge, second and fourth lobes acuminate, second lobe largest. At lower proximal angle of palm conical tubercle. A row of molariform tubercles extending from lower proximal angle of palm to base of immobile finger. Lower margin with row of triangular tubercles terminating at base of dactylus, distalmost largest. A finely milled ridge on outer surface of dactylus in male, absent in female. Plastron coarsely granular. First male pleopod with pronounced angle between shaft and apical lobe.

Colour (in alcohol).— Small red spots cover carapace, more crowded anteriorly. Propodus and dactylus of ambulatory legs marked with large red patches. For colour illustrations see Takeda 1982, fig. 322; Nagai & Nomura, 1988: 21.

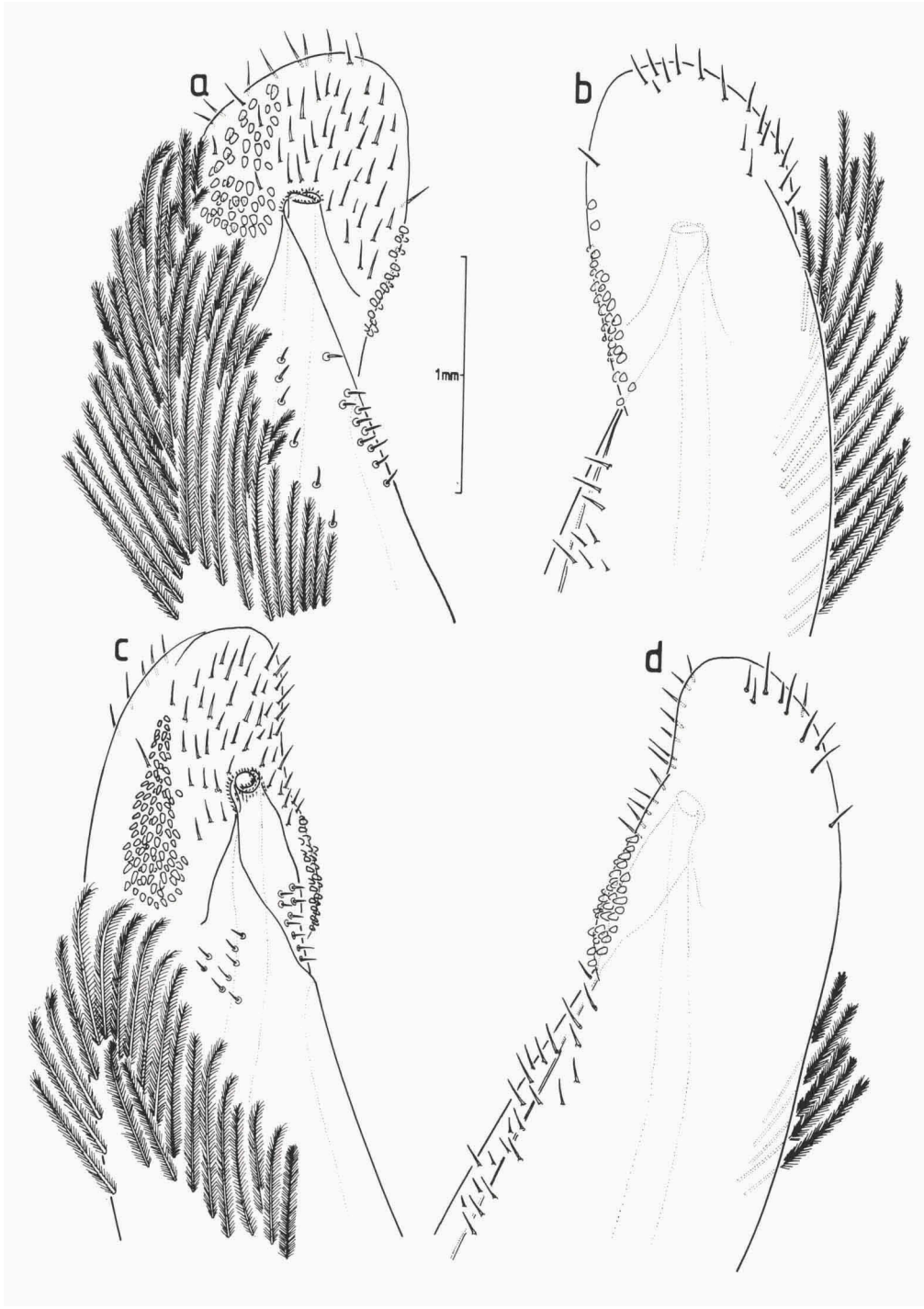
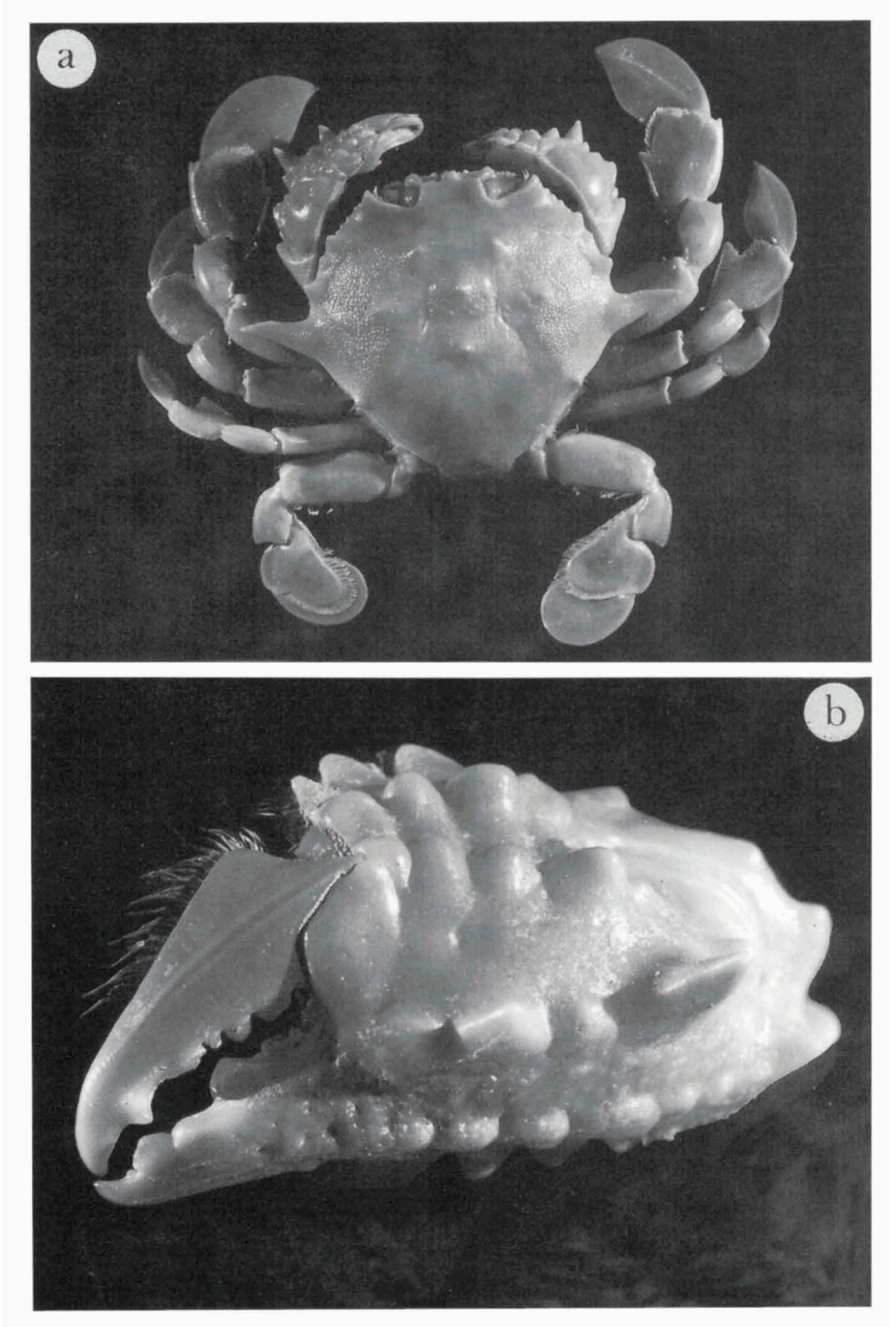


Fig. 1a-d; a & c = dorsal view, b & d = ventral view; a-b *Ashtoret lunaris* (Forskål, 1775) NHM 1900.10.22.328-337; c-d *Ashtoret granulosa* (Miers, 1877) NHM 1931.5.15.40-41.



Pl. 1a-b; *Ashtoret lunaris* (Forskål, 1775) NHM 1900.10.22.328-337; a = dorsal view, b = left chela.

Remarks.— The description of *Cancer lunaris* Forskål (1775) is a mixture of two species, mentioning both the prominent tubercule posteriorly on anterolateral margin indicative of *A. lunaris* and the transversely serrate carina on cheliped dactylus of the *M. victor*. De Man (1881) in describing *M. banksii* wrote, "Except its different coloration, this form of *Matuta* is most closely allied to *Mat. picta* Hess (Miers). The males however may be distinguished by the acute, triangular, fourth spine on the outer ridge of the hand, it being obtuse and truncate in *Mat. picta*". This distinctive character was disregarded by later authors who erroneously synonymized *M. picta* with *M. banksii* (Alcock, 1896; Lanchester, 1901; Klunzinger, 1906; Ihle, 1918; Balss, 1935; Estampador, 1937; Romimohtarto, 1967; Takeda, 1973; Sakai, 1976).

Type locality.— Red Sea (Forskål, 1775).

Distribution.— Red Sea and East Africa to Australia.

Ashtoret granulosa (Miers, 1877) comb. nov.
(fig. 1c-d, pl. 2a-b)

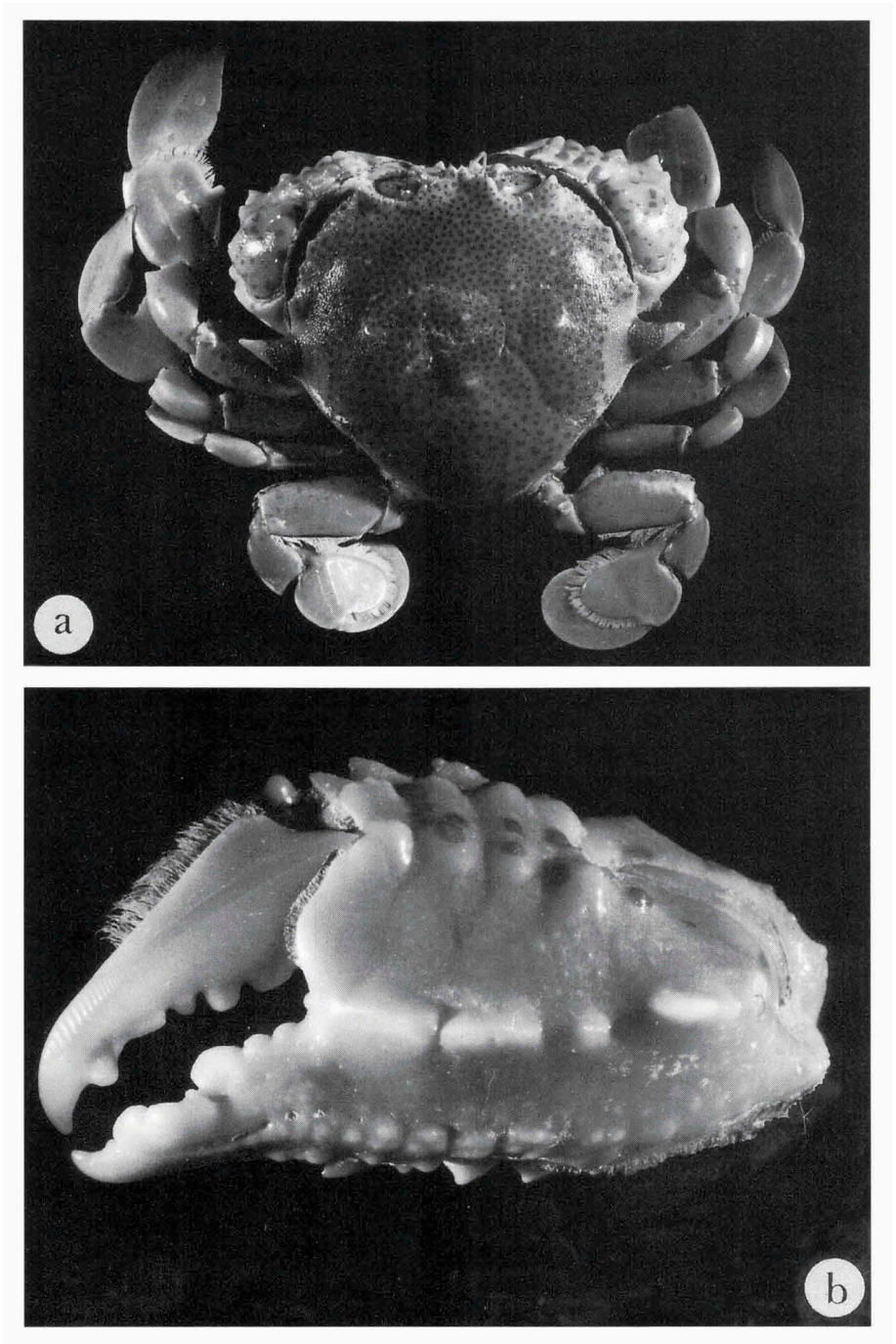
Matuta granulosa Miers, 1877: 245, pl. 39(8, 9); de Man, 1881: 114; Haswell, 1882: 134; Miers, 1886: 295; Ortmann, 1892: 572; Nobili, 1899: 251; Ihle, 1918: 308; Hale, 1927: 189, fig. 189; Tyndale-Biscoe & George, 1962: 71, fig. 4.2.

Material.— **Eastern Seas**. coll. Rayner, H.M.S. "Herald", purch. Warwick, det. Miers, ♂ 47 mm lectotype, ♂ 31 mm, ♀ 47 mm paralectotypes (NHM 1862.53), originally designated syntypes by Miers. **Indonesia**. Molucca Id., Amboina, 1864, coll. E.W.A. Ludeking, ♀ (RMNH D). **Australia**. N.W. Australia, coll. Mrs. Grey, 2 ♂♂ 42 mm, 58 mm (NHM 1931.5.15.40-41); Torres Strait, coll. MacFarlane, ♂ 61 mm, 3 ♀♀ 42-55 mm (NHM 1877.12); Gulf of Carpentaria, 24.i.1983, 17 m, ♂ 34 mm, ♀ 51 mm (QM W12649).

Description.— Surface of carapace minutely granulate, coarser granules near lateral spines, small granules clustering around four posterior dorsal tubercles. Two anterior dorsal tubercles nearly obsolete. Front with straight horizontal lobes laterally and a bilobed rostrum medially. On pterygostomial region three parallel rows of elongate tubercles diminishing in size laterally, serving as stridulating organ. Exognath and ischium of third maxilliped granulate.

Anterolateral margins of carapace nearly evenly crenulate with two somewhat larger triangular tubercles at mid margin and prior to lateral spine. Lateral spine short, 0.15 carapace width. Posterolateral margin oblique, with granulate carina extending to base of lateral spine, bearing mid posterolateral tubercle.

Cheliped carpus coarsely granulate distally on outer surface, its upper margin carinate, granulate. Palm coarsely granulate proximally on external surface. Upper external surface of palm with two rows of granulate obtuse tubercles, second tubercle in lower row largest. Mid palm, in both male and female, a five-toothed ridge parallel to lower margin, second tooth prominent, acuminate, fourth tooth somewhat larger than third and fifth. At lower proximal angle of palm a small granulate tubercle. A row of molariform tubercles extending from lower proximal angle of palm to base of immobile finger distally parallel to a short row of rounded tubercules. Lower margin with row of sharply triangular tubercles terminating at base of dactylus, distalmost largest. Dactylus in male with distally milled ridge on outer surface, obsolete in female.



Pl. 2a-b; *Ashtoret granulosa* (Miers, 1877) QM W12649; a = dorsal view, b = left chela.

Plastron coarsely granular. Apical lobe of first male pleopod kidney-shaped.

Colour (in alcohol).— numerous brownish-red spots with pale centers cover carapace except area adjacent to lateral spine, which basal half bears a large brownish-red patch, legs spotted.

Remarks.— Miers' (1877) description and drawings being very clear, there has never been any confusion over the identity of this handsome species. Miers (1877: 245) gives the type locality of *A. granulosa* as "Eastern seas" and the jar containing the syntypes (NHM 1862.53) is labelled accordingly. However, in the Annulosa register entry reads "New Caledonia, N.E. Australia, Timor, Ovolau Is., Fiji, Norfolk". Miers must have abbreviated it to "Eastern Seas". A jar registered as 1866.16 in the NHM and containing 3 specimens is labelled *M. granulosa* China Seas ?Syntypes. However, none of the specimens belongs to *M. granulosa*.

Type locality.— Eastern seas (Miers, 1877: 245).

Distribution.— Indonesia, Australia, Tahiti.

Ashtoret maculata (Miers, 1877) comb. nov.
(fig. 2a-b, pl. 3a-b)

Matuta maculata Miers, 1877: 246, pl. 40(3, 4); de Man, 1881: 116; de Man, 1896: 363.

Material.— **Philippines**. Panagatan Shoal, coll. A. Adams, pres. E. Belcher, HMS "Samarang", det. E.J. Miers, ♂ 45 mm syntype, now lectotype (NHM 1847.21), 3 juv. 16-30 mm (NHM 1847.21) syntypes, now paralectotypes. **China Seas**. purch. Swindhoe, det. E.J. Miers, *M. granulosa* ?syntype, now paralectotype, ♀ 37 mm (NHM 1866.16). **Eastern seas**. det. E.J. Miers, 3 juv. 16-30 mm (NHM 1847.21). **Fiji Is**. 1975, coll. D. Popper, ♂ 45 mm (TAU NS 21341).

Description.— Surface of carapace granulate, coarser granules near lateral spines and around nearly obsolete dorsal tubercles. Front with slightly arcuate lobes laterally and an emarginate rostrum medially. Exognath and ischium of third maxilliped tuberculate.

Anterolateral margins of carapace nearly evenly crenulate with two somewhat larger triangular tubercles at mid margin and prior to lateral spine. Lateral spine 0.3 carapace width. Posterolateral margin oblique, with granulate carina extending to base of lateral spine, bearing no mid posterolateral tubercle.

External surface of palm densely granulate. Upper external surface with two rows of granulate tubercles, second in lower row largest. Mid palm, in both male and female, a five-toothed ridge parallel to lower margin. Second tooth most prominent, acuminate; fourth tooth triangular, larger than third and fifth. At lower proximal angle of palm a prominent, granulate tubercle. Parallel with lower margin two rows of small granules. Lower margin with row of sharply triangular tubercles terminating at base of dactylus, distalmost largest. Dactylus in male with distally milled ridge on outer surface, obsolete in female.

Plastron coarsely granular. First male pleopod curved distally.

Colour (in alcohol).— Small, rounded reddish spots anteriorly on carapace, growing larger and coalescing to form broken rings posteriorly. Lateral spines red-margined. Legs coarsely spotted.

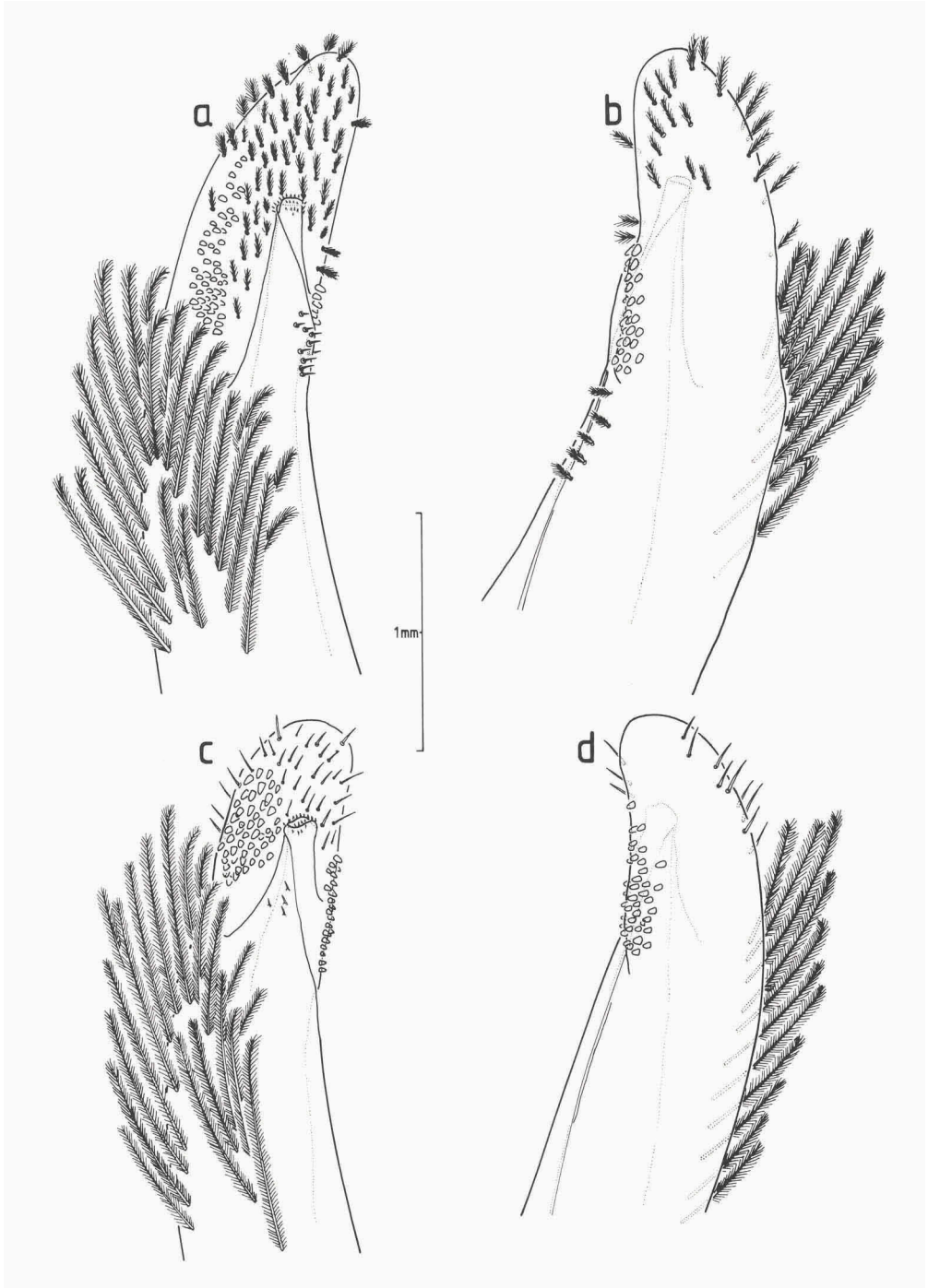
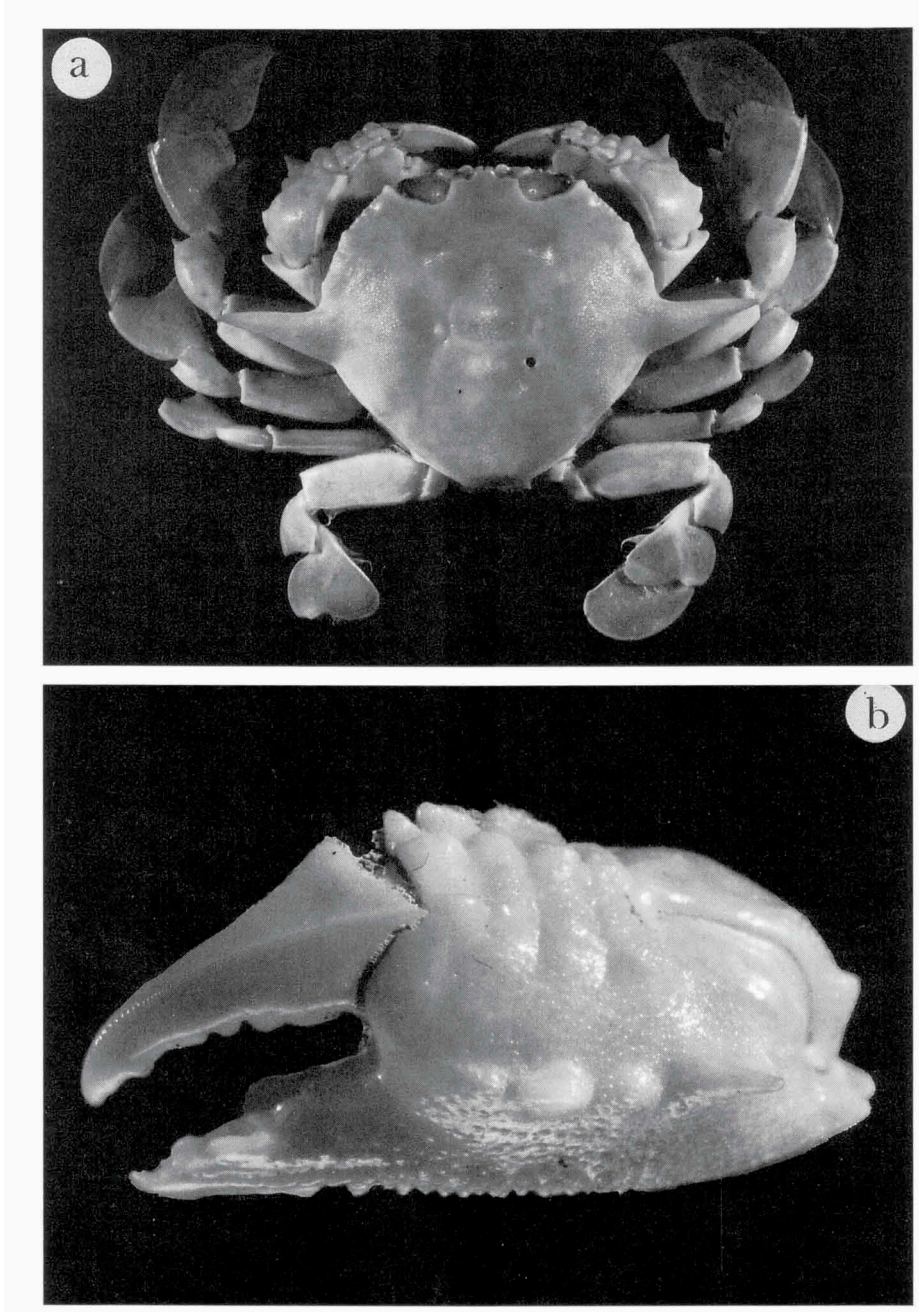


Fig. 2a-d; a & c = dorsal view, b & d = ventral view; a-b *Ashtoret maculata* (Miers, 1877) NHM 1847.21; c-d *Ashtoret miersii* (Henderson, 1887) NHM 1892.7.15.347-356.



Pl. 3a-b; *Ashtoret maculata* (Miers, 1877) NHM 1847.21; a = dorsal view, b = left chela.

Remarks.— A specimen in the NHM collection assigned to the type series (label reads ?syntype) of *A. granulosa* (NHM 1866.16) is in fact *A. maculata*. Whether the specimen is part of the type series of *A. maculata* cannot be confirmed. *A. maculata* and *A. miersii* alone among their congeners lack a tubercle on posterolateral margin. However, *A. maculata* is distinguished from the latter by its longer lateral spine, granulate lower margin of palm and its colour pattern.

Type locality.— Panagatan Shoal, Philippines; China Seas (Miers, 1877: 246).

Distribution.— China seas, Indonesia, Philippines, Fiji Is.

Ashtoret miersii (Henderson, 1887) comb. nov.
(fig. 2c-d, pl. 4a-b)

Matuta miersii Henderson, 1887: 66, figs 1-4; 1893: 396; Alcock, 1896: 163.
Matuta miersi; Laurie, 1906: 356; Ihle, 1918: 308; Sakai, 1976: 142 pl. 45(2); Miyake, 1983: 200 (list).

Material.— **India.** Madras, det. J.R. Henderson, syntype, now lectotype, ♂ 35 mm (NHM 1892.7.15.347-356); syntypes, now paralectotypes, 3 ♂♂ 23-28 mm, 23 ♀♀ 23-28 mm (NHM 1892.7.15.347-356); Gapalur, purch. R. Winkworth, ♀ 28 mm (NHM 1956.1.14.4). **Ceylon.** coll. W.A. Herdman, ♂ 23 mm (NHM 1907.5.22.20); 2 ♀♀ 23.5 mm, 27 mm (NHM 1907.5.22.21-22). coll. H. Nevill, 2 ♀♀ 31 mm, 33 mm (NHM 1894.8.1.15-16); Gulf of Manaar, coll. W.A. Herdman, det. Laurie, 2 ♂♂ 35 mm (NHM 934.1.16-26).

Description.— Surface of carapace mostly smooth, minutely granulate around six dorsal tubercles and lateral spines. Front with straight horizontal lobes laterally and a distinctly emarginate rostrum medially. Ischium of third maxilliped tuberculate. Anterolateral margins of carapace crenulate with five small tubercles followed by three large triangular, teeth-like, tubercles.

Lateral spine 0.2 carapace width. Posterolateral margin oblique, with granulate carina extending to mid lateral spine. No mid posterolateral tubercle.

Upper external surface of palm with two rows of granulate low tubercles. Mid palm a row of five tubercles, second tubercle most prominent, acuminate. At lower proximal angle of palm a minute granulate tubercle. A row of molariform tubercles extending from lower proximal angle of palm to base of immobile finger. Lower margin with row of tubercles terminating at base of dactylus, distalmost largest. No milled ridge on outer surface of dactylus.

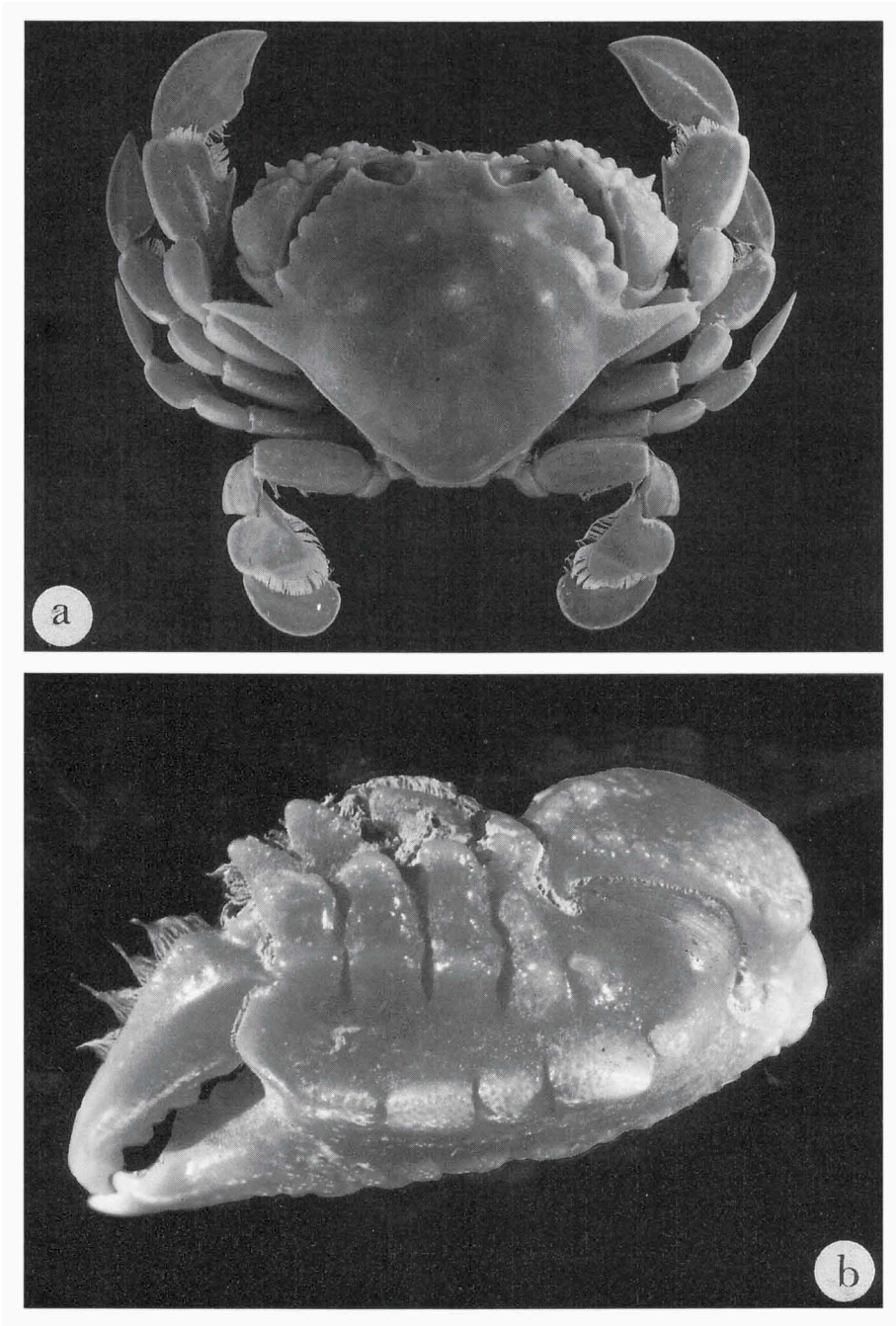
Plastron finely granular. First male pleopod curved distally.

Colour (in alcohol).— Carapace nearly covered with reddish dots interspersed with whitish patches.

Etymology.— This species was named after E.J. Miers.

Remarks.— *A. miersii* differs from its congeners in having no milled ridge on outer surface of male dactylus. From *A. obtusifrons*, which colour pattern is quite similar, it differs in lacking posterolateral tubercle, having a distinctly emarginate rostrum with straight lateral lobes and a nearly obsolete tubercle at lower proximal angle of palm.

Henderson's (1887) description of *A. miersii* is accurate and includes such distinguishing characters as lack of posterolateral tubercles and smooth surface of palmar dactylus. Henderson (1887: 67) accurately assigned the species "to the second section



Pl. 4a-b; *Ashtoret miersii* (Henderson, 1887) NHM 1892.7.15.347-356; a = dorsal view, b = left chela.

of the genus, in which the hand of the male is armed with a ridge of tubercles or spines, on the outer surface and parallel to the lower border."

Type locality.— Madras, India (Henderson, 1887: 68).

Distribution.— India, Ceylon, Japan.

Ashtoret obtusifrons (Miers, 1877) comb. nov.
(fig. 3a-b, pl. 5a-b)

Matuta obtusifrons Miers, 1877: 247, pl. 40, figs 8,9; 1880: 316.

Material.— **Fiji Is.** Nagu, det. E.J. Miers, syntype, now lectotype, ♂ 48 mm, ♀ syntype, now paralectotype (NHM 1856.105). **Indonesia.** Bali, purch. E. Gerrard, ♀ 42 mm (NHM 1880.6). **New Hebrides.** Malekula, coll. W.W. Perry, det. E.J. Miers, ♂ 49 mm, syntype, now paralectotype (NHM 1876.14).

Description.— Surface of carapace minutely granulate, coarser granules laterally and around six dorsal tubercles, largest cluster sorrounding mesogastric tubercle. Front with arcuate lobes laterally and an obtuse rostrum medially. Exognath and ischium of third maxilliped tuberculate.

Anterolateral margins of carapace crenulate with five small tubercles followed by three large triangular, teeth-like, tubercles.

Lateral spine 0.25 carapace width. Posterolateral margin oblique, with granulate carina extending to base of lateral spine. Mid posterolateral tubercle prominent.

Upper external surface of palm with two rows of granulate low tubercles, proximalmost in lower row largest. Mid palm a five-toothed ridge, second tooth prominent, acuminate. At lower proximal angle of palm an acuminate tubercle. A row of molariform tubercles extending from lower proximal angle of palm to base of immobile finger.

An additional short row of granules runs parallel to lower margin. Lower margin with row of triangular tubercles terminating at base of dactylus, distalmost largest. A distally milled ridge on outer surface of dactylus in male, absent in female. Propodus of first ambulatory leg with large tooth on anterior margin.

Plastron coarsely granular.

First male pleopod with pronounced angle between shaft and apical lobe.

Colour.— "Lines upon carapace dark red, forming irregular loops and circles, which are smaller and more crowded anteriorly, and interspersed with spots." (Miers, 1877: 247).

Remarks.— *A. obtusifrons* bears close resemblance to *A. lunaris* and *A. picta*. However, it is distinguished by its obtuse rostrum and its carapace is covered with looped, reticulating lines interspersed with spots, whereas *A. lunaris* is covered with minute dots and the carapace of *A. picta* is patterned with polygons. It seems that this close resemblance and the relative rarity of this species prompted later authors to synonymize *A. obtusifrons* with *M. picta* (Ortmann, 1892) or with both *M. picta* and *M. banksii* (Alcock, 1896; Klunzinger, 1906; Ihle, 1918; Estampador, 1937; Romimohtarto, 1967; Takeda, 1973).

Type locality.— Fiji Is. (Miers, 1877: 247).

Distribution.— Indonesia, New Hebrides, Fiji Is.

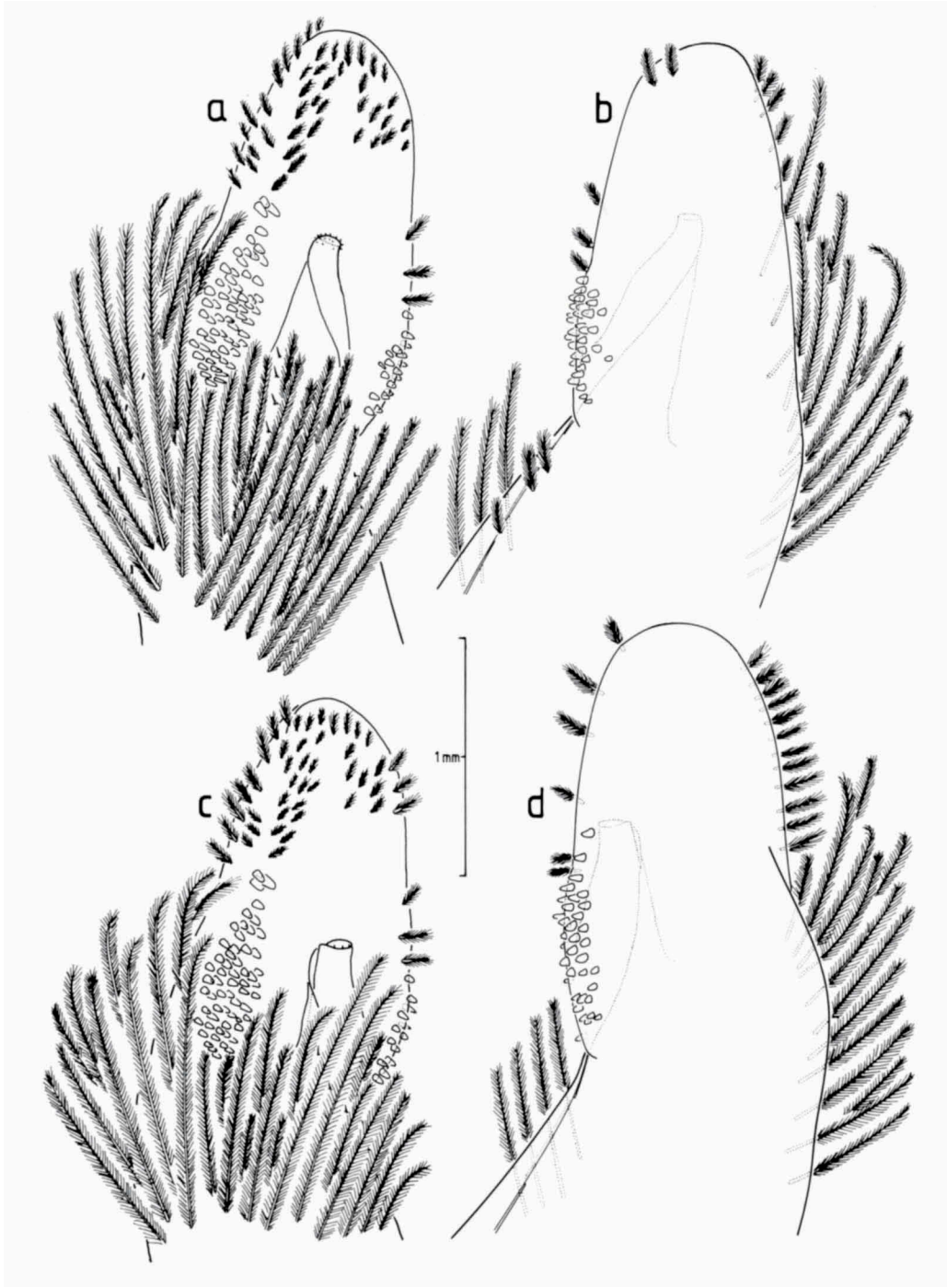
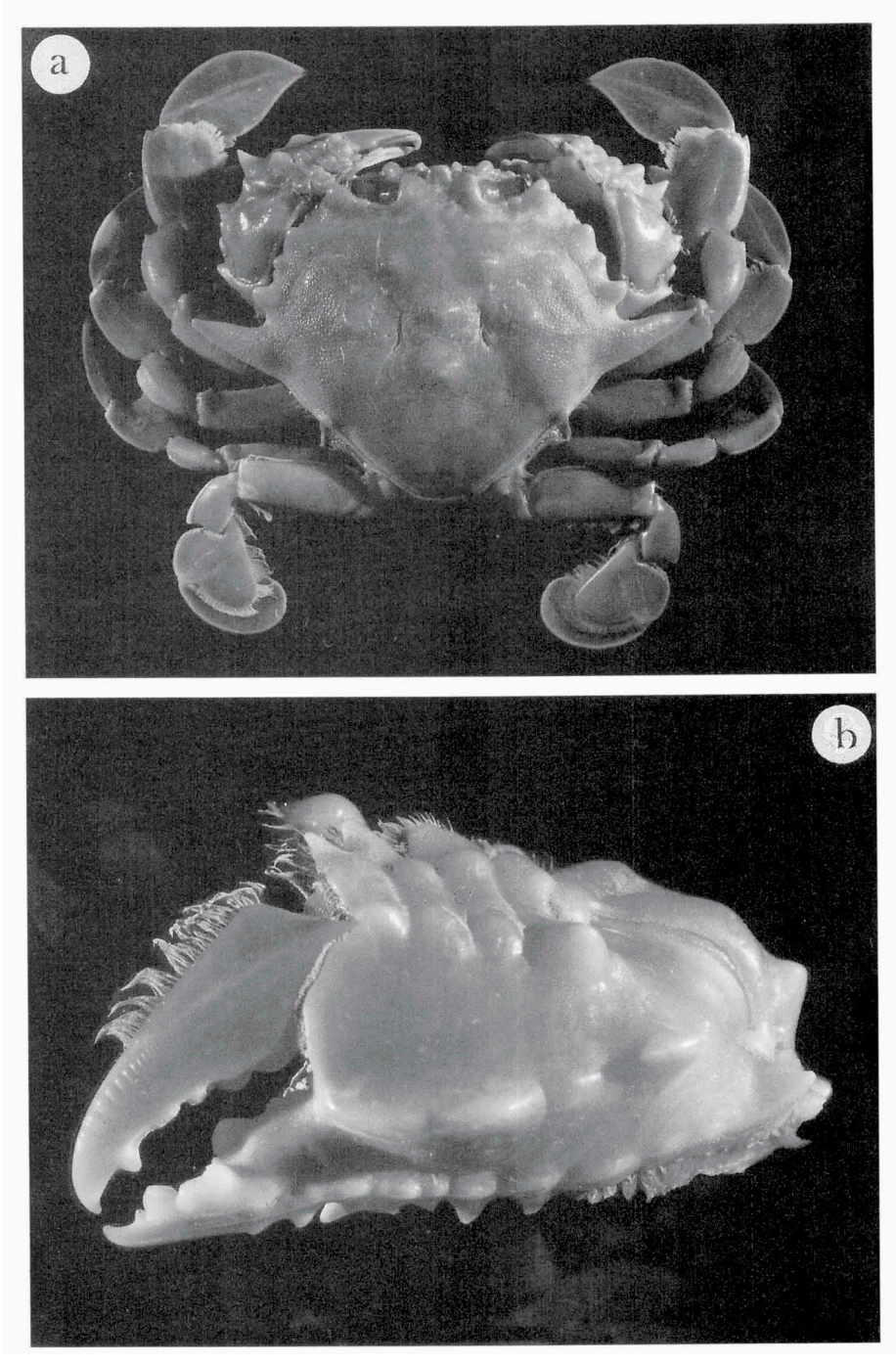


Fig. 3a-d; a & c = dorsal view, b & d = ventral view; a-b *Ashtoret obtusifrons* (Miers, 1877) NHM 1876.14; c-d *Ashtoret picta* (Hess, 1865) NHM 1868.32.



Pl. 5a-b; *Ashtoret obtusifrons* (Miers, 1877) NHM 1876.14; a = dorsal view, b = left chela.

Ashtoret picta (Hess, 1865) comb. nov.
(fig. 3c-d, pl. 6a-b)

Matuta lunaris; Leach, 1817: 13, pl. 127(3-5).
Matuta picta Hess, 1865: 158, pl. 6(13); Miers, 1877: 246, pl. 40(5-7); de Man, 1881: 118 (part); Haswell, 1882: 135; Miers, 1886: 295 (list); de Man, 1897: 364; 1902: 685; Ward, 1942: 69 (list).
Matuta distinguenda Hoffmann, 1877: 27, pl. 6(49-52) pl. 7(53-5); Lenz & Richters, 1881: 57.
Matuta victrix var. *picta*; Ortmann, 1892: 573.
Matuta banksi var. *picta*; Nobili, 1889: 251.
Matuta banksii; Lanchester, 1901: 552 (part); Klunzinger, 1906: 65, pl. 2(12); Sakai, 1937: 98, pl. 13(2); Barnard, 1950: 359, fig. 65 h- k; Takeda, 1973: 64 (part).
Matuta banksi; Sakai, 1976: 141, pl. 45(1) (part).

Material.— **Australia**. Sydney, 1864, coll. Schutte, det. W. Hess, holotype, ♀ 31.9 mm (SM 80a). **Red Sea**. coll. M.M. Ramadan, ♂ 32 mm (NHM 1936.12.17.4); Ras el Kanisa, Gulf of Suez, 28.x.1971, coll. L. Fishelson, 2 ♂♂ 31 mm, 32.8 mm (TAU 8331). **Aden**. pres. A. Franser-Brunner, ♀ 33 mm (NHM 1950.8.8.35-36). **Kenya**. coll. H. Copley, ♀ 41 mm (NHM 1955.6.22.45). **Tanzania**. Zanzibar, purch. Dr. Kirk, ♂ 47 mm (NHM 1868.32). **Aldabra**. Chalen sand flats, 16.x.1967, coll. J.D. Taylor, Royal Society Expedition Aldabra, 1967-1968, ♂ 62 mm, ♀ 33 mm (NHM 1993.25). **Madagascar**. Passandava Bay, 1864, coll. F.P.L. Pollen & D.C. van Dam, det. Hoffmann, as *M. distinguenda* syntype now lectotype, ♂ 51 mm ♀ 45.5 mm paralectotype (RMNH D 754); syntypes now paralectotypes, 7 ♂♂ 35-45 mm, 9 ♀♀ 24-29 mm (RMNH D 754). **Seychelles**. coll. Dr. E. P. Wright, 2 ♂♂ 53 mm, 63 mm (NHM 1875.20); Mahe, Anse Royale, 1965, coll. Dr. J. Taylor, ♂ 56 mm (NHM 1993.28); Beau Vallon Beach, Praslin, -.v.1973, coll. M. V. Angel, det. R.W. Ingle as *M. banksii*, 2 ♂♂ 40 mm, 60 mm (NHM 1993.27). **Mauritius**. pres. F. Cole, ♂ 50 mm (NHM 1842.66). **South Africa**. Durban bay, pres. Natal Govt. Mus., ♂ 66 mm (NHM 1917.619.20). **Ceylon**. coll. E.W. Holdsworth, ♂ 46 mm, ♀ 42 mm (NHM 1876.11). **Malaysia**. purch. E. Gerrard, ♂ 49 mm (NHM 1880.6). **Indonesia**. Molucca Id., Bandanaira 1881, coll. Semmelink, 2 ♂♂, ♀ (RMNH D 755); Goram Is., coll. W. Stalker, ♂ 33 mm, 3 ♀♀ 33-34 mm (NHM 1910.3.29.32-35). **Australian Seas**. coll. Mr. Warwick, det. E.J. Miers, ♂ 50 mm (NHM 1850.73); Baudin id., 8-15 fms, coll. J.J. Walker, ♂ 48 mm (NHM 1894.7.16.1). **Tahiti**. Pointe Venus, 16°30'0S 149°30'W 1992, 2 m, coll. J. Poupin, ♂ 36 mm (MNHN). **Ile de Pines, Ile Aneytioum, Ile Fontina, Tanna, New Hebrides**. HMS "Herald", pres. Lords of the Admiralty, ♂ 53 mm (NHM 1854.48).

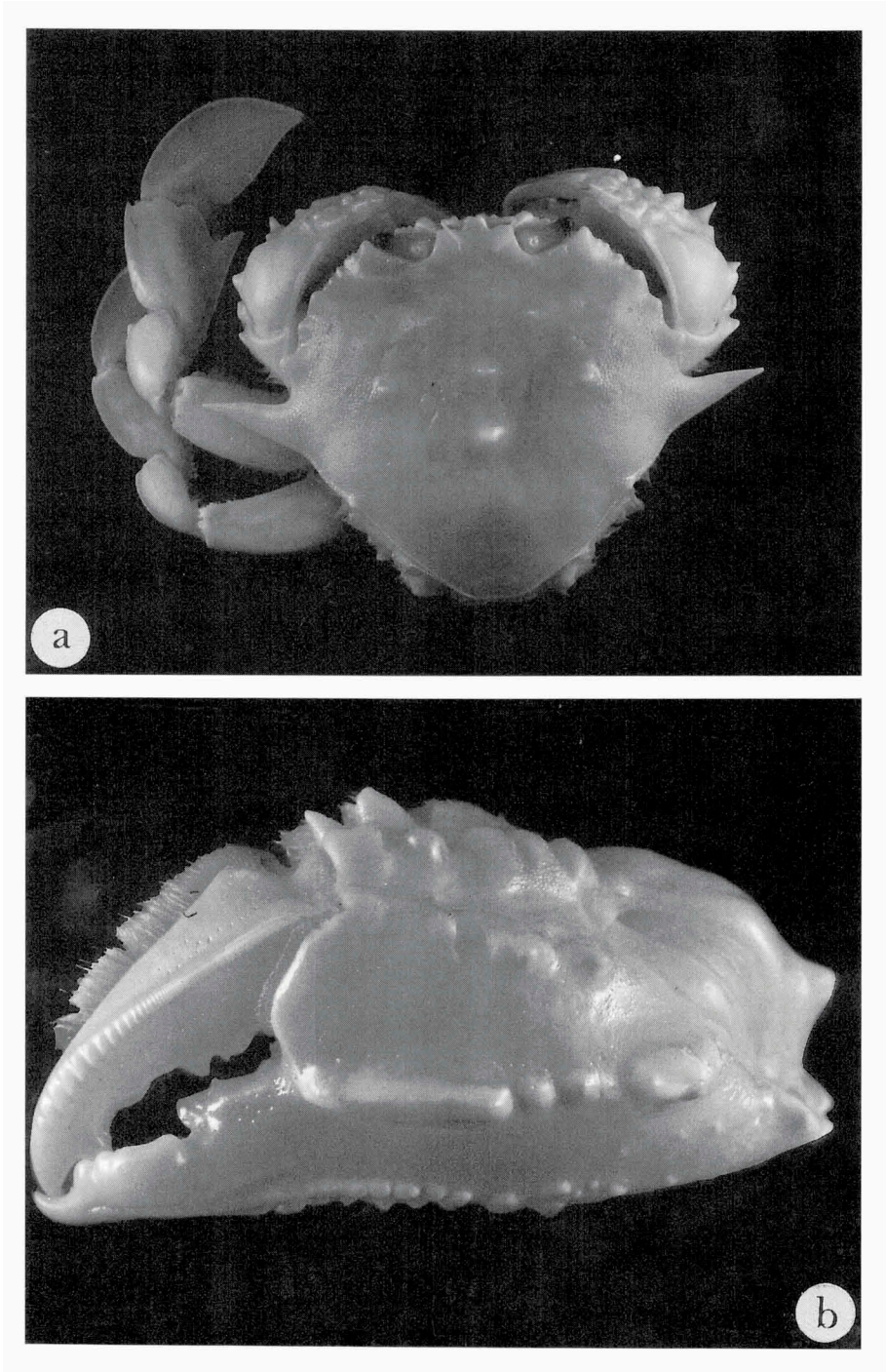
Description.— Surface of carapace minutely granulate, coarser granules laterally and around six dorsal tubercles, largest cluster sorrounding mesogastric tubercle. Front with arcuate lobes laterally and a slightly emarginate rostrum medially. Exognath and ischium of third maxilliped tuberculate.

Anterolateral margins of carapace crenulate with five small tubercles followed by three large triangular, teeth-like, tubercles.

Lateral spine 0.2 carapace width. Posterolateral margin oblique, with granulate carina extending to base of lateral spine. Mid posterolateral tubercle present.

Upper external surface of palm with two rows of granulate low tubercles, proximalmost in lower row largest. Mid palm a lobed ridge, second lobe prominent, acuminate, fourth and fifth wide and obtuse. At lower proximal angle of palm an acuminate tubercle.

A row of molariform tubercles extending from lower proximal angle of palm to base of immobile finger. An additional short row of granules runs parallel to lower margin. Lower margin with row of triangular tubercles terminating at base of dactylus, distalmost largest. A distinctly milled ridge on outer surface of dactylus in male, absent in female.



Pl. 6a-b; *Ashtoret picta* (Hess, 1865) NHM 1993.25; a = dorsal view, b = left chela.

Plastron coarsely granular. First male pleopod with pronounced angle between shaft and apical lobe.

Colour (in alcohol).— Carapace with reticulating brown lines forming small polygons anteriorly and larger, longitudinal loops posteriorly.

Remarks.— Leach (1817) described *M. lunaris* as having "pollice linea elevata polita transversim tenuissime striata, tibiis tertiis et quartis articulo primo superne bicarinatis", the carapace in the accompanying drawing (pl. 127 fig. 3) is patterned with reticulating punctate lines forming vague polygons.

Although Hess' (1865) description and drawing (pl. 6 fig. 13) of *M. picta* lack detail, Hoffmann's (1877) of *M. distinguenda* are clearly identifiable. On examining both specimens we follow de Man (1881) in considering *A. distinguenda* to be a junior synonym of *A. picta*.

Other authors, noting the similarity of *M. picta* and *M. banksii* (= *A. lunaris*), either considered it a variety (Nobili, 1889), or sought to synonymize it with the latter (Alcock, 1896; Lanchester, 1901; Klunzinger, 1906; Ihle, 1918; Balss, 1935; Sakai, 1937; Estampador, 1937; Barnard, 1950; Takeda, 1973; Sakai, 1976). *A. picta* differs from *A. lunaris* in having fourth lobe on male mid palmar ridge wide and obtuse, rather then acuminate, and carapace patterned with punctate polygons, not diffuse minute spots.

Type locality.— Sydney, Australia (Hess, 1865: 158). It seems that material collected by Dr Schutte and later determined by Hess, might have come from several localities.

Distribution.— Red Sea and East Africa, Madagascar, Seychelles, Mauritius, Ceylon, Malaysia, Australia.

Ashtoret sanguianulata spec. nov.
(fig. 4a-b, pl. 7a-b)

Material.— **Madagascar.** Holotype, Maintirano, -.vi.1959, 7 m, sand, coll. A. Crosnier, ♂ 48 mm (MNHN B. 21359). Paratype, 17°58'S 43°23'E, 90-110 m, "FAO 26", ♂ 29.8 mm (MNHN B. 24772).

Description.— Holotype; Surface of carapace polished, fine granules near lateral spines and around nearly obsolete dorsal tubercles. Front with slightly arcuate lobes laterally and barely emarginate rostrum medially. Exognath and ischium of third maxilliped tuberculate.

Anterolateral margins of carapace crenulate with five small tubercles followed by three large triangular, teeth-like, tubercles, median tubercle smallest. Lateral spine long, 0.4 carapace width. Posterolateral margin oblique, with granulate carina extending to base of lateral spine, bearing no mid posterolateral tubercle.

Upper external surface of palm with two rows of granulate tubercles. Mid palm a five-toothed ridge parallel to lower margin. Second tooth most prominent, acuminate; fourth tooth triangular, larger than third and fifth. At lower proximal angle of palm conical tubercle. A row of nearly obsolescent molariform tubercles paralleling margin from lower proximal angle of palm to base of immobile finger. Lower margin with row of sharply triangular tubercles terminating at base of dactylus, distalmost largest. Dactylus in male with distally milled ridge on outer surface, obsolete in female. First ambulatory propodus with small tooth on anterior margin.

Plastron coarsely granular.

First male pleopod with shaft unbroken.

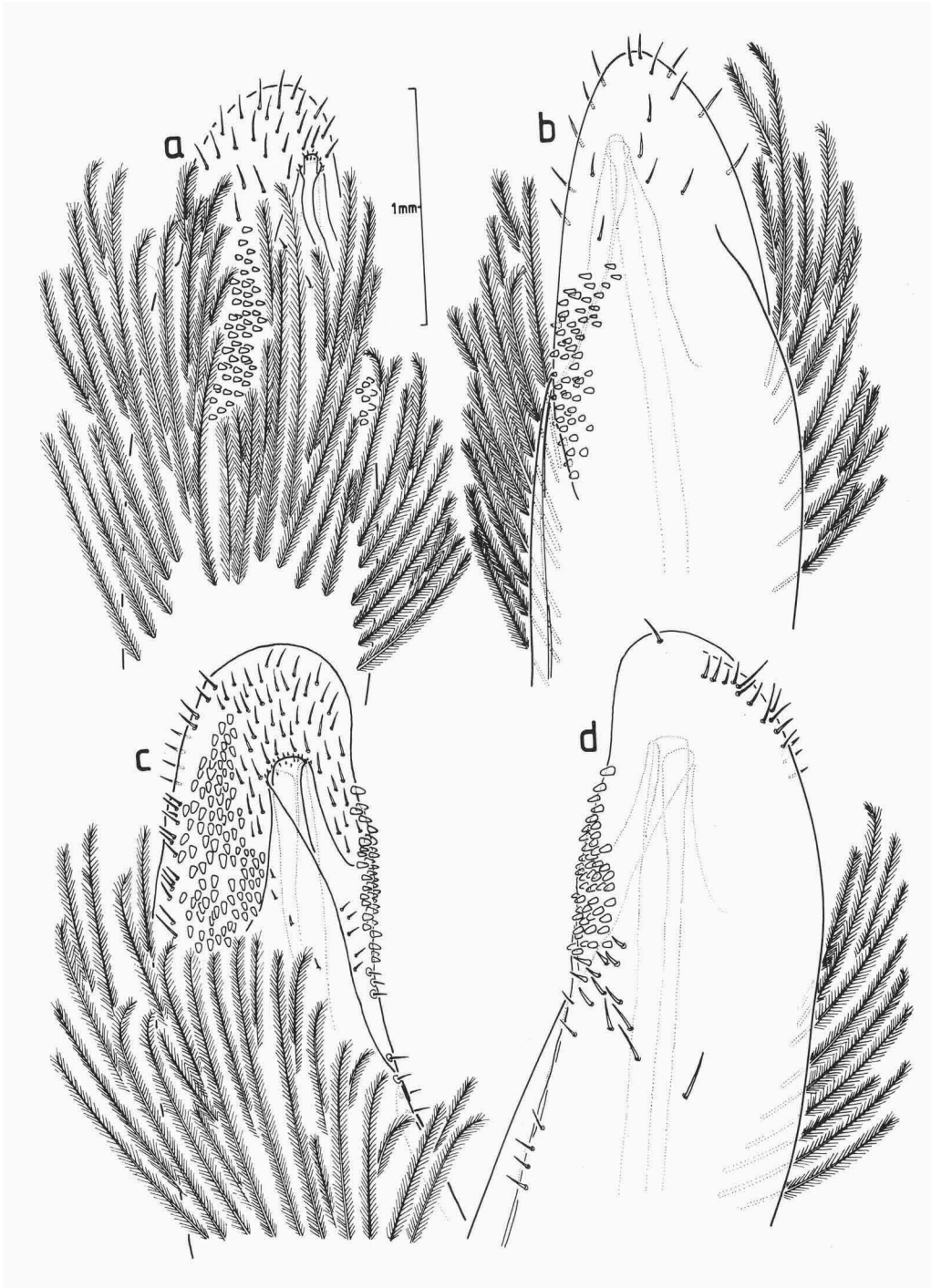
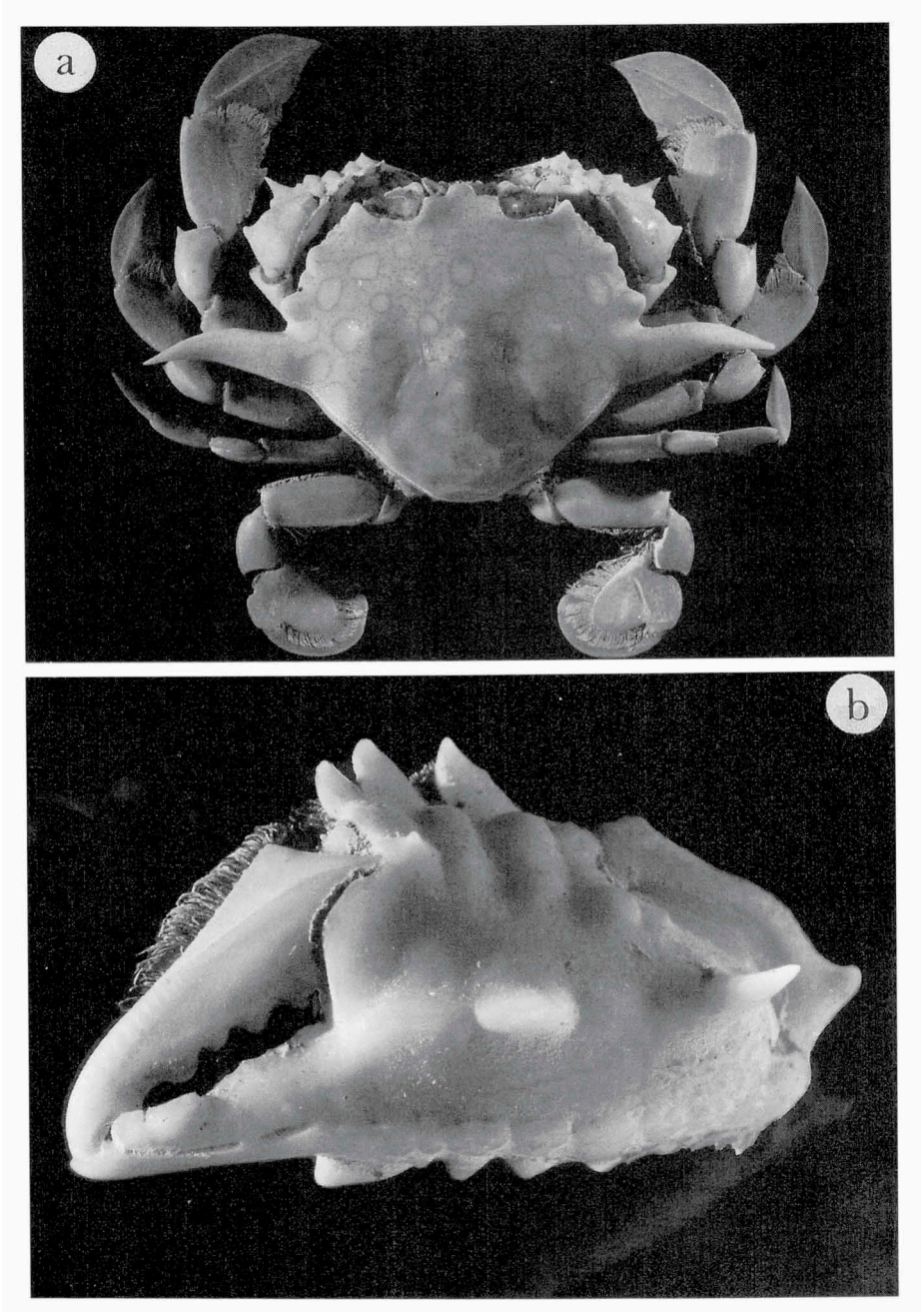


Fig. 4a-d; a & c = dorsal view, b & d = ventral view; a-b *Ashtoret sanguianulata* spec. nov. MNHN B.24772; c-d *Ashtoret shengmuae* sp. nov. NUS 1984.6003-6007.



Pl. 7a-b; *Ashtoret sanguianulata* spec. nov. MNHN B.21359; a = dorsal view, b = left chela.

Etymology.— from the Latin, sangre - blood, anulus - ring, for the red ring pattern on its carapace. Gender feminine.

Colour (in alcohol).— Carapace with red rings encircling pale centres on a background of tiny red spots.

Remarks.— *A. sanguianulata* is easily distinguished from its congeners by its exceedingly long lateral spines. From *A. miersii*, that possess a similar colour pattern, it differs in structure of mid palmar ridge and presence of milled ridge on palmar dactylus.

Distribution.— Known only from the type locality, Madagascar.

Ashtoret shengmuae spec. nov.
(fig. 4c-d, pl. 8a-b)

Material.— **South China Sea**. Holotype, Tanjong Datu, 0°60'N 109°40'45"E, 24.xi.1955, 35 m, M.F.V. "Manihine", ♂ 40.3 mm (NUS 1984.6003-6007); same data as holotype, 4 ♀♀ 44.4-49.8 mm (NUS 1984.6003-6007), paratypes; 3°37'30"N 108°24'E, 16.vi.1956, 78-101 m, M.F.V. "Manihine", 2 ♀♀ 34, 34.4 mm (NUS 1984.6008- 6009), paratypes.

Description.— Surface of carapace minutely granulate, slightly coarser granules near lateral spines. Two anterior dorsal tubercles nearly obsolete. Front with straight horizontal lobes laterally and a bilobed rostrum medially. On pterygostomial region three parallel rows of elongate tubercles diminishing in size laterally, serving as stridulating organ. Exognath and ischium of third maxilliped granulate.

Anterolateral margins of carapace nearly evenly crenulate with two somewhat larger triangular tubercles at mid margin and prior to lateral spine. Lateral spine short, 0.15 carapace width. Posterolateral margin oblique, with granulate carina extending to base of lateral spine, bearing mid posterolateral tubercle.

Cheliped carpus coarsely granulate distally on outer surface, its upper margin carinate, granulate. Palm coarsely granulate proximally on external surface. Upper external surface of palm with two rows of granulate obtuse tubercles. Mid palm, in both male and female, a five-toothed ridge parallel to lower margin, second tooth prominent, acuminate, fourth tooth somewhat larger than third and fifth. At lower proximal angle of palm a small granulate tubercle. A row of molariform tubercles extending from lower proximal angle of palm to base of immobile finger distally parallel to a short row of rounded tubercules. Lower margin with row of sharply triangular tubercles terminating at base of dactylus, distalmost largest. Dactylus in male with distally milled ridge on outer surface, obsolete in female.

Plastron coarsely granular.

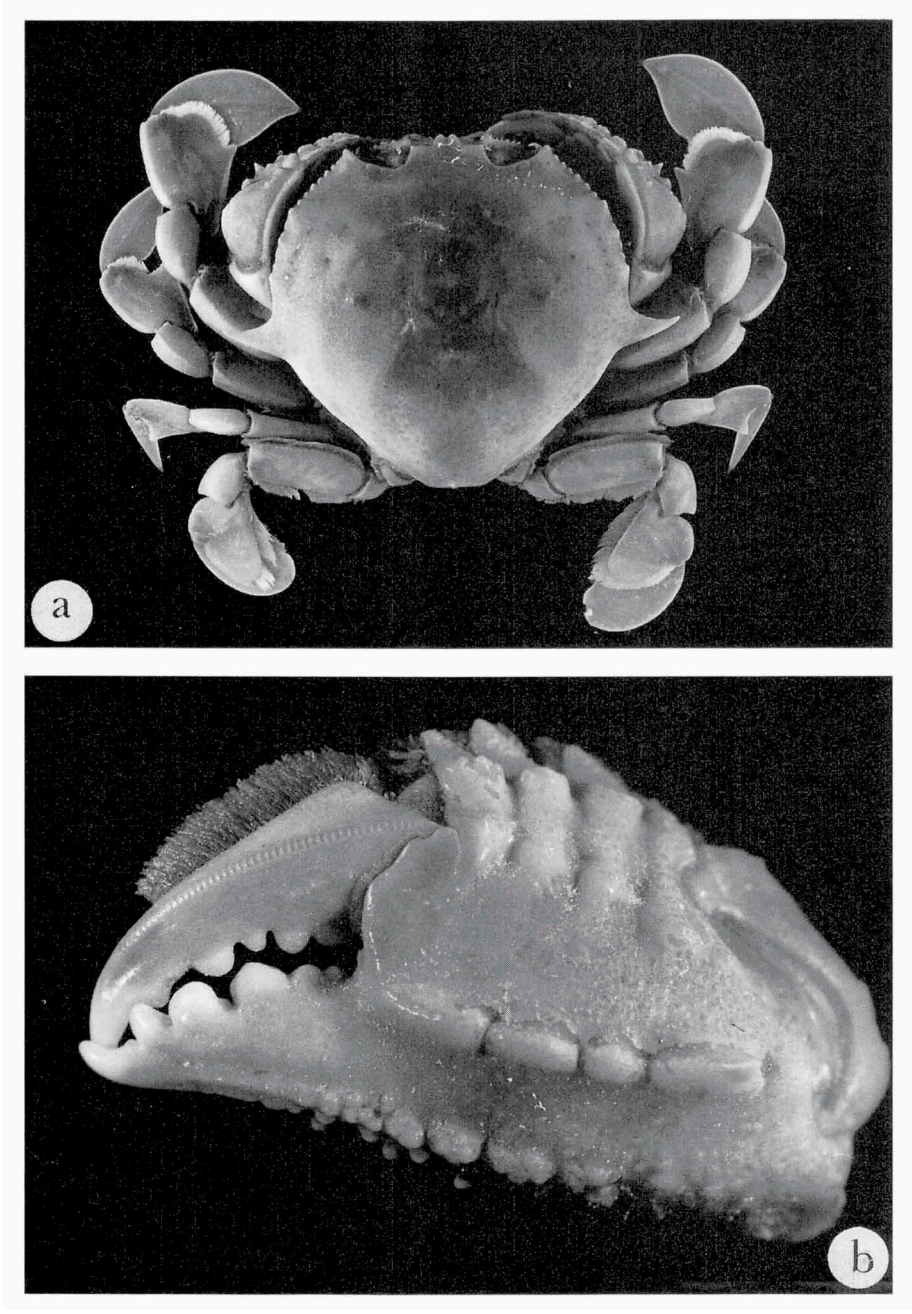
First male pleopod with shaft unbroken.

Etymology.— Sheng-Mu, Chinese goddess, protector of women and children, presides over birth. Greatly venerated throughout China. Gender feminine.

Colour (in alcohol).— Numerous fine brownish-red spots cover carapace, spots somewhat larger posteriorly. Ambulatory meri and carpi finely spotted.

Remarks.— *A. shengmuae* closely resembles *A. granulosa* save for a distinct colour pattern; whereas the carapace of the latter is covered with pale-centered spots and the lateral spines bear a single large spot basally, the carapace and lateral spines of *A. shengmuae* are covered with fine spots.

Distribution.— Known only from the type locality, South China Sea.



Pl. 8a-b; *Ashtoret shengmuae* sp. nov. Holotype NUS 1984.6003-6007; a = dorsal view, b = left chela.

Izanami gen. nov.

Type species: *Matuta inermis* Miers, 1884.

Diagnosis.— Carapace circular, slightly convex, bearing six tubercles centrally, regions undefined. Front, wider than orbit, trilobate, median lobe projecting. Anterolateral margin tuberculate. Posterolateral margin carinate. Lateral spine rudimentary. Orbits obliquely cut, separated from antennular fossa. Antennae rudimentary. Inferior orbital tooth molariform. Supraorbital margin smooth. Outer orbital angle produced. Eye stalk elongate, densely covered with long plumose setae inferiorly. Suborbital margin laterally interrupted by curved inhalant canal with setose margins. Pterygostomial region prominently and evenly granular. Outer maxilliped elongate, extending nearly to anterior margin of carapace.

Chelipeds subequal. Carpus with anterior angle produced. External surface of palm sculptured, with two rows of tubercles below cristate upper margin, a milled ridge mid-palm serving as stridulating organ and two rows of tubercles inferiorly. Upper margin of palm cut into three teeth, inner surface of teeth granulate. External surface of dactylus smooth, cutting margin with molariform tooth. Ambulatory legs with first propodus unidentate, penultimate carpus unicarinate, ultimate carpus heart-shaped.

Anterior margin of sternum triangular. Male abdomen five-segmented, with prominent carina on second abdominal tergite. First male pleopod distally setose, with coiled tubular appendage distally on inner surface, apex lobate distad.

Etymology.— Izanami, literally she-who-invites. In Japanese mythology the primal female principle. Gender feminine.

Remarks.— The new genus includes the two species, *I. curtispina* and *I. inermis*, possessing rudimentary lateral spines and is distinguished from other matutine genera by narrow orbits closed off from antennular fossa, presence of carina on second abdominal tergite, mid-palm stridulating ridge, granulate interior surface of palmar teeth and evenly granulate pterygostomian region.

Romimohtarto (1972), in discussing the grouping of the Indonesian species of *Matuta*, recognized the affinity between *M. inermis* and *M. curtispina* and assigned them to his "group II". This group was characterized by rudimentary epibranchial spine, molariform tooth on dactylus, stridulating ridge on external surface of palm and "Stridulating organ on the inner face of the palm composed of two batches of granules or very faint striae". However, examination of the specimens convinced us that in *I. inermis* the two proximalmost palmar teeth are granulate interiorly, while in *I. curtispina* all three superior palmar teeth bear granules, never striae, on their interior surfaces.

Izanami curtispina (Sakai, 1961) comb. nov.
(fig. 5a-b, pl. 9a-b)

Matuta curtispina Sakai, 1961: 139, pl. 3(7); 1965: 60, pl. 24(2); 1976: 142, pl. 45(3); Takeda & Miyake, 1970: 231; Romimohtarto, 1972: 16, figs 11, 12, 33-38, pls 2b, 3e; Takeda, 1982: 110, pl. 323; Miyake, 1983: 200 (list).

Matuta sp. II Romimohtarto, 1967: 8, figs 1c, 2c, pl. 1e, f.

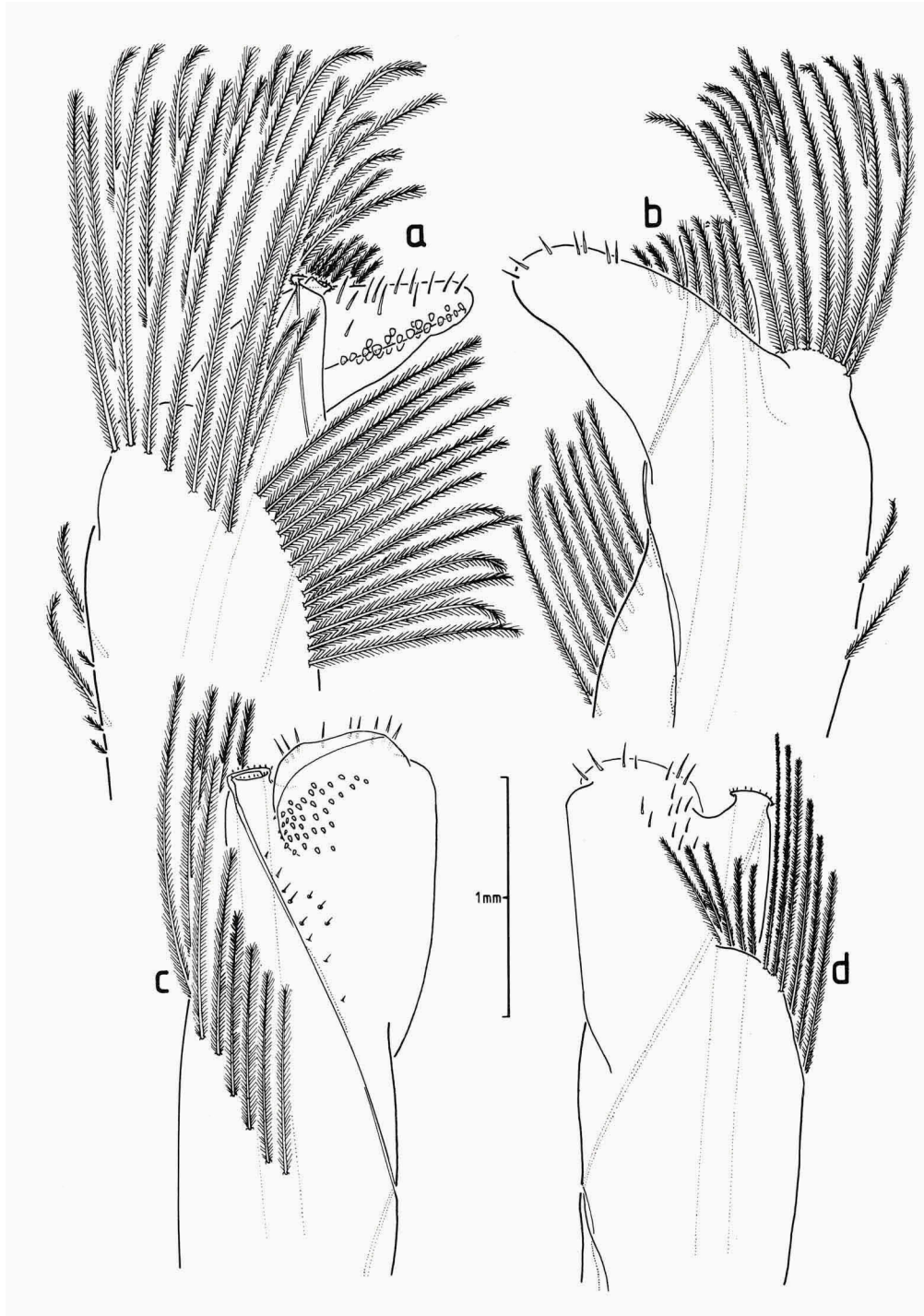
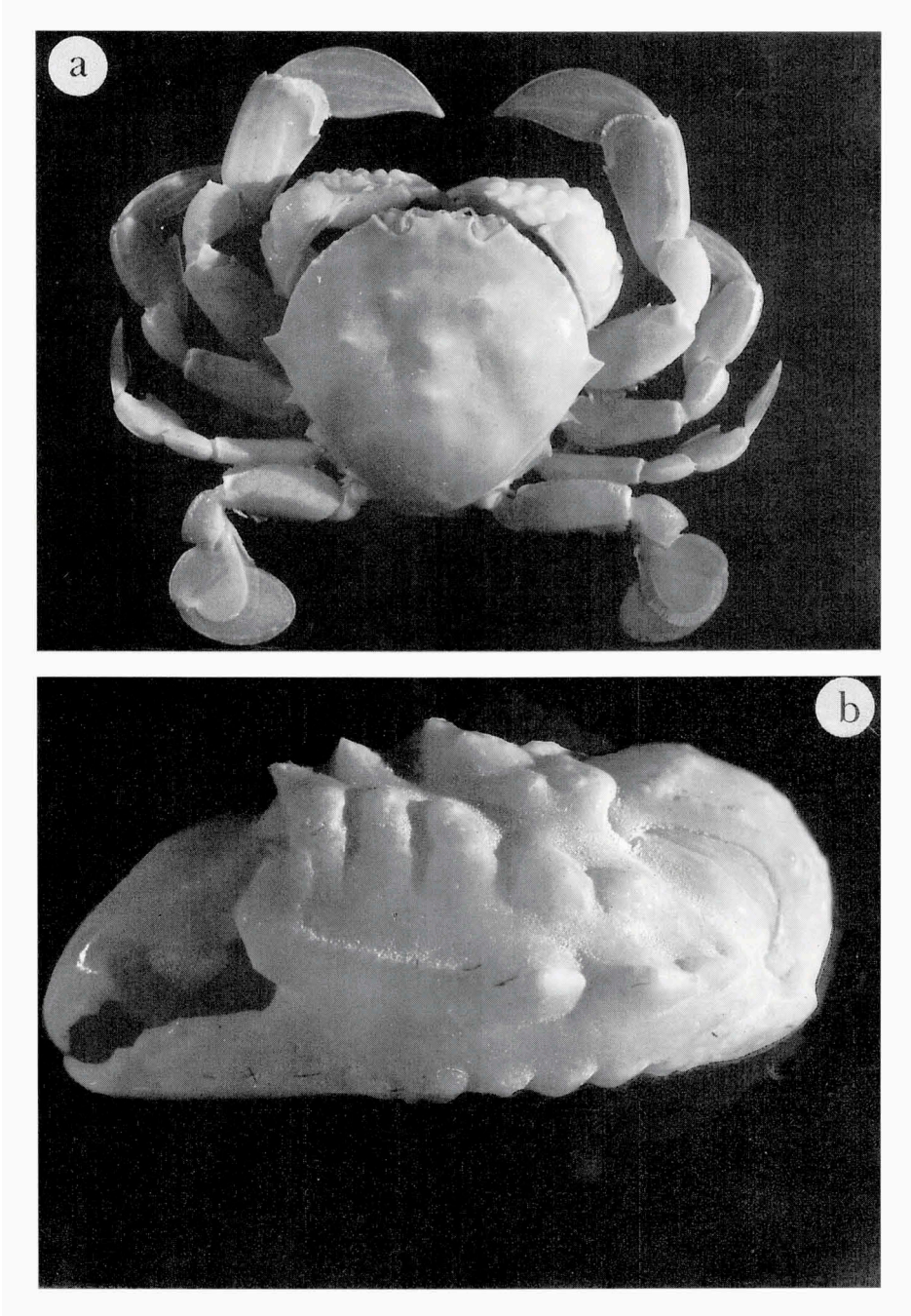


Fig. 5a-d; a & c = dorsal view, b & d = ventral view; a-b *Izanami curtispina* (Sakai, 1961) USNM stn 4915; c-d *Izanami inermis* (Miers, 1884) NHM 1884: 31.



Pl. 9a-b; *Izanami curtispina* (Sakai, 1961) USNM 72475; a = dorsal view, b = left chela.

Material.— **Madagascar**. det. R. Serène, ♂ 33 mm (MNHN B. 20983). **China Sea**. Near Hong Kong, 21°33'N 116°15'E, 4.xi.1908, 160 m, "Albatross" Exped., stn 5311, det. T. Sakai, ♂ 17 mm (USNM). **Japan**. Sagami Bay, 1977, 85 m, ♀ (RMNH D 38136); N.E. Point Yaku-Shima, 30°12N 130°43'40"E, 15.viii.1906, 150 m, "Albatross" Exped., stn 4931, det. M. J. Rathbun, as *M. inermis*, 2 ♂♂ 26 mm, 29 mm (USNM 72475); 12.viii.1906, "Albatross" Exped., stn 4915, ♂ (USNM).

Description.— Surface of carapace smooth, bearing six obtuse tubercles. Front with two horizontal lobes laterally and an anteriorly emarginate, tapering rostrum. Subhepatic and pterygostomial regions evenly granulate. Third maxilliped very finely granular.

Anterolateral margins set with low tubercles, smaller and closer together anteriorly. Lateral spine triangular. Posterolateral margin with ridge extending to tip of lateral spine.

Carpus of cheliped swollen, granulate, its upper margin carinate, anterior angle produced. Palm with upper margin cristate, tridentate, teeth diminishing in size distally, interior surface of teeth granulate. Upper external margin with two rows of wide, blunt tubercles. Mid-palm, a milled ridge basally set with two tubercles. Lower margin with tubercles growing in size distally, largest at base of lower finger. Fingers acuminate. Cutting margin of lower finger with three small teeth. Dactylus strongly curved, upper margin carinate, proximally setose, cutting margin, proximally with large rounded tooth.

First ambulatory propodus one and half times long as wide, inferiorly with acute tooth; second propodus anteriorly bilobate; third propodus with acute tooth on inferior margin.

Plastron minutely pitted.

Male abdomen with lateral margins of penultimate segment convex. Telson one and half times as long as wide at base, triangulate. A granulate carina on second abdominal segment. First male pleopod with apical lobe lingulate, distended sidewards, minutely granulate on inner surface.

Colour.— Carapace covered with reddish vermilion lines. For colour illustration see Takeda, 1982, pl. 323.

Remarks.— Sakai (1961) when describing *M. curtispina* wrote "Among the known species of the genus *Matuta*, the new species is related to *M. inermis*", and again (Sakai, 1976): "Among the species of the genus *Matuta*, both *M. curtispina* and *M. inermis* are peculiar in having the lateral processes of the carapace undeveloped". However, the two are readily distinguished by the pronounced granulation of *I. inermis*, its evenly tapering penultimate abdominal segment, and the form of ambulatory propodi and first male pleopod as compared to the smooth carapace of *I. curtispina*, its laterally convex penultimate abdominal segment, the form of ambulatory propodi and the laterally distended tip of first male pleopod.

Type locality.— Aichi Prefecture, Japan (Sakai, 1961: 139).

Distribution.— Madagascar, China Sea, Japan, Arafura Sea.

Izanami inermis (Miers, 1884) comb. nov.
(fig. 5c-d, pl. 10a-b)

Matuta inermis Miers, 1884: 256, pl. 26(C); 1886: 296; Alcock, 1896: 157 (in key); Ihle, 1918: 308; Rath-

bun, 1924: 27; Ward, 1942: 69 (list); Tyndale-Biscoe & George, 1962: 72; Romimohtarto, 1972: 19, figs 13-14, 39-41, pls 2a, 3d; Campbell & Stephenson, 1970: 246, fig. 6.
Matuta sp. I Romimohtarto, 1967: 6, figs 1d, 2d, pl. 1 a-d.

Material.— **Australia**. Queensland, Torres Strait, Albany Id, 5-7 m, coll. Dr. Coppinger, HMS "Alert", stn 109, det. E.J. Miers, syntype now lectotype, pres. Lords of the Admiralty; ♀ 21 mm, (NHM 1881.31); Prince of Wales Channel, 13 m, coll. Dr Coppinger, HMS "Alert", stn 169, det. E.J. Miers, syntypes now paralectotypes, pres. Lords of the Admiralty; 3 juv. 7-8 mm, (NHM 1882.7); 10°36'S 141°55'E, 11 m, 9 September, 1874, HMS "Challenger", stn 187, det. E.J. Miers, pres. the Lords of the Treasury; 2 ♂♂ 28.5 mm, 16.5 mm, 2 ♀♀ 32 mm, 21.5 mm, (NHM 1884.31); 27°08'00"S 153°21'30"E, 29 August, 1967, ♂ 27 mm, ♀ 27 mm (QM W2843). **Philippines**. Jolo, 14.ii.1908, 137 m, "Albatross" Exped., stn 5140, det. M. Ward as *M. inermis*, 6 ♂♂ 17-19 mm, 7 ♀♀ 18-19 mm (USNM 65381); Jolo, Jeomabal, 19.ix.1909, "Albatross" Exped., det. M. Ward as *M. inermis*, ♂ 22 mm, ♀ 20 mm (USNM 65379). **New Caledonia, N.E. coast of Australia, Timor, Ovolau Is., Fiji, Norfolk**. coll. Mr Rayner, HMS "Herald", purch. Mr Warwick, det. E.J. Miers, syntype now paralectotype; ♂ 19 mm, 1 juv. 13.5 mm, (NHM 1862.53). **Eastern seas**. coll. Adam White, HMS "Samarang", pres. Captain Sir E. Belcher, 2 juv. 11 mm, (NHM 1847.21).

Description.— Surface of carapace prominently granulose laterally, bearing six distinct tubercles. Front with two horizontal lobes laterally and a rostrum anteriorly bifid. Supraorbital margin smooth. On pterygostomial region a row of elongate tubercles, median tubercle longest, tubercles diminishing in size laterally, serving as stridulating organ. Third maxilliped finely granular.

Anterolateral margins prominently tuberculate. Lateral spine little more than tubercle. Posterolateral margin with tuberculate ridge extending to base of lateral spine, tubercles larger anteriorly.

Carpus of cheliped swollen, tuberculate, its upper margin bearing a tuberculate ridge, anterior angle produced. Palm with upper margin cristate, tridentate, teeth reduced distally, proximal tooth tuberculate. Interior surface of two proximal teeth granulate.

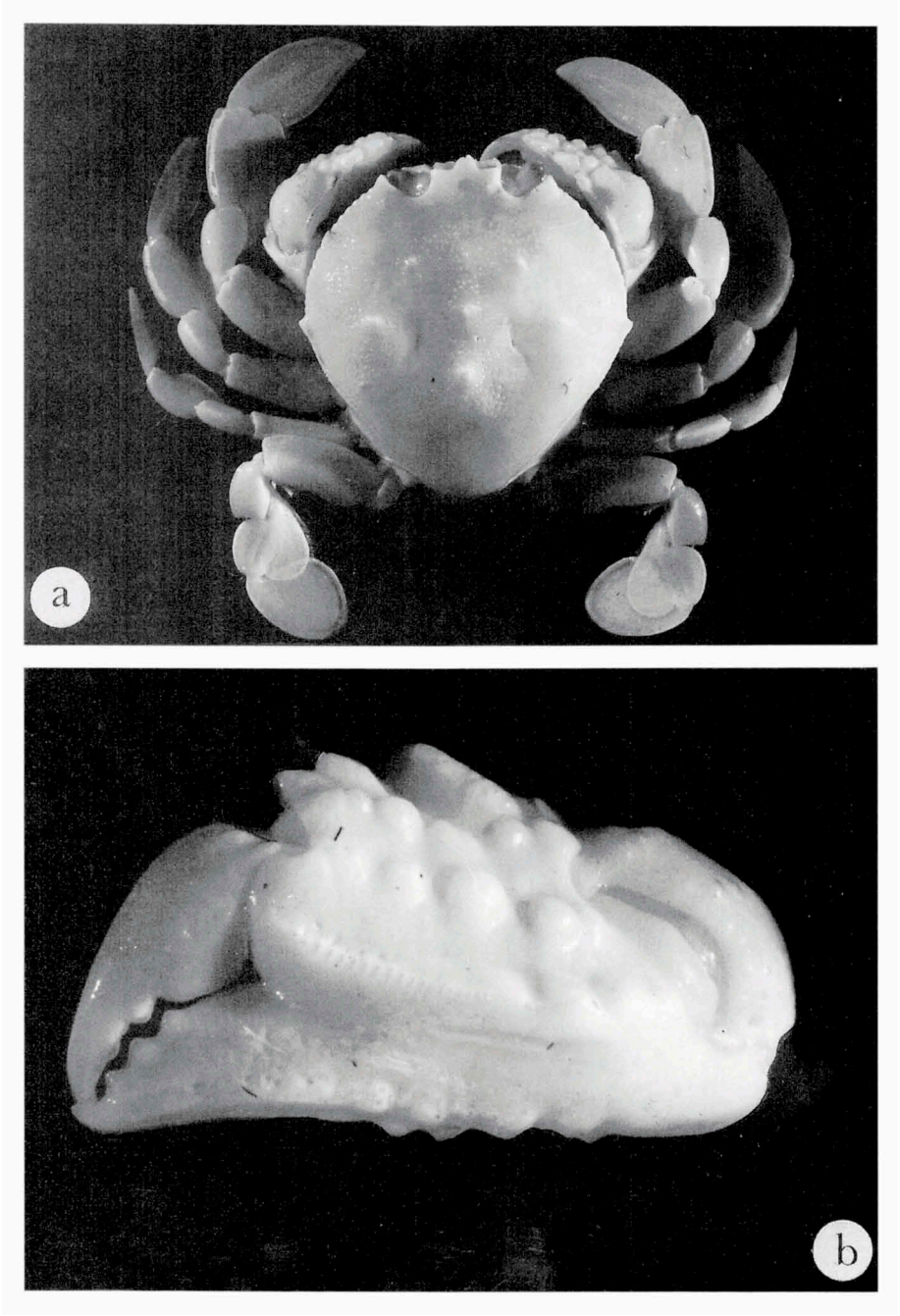
Upper external margin with two rows of wide, obtuse tubercles. Mid-palm a milled ridge basally set with two tubercles in males, three in females. Lower margin with molariform tubercles growing in size distally, largest at base of lower finger. Fingers acuminate. Cutting margin of lower finger with three triangular teeth. Dactylus strongly curved, upper margin carinate, proximally setose, cutting margin with large tooth midway. First ambulatory propodus 1.1 times as long as wide, inferiorly with rounded tooth, second propodus anteriorly unilobate, third propodus inferiorly with rounded tooth.

Plastron minutely pitted.

Male abdomen tapering evenly. A granulate carina on second abdominal segment. First male pleopod with apical lobe rounded, minutely granulate on inner surface adjacent to tubular appendage.

Colour.— "Pinkish beige, darker pink on anterior half of carapace, red reticulations on carapace and chelipeds (Tyndale-Biscoe & George, 1962: 72).

Remarks.— Miers (1884) referred *M. inermis* to his "second section (B) of the genus" because of its mid-palmar ridge and externally smooth dactylus. However, his description does mention enough distinctive characters, obsolete lateral spine and the lack of proximal palmar spine, as to leave no doubt as to the identity of the



Pl. 10a-b; *Izanami inermis* (Miers, 1884) USNM 65379; a = dorsal view, b = left chela.

species. The accompanying figure (pl. 26c) is somewhat distorted, leading Alcock (1896) to describe the species with "carapace pentagonal" in his key.

The syntypes collected from stn 177, Thursday Island and stn 158, Torres Strait by Dr Coppinger, of *M. inermis* Miers are no longer extant.

Type locality.— Albany Is., Torres Strait, Australia (Miers, 1884: 256).

Distribution.— Philippines, Torres Strait, Arafura Sea.

Matuta Weber, 1795

Matuta Weber, 1795: 92.

Type species: *Cancer victor* Fabricius, 1781, by monotypy.

Diagnosis.— Carapace subcircular, slightly convex, bearing six obtuse tubercles centrally, regions undefined. Front, wider than orbit, trilobate, median lobe projecting, anteriorly emarginate. Anterolateral margin arcuate, tuberculate. Posterolateral margin sharply convergent, carinate. Lateral spine long, acute. Antennae rudimentary, inferior to antennular basal segment. Orbits obliquely cut, communicating with antennular fossa. Supraorbital margin smooth. Outer orbital angle prominently produced. Eye stalk elongate, densely covered with long plumose setae on inferior surface. Suborbital margin tuberculate, laterally interrupted by curved inhalant canal with setose margins. Internal orbital tooth molariform, apparent in dorsal view. Subhepatic region minutely granulate, laterally set with plumose setae. On pterygostomial region rows of elongate tubercles diminishing in size laterally, serving as stridulating organ. Outer maxilliped elongate, extending nearly to anterior margin of carapace.

Chelipeds subequal. Carpus with anterior angle produced. Upper margin of palm cut into three teeth, two proximalmost interiorly striate. Length of palm nearly twice its height. External surface of palm sculptured, with two rows of tubercles below cristate upper margin. Mid-palm, in male, oblique ridge extending from acute spine to lower finger, ridge less distinct in female. Lower margin with row of tubercles. External surface of dactylus in male bearing strongly milled ridge, absent in female. Lower finger with molariform tooth proximally and cup-like depression distally. Upper margin of dactylus basally setose, cutting margin dentate. Ambulatory legs natatory, with first propodus bearing triangular tooth on inferior margin; penultimate carpus unicarinate; ultimate propodus greatly extended posteriorly.

Sternum anteriorly in 'fleur de lis' form. Male abdomen five- segmented, tapering, telson one and half as long as wide at base, with prominently tuberculate carina on third abdominal tergite. First male pleopod distally setose, apex rounded, with funnel- shaped appendage on inner surface framed laterally by minute granules.

Etymology.— Mater Matuta, ancient Italian goddess of birth and dawn, patroness of sailors. Gender feminine.

Remarks.— In the present study *Matuta* Weber, 1795 encompasses three species, *M. circulifera, M. planipes, M. victor*, which are characterized by a 'fleur de lis' sternum, penultimate carpus unicarinate, mid-palmar oblique ridge and, in males, strongly milled dactylar ridge.

Fabricius (1798) placed two species in *Matuta*, *M. victor* and *M. planipes*. Miers (1877) too, grouped *M. victrix*, *M. victrix* var. *crebrepunctata* [now both *M. victor*], *M. rubrolineata* and *M. lineifera* [now both *M. planipes*], recognizing their affinity: "Hand of male with an interrupted ridge or series of spines and tubercles crossing its outer surface obliquely, and continued along the outer surface of the lower (immobile) finger. Upper (mobile) finger with a strongly beaded ridge extending throughout its whole length". Miers (1880) added *M. circulifera* to this group.

Subsequent authors failed to differentiate between *Matuta* spp. and their close relatives and united them all in a single genus.

Matuta circulifera Miers, 1880
(fig. 6a-b, pl. 11a-b)

Matuta victor var. III; de Haan, 1841:127.
Matuta victor var. c; Herklots, 1861: 26.
Matuta circulifera Miers, 1880: 315, pl. 14(5); 1886: 295; de Man, 1896: 361, fig. 44.
Matuta lunaris; de Man, 1881: 112; Ortmann, 1892: 572 (part); Alcock, 1896: 161 (part).
Matuta planipes; Shen, 1932: 35 (part).

Material.— **Indo-Malayian seas**, coll. Dr P. Bleeker, purch. E. Gerrard, det. E. J. Miers as *M. circulifera*, holotype, redet. *M. planipes* Shen, ♂ 60 mm (NHM 1880.6). **Indonesia**. Sumatra, Atjeh, coll. Capt. Storm, det. de Man, (Museum Lübeck) 1 ♂ 43 mm, 1 ♀ 41 mm (USNM 39168); 1 ♂ (RMNH D 1382); Java, transfered from the Indian Museum, 2 ♀♀, 44 mm, 41 mm, (NHM 1879.32); South coast of Java, 1 ♂, 2 ♀♀ (RMNH D 38170). **No further data**. 3 ♂♂, 5 ♀♀ (RMNH D 1705); 2 ♂♂, 3 ♀♀ (RMNH D 749).

Description.— Surface of carapace minutely granulate, granules clustering around six dorsal tubercles, largest cluster surrounding mesogastric tubercle. Front with rounded lobes laterally and a slightly emarginate rostrum medially. Ischium of third maxilliped tuberculate.

Anterolateral margins with five teeth, diminishing in size anteriorly, two anterior teeth interspaced with tubercles. Lateral spine 0.3 carapace width. Posterolateral margin oblique, with granulate carina extending three quarters of its length. Carpus of cheliped with two obtuse tubercles on outer surface, its upper margin carinate, granulate, internal anterior angle produced. Upper margin of palm cut into three teeth, proximal tooth tuberculate.

Upper external surface with two rows of granulate low tubercles, proximalmost in lower row largest. Mid palm, in male, four tubercles continuing in a rounded ridge extending to tip of lower finger; proximal tubercle granulate, second tubercle prominent, acuminate, following tubercles small, obtuse. Mid palm, in female, five tubercles second tubercle prominent, acuminate. At lower proximal angle of palm a small granulate tubercle. Lower margin with row of tubercles terminating at base of dactylus. In female, an additional row of obtuse granules runs parallel to lower margin. Distinctly milled ridge on outer surface of dactylus in male, absent in female.

Plastron finely granular.

Colour (in alcohol).— Dorsally on carapace eight reddish circles arranged in three rows, three on protogastric region, of four in mid carapace, median pair smaller than lateral circles and two on metagastric region.

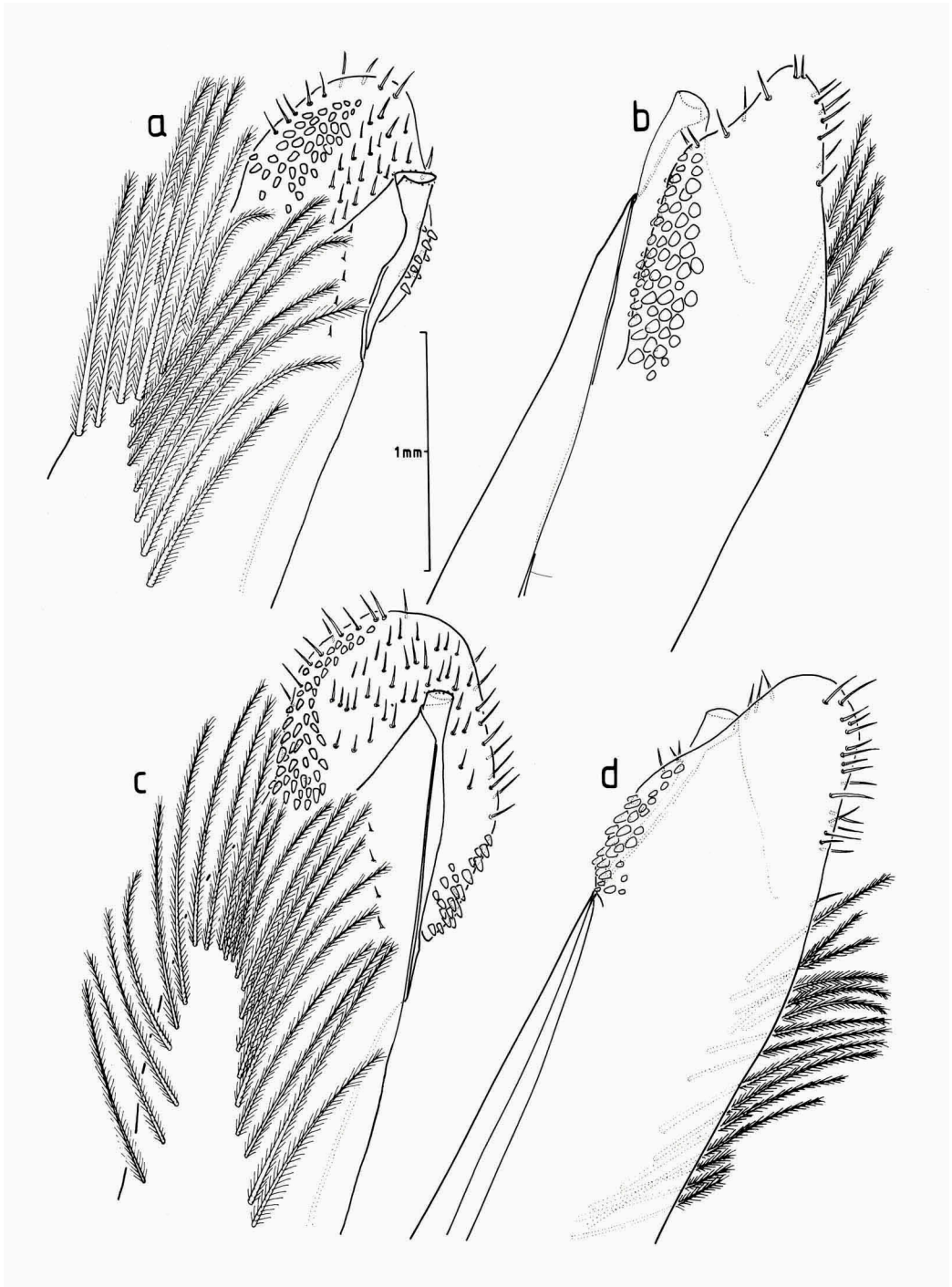
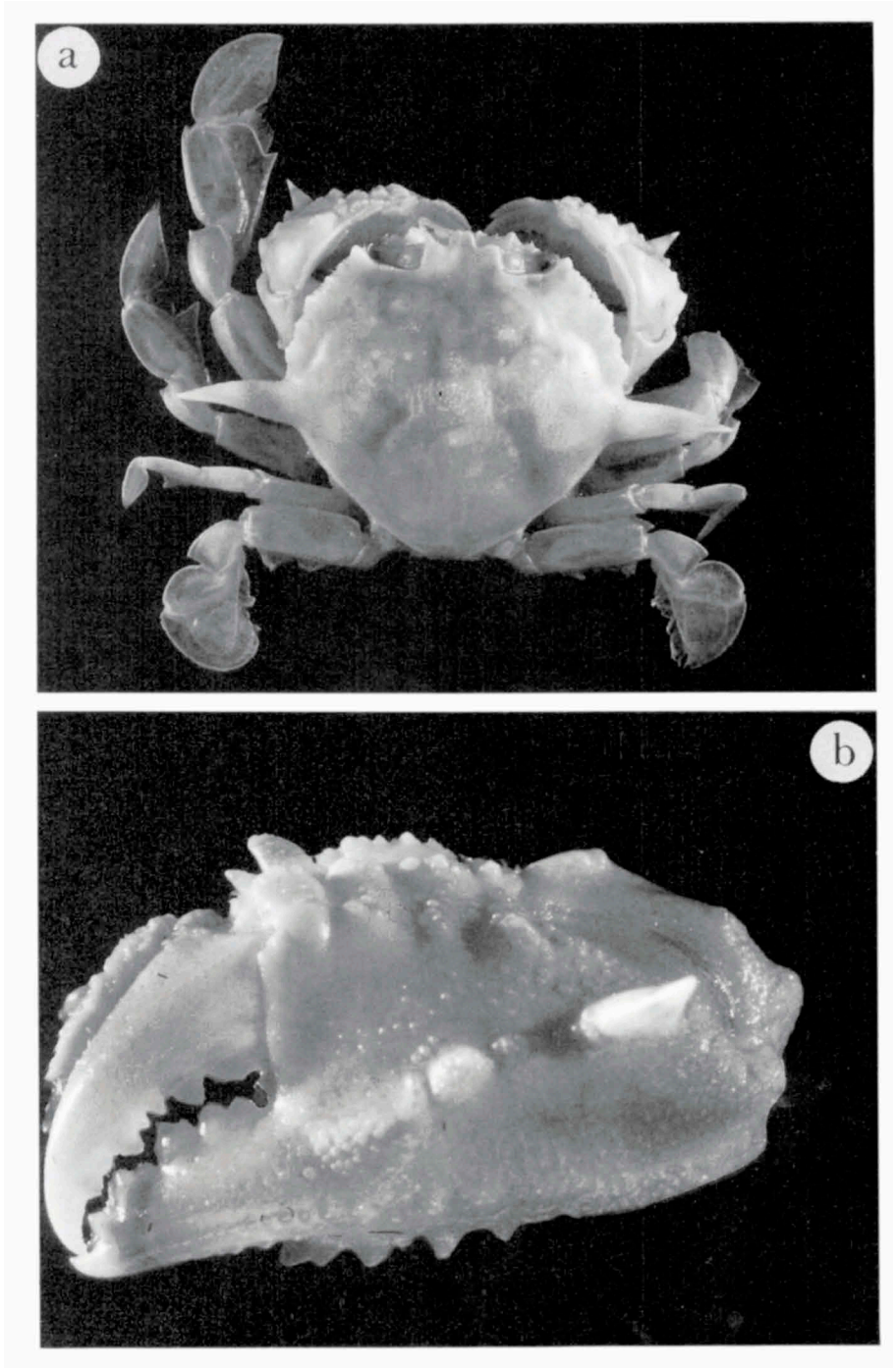


Fig. 6a-d; a & c = dorsal view, b & d = ventral view; a-b *Matuta circulifera* NHM 1880.6; c-d *Matuta planipes* Fabricius, 1798 NHM 1930.12.6.1.



Pl. 11a-b; *Matuta circulifera* USNM 39168; a = dorsal view, b = left chela.

Remarks.— De Haan (1841) assigned to *Matuta victor* six varieties, to which no names were given, but the lucid description leaves no doubt as to the identity of the species he called variety III :"octo offert in thorace circulos sanguineos tres aequales in parte anteriore distantes; quatuor inter spinas laterales, quorum duo intermedii minores; et unicus posticus. Manus parte inferiore spinam unicam acutam et tuberculata tria obtusa offerunt in utroque sexu". De Haan's material is preserved in the NNM.

Miers (1880) described and figured (pl. 14 fig. 5) *M. circulifera*. In his drawing the long lateral spine, rounded lateral frontal lobes, single acute spine at palmar base and colour pattern are clearly evident. Miers wrote that *M. circulifera* has "Hand of male nearly as in *M. lunaris* (*M. rubrolineata*, Miers) and *M. lineifera*" [= *M. planipes*]. The present study agrees with Miers' later (1886) assignation of *M. circulifera* to his 'section A' of the genus - all species with oblique ridge across chela and milled ridge on dactylus.

De Man (1881) considered the most important characters to be "the course of the ridge on the outer surface of the hands of the male; the presence and shape of the spines or tubercles with which the latter is armed, and the ridge on the mobile finger being beaded over it all length or not...while the manner of coloration of the cephalothorax ...of a very slight value"; and that "*Matuta circulifera* Miers ... must be united ...with the *Matuta lunaris* (Herbst) (*rubrolineata* Miers)" [= *M. planipes*]. Ortmann (1892) and Alcock (1896) followed de Man in placing *M. circulifera* in synonymy with *M. lunaris* [= *M. planipes*]. In 1896 de Man, though yet unconvinced, assigned *circulifera* specific status :"Ich fuhre jetzt diese Form wieder als eigne Art an, obgleich die Frage, ob wir es hier mit einer Varietät von *Mat. lunaris* Herbst (*rubrolineata* Miers) zu thun haben oder nicht, nur durch Vergleichung mit typischen Exemplaren dieser Art zu entscheiden ist".

Shen (1932), while visiting the British Museum, redetermined Miers' *M. circulifera* type as *M. planipes* and placed *M. circulifera* in synonymy with *M. planipes*.

M. circulifera differs from *M. victor* in having a single spine on external surface of chela; from *M. planipes* it differs in having anterolateral margin five-toothed, lateral frontal lobes rounded, long lateral spine and eight red circles dorsally on carapace.

Type locality.— "Indo-Malayan seas" (Miers, 1880: 315).

Distribution.— Indonesia.

Matuta planipes Fabricius, 1798
(fig. 6c-d, pl. 12a-b)

Cancer americanus Seba, 1758, pl. 20, figs 10, 11 (non binominal).

Matuta planipes Fabricius, 1798: 369; Latreille, 1803: 24; Bosc, 1802: 225; 1830: 222; Ihle, 1918: 308 (part); Balss, 1922: 125; Gordon, 1930: 527 (list); Shen, 1932: 35, textfig. 20, 21, pl. 3(2) (part); Chopra, 1933: 32; Balss, 1935: 116; Sakai, 1937: 101, pl. 13(4); 1976: 141, pl. 44(2); Chopra & Das, 1937: 384, fig. 1b; Buitendijk, 1939: 232; Ward, 1942: 69 (list); Chhapgar, 1957: 406; Miyake, 1961: 170 (list); Tyndale-Biscoe & George, 1962: 71, fig. 2(11); Zimsen, 1964: 652; Campbell & Stephenson, 1970: 246, fig. 7; Holthuis & Sakai, 1970: 118, pl. 10(3); Romimotahrto, 1972: 11, figs 1-3, 5, 8, 15-20, pls 1a, 3a; Takeda, 1982: 109, fig. 321; Miyake, 1983: 199 (list); Utinomi, 1985: 69, pl. 35(4); Dai et al., 1986: 98, textfig. 55(1), pl. 12(4); Dai & Yang, 1991: 109, fig. 55(1), pl. 12(4).

Cancer lunaris; Herbst, 1799: 43, pl. 48(6).

Matuta victor; Latreille, 1818: 273, figs 3, 4.

Matuta appendiculata Bosc, 1830: 222.
Matuta victor var. IV; de Haan, 1841: 128.
Matuta victor var. d; Herklots, 1861: 26.
Matuta lunaris; White, 1847: 46 (part); Miers, 1877: 247, pl. 40(10, 11); Hilgendorf, 1879: 810; de Man, 1881: 112; Miers, 1886: 295; Henderson, 1887: 66, fig. 6; 1893: 396; Walker, 1887: 111; Alcock, 1896: 161; Cano, 1889: 251; Lanchester, 1900: 763; Stimpson, 1907: 166; Parisi, 1914: 291; Andre, 1931: 641.
Matuta rubrolineata Miers, 1877: 244, pl. 39(5, 6).
Matuta lineifera Miers, 1877: 245, pl. 39(7); Haswell, 1882: 134; Whitelegge, 1889: 230; Ward, 1942: 69 (list).
Matuta laevidactyla Miers, 1880: 316; 1886: 296; Whitelegge, 1889: 230; de Man, 1896: 364, fig. 45.
Matuta victrix var. *lunaris*; Ortmann, 1892: 572.
Matuta flagra Shen, 1936: 64, fig. 1.

Material.— **Indian Ocean**. coll. Daldorff, det. Fabricius as *M. planipes*, lectotype, ♂ 39.5 mm (ZM 154-6); paralectotype, ♀ 40 mm (ZM 154-7). **Pakistan**. Karachi, pres. J. A. Murray, Karachi Museum, reg. 265; ♂ 45 mm, (NHM 1883:8); pres. E. Jackson; ♀ 34 mm, (NHM 1897.9.12.6). **India**. Madras, coll. pres. J.R. Henderson; det. J.R. Henderson as *M. lunaris*, redet. C-J. Shen as *M. planipes*, ♀ 49.5 mm, (NHM 1892.7.15.357); 3.ii.1979, 2 ♂♂ 24 mm, 41 mm (USNM); Calcutta, coll. pres. F. Day; ♂ 27 mm, ♀ 19 mm, (NHM 1889.6.17.129). **Ceylon**. pres. Dr. Kelaart, det. E.J. Miers *M. laevidactyla*, syntype now lectotype, ♂ juv. 22 mm, (NHM 1939.9.20.12-14); ♂ 21 mm, ♀ juv. 20 mm, det. E.J. Miers *M. laevidactyla*, syntypes now paralectotypes (NHM 1939.9.20.12-14). **Indian Ocean**. pres. General Th. Hardwicke; det. A. White as *Matuta lunaris*, redet. E.J. Miers as *M. rubrolineata*, syntypes now paralectotypes, redet. J.R. Henderson as *M. lunaris*, redet. C-J. Shen as *M. planipes*, ♂ 34 mm, 2 ♀♀ 47 mm, 46 mm, (NHM 1993.13). **Gulf of Thailand**. Pattani Bay, 14.xi.1985, coll. C. Swennen, 2 ♀♀ (RMNH D 36521). **Malaysia**. Pinang Is. coll. Dr Canton; transfered from the Indian Museum; ♂ 51 mm, ♀ 47 mm (NHM 1879.32); Port Dickson, -.iii.1946, coll. J.C.A. Detach, 2 ♂♂, 3 ♀♀ (RMNH D 5281); Melaka; pres. Bedford Lanchester; det. Lanchester as *M. lunaris*, ♂ 33 mm, ♀ 28 mm, juv. 23 mm, (NHM 1900.10.22.332-334). **Singapore**. stn 201, beach, coll. Dr Coppinger, HMS "Alert"; pres. Lords of the Admiralty; 2 juv. 20 mm, 19 mm, (NHM 1882.24); stn 205, beach, coll. Dr Coppinger, HMS "Alert"; pres. Lords of the Admiralty; ♀ 28 mm (NHM 1882.24); ♂ 21 mm, ♀ 31 mm (USNM 17912); Tuas, 23.iii.1981, coll. K.L. Yeo, ♂ 39 mm (NUS 1981.8.14.106); Katong, 15.vi.1926, ♂ 31.1 mm, ♀ 32.5 mm (NUS 1973.11.20.1-2). **Indonesia**. Sumatra, Padang, 1894, coll. E. Büttikofer, ♀, juv., (RMNH D 3098); Poeloe Weh, -.x.1921, det. A. Buitendijk, 2 ♀♀ (RMNH D 3081); 1913, det. A. Buitendijk, ♂ (RMNH D 3082); Java, coll. P. Bleeker, ♀ (RMNH D 750); Molluca Id., Amboina, Batoe Merah, 15.x.1930, "Snellius" Exped., det. A. Buitendijk, ♀ (RMNH D 4251); Borneo, Tarakan, 16.viii.1930, "Snellius" Exped., det. A. Buitendijk, ♂, ♀ (RMNH D 4250). **China**. 1930, coll. C.J. Shen, det. T. Sakai, 2 ♂♂ 31 mm, 32 mm, ♀ 30 mm (USNM 134240); Chufoo, Shantung Peninsula, purch. Mr Swinhoe, det. E.J. Miers as *M. rubrolineata*, syntype now lectotype, redet. J.R. Henderson as *M. lunaris*, redet. C-J. Shen as *M. planipes*, ♂ 40 mm, (NHM 1874.2); purch. Mr Swinhoe, det. E.J. Miers as *M. rubrolineata*, syntypes now paralectotypes, redet. J.R. Henderson as *M. lunaris*, redet. C-J. Shen as *M. planipes*, ♂ 40 mm, ♀ 39 mm, (NHM 1874.2); -.iii.1927, pres. E. Hindle, ♂ 42 mm, (NHM 1930.12.6.1); Yanghokou, Peichihli Bay, 17.vii.1930, pres C-J. Shen, Fan Memorial Institute of Biology, reg. 6657; 2 ♀♀ 39 mm, 38 mm, (NHM 1935.3.19.140); Peitaiho, Summer 1926, G. S. King; pres. Fan Memorial Institution of Biology, Peiping, China, reg. 2016; det. C-J. Shen, ♂ 38 mm, (NHM 1930.11.14.4). Gulf of Chihli, Pehtaiho, 4.vi.1929, coll. C.J. Shen, ♂ 24 mm, ♀ 27 mm (USNM 99346); -.viii.1921, coll. A. Sowerby, det. M.J. Rathbun, 3 ♂♂ 23-34 mm, ♀ 24 mm (USNM 50468); 3 ♂♂ 23-32 mm, 3 ♀♀ 26-27 mm (USNM 55707); Peiping, ♂ 31 mm (USNM 108418); Shantung Peninsula, Yentai (Chefoo), 1922, coll. C. Ping, det. M.J. Rathbun, ♂ 31 mm, ♀ 26 mm (USNM 56751); Foochow, 1924, coll. C.R. Kellogg, det. M.J. Rathbun, 3 ♀♀ 28-31 mm (USNM 58725); Usiok, near Foochow, -.viii.1923, coll. C.R. Kellogg, det. M.J. Rathbun, ♂ 30 mm, 2 ♀♀ 27 mm, 28 mm (USNM 61981). **South China Sea**. Tanjong Datu, 0°60'N 109°40'45"E, M.F.V. "Manihine", 24.xi.1955, 32 m, ♀ 34.1 mm (NUS 1984.6032). **Japan**. Miyagi Perfecture, coll. M. Sasaki, det. M.J. Rathbun, ♂ 40 mm (USNM 54486); Ishibashi, Atami Perfecture, ♂ 29 mm (USNM 18877); Kobe, det. Hilgendorf, ♂ 29

mm (USNM 19562). **New Guinea**. Mimika River, coll. pres. by the British Ornithologists' Union Expedition to New Guinea; 2 ♂♂ 57 mm, 33 mm, ♀ 31.5 mm, (NHM 1911.8.1.9-10). **Australia**. Queensland, stn 202, Off Cape Byron Moreton Island, coll. Mr Macgillivray, HMS "Rattlesnake", ♂ 33 mm (NHM 1848:53); N.W. Australia, pres. Mrs B. Grey; ♂ 55 mm, ♀ 34 mm, (NHM 1931.5.15.42- 43); Nicol (Nickol) Bay, N.W. Australia (Western Australia), purch. H. Du Boulay, det. E.J. Miers as *M. lineifera*, holotype, redet. C-J. Shen as *M. planipes*, ♂ 61 mm, (NHM 1869.38); New South Wales, Coffs Harbour, 23.i.1955, ♀ (RMNH D 10365); Wreck Rock, 60 ♂♂ NNE Bundaberg, 24 March, 1974, coll. R. Whalley, ♂ 30 mm (QM W4180); 21°05'10"S 153°18'40"E, 5.x.1964, 9 m, ♀ 28 mm (QM W2933). **Australian seas**. det. Leach as *M. banksii* type (part); redet. White as *M. victor*, ♂ 35.6 mm (NHM 1993.74). **Pacific Ocean**. coll. U.S. Exploring Expedition, C. Wilkes U.S.N. Commanding; det. E.J. Miers as *M. rubrolineata*, syntypes now paralectotypes, redet. J.R. Henderson as *M. lunaris*, redet. C-J. Shen as *M. planipes*, ♀ 54 mm (NHM 1861.44). **No further details**. Kiel, ♂ 44 mm (ZM 154-3); ♀ 38.5 mm (ZM 154-4); ♂ 30 mm (ZM 154-5).

Description.— Surface of carapace minutely granulate, small tubercles clustering around six dorsal tubercles, largest cluster surrounding mesogastric tubercle. Front with straight horizontal lobes laterally and a slightly emarginate rostrum medially. Ischium of third maxilliped tuberculate.

Anterolateral margins nearly uniformly crenulate, tubercles somewhat larger posteriorly. Lateral spine 0.2 carapace width. Posterolateral margin oblique, with granulate carina extending to base of lateral spine.

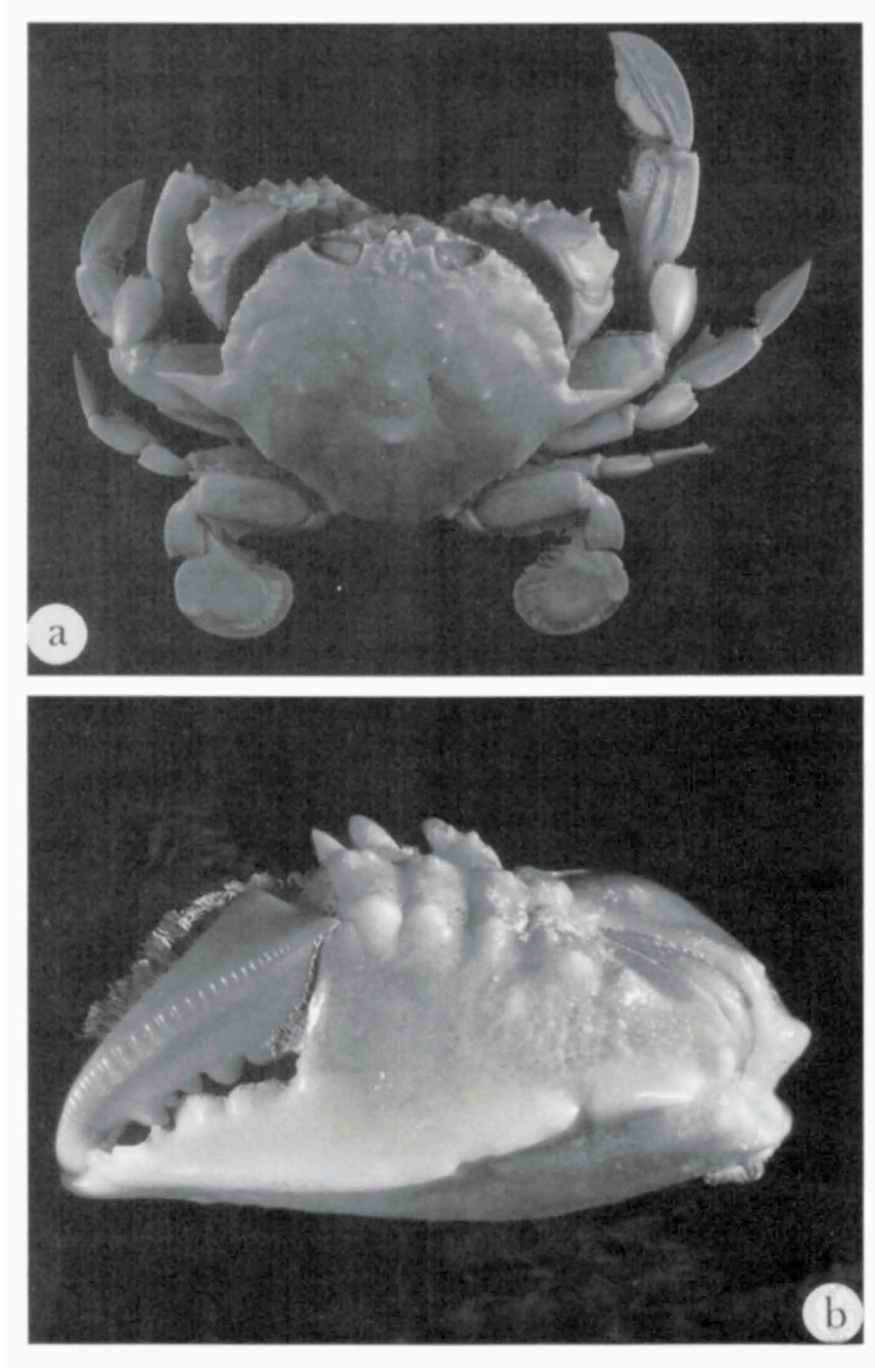
Carpus of cheliped with two obtuse tubercles on outer surface, its upper margin carinate, granulate, internal anterior angle produced. Upper margin of palm cut into three teeth, proximal tooth tuberculate. Upper external surface with two rows of granulate low tubercles, proximalmost in lower row largest. Mid palm, in male, a rounded ridge extending to tip of lower finger, proximally with granulate tubercle followed by a prominent, acuminate spine. Mid palm, in female, five tubercles, second tubercle spine-like. At lower proximal angle of palm a small granulate tubercle. Lower margin with row of tubercles terminating at base of dactylus. In female, an additional row of obtuse granules parallel to lower margin. Distinctly milled ridge on outer surface of dactylus in male, absent in female.

Plastron finely granular.

Colour (in alcohol).— Carapace with reticulating brown lines forming small rings anteriorly and larger, elongate loops posteriorly. For colour illustration see Sakai, 1960: pl. 16(6); Takeda 1982: 109 pl. 321; Utinomi, 1985: pl. 35(4).

Remarks.— Fabricius' (1798) description of *M. planipes* is succinct to a fault: "thorace postice striato". Fortunately his specimens are preserved in Copenhagen and a lectotype and paralectotype were selected from material determined by him and labelled Indian Ocean, coll. Daldorff. In addition, the Zoologisk Museum possesses three specimens labeled 'Kiel' and listed by Zimsen (1964) as belonging with Fabricius' types.

Herbst described and illustrated *Cancer lunaris* twice (1783: 140, pl. 6, fig. 44; 1799: 43, pl. 48, fig. 6). At first he described it as having "feinen violetten Punktchen uberall besprengt" and in the drawing (pl. 6, fig. 44) the hand is tridentate, whereas the later specimen is described as having "rothen flammenden Zugen gezeichnet" and in the drawing (pl. 48, fig. 6) the characteristic pattern of small rings anteriorly and elongate ones posteriorly is clearly discernible, as well as a single palmar spine. Hilgendorf (1879), who examined Herbst's material, mentions only "Die *M. lunaris*



Pl. 12a-b; *Matuta planipes* Fabricius, 1798 NHM 1931.5.15; a = dorsal view, b = left chela.

Herbst. Bd. 3 Taf. 48 fig. 6" when he compared it with Fabricius' specimens :"Auch das Original von *planipes* Fabricius konnte ich untersuchen, es gehort zu *lunaris* Herbst". Alcock (1896) commented that if Hilgendorf's remarks referred only to Herbst's second description "then the Fabrician name *M. planipes* would have the priority". This is now a mute point as Rathbun (1903) found out that:"The original of Herbst's pl. VI, fig. 44, is probably not extant; it was not to be found during my visit to the Berlin Museum in 1896". Most subsequent authors favoured the opinion that from the above colour decriptions and illustrations it seems that only the second species could be assigned with confidence to *M. planipes* (Ihle, 1918; Balss 1922; Shen, 1932; Chopra, 1933; Sakai, 1937, 1976; Chopra & Das, 1937; Buitendijk, 1939; Ward, 1942; Chhapgar, 1957; Tyndale-Biscoe & George, 1962; Zimsen, 1964; Campbell & Stephenson, 1970; Romimotahrto, 1972).

White (1847) listed as *M. lunaris* an heterogenous group of specimens among which, material collected by General Hardwicke in India was redetermined by Miers (1877: 244) as a new species, *M. rubrolineata*. This species and *M. lineifera* were so similar Miers (1877:245), when describing the latter species, wrote: "A larger series of specimens might show that it is but a variety of the foregoing". De Man (1881) went a step further and declared: "*Matuta lineifera* Miers ...must be united ....with the *Matuta lunaris* Herbst (*rubrolineata* Miers)". He synonymized *M. rubrolineata* and *M. lineifera* with *M. lunaris* Herbst following Hilgedorf's (1879) findings that "Die *M. lunaris* Herbst, Bd. 3 Taf. 48 Fig. 6, entspricht seiner (Miers) *rubrolineata*".

Miers (1877) described specimens from Ceylon as *M. lunaris* (Herbst) and noted: "The form of the hand is almost exactly the same in the male and female", unaware this is a juvenile characteristic. Later Miers (1880) described the specimens from Ceylon as a new species, *M. laevidactyla*. This error was repeated by Miers (1886) followed by de Man (1896). Alcock (1896) resolved this mistake by synonymizing *M. laevidactyla* with *M. lunaris* (Herbst).

M. planipes differs from *M. victor* in having a single spine on external surface of male chela, straight lateral frontal lobes and carapace covered with reticulated loops as compared with the bispinose chela, rounded frontal lobes and minutely spotted carapace of the latter.

Type locality.— Indian Ocean (Fabricius, 1798: 369).

Distribution.— India, Malaysia, China, Japan, Indonesia, New Guinea and Australia.

Matuta victor (Fabricius, 1781)
(fig. 7a-b, pl. 13a-b)

Cancer lunaris Forskål, 1775: 91 (part).

Cancer victor Fabricius, 1781: 502; 1793: 449.

Matuta victor; Fabricius, 1798: 369; H. Milne Edwards, 1837: 115, pl. 20(3-6); Krauss, 1843: 52; White, 1847: 46 (part); Dana, 1853: 395; Hilgendorf, 1869: 93, pl. 3(2), 1879: 810; Tozzetti, 1877: 191, pl. 11(a-c) (part); Hoffmann, 1877: 27 pl. 6(45-48); Lenz & Richters, 1881: 57; Alcock, 1896: 160; Nobili, 1899: 250 (part); 1906: 149; Lenz, 1905: 347; Kemp, 1915: 209; Gravely, 1927: 142, pl. 22(28); Gordon, 1930: 527 (list); Ward, 1942: 69 (list).

Matuta peronii Leach, 1817: 13; pl. 127(1, 2).

Matuta lesueurii Leach, 1817: 14.

Matuta lessueri; Rüppell, 1830: 7 (part).

Matuta victor var. I & II; de Haan, 1841: 127.

Matuta lunaris; Kossmann, 1877: 64 (part?); Rathbun, 1903: 30; Stebbing, 1905: 54 (part); Ihle, 1918: 185, 308; Chopra, 1933: 31; Sakai, 1936: 49, pl. 13(3); Chopra & Das, 1937: 383, fig. 1a; Buitendijk, 1939: 231; Barnard, 1950: 358, fig. 67(l); Sakai, 1956: 8; Miyake, 1961: 170 (list); Tyndale-Biscoe & George, 1962: 71, fig. 2(10); Sankarankutty, 1962: 153, fig. 2; Holthuis & Sakai, 1970: 118, pl. 10(2); Takeda, 1982: 109, fig. 320; Miyake, 1983: 199, pl. 8(9); Utinomi, 1985: 69, pl. 35(3); Dai et al., 1986: 98, pl. 12, fig. 4; Dai & Yang, 1991: 110, pl. 12(5), fig. 55(2).

Matuta victrix; Miers, 1877: 243, pl. 39(1-3); 1880: 315; 1884: 256; 1886: 295; de Man, 1881: 110; 1888: 389; Haswell, 1882: 133; Henderson, 1887: 65; 1893: 396; Walker, 1887: 111; Whitelegge, 1889: 230; Müller, 1890: 473 (list); Ortmann, 1892: 571; de Man, 1896: 360; Lanchester, 1900: 762; 1901: 551; Klunzinger, 1906: 67; Parisi, 1914: 291; André, 1931: 641; Estampador, 1937: 515.

Matuta victrix var. *crebrepunctata* Miers, 1877: 244, pl. 39(4); 1886: 295; de Man, 1881: 111; Miers, 1884: 256; Ortmann, 1892: 572; Zehntner, 1894: 183; Cano, 1889b: 251; Schenkel, 1902: 573.

Matuta crebrepunctata; Ward, 1941: 1.

Matuta crebripunctata; Ward, 1942: 69 (list).

Material.— **India**. Madras, Tranquebar, coll. D. Daldorff, ♂ 57.5 mm (ZM 49-1) *Cancer victor;* Fabricius, 1793, neotype, material of Fabricius, 1781 is not extant., ♀ 48 mm (ZM 49-2); ♀ 46 mm (ZM 49-3). **Red Sea**. 1880, coll. Kossmann, ♀ (RMNH D 756); coll. M. Beaudouin, ♂ 64 mm (MNHN 115); purch. at Steven's sale, ♂ 38 mm (NHM 1840.3.20.34); juv. 37 mm (BM 1840.3.20.33); ♂ 47.5 mm (NHM 1840.3.20.33); Gulf of Suez, Merra Themed, 18.iv.1928, coll. R. Dollfus, det. Th. Monod, ♂ 59 mm (MNHN B. 13529); Ras Metarma, 22.iii.1928, coll. R. Dollfus, det. Th. Monod, ♂ 45 mm, ♀ 39.5 mm (MNHN B. 13522); Sinai Peninsula, coll. H.C. Hart, ♂ 54 mm (NHM 1884.40); Ras Burka, 24.vi.1969, 0-1 m, 2 ♂♂, 2 ♀♀ (TAU NS7325); Assab, 14.i.1966, 8 ♂♂, 2 ♀♀ (RMNH D); Sudan, Suakin, 1875, leg. Reise, ♂ 35 mm (SM 81e). **Red Sea and Aden**. 1897, coll. Dr. Jousseaume, det. G. Nobili, 3 ♂♂ 30- 62 mm, 2 ♀♀ 31 mm, 48 mm (MNHN B.16328). **Aden**. pres. A. Fraser-Brumer, ♂ 57 mm (NHM 1950.8.8.35/36); pres. Capt. J.W. Yerbury, 2 juv. 34 mm, 36 mm (NHM 1884: 25). **Muscat**. coll. Lt. Col. Surgeon Jayakav, 2 ♀♀ 47 mm, 43 mm (NHM 1898.4.14.1-2). **Oman**. Qurm, west of Muscat, 17.iv.1981, coll. M.S. Gallagher, det. R.W. Ingle, 3 ♂♂ 42-44 mm, 5 ♀♀ 37.5-45 mm (NHM 1993.14); 8 ♂♂ 34.5-53.5 mm, ♀ 55 mm (NHM 1993.15); Khasat Market, 10.i.1972, coll. P.F.S. Cornelius, det. R.M. Cumming as *M. planipes*, ♂ 50 mm (NHM 1973: 163). **East Africa**, Mongue Ferry, Morrumbene Estuary Port, pres. J.H. Day, 2 ♂♂ 17 mm, 48 mm (NHM 1955.3.5.130-131). **Somalia**. Mogadisci, 1953, ♀ 60 mm (MF 4792); Sar Uanle, -.vi.1973, coll. M. Vannini 2 ♂♂ 66 mm, 69 mm, ♀ 50 mm (MF); Gesira, -.x.1981, coll. M. Vannini, 2 ♂♂ 58 mm, 65 mm, 2 ♀♀ 50 mm, 53 mm (MF). **Tanzania**. Zanzibar, coll. M. Grandidier, ♂ 44 mm, ♀ 47 mm (MNHN 106); 2 ♂♂ 69 mm, 70 mm, ♀ 30 mm (MNHN 101); 2 ♂♂ 34.5 mm, 37 mm (MNHN 117); 1876, leg. C. Semper, ♀ 31 mm (SM 81f); purch. Dr. Kurk, ♂ 82 mm (NHM 1868.32); Tanga, coll. L.F. Brown, ♀ 49 mm (NHM 1955.6.9.77); Dar es Salaam, pres. Commander Smart, ♂ 45 mm (NHM 1919.11.11.1). **Comoro Is.**, Mayotte I. -.vii.1972, coll. R. von Hentig, ♂ (RMNH D 29256). **Madagascar**. Passandava Bay, det. de Man, ♂ 67 mm, ♀ 51 mm (MNHN 4126); 1864, coll. Pollen & van Dam, ca. 70 specimens (RMNH D 758); N. W. coast of Nosy Be, -.xi.1958, 6 m, coll. A. Crosnier, 7 ♂♂ 37-62 mm, ♀ 49 mm (MNHN B. 21361); East coast of Ile Sainte Marie, -.xi.1958, coll. A. Crosnier, ♂ 71 mm, ♀ 39 mm (MNHN B. 21362); Fort Dauphin, -.vi.1926, coll. Decary, det. Balss as *M. planipes*, ♂ 22 mm (MNHN B.13536) (part); St. Augustan, 1906, coll. T. Geary, det. Bouvier, 7 ♂♂ 52-71 mm, 4 ♀♀ 51-58 mm (MNHN B. 13530). **Mozambique**. Lourenço Marques (Delagoa) Bay, 18.ix.1967, coll. G. Hartmann, ♂ (RMNH D 27385); Beira Port, coll. L.F. Brown, ♂ 58 mm (NHM 1955.6.9.78). **South Andaman**. 15.viii.1985, coll. M. Vannini, ♂ 69 mm, ♀ 40 mm (MF). **Indian ocean**. pres. Th. Hardwicke, det. A. White as *M. victor*, ♂ 57.5 mm (NHM 1993.16); ♂ 67 mm (NHM 1993.17); pres. Dr. Shoath, ♂ 62 mm (NHM 1859: 123). **Pakistan**. Karachi, coll. J. A. Murray, ♂ 58 mm (NHM 1883.8.265); 5.ii.1973, coll. G. Pilleri, det. R.W. Ingle, 6 ♂♂ 47-57 mm (NHM 1993.18); coll. E. Jackson, ♂ 62 mm (NHM 1897.9.12.3); Hab estuary, Baluchistan. 1991, coll. A. Kushnir, ♀ 35.2 mm (TAU). **Sind**. coll. F. Day, 2 ♂♂ 33 mm, 39 mm (NHM 1889: 6.17.125-126). **India**. det. W.E. Leach as *M. peronii* types, redet. A. White as *M. lunaris*; ♀ 47 mm, juv. 31 mm, (NHM 1993.19); coll. A. Ansell, det. A.L. Rice, ♂ 42 mm (NHM 1993.20); pres. Sec. India Board, 2 ♂♂ 39 mm, 43.5 mm, 2 ♀♀ 50.5 mm, 51 mm

(NHM 1860.15); Madras, coll. J.R. Henderson, 2 ♂♂ 62 mm, 63 mm, 2 ♀♀ 47.5 mm, 51.5 mm (NHM 1892.7.15.337-46); 20.xi.1926, 2 ♀♀ 51 mm, 56 mm (NHM 1993.21); 1878, ♂ 63 mm (NHM 1879: 32); coll. F. Day, ♀ 51 mm (NHM 1889.6.17.124); Pondicherry, det. White, ♂ 59 mm (NHM 1993.22); coll. M. Reymaud 2 ♂♂ 58 mm, 64 mm (MNHN 100) *M. lesueurii* Leach, holotype; -.xii.1944, coll. K. Lindberg, ♂ 51 mm (MNHN B. 13531); Maharashtra, Ratnagiri Beach, 1980, coll. P. Noel, 2 ♂♂ 44 mm, 54 mm (MNHN B. 13519); Coromandel Coast, coll. Capt. Armange, ♂ 63.5 mm (MNHN 114). **Ceylon**. coll. Dr. Osman Hill, det. M.J. Bearman, ♀ 34 mm (NHM 1974.154); coll. H. Nevile, ♀ 57 mm (NHM 1894.8.1.19); Galle, pres. Miss Herdman, det. Laurie, ♀ 62 mm (NHM 1934.1.16.25); pres. W. Oudaatji, ♂ 31 mm, ♀ 41 mm (NHM 1882.19); Tricomali, purch. R. Winkworth, ♂ 63 mm ♀ 53 mm (NHM 1956.1.14.1-2); Peradeniya, coll. E.E. Green, ♂ 52 mm, ♀ 37 mm (NHM 1904.11.2-3). **Thailand**, Katayai, 14.viii.1976, Oxford Univ. Exped., ♂ 36 mm, 4 ♀♀ 47-51.5 mm (NHM 1985.38); Songkhla Channel, 7°13'35"N 100°34'43"E, 2.xi.1957, coll. Rofen, ♂ (USNM 230087); Kcabi province, Nophacatana Beach, 11.i.1983, coll. Holthuis, (RMNH D 35932); Pattaya, King Beach, 4.ix.1983, coll. C.J. Burgers, ♂ (RMNH D 36088); Nhatrang Bay, 1912, coll. A. Krempf, ♂ 71 mm (MNHN B. 13528); Kokraan, coll. S.S. Flower, 2 ♀♀ 55 mm, 58 mm (NHM 1898.5.27.2-4). **Malaysia**. Pinang Is., coll. Dr. Canton, transferred from Indian Mus., ♀ 50.5 mm (NHM 1879: 32); south coast of Pinang I., Batu Feringgi, ii-iii.1973, coll. H. Kuhl, ♀ (RMNH D 29449); Sarawak, ♂ 52 mm (NHM 1993.23); Melaka. coll. Bedford & Lanchester, 2 ♀♀ 26 mm, 51 mm (NHM 1899.10.22.326/7); Sabah, Kota Kinabalu, 30.x.1986, coll. L. Nyanti, ♀ 21.6 mm (NUS 1987.21); 5.xi.1986, coll. L. Nyanti ♂ 24.2 mm (NUS 1987.47). **Singapore**. coll. Bedford & Lanchester, 2 ♂♂ 68 mm, 57 mm, ♀ 37 mm (NHM 1900.10.22.322-5); Singap, -.vi.1933, ♂ 22.2 mm (NUS). **Indonesia**. Sumatra, -.v.1914, coll. E. Jacobson, 3 ♂♂ (RMNH D 3071); Banda Sea, 1881, coll. Y. Semmelink, ♂ (RMNH D 2761); Rupat (Roepat) I., coll. G.A.J. v. de Sande, ♂, ♀ (RMNH D 3089); Java, Jakarta (Batavia) Bay, -.vii.1904, coll. A. Buitendijk, ♂ (RMNH D 2502); Java, coll. P. Bleeker, ♂ (RMNH D 7285); ♂, ♀ (RMNH D 757); Bezoeki, 1865, coll. Y. Semmelink, 6 ♂♂ (RMNH D 539); Java Sea, 1907, coll. A. Buitendijk, 3 ♂♂ (RMNH D 3080); 1908, ♀ (RMNH D 3070); Ciulang (Tjilowong) I., 1906, ♂ (RMNH D 3084); Tanjunk Priok, 1906, coll. A. Buitendijk, ♂ (RMNH D 3079); 1907, ♂ (RMNH D 3078); -.v.1924, (RMNH D 3013); 1906, 2 ♂♂ (RMNH D 3083); Poeloe Weh, 1914, coll. A. Buitendijk, ♂, ♀ (RMNH D 3076); -.iii.1925, (RMNH D 3073); 1904, ♂, ♀ (RMNH D 3096); -.ii.1927, ♂ (RMNH D 3075); -.i.1922, ♂ (RMNH D 3095); -.x.1915, ♀ (RMNH D 3088); -.xi.1926, 2 ♀♀ (RMNH D 3085); Bali. purch. E. Gerrard, ♀ 59 mm (NHM 1880.6); Celebes, Paleleh, 22.viii.1929, Snellius Exped., det. A. Buitendijk, 2 ♀♀ (RMNH D 4247); Ujung Pandang (Makassar), 3 ♂♂, ♀ (RMNH D 2686); Makassar, purch. of E. Gerrard, ♂ 43.5 mm, ♀ 42 mm (NHM 1880.6); Sangihe I., 1867, coll. Moedt, 2 ♂♂, 2 ♀♀ (RMNH D 1700); Johore, Telok Makhota (Jason's Bay), 7.x.1991, coll. K.L.Yeo, 2 ♂♂ 43.9, 36.7 mm (NUS 1993.156-158); Molucca Id., 1895, coll. W.A. Horeau, 4 ♀♀ (RMNH D 3072); Obi I., 1862, coll. Bernstein, ♂ (RMNH D 1730); Natuna I., Ranai, pres. Hon. W. Rothschild, ♀ 52 mm (NHM 1905.10.26.9-10); Borneo, pres. Admiralty, ♂ 52 mm (NHM 1844: 106); Mouth of Baram River, ♂ 55 mm (NHM 1895.7.2.25-7). **Philippine Id.**, 14.iii.1979, 5 ♂♂ 18-46 mm, 5 ♀♀ 24-39 mm (USNM); coll. M. Porte, 2 ♂♂ 64 mm, 69 mm (MNHN 104); Siquijoz, purch. Cuming, ♂ 44.5 mm (NHM 1843.6); 10°51'24" N 120°59'36" E, 21.v.1978, 3 m, 2 ♂♂ 41 mm, 51 mm, ♀ 31 mm (USNM); Luzon I., Manila Bay, 28.i.1909, 2 ♂♂ (USNM 134237); Ternate, 15.x.1874, HMS "Challenger", det. E.J. Miers as *M. victrix* var. *crebrepunctata* , ♂ 49 mm (NHM 1884.31); Negros I., mouth of Mangnanod river, coll. H.C. Kellers, det. M.J. Rathbun, ♂ 32 mm, 5 ♀♀ 28-35 mm (USNM 73147); Mindoro I., Puerto Galera, -.v.1939, coll. F. Gutierrez, 5 ♀♀ 33-35 mm (USNM); Mindanao I., Gulf of Davao, mouth of Padada River, 14-21.vi.1936, coll. G.R. Oesch, det. M. Ward, 3 ♂♂ 17-24 mm, 2 ♀♀ 20 mm, 34 mm (AMNH 7643); 23-24.vi.1936, det. M. Ward, 2 ♀♀ 23 mm (AMNH 7890); 6-19.vii.1936, det. M. Ward, ♀ 23 mm (AMNH 7837); 6.xi.1937, coll. F. Berte, det. M. Ward, ♂ 47 mm, ♀ 21 mm (AMNH 8510); 7.xi.1937, coll. W. G. Van Name, det. M. Ward, ♂ 52 mm (AMNH 8417); 7.xi.1937, coll. W. G. Van Name, det. M. Ward, ♂ 46 mm (AMNH 8511); -.ix.1939, coll. G. R. Oesch, det. D. V. Espinosa, ♀ 23 mm (AMNH 15975); Zamboanga, HMS "Challenger", 10-20 fms, 2 ♂♂ 39 mm, 65 mm, 2 ♀♀ 39 mm, 47 mm (NHM 1884.31); 1891, coll. M. van Embden, ♂, ♀ (RMNH D 7286); 18.vii.1897, coll. van der Volk, 2 ♂♂ (RMNH D 7284). **Hong Kong**. pres. Dr. C.J. Chen, 2 ♀♀ 37 mm, 52.5 mm (NHM 1935.3.19.141); coll. Barney, 2 ♂♂ 56 mm, 61 mm, 2 ♀♀ 49 mm, 53 mm, juv. 21 mm (NHM 1930.12.3.37-40). **China**. Amoy, coll. J.A. Buddingh, ♂ (RMNH D 7283). **Taiwan**. pres. Formosa Museum, 3 ♀♀ 46-53 mm (NHM

1884.10); Takao, coll. H. Sauter ♂ 46 mm, ♀ 52 mm (NHM 1908.10.27.41-42). **Eastern Seas**. HMS "Samarang", coll. A. Adams, pres. Capt. E. Belcher, ♂ 33 mm (NHM 1847.21). **Japan**. det. E.J. Miers as *M. victrix* var. *crebrepunctata*, syntype, now lectotype, ♂ 70 mm (NHM 1844.6); pres. G.B. Sowerby, ♀ 33 mm (NHM 1884.13); purch. Mr. Maries, ♀ 50 mm (NHM 1880.5); Tsushima, 2 ♀♀ 40.5 mm, 41.5 mm (NHM 1955.3.31.18-19). **New Caledonia**. coll. M. Beaudouin, ♂ 67.5 mm (MNHN 108); Noumea, ♂ 56 mm (MNHN B.13513). **New Caledonia, N.E. Coast of Australia, Timor, Ovolan, Fedjee, Norfolk**. coll. Rayner, HMS "Herald", purch. Mr. Warwick, ♀ 51 mm (NHM 1862.53); ♂ 65 mm (NHM 1862.53); ♂ 56 mm (NHM 1862.52). **Fiji**. Vanua lenu, ♂ 67 mm, ♀ 43 mm det. E.J. Miers as *M. victrix* var. *crebrepunctata*, syntypes now paralectotypes(NHM 1862.172); Ngau, HMS "Herald", ♂ 64 mm, ♀ 58 mm, det E.J. Miers as *M. victrix* var. *crebrepunctata*, syntypes now paralectotypes (NHM 1862.53). **Australia**. Torres Strait, pres. J.B. Jukes, ♂ 54.5 mm (NHM 1845.91); West Hill Island, pres. J.B. Jukes, ♂ 62 mm (NHM 1846.89); Queensland, Percy Is., coll. Dr. Coppinger, HMS "Alert", pres. Lords of the Admiralty, 2 ♂♂ 63 mm, 68 mm (NHM 1881.31); off Cape Byron, Moreton Is., coll. Macgillivray, HMS "Rattlesnake", det. E.J. Miers as *M. victrix*, ♂ 36 mm (NHM 1848.53); ♂ 67 mm (NHM 1848.53); ♀ 49 mm (NHM 1848.53); Western Australia, Shark Bay, 5-10 fms, coll. F.M. Rayner, HMS "Herald", juv. 25 mm (NHM 1858.172); Yampi Sound, -.xii.1960, coll. G.A. Robinson, ♂ (RMNH D 17540); East Coast, pres. University College Dundee (NHM 1955.4.22.135-137). **New Hebrides**. Malekula, 27.vii.1875, pres. W. Wykeham Perry, det. E.J. Miers as *M. victor* var. *crebrepunctata*, syntype now paralectotype, ♀ 57 mm (NHM 1876.14). **South Pacific**. 2 ♂♂ (USNM 17833).

Description.— Surface of carapace minutely granulate, more prominently so laterally. Six dorsal tubercles nearly indistinct, mesogastric tubercle largest. Front with slightly rounded lobes laterally and an emarginate rostrum medially. Ischium of third maxilliped tuberculate.

Anterolateral margins with six tubercles behind outer orbital angle followed by three crenulate teeth, median teeth smallest. Lateral spine 0.25 carapace width. Posterolateral margin oblique, with granulate carina extending three quarters of its length.

Carpus of cheliped with two obtuse tubercles on outer surface, its upper margin carinate, granulate, internal anterior angle produced. Upper margin of palm cut into three teeth, proximal tooth tuberculate. Upper external surface with two rows of granulate low tubercles, proximalmost in lower row largest. Mid palm, in male, a rounded ridge extending to tip of lower finger, proximally with granulate tubercle followed by a prominent, acuminate spine. Mid palm, in female, five tubercles, second tubercle spinose, fourth tubercle triangulate. At lower proximal angle of palm a prominent acute spine. Lower margin with row of tubercles terminating at base of dactylus. In female, an additional row of obtuse granules runs parallel to lower margin. Dactylus in male with distinctly milled ridge on outer surface, absent in female.

Plastron finely granular.

Colour.— Carapace covered with minute red dots, propodi of first pereiopods distally with prominent red spot. For colour illustration see Sakai 1960, pl. 16(7); Holthuis & Sakai 1970, pl. 10(2); Takeda, 1982, fig. 320; Miyake 1983, pl. 8(9); Utinomi 1985, pl. 35(3).

Remarks.— Forskål's (1775) description of *C. lunaris*, is somewhat generic and mixes clues to two species: The transversely serrate ridge on palmar dactylus points to one species (*M. victor*), whereas the prominent posterior tubercle on the anterolateral margin indicates another (*A. lunaris*). Fabricius' (1781, 1793) descriptions of *C. victor* are rather general. The colour pattern was described as "pallidus supra punctis lineolisque ferrugineis" (1793). The original material is no longer extant, however, the specimens collected by Daldorff on the Malabar coast and described in 1798 are

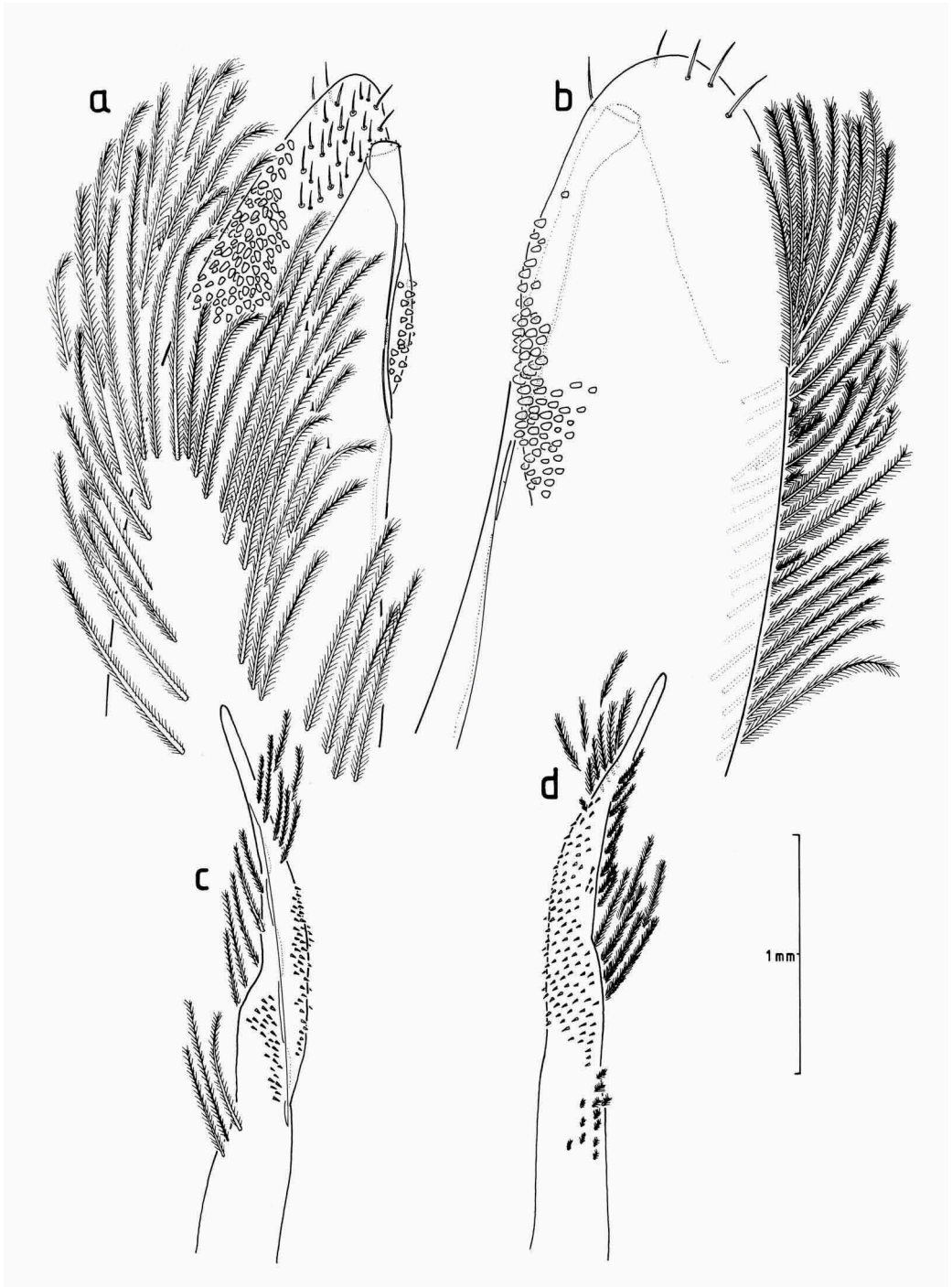
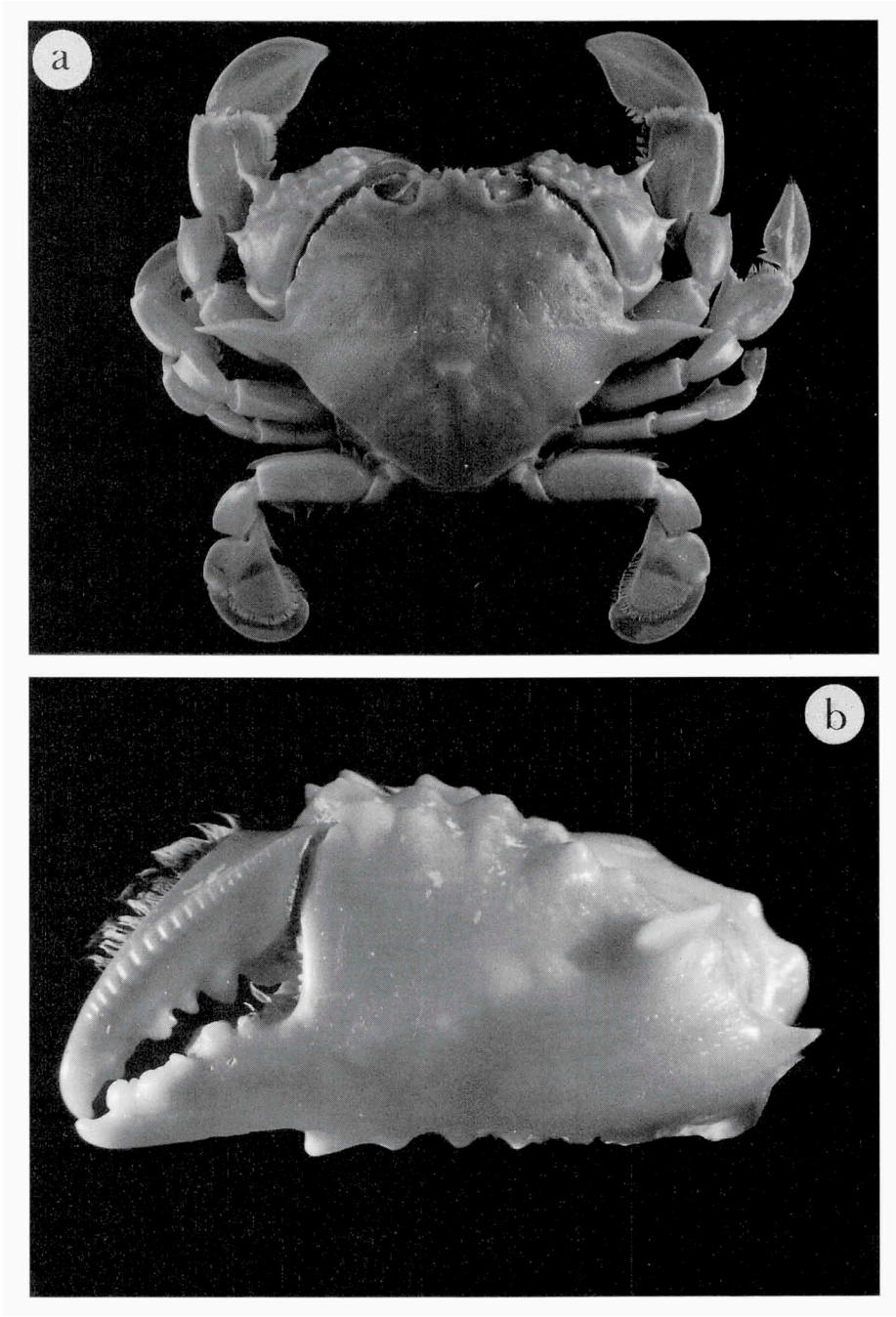


Fig. 7a-d; a & c = dorsal view, b & d = ventral view; a-b *Matuta victor* (Fabricius, 1781) NHM 1955.4.22.135-137; c-d *Mebeli michaelseni* (Balss, 1921) NHM 1957.5.26.197-202.



Pl. 13a-b; *Matuta victor* (Fabricius, 1781) (MF); a = dorsal view, b = left chela.

preserved in the Zoologisk Museum in Copenhagen and, from these, a neotype was selected. The pattern of the Malabar specimens was described as "thorace undique punctato". We can only speculate today whether Fabricius' original descriptions (1781, 1793) really belong to the same species as he described in 1798 under the same name. Since the descriptions are obscure and material lost it was deemed preferable to follow Fabricius' own identification and preserve the name he had given them.

Leach (1817) described the single female of *M. peronii* as having "the exterior side of the hand has three spines, the middle of which is the longest", and in the accompanying figure (tab. 127, fig. 1) the carapace has the punctate pattern of *M. victor*.

Leach (1817) described *M. lesueurii* as having "tibiis...quartis acute unicarinatis", "pollice linea elevata polita trasversim fortissime excavate" and "the external side of the hand has two spines, the anterior of which is the longest" leaving no doubt it is *M. victor*.

Rüppell's (1830) description of *M. lessueri* is in fact a composite of both *M. victor* and *A. lunaris*, though the accompanying drawing (tab. 1, fig. 3) is clearly identifiable as *M. victor* due to the prominently spinose lower palmar proximal angle.

Miers (1877: 244) separated *M. victrix* var. *crebrepunctata* from the typical form as "having the carapace more coarsely granulated, the spots very numerous, crowded". De Man (1881), on examining large series of specimens, observed the species "presents... many local and individual varieties as regards the coloration of the carapace and the more or less distinct tubercles", but chose to retain *M. victrix* var. *crebrepunctata*. Alcock (1896) synonymized var. *crebrepunctata* with *M. victor* and after checking Miers' material we agree.

Type locality.— Malabar coast, India (Fabricius, 1798: 369).

Distribution.— Red Sea and East Africa to Fiji and New Caledonia.

Mebeli gen. nov.

Type species: *Matuta michaelseni* Balss, 1921.

Diagnosis.— Carapace subcircular, smooth, slightly convex, regions undefined. Front, as wide as orbit, trilobate, median lobe projecting. Anterolateral margin cut into five teeth. Posterolateral margin uninterrupted, carinate. Lateral spine prominent, acuminate. Orbits lozenge-shaped, continuous with antennular fossa. Inferior orbital tooth, well defined. Antennae rudimentary. A short inhalant canal laterally interrupting suborbital margin. Pterygostomial region bearing a stridulating organ consisting of a single row of elongate tubercles. Outer maxillipeds elongate, extending nearly to anterior margin of carapace.

Chelipeds subequal. Merus short, trigonal, lower margin tuberculate, a fringe of long plumose setae on posterior margin, short setae on anterior margin. Carpus rounded, granulate, its upper margin carinate, with three triangular teeth at internal anterior margin. Length of palm nearly twice its height. External surface of palm smooth, upper margin bearing three acute teeth, inner surface of median tooth striate. External surface of dactylus smooth. Fingers crossing distally. Ambulatory legs natatory, with long setae on posterior margin of propodus and dactylus. Propodus of first ambulatory leg not dentate, penultimate carpus unicarinate.

Anterior margin of sternum ogival. Male abdomen five segmented, tapering, a granulate carina on third abdominal segment. Telson as long as wide at base, bluntly triangular. First male pleopod slender, tapered, distally setose, minutely granulate distally both on inner and outer surfaces, lacking tubular appendage on inner face.

Etymology.— After Mebeli, a fertility goddess of the Congo River people. Gender feminine.

Remarks.— The new genus, erected to contain the only Atlantic species, is distinguished from all its matutine relatives in having short, straight inhalant canal, external surface of palm unsculptured, pterygostomian stridulating organ consisting of a single row of tubercles, on palmar upper margin only median tooth interiorly striate, first ambulatory propodus not dentate and first male pleopod tapered and lacking tubular appendage on inner surface.

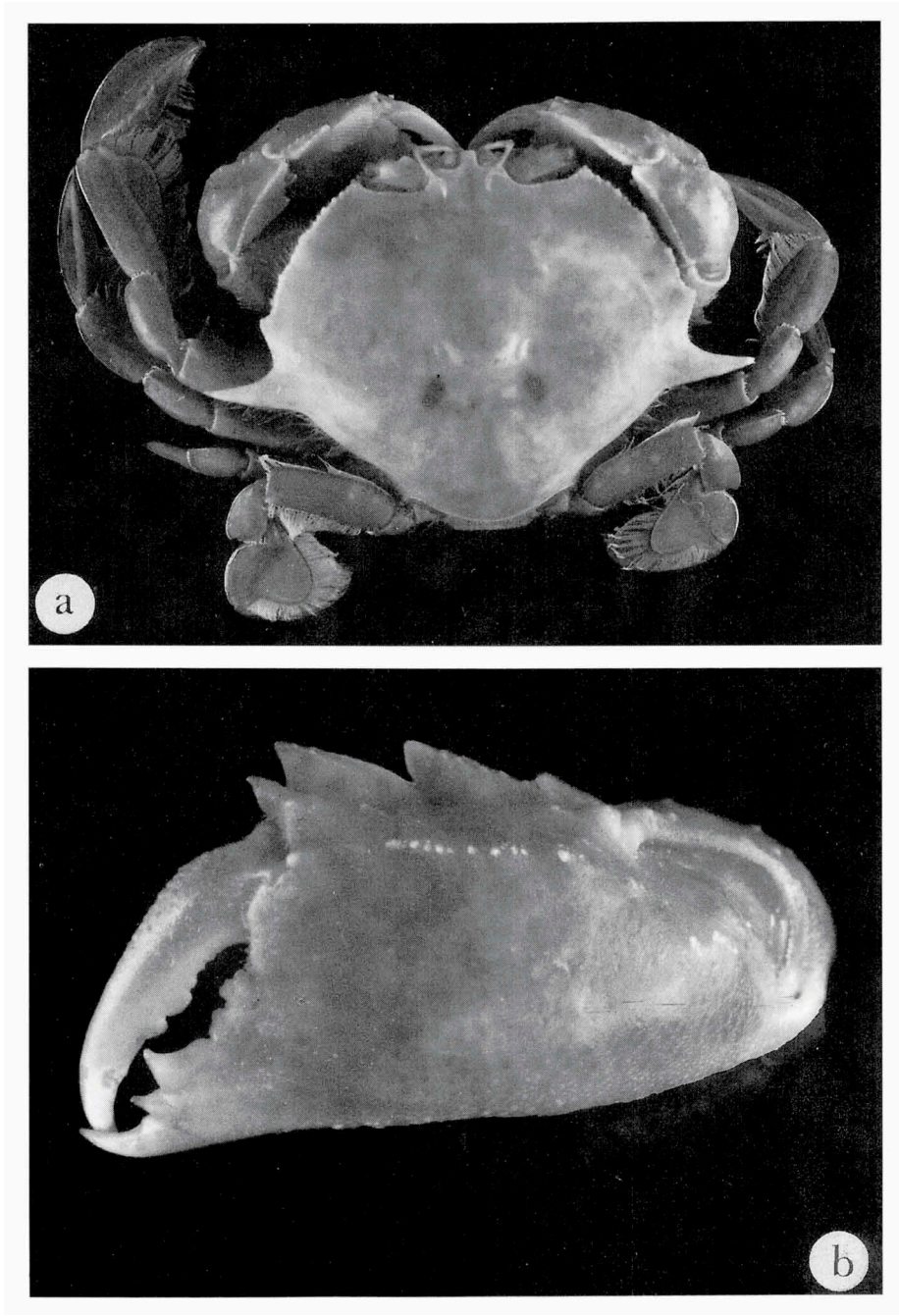
Mebeli michaelseni (Balss, 1921) comb. nov.
(fig. 7c-d, pl. 14a-b)

Matuta michaelseni Balss, 1921: 50, figs 5-6; Monod 1927: 606; Capart, 1951: 45, fig. 12; Monod, 1956: 98, figs 108-114; Rossignol, 1957: 77; Buchanan, 1958: 20; Longhurst, 1958: 87; Gauld, 1960: 68; Guinot & Ribeiro, 1962: 25; Rossignol, 1962: 114; Forest & Guinot, 1966: 51; Le Loeuff & Intes, 1968: table 1; Manning & Holthuis, 1981: 56.

Material.— **Senegal**. Pointe Sangomar, Lagoba, 12.viii.1952, 10-11 m, det. Th. Monod, 1952, ♂ 16 mm (MNHN B. 13527); Banc de Faguque, Joal, 5.iv.1953, coll. I. Marche-Marchad, 9 m, ♀ 19 mm (MNHN B. 13524). **Guinea**. 21.iii.1964, 20 m, "la Rafale", ♀ 18 mm, (MNHN B. 13439); 31.iii.1964, 20 m, "la Rafale", ♂ 20 mm, 2 ♀♀ 18 mm, 17 mm, (MNHN B. 13442); 3.iv.1964, 15 m, "la Rafale", ♀ 17 mm, (MNHN B. 13440); 4.iv.1964, 15 m, "la Rafale", juv. 12 mm, (MNHN B. 13441). **Gulf of Guinea**. 04°57'N 02°44'W, 5.x.1963, 20 m, "la Rafale", det. J. Forest, 1963, 4 juv. 8-13 mm, (MNHN B. 13533). **Sierra Leone**. Off Lumley, 11.xii.1954, 10 m, coll. A.R. Longhurst, det. Th. Monod, 1955, 6 ♂♂ 18.5-14 mm, 4 ♀♀ 16-13 mm (NHM 1957.5.26.197- 202). **Liberia**. St. Paul River, 16.i.1953, coll. J.C. Miller, ♂ 16 mm (USNM 97860). **Ivory Coast**. stn 18, 05°03'N 05°25'W, 21.v.1956, 20-25 m, "la Calypso", det. Forest & Guinot, ♀ 19 mm (MNHN B. 13523); Sassandra, 3.iv.1964, ♀ (RMNH D 21473). **Ghana**. Takoradi, Fisheries Bay, 14.viii.1961, ♂ (USNM 170320). **Togo**. Anecho, 3.xii.1947, coll. J. Cadenat, det. Th. Monod, 1952, 4 ♂♂ 20-21 mm, 2 ♀♀ 19 mm, 16.5 mm (MNHN B. 13526); Lome, 18.x.1963, 14 m, coll. A. Crosnier, 1 ♂ 21 mm, (MNHN B. 13534). **Benin**. Cotonou, 1910, coll. A. Gruvel, ♂ 18 mm (MNHN B. 13520). **Congo**. Pointe-Noire, -.vii.1963, coll. A. Crosnier, 2 ♂♂ 8.7 mm, 14.2 mm, 7 ♀♀ 10-14 mm, (USNM 127183); 7.vii.1964, coll. A. Stauch, det. A. Crosnier, ♂ 17 mm, 5 ♀♀ 17-18 mm, juv. (MNHN B. 16714). **West Africa**. 1910, coll. A. Gruvel, det. Th. Monod, 1953, ♂ 19 mm, 3 ♀♀ 11-18 mm (MNHN B. 13525).

Description.— Carapace somewhat wider than long, moderately convex. Surface smooth. Front with two sinuous lobes laterally and a slightly emarginate rostrum medially. Supra orbital margin finely granular. Outer orbital angle produced. Internal orbital tooth granular, apparent in dorsal view. Eye stalk elongate, three and a half times as long as cornea, densely covered with long plumose setae on inferior surface.

Suborbital margin laterally interrupted by short, straight inhalant canal with setose margins. Subhepatic and pterygostomial regions minutely granulate, laterally set with plumose setae. On pterygostomial region a row of elongate tubercles, median tubercle longest, tubercles diminishing in size laterlly. Third maxilliped finely granular.



Pl. 14a-b; *Mebeli michaelseni* (Balss, 1921) USNM 97860; a = dorsal view, b = left chela.

Anterolateral margins with five granulose teeth, diminishing in size anteriorly, anteriormost barely more than tubercle. Lateral spine minutely granulate, 0.16 carapace width. Posterolateral margin oblique, somewhat sinuous, minutely granulate, carinate. Carina extending to base of lateral spine.

External surface of palm somewhat swollen, smooth but for indistinct row of tubercles terminating at base of dactylus. Upper margin of palm with three teeth, distalmost smallest. Interior surface of median tooth with 10-12 striae. Lower margin of palm granulate. Fingers slender, acuminate, crossing at tips. Lower finger with several acuminate teeth. Dactylus strongly curved, with two rows of granules basally on upper margin and two small triangular teeth on cutting edge.

Inferior margin of propodus of first ambulatory leg arcuate, propodi of second and third legs with small tooth inferiorly.

Plastron finely granular.

Colour (in alcohol).— Grey-white (Capart, 1951: 46).

Type locality.— Gambia (Balss, 1921: 50).

Distribution.— West Coast of Africa from Senegal to Angola, found in shallow water from shore to 30 m (Manning and Holthuis, 1981: 56).

Key to the species of Matutinae

1. External surface of chela unsculpted, pterygostomian stridulating organ consisting of a single row of tubercles, straight inhalant canal ..... ***Mebeli michaelseni***
- External surface of chela sculpted, pterygostomian stridulating organ otherwise, curved inhalant canal 2
2. Antennular fossae closed off from orbits, lateral spine rudimentary, external suface of chela with mid-palmar stridulating ridge, palmar teeth interiorly granulose, pterygostomian region evenly granulose, second abdominal segment carinate. Genus ***Izanami*** gen. nov. 3
- Antennular fossae continuous with orbits, lateral spine well developed, external suface of chela lacking mid-palmar stridulating ridge, palmar teeth interiorly striate, pterygostomian region with several rows of elongate tubercles, third abdominal segment carinate 4
3. Carapace surface smooth, lateral spine triangular, penultimate abdominal segment laterally convex, first pereiopodal propodus interiorly with acute tooth ..... ***Izanami curtispina***
- Carapace surface granulose, lateral spine tubercle-like, penultimate abdominal segment tapering evenly, first pereiopodal propodus interiorly with rounded tooth ..... ***Izanami inermis***
4. Mid-palmar ridge oblique, dactylar ridge in male strongly milled throughout, carpus of penultimate pereiopod unicarinate. Genus ***Matuta*** gen. nov. 5
- Mid-palmar ridge parallel with lower margin, dactylar ridge in male either distally milled or smooth, carpus of penultimate pereiopod bicarinate. Genus ***Ashtoret*** gen. nov. 7
5. Lower proximal angle of palm prominently spinose, carapace minutely spotted dorsally ..... ***M. victor***
- Lower proximal angle of palm not spinose, carapace patterned otherwise 6

6. Front with lateral lobes arched, mid palmar ridge in males quadri-tuberculate, carapace with eight reddish circles arranged in three rows ..... ***M. circulifera***
- Front with lateral lobes nearly straight, mid-palmar ridge in males nearly gapless, carapace with reticulating brown lines forming small rings anteriorly and larger loops posteriorly ..... ***M. planipes***
7. Lateral spine 0.4 times as long as width of carapace, carapace patterned with red rings encircling pale centers on a background of red dots ..... ***A. sanguianulata*** spec. nov.
- Lateral spine 0.3 times as long as width of carapace or less, carapace patterned otherwise 8
8. Lateral spine 0.15 times as long as width of carapace 9
- Lateral spine 0.2-0.3 times as long as width of carapace 10
9. Carapace patterned with pale-centered red spots leaving pale crescents near base of red - patched lateral spine ..... ***A. granulosa***
- Carapace finely patterned with brown-red spots, somewhat larger posteriorly ..... ***A. shengmuae*** spec. nov.
- Lateral spine 0.2-0.3 carapace width, carapace patterned otherwise 9
10. Mid-posterolateral tubercle absent 11
- Mid-posterolateral tubercle present 12
11. Palmar dactylus in male with distally milled ridge on outer surface, outer lower surface of palm granulate, carapace patterned with red dots anteriorly, larger dots forming broken rings posteriorly ..... ***A. maculata***
- Palmar dactylus in male lacking distally milled ridge on outer surface, outer lower surface of palm with row of molariform tubercles, carapace patterned with red dots interspersed with white patches ..... ***A. miersii***
12. Mid palm a five lobed ridge, second lobe prominent, acuminate, fourth and fifth lobes wide and obtuse, carapace with reticulating brown lines forming rings anteriorly and larger loops posteriorly ..... ***A. picta***
- Mid palm a five lobed ridge, second and fourth lobes large, acuminate, colour pattern otherwise 13
13. Rostrum emarginate, carapace covered with red dots, propodus and dactylus of ambulatory legs covered with large red patches ..... ***A. lunaris***
- Rostrum obtuse, entire, carapace with red irregular loops and circles, larger posteriorly, on a background of red dots ..... ***A. obtusifrons***

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Literature cited

Alcock, A., 1896. Materials for a carcinological Fauna of India. No. 2. The Brachyura Oxystoma.— J. Asiat. Soc. Beng. 65(2): 134-296, pls VI-VIII.

André, M., 1931. Crustacés Décapodes provenant de l'Institut oceanographique de Nha-Trang (Annam).— Bull. Mus. natn. Hist. nat., Paris, (2)3(7): 683-650.

Balss, H., 1921. Crustacea VI: Decapoda Anomura (Paguridea) und Brachyura (Dromiacea bis Brachygnatha I.).— In: J. W. Michaelsen, Beiträge zur Kenntnis der Meeresfauna Westafrikas III(2): 37-67, figs 1-7.— Hamburg.

Balss, H., 1922. Ostasiatische Decapoden. III. Die Dromiaceen, Oxystomen und Parthenopiden.— Arch. Naturgesch. 88A(3): 104-140, figs 1-9.

Balss, H., 1935. 10.- Brachyura of the Hamburg Museum Expedition to South-Western Australia, 1905.— J. R. Soc. W. Aust. 21: 113-151, figs 1-5, pl. 13.

Barnard, K. H., 1950. Descriptive Catalogue of South African Decapod Crustacea (Crabs and Shrimps).— Ann. S. Afr. Mus. 38: 1-837, figs 1-154.

Bosc, L.A.G., 1802. Histoire naturelle des Crustacés, contenant leur description et leurs moeurs, avec figures dessinées d'après nature, 1: 1-258, pls 1-8.— Paris.

Bosc, L.A.G., 1830. Manuel de L'Histoire Naturelle des Crustacés, contenant leur description et leurs moeurs; avec figures dessines d'après nature. Edition Mise au niveau des connaissances actuelles par M.A.G. Desmarest, 1: 1-328, pls 1-9.— Paris.

Buchanan, J.B., 1958. The bottom fauna co mmunities across the continental shelf off Accra, Ghana (Gold Coast).— Proc. Zool. Soc. Lond. 130: 1-156, figs 1-10, pl. 1.

Buitendijk, A.M., 1939. The Dromiacea, Oxystomata and Oxyrhyncha of the Snellius Expedition.— Temminckia 4: 223-276, text-figs 1-17 pls 1-5.

Campbell, B.M. & W. Stephenson, 1970. The sublittoral Brachyura (Crustacea: Decapoda) of Moreton Bay.— Mem. Qd. Mus. 15(4): 235-302, figs 1-49, pl. 22, tab. 1.

Cano, G., 1889. Viaggi della R. Corvetta "Vettor Pisani" attorno al globo. Crostacei Brachiuri ed Anomuri.— Boll. Soc. Nat. Napoli (1)3: 169-268, pl. 7.

Capart, A., 1951. Crustacés Décapodes, Brachyures. In: Expédition Océanographique Belge dans les Eaux Côtières Africaines de l'Atlantique Sud (1948-1949).— Résultats Scientifiques. Publiés avec l'appui de l'Association "MBIZI", par les soins de la Commission Administrative du Patrimoine de l'Institute royal des Sciences naturelles de Belgique III(1): 11-205, figs 1-80, pls 1-3.

Chhapgar, B.F., 1957. On the marine crabs (Decapoda: Brachyura) of Bombay state, Part I.— J. Bombay nat. Hist. Soc. 54(2): 399-439, figs 1-2, pls 1-11.

Chopra, B.N., 1933. Further notes on Crustacea Decapoda in the Indian Museum III. On the decapod Crustacea collected by the Bengal Pilot Service off the mouth of the River Hugli. Dromiacea and Oxystomata.— Rec. Indian Mus. 35: 25-52.

Chopra, B.N. & K.N. Das, 1937. Further notes on Crustacea Decapoda in the Indian Museum. IX. On Three Collections of Crabs from Tavoy and Mergui Archipelago.— Rec. Indian Mus. 39(4): 377-434, figs 1-21, pl. 6.

Clark, P.F., Harrison, K. & S.L. Goodman, 1990. Brock's Indian Archipelago Decapoda and Stomatopoda by De Man: 1887 or 1888?— Arch. Nat. Hist. 17(1): 79-80.

Dai, A. & S. Yang, 1991. Crabs of the China Seas: i-iv, 1-682, figs 1-295, pls 1-74.— China Ocean Press, Beijing: Springer-Verlag [English Edition].

Dai, A., Yang, S., Song, Y., & C. Chen, 1986. Crabs of Chinese Seas: i-iv, 1-642, figs 1-295, pls 1-74.— Ocean Press, Beijing [in Chinese].

Dana, J. D., 1853. Crustacea, Part 1. In: United States Exploring Expedition during the Years 1838, 1839, 1840, 1841, 1842, under the Command of Charles Wilkes, U.S.N., Philadelphia, C. Sherman, 13[1852]: i-viii, 1-685. [For date of publication see Haskell, 1942: 79].

Desmarest, A.G., 1825. Considérations générales sur la Classe des Crustacés, et descriptions des espèces de ces animaux, qui vivent dans la mer, sur les côtes, ou dans les eaux douces de la France: i-xix, 1-446, pls 1-56, 5 tables.— Paris, Strasbourg.

Doflein, F., 1902. Ostasiatische Dekapoden.— Abh. bayer. Akad. Wiss. 21(3): 613-670, figs 1-4, pl. 1-6.

Estampador, E.P., 1937. A Check List of Philippine Crustacean Decapods.— Philipp. J. Sci. 62(4): 465-559.

Fabricius, J.C., 1781. Species Insectorum Exhibentes eorum Differentias Specificas, Synonyma Auctorum, Loca Natalia, Metamorphosia adectis observationibus, descriptionibus, 2: i-ii, 1-517.— Hamburg & Kilonii.

Fabricius, J.C., 1793. Entomologia Systematica Emendata et Aucta. Secundum Classes, Ordines, Genera, species, Adjectis Synonimis, Locis, Observationibus, Descriptionibus, 2: i-viii, 1-519.— Hafniae.

Fabricius, J.C., 1798. Supplementum Entomologiae Systematicae: 1- 572.— Hafniae.

Forest, J. & D. Guinot, 1966. Crustacés Décapodes: Brachyoures. In: Campagne de la Calypso dans le Golfe de Guinée et aux îles Pricipe, São Tomé et Annobon (1956).— Annls. Inst. Océanogr. Monaco 44: 23-124, figs 1-19.

Forskål, P., 1775. Descriptiones Animalium Avium, Amphibiorum, Piscium, Insectorum, Vermium; quae in Itinere orientali observavit. Petrus Forskal. Post Mortem Auctoris edidit Carsten Niebuhr. Adjuncta est materia Medica Kahirina: 1-19, i-xxxii, 1-164.— Hafniae.

Gauld, D.T., 1960. An annotated check-list of the Crustacea of Ghana, IV. Brachyura.— J.W. Afr. Sci. Ass. 6(1): 68-72.

Gordon, I., 1930. Brachyura from the coasts of China.— J. Linn. Soc. Lond. 37(254): 525-558, figs 1-36.

Gravely, F.H., 1927. Orders Decapoda (except Paguridae) and Stomatopoda. In: The Littoral fauna of Krusadai Island in the Gulf of Mannar with Appendices on the Vertebrates and Plants.— Bull. Madras Govt. Mus., new ser., nat. Hist. Sect. 1(1): 135-155, figs 1-2, pls 19-26.

Guinot, D. & A. Ribeiro, 1962. Sur une collection de Crustacés Brachyoures des Îles du Cap-Vert et de l'Angola.— Mems. Jta. Invest. Ultrmar. (2)40: 9-89, figs 1-33, pls 1-4.

Haan, W. de, 1833-1850. Crustacea. In: P.F. van Siebold, Fauna Japonica, sive Descriptio animalium, quae in itinere per Japoniam, jussu et auspiciis superium, qui su mmum in India Batava imperium tenent, suscepto, annis 1823-1830 collegit, notis, observationibus et adumbrationibus illustravit: i-xvii, i-xxxi, ix-xvi, 1-243, pls 1-55, A-J, L-Q, circ., pl.2.— Lugundi-Batavorum.

Hale, H.M., 1927. The crustaceans of South Australia. Part I: 1-200, figs 1-201.— Adelaide.

Haskell, D.C., 1942. The United States Exploring Expedition, 1838-1842 and its publications 1844-1873. With an Introductory Note by Harry Miller Lydenberg: i-xii, 1-188.— New York.

Haswell, W.A., 1882. Catalogue of the Australian Stalk- and sessile-eyed Crustacea: iii-xxiv, 1-324, figs 1-8, pls 1-4.— Sydney.

Henderson, J.R., 1887. Notes on the Madras Species of *Matuta*. In: Captain R.H.C. Tufnell, (Ed.) Session 1886-87.— Madras J. Lit. Sci. 29: 63-68, figs 1-6.

Henderson, J.R., 1893. X. A contribution to Indian Carcinology.— Trans. Linn. Soc. Lond., Zool. (2)5: 325-458, pls 36-40.

Herbst, J.F.W., 1783. Versuch einer Naturgeschichte der Krabben und Krebse. Nebst Einer Systematischen Beschreibung Ihrer VershiedenenArten. 1(2-5): 87-182, pls 87-182.— Berlin und Stralssund.

Herbst, J. F.W., 1799. Versuch einer Naturgeschichte der Krabben und Krebse. Nebst Einer Systematischen Beschreibung Ihrer Vershiedenen Arten. 3(1): 1-66, pls 47-50.— Berlin und Stralssund.

Herklots, J.A., 1861. I. Catalogue des Crustacés qui ont servi de base au système carcinologique de M.W. de Haan. Rédigé d'après la collection du Musée des Pays-Bas et les crustacés de la faune du Japon. In: Symbolae Carcinologicae. Études sur La Classe des Crustacés: 1-43.— Leyden.

Hess, W., 1865. Beiträge zur Kenntniss der Decapoden-Krebse Ost- Australiens.— Arch. Naturgesch. 31(1): 127-173, pls 6-7.

Hilgendorf, F., 1869. Crustaceen. In: C. von der Decken's, Reise in Ost-Afrika in den Jahren 1859-1865. 3(1): 67-116, 147, pls 1-6.— Heidelberg, Leipzig.

Hilgendorf, F., 1879. Die von Hrn. W. Peters in Moçambique gesammelten Crustaceen. Mber. K. preuss.— Akad. Wiss. [1878]: 782- 851, pls 1-4.

Hoffmann, C.K., 1877. Crustacés et Echinoderms de Madagascar et de l'île de la Réunion. In: Recherches sur la Faune de Madagascar et de ses dépendances, d'après les découvertes de François P.L. Pollen et D.C. van Dam, 5 partie: 1-58, pls 1-10.— Leiden.

Holthuis, L.B. & T. Sakai, 1970. PH. F. Siebold and Fauna Japonica. A History of Early Japanese Zoology: i-xviii, 1-323, pls i-xxxii.— Tokio.

Ihle, J.E.W., 1918. III. Oxytomata: Calappidae, Leucosiidae, Raninidae. Die Decapoda Brachyura der Siboga Expedition. In: Uitkomsten op Zoologisch, Botanisch, Oceanographisch en Geologisch Gebied verzameld in Nederlandsch Oost-Indie 1899-1900 aan Boord H.M. "Siboga" onder commando van Luitenant ter zee I^{e} kl. G.F. Tydeman uitgegeven door Dr. Max Weber Prof. in Amsterdam, Leider der Expeditie.— Siboga-Expeditie 39(b2): 159-322, figs 78-148.

Kemp, S., 1915. Crustacea Decapoda. In: Fauna of the Chilka Lake.— Mem. Indian Mus. 5(3): 199-325, figs 1-37, pls 12-13.

Klunzinger, C.B., 1906. Die Spitz- und Spitzmundkrabben (Oxyrhyncha und Oxystomata) des Roten Meeres: i-vii, 1-91, figs 1-13, pls 1-2.— Stuttgart.

Kossmann, R., 1877. III. Malacostraca, (I. Theil: Brachyura). In: R. Kossmann, Zoologische Ergebnisse einer im Auftrage der Königlichen Academie der Wissenschaften zu Berlin ausgeführten Reise in der Küstengebiete des Rothen Meeres, Erste Häfte, III: 1-66, pls 1-3.— Leipzig.

Krauss, F., 1843. Die Südafrikanischen Crustaceen. Eine Zusammenstellung aller bekannten Malacostraca, Bemerkungen über deren Lebensweise und geographische Verbreitung, nebst Beschreibung und Abbildung mehrerer neuen Arten: 1-68, pls 1-4.— Stuttgart.

Lanchester, W.F., 1900. On a collection of Crustaceans made at Singapore and Malacca. Part I. Crustacea Brachyura.— Proc. Zool. Soc. Lond. 1900: 719-770, pls 44-47.

Lanchester, W.F., 1901. On the Crustacea collected during the 'Skeat Expedition' to the Malay Peninsula, together with a Note on the genus *Actaeopsis*. I.— Proc. Zool. Soc. Lond. 1901: 534-574, pls 33- 34.

Latreille, P.A., 1803. Des Crustacés et des Insectes. 6. Insectes. In: Histoire Naturelle, générale et particulière, par Leclerc de Buffon; Nouvelle Édition, accomagnée de Notes, et dans laquelle les supplements sont inseres dans le premier texte, la place qui leur convient. L'on y a ajoute l'histoire naturelle des quadrupedes et des Oiseaux découverts depuis la morte de Buffon, celle des Reptiles, des Poissons, des Insectes et des Vers; enfin, l'histoire des Plantes dont ce grand Naturaliste n'a pas eu le temps de s'occuper. Ouverage un Cours complet d'Histoire Naturelle rédigé par C.S. Sonnini, 84: 1- 391, pls 44-55.— Paris.

Latreille, P.A., 1818. Crustacés, In: Crustacés, Arachnides et Insectes. Tableau Encyclopédique et Méthodique des trois Régnes de la Nature. Encyclopédie Méthodique, ou par ordre de Matiares; par une Société de Gens Lettres, de Savans et d'Artistes. Précedée d'un Vocabulaire universal, servant de Table pour tout l'Ouvrage ornée des Portraits de MM. Diderot & d"Alembert, premiers Editeurs de l'Encyclopédie, 86 lavaraison: 1-39, pls 268-397.

Laurie, R.D., 1906. Report on the Brachyura collected by Professor Herdmann, at Ceylon, in 1902. In: W. A. Herdman (ed.), Report to the government of Ceylon on the Pearl Oyster fisheries of the Gulf of Manaar. Part V, Suppl. Rep. XL: 349-432, figs 1-12, pls 1-2.

Le Loeuff, P. & A. Intes, 1968. La faune benthique du plateau continental de Côte d'Ivoire, récoltes au chalut, abondance- repatition-variation saisonnières (Mars 1966-Fevrier 1967). Centre de Recherches Océanographiques, Abidjan, Document Scientifique Provisoire 25: 1-78, figs 1-63.

Leach, W.E., 1817. The Zoological Miscellany, Being Descriptions of New or Interesting Animals, illustrated with Coloured Figures, Engraved from Original Drawings, by R.P. Nodder. London. vol. 3: i-vi, 1- 151, pls 121-149.— London.

Lenz, H., 1905. Ostafrikanische Decapoden und Stomatopoden. Gesammelt von Herrn Prof. Dr. A. Voeltzkow. In: Wissenschaftliche Ergebnisse der Reise in Madagaskar und Ostafrika in den Jahren 1889- 1895 von Dr. A. Voeltzkow. Bd. III.— Abh. Senckenb. naturforsch. Ges. 27(4): 341-392, pls 47-48.

Lenz, H. and F. Richters, 1881. Beitrag zur Krustaceenfauna von Madagaskar.— Abh. Senckenb. naturforsch. Ges. 12(3-4): 421-428, figs 20- 27.

Longhurst, A.R., 1958. An ecological survey of the west African marine benthos. Colonial Office, Fishery Publications, HMSO. London, 11: 1-102, figs 1-11.

MacLeay, W.S., 1838. On the Brachyurous Decapod Crustacea. Brought from the Cape by Dr. Smith. In: A. Smith, Illustrations of the Zoology of South Africa; consisting chiefly of figures and descriptions of the objects of natural history collected during an expedition into the interior of South Africa, in the years 1834, 1835 and 1836; fitted out by "The Cape of Good Hope Association for Exploring Central Africa": together with a summary of African Zoology, and an inquiry into the geographical ranges of species in that quarter of the globe: 53-71, pls 2-3.— London.

Man, J.G. de, 1881. Note XXVI. Remarks on the species of *Matuta* Fabr. in the collection of the Leiden Museum.— Notes Leyden Mus. 3: 109-120.

Man, J.G. de, 1888. Bericht über die von Dr. J. Brock im indischen Archipel gesammelten Decapoden und Stomatopoden.— Arch. Naturgesch. (Berlin), 53(I Band. 3 Heft.): 289-600, Taf. xi-xxiia. (- issued 1888). [For dates of publication see Clark et al., 1990].

Man, J.G. de, 1896. Bericht über die von Herrn Schiffscapitän Storm zu Atjeh, an den westlichen Kusten von Malakka, Borneo und Celebes sowie in der Java-See gesammelten Decapoden und Stomatopoden.— Zool. Jb.(Syst.) 9: 339-386, figs 40-49.

Man, J.G. de, 1902. Die von Herrn Professor Kükenthal, im Indischen Archipel gesammelten Dekapoden und Stomatopoden. In: Ergebnisse einer zoologischen Forschungsreise in den Molukken und Borneo, im Auftrage der Senckenbergischen naturforschenden Gesellschaft ausgefuhrt von Dr. Willy Kükenthal, ordentl. Professor der Zoologie an der Universität Breslau.— Abh. Senkenb. naturforsch. Ges. 25(Band III, Heft III): 467-929; pls 19-27.

Manning, R.B. & L.B. Holthuis, 1981. West African Crabs (Crustacea: Decapoda).— Smithson. contr. Zool. 306: i-xii, 1-379, figs 1-88.

Miers, E.J., 1877. XII. Notes upon the Oxystomatous Crustacea.— Trans. Linn. Soc. Lond. (2)1(V): 235-249, pls 38-40

Miers, E.J.,1880. On a collection of Crustacea from the Malaysian Region. Part II. Telphusidea, Catometopa, and Oxystomata.— Ann. Mag. nat. Hist. (5) 5: 304-317, pl. 14.

Miers, E.J., 1884. Crustacea. In: Report on the zoological collections made in the Indo-Pacific Ocean during the voyage of H.M.S. Alert 1881-1882. Part I. The collection from Melanesia: 178- 322, pls 18-32.— London.

Miers, E.J., 1886. Report on the Brachyura collected by H.M.S. Challenger during the years 1873-76. In: Report on the Scientific Results of the Voyage of H.M.S. Challenger during the years 1873-1876 under the co mmand of Captain George S. Nares, N.R., F.R.S. and Captain Frank Tourle Thomson, R.N. prepared under the Superintendence of Sir C. Wyville Thomson, Knt., F.R.S. & C. Regius Professor of Natural history inthe University of Edinburough Director of the civilian scientific staff on board and now of John Murray one of the naturalists of the Expedition. Zoology. London, Edinburgh and Dublin, 17: i-l, 1-362, pls 1-29.

Milne Edwards, A., 1874. Recherches sur la faune carcinologique de la Nouvelle-Calédonie. 13 Partie. Groupe des oxystomes.— Nouv. Arch. Mus. Hist. nat. Paris 10: 43-58, pls 2,3.

Milne Edwards, H., 1837. Histoire naturelle des Crustacés, comprenant l'anatomie, la physiologie et la classification de ces animaux. II: 1-532.— Paris.

Miyake, S., 1961. A list of the decapod Crustacea of the Sea of Ariake, Kyushu.— Records of Oceanographic Works in Japan (Special Number 5): 165-178.

Miyake, S., 1983. Japanese Crustacean Decapods and Stomatopods in Color. Vol. II Brachyura (Crabs): 1-277, pls 1-64.— Osaka [in Japanese].

Monod, Th., 1927. Crustacea IV. Decapoda (excl. Palaemonidae, Atyidae et Potamonidae). In: Th. Monod, Contribution a l'etude de la fauna du Cameroun. Fauna des Colonies françaises. Publiée sous la Direction de A. Gruvel. Paris. 1(6): 593-624, figs 1-3.

Monod, Th., 1956. Hippidea et Brachyura ouest-africains.— Mem. IFAN 45: 1-674, figs 1-884, tabs 1-10.

Müller, F., 1890. Zur Crustaceen Fauna von Tricomali.— Verh. naturf. Ges. Basel 8: 470-485, pls 4-5.

Nagai, S. & K. Nomura, 1988. The guide book of marine animals and plants of Okinawa. Vol. 7 Crustacea (Brachyura): 1-250.— Okinawa [in Japanese].

Nobili, G., 1899. Contribuzioni alla conoscenza della Fauna carcinlogica della Papuasia, della Molluche e dell'Australia.— Annali Mus. civ. Stor. nat. Genova (2)20(40): 230-282.

Nobili, G., 1906. Faune carcinologique de la Mer Rouge. Décapodes et Stomatopodes.— Annls Sci. nat. (Zool.) 9(4): 1-347. figs 1-12, pls 1-11.

Ortmann, A. E., 1892. V. Theil. Die Abtheilungen Hippidea, Dromiidea und Oxystomata. Die Decapoda-Krebse des Strassburger Museum, mit besonderer Berücksichtigung der von Herrn Dr. Döderlein bei Japan und bei den Liu-Kiu-Inseln gesammelten und zur Zeit im Strassburger Museum aufbewahrten Formen.— Zool. Jb. (Syst.) 6: 532- 588, figs 1-18.

Parisi, B., 1914. I Decapodi giapponei del Museo di Milano. I. Oxystomata.— Atti Soc. Ital. Sci. 53: 282-312, figs 1-5, pls 11-13.

Rathbun, M.J., 1903. Japanese stalk-eyed crustaceans.— Proc. U.S. Nat. Mus., 26: 23-55, figs 1-24.

Rathbun, M.J., 1907. Reports on the scientific results of the expedition to the tropical Pacific, in charge of Alexander Agassiz, by U.S. Fish Commission Steamer 'Albatross', from August 1899 to March 1900, Commander Jefferson F. Moser, U.S.N., Co mmanding. IX. Reports on the scientific results of

the expedition to the eastern tropical Pacific, in charge of Alexander Agassiz, by the U.S. Fish Commission Steamer 'Albatross', fromOctober 1904, to March 1905, Liet. Commander L.M. Garrett, U.S.N., Commanding. X. The Brachyura.— Mem. Mus. comp. Zool. Harv. 35(2): 23-74, pls 1-9.

Rathbun, M.J., 1924. Brachyura, Albuneidae and Porcellanidae. 37. In: Results of Dr. E. Mjöberg's Scientific Expedition to Australia 1910-1913.— Ark. Zool. 16(23): 1-33, figs 1-7, pl. 1.

Romimohtarto, K., 1967. The Oxystomatous crabs of the Baruna Expedition.— Mar. Res. Indonesia 8(1): 1-28, figs 1-7 pls 1-3.

Romimohtarto ,K., 1972. Five species of *Matuta* (Calappidae, Brachyura, Decapoda) from Indonesia.— Mar. Res. Indonesia 12: 3-23, figs 1-41, pls 1-3.

Rossignol, M., 1957. II. Crustacés Décapodes marins de la région de Pointe-Noire. In: J. Collignon, M. Rossignol & Ch. Roux, Mollusques, Crustacés, Poisons Marins des côte d"A.E.F. en collection au Centre d'Océanographie de l'Institut d'Études Centrafricaines de Pointe-Noire, Paris: 71-136, figs 1-20, pls 1-3.

Rossignol, M., 1962. V. Catalogue des Crustacés Décapodes Brachyoures, Anomoures et Macroures littoraux en collection au Centre d'Océanographie de Pointe-Noire. O.R.S.T.O.M. Travaux du Centre Océanographique de Pointe-Noire, 2: 11-138, pls 1-4.

Rumphius, G.E., 1741. D'Amboinsche Rariteitkamer, behelzende eene Beschryvinge van allerhande zoo weeke als harde Schaalvisschen, te weeten raare Krabben, Kreeften, en diergelyke zeedieren, als mede allerhande Hoorntjes en Schulpen, die men in d'Amboinsche Zee vindt: daar beneven zommige Mineraalen, Gesteenten, en soorten van Aarde, die in d'Amboinsche, en zommige omleggende Eilanden gevonden worden, et. I: 1-340, pls 1-60.

Rüppell, E., 1830. Beschreibung und Abbildung von 24 Arten kurzschwänzigen Krabben, als Beitrag zur Naturgeschichte des rothen Meeres: 1-28, pls 1-6.— Frankfurt am Main.

Sakai, T., 1936. Crabs of Japan, 66 plates in life colours with descriptions. [1935]: i-x, 1-239, figs 1-122, 27 pages of bibliography and index, frontispiece (colour), pls 1-66 (colour).— Tokyo [in Japanese].

Sakai, T., 1937. Studies on the crabs of Japan. II. Oxystomata.— Sci. Rep. Tokyo Bunrika Dai., (sect. B, supp. 2)3: 67-192, figs 1-45, 1 tab., pls X-XIX.

Sakai, T., 1956. Crabs: 1-224, textfigs 1-71, 1-60 appendix, pls 1-6.— Tokyo.

Sakai, T., 1960. Arthropoda, Crustacea, Decapoda, Brachyura: i- xxx, 28-87, pls 14-43, In: Okada, K. & T. Uchida (eds.) Encyclopedia Zoologica Illustrated in Colours, IV: i-vi, 1-247, index i-ii, 1-37 [in English], 1-32 [in Japanese], pls 1-123.—Tokyo.

Sakai, T., 1961. New species of Japanese crabs from the collection of His Majesty the emperor of Japan.— Crustaceana 3(2): 131-150, figs 1-4, pls III-IV.

Sakai, T., 1965. The Crabs of Sagami Bay collected by His Majesty the Emperor described and illustrated by Tune Sakai, D.Sc.: 1-xvi, 1-206 [English text], 1-92 [Japanese text], 1-32 [Bibliography & Index], figs 1-27, pls 1-100.— Tokyo.

Sakai, T., 1976. Crabs of Japan and the adjacent Seas. [In 3 volumes: (1) i-xxix, 1-773, figs 1-379 [English text]. (2) Plates volume, 1-16 , pls 1-251. (3) 1-461, figs 1-2 [Japanese text].— Tokyo.

Sankarankutty, C., 1961. On some crabs (Decapoda-Brachyura) from the Laccadive Archipelago.— J. mar. biol. Ass. India 3(1&2): 102-136, figs 1-2.

Schenkel, E., 1902. Beitrag zur Kenntnis der Dekapodenfauna von Celebes.— Verh. Naturf. Ges. Basel 13(3): 485-585, pls 7-13.

Seba, A., 1759. Locupletissimi rerum naturalium thesauri accurata descriptio et iconibus artificiosissimis expressio per universam physices historiam, 3: 1-212, pls 1-116.— Amsterdam.

Shen, C.J., 1932. The Brachyuran Crustacea of North China.— Zoologia Sinica, ser. A, Invertebrates of China 9(1): i-x, 1-320, figs 1-171, pls 1-10, 1 map.

Shen, C.J., 1936. On a collection of brachyuran Decapoda from Hainan Island with descriptions of three new species.— Chinese J. Zool. 2: 63-80.

Stebbing, T.R.R., 1905. South African Crustacea. Part III. In: Marine Investigations in South Africa. IV. Cape of Good hope, Department of agriculture. Cape Town, Cape Times Ltd, 4: 21-123, pls 17-26.

Stimpson, W., 1907. Report on the Crustacea (Brachyura and Anomura) collected by the North Pacific Exploring Expedition, 1853- 1856.— Smithson. misc. Collns 49(1717): 1-240, pls 1-26.

Takeda, M., 1973. Studies on the Crustacea Brachyura of the Palau Islands. I. Dromiidae, Dynomeni-

dae, Calappidae, Leucosidae, Hymenostomatidae, Majidae and Parthenopidae.— Bull. Lib. Art. & Sci. Nihon Univ. Sch. Meded. 1: 75-122, figs 1-6, pls 2-3.

Takeda, M., 1982. Keys to the Japanese and Foreign crustaceans fully illustrated in colors: i-vi, 1-284, pls 1-779.— Tokyo [in Japanese].

Takeda, M. & S. Miyake, 1970. Crabs from the East China Sea. IV. Gymnopleura, Dromiacea and Oxystomata.— J. Fac. Agric. Kyushu Univ. 16(3): 193-235, figs 1-6, pl. 1.

Takeda, M. & N. Nunomura, 1976. Crabs collected by the Melanesia Expedition of the Osaka Museum of Natural History, 1958.— Bull. Osaka Mus. Nat. Hist. 30: 61-92.

Tozzetti, A.T., 1877. Crostacei Brachiuri e Anomuri. In: Zoologia del viaggio intorno al globo della R. Pirocorvetta Magenta durante gli anni 1865-68.— Pubbl. Ist. Stud. sup. Prat. perfez. firenze 1: i-xxix, 1-257, pls 1-12.

Tyndale-Bicoe, M. & R.W. George, 1962. The Oxystomata and Gymnopleura (Crustacea, Brachyura) of Western Australia with decriptions of two new species from Western Australia and one from India.— J. R. Soc. W. Aust. 45(3): 65-96, figs 1-8, pls 1-3.

Utinomi, H., 1985. Colored Illustrations of Seashore Animals of Japan [2]: i-xvii, 1-167, pls 1-76 .— Osaka [in Japanese].

Walker, A.O., 1887. Notes on a collection of Crustacea from Singapore.— J. Linn. Soc. (Zool.) 20(118): 107-117, pls 6-9.

Ward, M., 1941. New Brachyura from the Gulf of Davao, Mindanao, Philippine Islands.— Am. Mus. Novit. (1104): 1-15, figs 1-30.

Ward, M., 1942. Notes on the crustacea of the Desjardins Museum, Mauritius Institute, with descriptions of new genera and species.— Maurit. Inst. Bull. 2(2): 49-113, pls 5-6.

Weber, F., 1795. Nomenclator Entomologicus Secundum Entomologiam Systematicum III. Fabricii Adjectis Speciebus Recens Detectis et Varietabilis: i-viii, 1-172.— Bohn.

White, A., 1847. List of the specimens of Crustacea in the collection of the British Museum. London: i-viii, 1-143.

Whitelegge, T., 1889. List of tha Marine and Fresh-water Invertebrate Fauna of port Jackson and the Neighbourhood.— J. roy. Soc. N.S.W. 23: 163-323.

Zehntner, L., 1894. Crustacés de l'Archipel malais. Voyage de MM. Bedot et Pictet dans l'Archcipel Malais.— Revue suisse zool. 2: 135- 214, pls 7-9.

Zimsen, E., 1964. The type material of I.C. Fabricius: 1-656.— Copenhagen.

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