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BIOLOGICAL RESULTS OF THE SNELLIUS EXPEDITION

XIII. ON SOME XANTHIDAE, CHIEFLY OF THE GENUS PLATYPODIA BELL

BY

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With 3 textfigures

This paper chiefly deals with the material collected by the Snellius Expedition in the eastern part of the East Indian Archipelago, while at the same time it contains the results of a reexamination of the material of the Rijksmuseum van Natuurlijke Historie at Leiden. The material at my disposal was enlarged with the unnamed Xanthids from the Zoological Museum at Copenhagen, consisting of material collected by Dr. Th. Mortensen on his various expeditions, the Monsunen material, and crabs obtained by various other collectors. I take this opportunity for expressing my thanks to Dr. K. Stephensen for sending me these collections for study. I am also indebted to Dr. Waldo L. Schmitt for the loan of material belonging to the U. S. National Museum, which was obtained from various collectors, among which especially the crabs collected by the Albatross, the U. S. Fish Commission and the Naval Eclipse Commission may be mentioned. Moreover I could study the collection of crabs of the Zoological Museum at Amsterdam. It is intended to publish the results of this study together with that of the material of the Siboga Expedition; in the present paper only a few remarks regarding this material are given. I wish to express my thanks to Prof. De Beaufort and his staff for their hospitality during my visits to Amsterdam.

De Man (1889) and several other authors remarked that the Xanthidae are badly in need of a thorough reexamination. Odhner (1925) gave a revision of some genera, but there remains a great deal of confusion as far as concerns the synonymy of the species. It would be necessary to compare the types of various described species before one could arrive at definite results. As at present this is impossible (many of these types are not available now) I can give here only a few provisional remarks on some of the genera, and I hope to be able to give a revision at a time better suited for such work.

Carpilodes Dana

Odhner (1925) enlarged the genus *Carpilodes* with 3 species, belonging till then in *Liomera* Dana (*L. cinctimana* (White), *L. semigranosa* De Man and *L. guttata* De Man). Now the type species of *Liomera* is *L. lata* Dana, synonymous with *cinctimana* (White) and again *Liomera* is described 2 pages earlier than *Carpilodes*, therefore the enlarged genus should be named *Liomera* "eine Namensänderung, die indessen entschieden besser zu unterlassen ist". I too think we can better use the name *Carpilodes*, which was already placed in the Official List of Generic Names by the International Commission on Zoological Nomenclature (Opinion 73, Smith. Misc. Coll., 1922, vol. 73, number 1, p. 26, *Carpilodes* mt. *C. tristis* Dana). But in the same year 1925 the said Commission placed in the list *Liomera*, type *L. cinctimana* (White) (Opinion 85, Smith. Misc. Coll., vol. 73, number 3, p. 15). As it is not well possible to separate *cinctimana* from *Carpilodes*, as is already stated by Odhner, the generic name *Liomera* should be struck from the Official List, if we want to preserve *Carpilodes* for the enlarged genus, grounding this opinion on the fact that *Carpilodes* is the first name mentioned in the list.

Neoliomera striata nov. spec. (Pl. IV fig. 1, 2)

Snellius Expedition

Obi latoe; shore or reef; April 23—27, 1930. — 1 ♀.

Carapace broad, barrel-like, convex in both directions, regions not indicated. Front slightly deflexed, with a small emargination in the middle, but not distinctly bilobed. Orbits with two distinct sutures; the eye-stalks short and thick.

Antero-lateral margin flat, distinctly separated from the rest of the carapace; indistinctly four lobed; postero-lateral margin rather straight, not at all concave.

The whole upper surface is granular and those granules are arranged in transverse rows separated by smooth parts, which give, when seen with the naked eye, the carapace an impression of being striped. The antero-lateral crest is granular too, but here the granules are not arranged in rows; the postero-lateral margin is smooth.

Antennules folded nearly transversely; basal antennal joint slightly produced and in contact with the inner side of the down-turned frontal edge; the rather short flagellum is lodged in the orbital hiatus.

External maxillipeds with slightly oblique anterior edge.

Suborbital, subhepatic and subbranchial parts of the carapace granular, but the granules not arranged in rows.

Chelipeds equal, slender; wrist granular; inner angle with a tubercle and a second, smaller tubercle lower down. Upper border of palm crested, separated by a smooth part from a second crest, situated somewhat lower down on the outer surface of the palm; this outer surface is armed moreover with two rows of granules; the fingers are long and slender, with some sharp crests and a row of small, blunt teeth on their cutting edges; their tips are rather hollowed.

Walking legs with the upper border of meri, carpi and propodi granular; the outer surface of these joints slightly granular too and these joints and the dactyli moreover with many long hairs.

Platypodia alcocki nov. spec. (Pl. IV fig. 3, fig. 1 a)

Museum Leiden

Padang. — 1 ♂, holotype, 1 smaller ♂, 1 ♀.
Sinabang, Simaloer; March, 1913; E. Jacobson. — 1 young specimen.

Description of the ♂ from Padang. Carapace broad; the anterior part

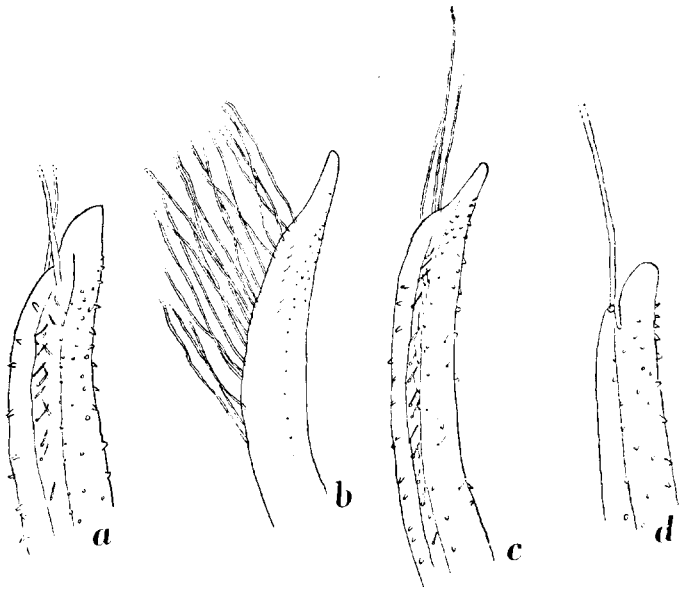

Fig. 1. a, *Platypodia alcocki* nov. spec., apex first pleopod, ♂ from Padang; b, *Platypodia anaglypta* (Heller), apex first pleopod, ♂ from Upolu; c, *Platypodia cristata* (A. M. Edw.), apex first pleopod, ♂ from Jidda; d, *Platypodia granulosa* (Rüppell), apex first pleopod, ♂ from Upolu. × 50.

with distinct regions separated by broad grooves; 2 M divided into two parts by a rather broad but shallow groove. The posterior and postero-lateral part of the carapace are not divided into regions.

The granules on the anterior part of the carapace are lower and also there are less granules than described for *cristata* (A. M. Edw.), which it resembles in many other respects. 3 M is nearly smooth, with only eight granules on the broad part, while the long arm bears traces of two or three granules. Posterior part of carapace smooth; postero-lateral part indistinctly granulated. No hairs at all.

Front slightly bilobulated; grooved in the median and separated from the orbit by a small groove.

The tumid orbital margins show the usual fissures and 3 granules on the upper border near the inner angle.

The crested antero-lateral border is divided into four lobes by three fissures.

Under surface and abdomen smooth; sternum slightly roughened. Interantennular septum rather broad; basal antennal joint clasping the down-turned edge of the front.

Chelipeds equal; outer surface of palm and wrist granulated; the granules on the palm are arranged in longitudinal series and those on the wrist are low; a tubercle at the upper angle of the wrist; upper border of palm with an indistinctly granulated crest. Fingers channelled, with some teeth on their cutting edges.

Upper border of carpi, meri and propodi and lower border of meri crested; outer surface of propodi granular; in the middle of the carpi of the first pair of walking legs a row of granules is distinct.

♂ pleopods as in fig. 1 a.

Alcock (1898, p. 101) describes as *semigranosa* specimens closely resembling *cristata* "a *cristata* with sculpturing worn". Now this is assuredly no *semigranosa*, for in *semigranosa* the antero-lateral margin is quite otherwise than in *cristata;* but the specimens probably belong in this new species, which differs from *cristata* just in the sculpturing.

The young specimen from Sinabang agrees with the description; the smaller ♂ from Padang (cb. 30 mm, cb. of holotype 37 mm) has the granules on the walking legs and on the wrist of the chelipeds indistinct, those on the crest of the palm are better developed; the ♀ agrees with the small ♂, but the granules on the palmar crest are less distinct.

Platypodia anaglypta (Heller) (fig. 1 b)

Atergatis anaglyptus Heller, 1861, Verh. zool. bot. Ges. Wien, vol. 11, p. 6; Heller, 1861, Sitz. Ber. Ak. Wiss. Wien, math. naturw. Kl., vol. 43, p. 312, pl. 2 figs. 11 and 12.

Lophactaea anaglypta Alcock, 1898, Journ. As. Soc. Beng., vol. 67, pt. 2, p. 102 (for the older literature); Nobili, 1901, Ann. Mus. Zool. Napoli (n.s.), vol. 1, no. 3, p. 12; Borradaile, 1902, Fauna and Geogr. Mald. and Lacc. Arch., vol. 1, pt. 3, p. 258; De Man, 1902, Abh. Senck. naturf. Ges., vol. 25, p. 587; Grant and Mc Culloch, 1906, Proc. Linn. Soc. N. S. Wales, vol. 31, p. 9; Laurie, 1906, Rep. Pearl Oyster Fish., vol. 5, p. 395; Nobili, 1906, Ann. sc. nat.(9), Zool., vol. 4, p. 233; Lenz, 1912, Ark. f. Zool., vol. 7, no. 29, p. 3; Klunzinger, 1913, Abh. k. Leop.-Car. D. Ak. Naturf., vol. 99, p. 160; Ward, 1932, Austr. Zool., vol. 7, p. 242.

Platypodia anaglypta Rathbun, 1907, Mem. Mus. Comp. Zoöl. Harvard Coll., vol. 35, p. 38; Rathbun, 1911, Trans. Linn. Soc. London (2), Zool., vol. 14, p. 214, pl. 17 fig. 3; Balss, 1924, Denkschr. Ak. Wiss. Wien, math. naturw. Kl., vol. 99, p. 6; Balss, 1934, Faune colo franç., vol. 5, p. 515; Balls, 1938, Göt. k. Vet.- och Vitt.-Samh. Handl. (5), B, vol. 5, p. 37.

nec *Platypodia anaglypta* Boone, 1934, Bull. Vanderbilt Mar. Mus., vol. 5, p. 96, pl. 49.

Museum Leiden

Halmahera; Bernstein. — 1 ♀.
Upolu. — 2 ♂ ♂.

United States National Museum

Lembeh Strait; in coral head; June 21, 1929; Herre. — 1 small ♀.
Vila Efati, New Hebrides; March 27, 1929; Herre. — 1 ♀.

Museum Copenhagen

Flat Island, Mauritius; shore at low tide; October 19, 1929; Th. Mortensen's Java S. Afrika Exp.; 2 small specimens, probably ♂ and ♀.

Description. Carapace smooth; the anterior part divided into regions by rather broad grooves; the postero-lateral and posterior part undivided. No distinct groove between 1 and 2 M, the latter with no trace of a longitudinal groove; 2 and 3 L not separated and only a shallow furrow exists between 5 and 6 L.

Front slightly deflexed with a small groove in the middle and separated from the orbital margin by a more or less distinct groove. Orbit large, near the outer margin with three sutures; eye-stalks thick and large.

Antero-lateral margin crest-like, divided by three fissures into four lobes, the posterior of which is tuberculiform with a small ridge extending on the dorsal surface of the carapace. Postero-lateral margin somewhat concave.

Antennules folded obliquely transversely, interantennular septum rather broad. Basal antennal joint short, just touching the down-turned ridge of the front; flagellum lodged in the orbital hiatus.

Outer maxillipeds with the usual fringe of hairs on their inner border; anterior border of meri somewhat oblique.

Chelipeds equal; fingers pointed, channelled, their prehensile borders, especially of the immovable finger, denticulated. Palm crested, but the crest is sometimes low and blunt; outer surface with a longitudinal ridge, extending from the base of the immovable finger backwards; furthermore on

this outer surface two furrows near the anterior border and a few lines and impressions making a somewhat rugose appearance. The carpus too is more or less rugose, sometimes nearly smooth; with a short, shallow groove near the articulation with the palm. The dark colour of the fingers in the mature ♂♂ extending on the palm, sometimes the lower half of the outer surface of the latter being dark coloured, but in the immature ♂♂ and the ♀♀ the dark colour reaches not further than the base of the immovable finger, the colouration seemingly extending with age. Walking legs smooth and crested.

♂ pleopod as in fig. 1 b.

Boone's specimens from Bali are described with granulose carapace and palm; the lobe 2 M is divided; moreover the carapace lobes are too distinct; these specimens probably belong in *granulosa*.

The orbital sutures are sometimes very distinct, sometimes just visible (♂♂ from Upolu); in the small specimens the regions are far less distinct, the fissures of the antero-lateral margin better developed. The epibranchial tubercle is often better developed than figured by Heller.

Platypodia corallina (Alcock) (fig. 2 a)

Lophactaea corallina Alcock, 1898, Journ. As. Soc. Beng., vol. 67, pt. 2, p. 102; Alcock and Anderson, 1900, Ill. Zool. Inv., Crust., pt. 7, pl. 36 fig. 6.

United States National Museum

Stat. 5250; May 18, 1908; Albatross Philippine Exp. — 1 ♂.

Description of the ♂ of this apparently rare species. Carapace broad, finely granulated; regions hardly indicated; 3 M delimited by a hardly perceptible groove, while the cardiac region is laterally bounded by a more distinct groove; a trace of a groove between protogastric and lateral regions.

Front broadly bilobed, sharp and granular; distinctly grooved and emarginated in the middle; outer lobe sharp and separated from the granular orbital margin by a groove.

Three fissures near the outer angle of the orbit.

Antero-lateral crest thin and sharp, divided into some lobes by shallow emarginations; with two or three denticles and rather pointed at the epibranchial angle. Postero-lateral and posterior margin with a row of teeth. Ventral surface of carapace, outer maxillipeds and sternum finely granular; just below the anterior part of the postero-lateral margin the granules are largest and teeth-like; outer maxillipeds as well as ventral surface of carapace hairy; the legs are hairy too and there are some tufts of hairs on the sternum.

Arm of chelipeds granular at the distal end; near the articulation with the wrist a petal-like crest and a row of teeth on the upper margin; wrist granular on the inner side and on the lower part of the outer surface; on this outer surface two longitudinal petaloid crests and nearer the upper margin three petaloid tubercles. The upper border itself again shows a line of spinules. Inner surface and lower part of outer surface granular as the wrist; these granules become larger and more teeth-like on the middle part, here they are somewhat linear in arrangement; near the upper margin three petaloid tubercles and a fourth near the proximal end of a second line of granules; upper margin distally with rather large teeth. Fingers rather short, pointed, channelled; some teeth on the movable and two rows of granules on the immovable finger. Cutting edges denticulated; on the immovable finger with a rather broad lobe and two small teeth.

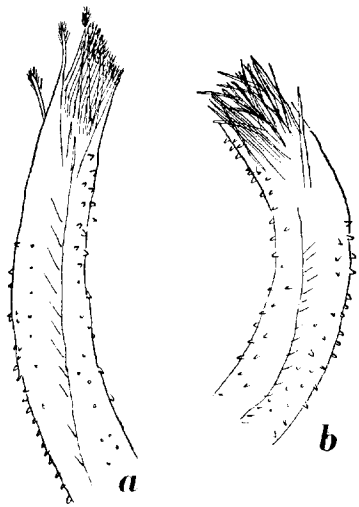

Fig. 2. a, *Platypodia corallina* (Alcock), apex first pleopod, ♂ from Stat. 250, Siboga Exp.; b, *Platypodia multicristata* (Zehntner), apex first pleopod, ♂ from Stat. 99, Siboga Exp. × 50.

Legs granular, the granules often spine-like, especially on the upper border; on the carpi two petaloid crests and one petal-like tubercle; some of the granules on the propodi too are petaloid. All the joints are hairy, especially on the upper and lower border.

Antennules folding nearly transversely; interantennular septum rather broad; basal antennal joint just reaching the down-turned edge of the front; flagellum broken off.

♂ pleopod as in fig. 2 a; with a bundle of serrate hairs at its apex. Such a bundle of hairs, but this time not serrate, is found at the apex of the pleopod of *P. multicristata* (Zehntner) too. Both species resemble each other and differ from all the other species of *Platypodia* I have examined in the shape of the front and anterolateral margin; moreover in both the basal antennal joint is touching, but not clasping, the down-turned edge of the front. The outer surfaces of the joints of the walking legs have crests in both species; it is possible that they both belong in the same, probably a new, genus.

Platypodia cristata (A. M. Edw.) (fig. 1 c)

Lophactaea cristata A. Milne Edwards, 1865, Nouv. Arch. Mus. Paris, vol. 1, p. 246, pl. 16 fig. 1; Alcock, 1898, Journ. As. Soc. Beng., vol. 67, pt. 2, p. 100 (for the older literature); Borradaile, 1902, Fauna and Geogr. Mald. and Lacc. Arch., vol. 1, pt. 3, p 258; De Man, 1902, Abh. Senck. naturf. Ges., vol. 25, p. 582; Nobili, 1906, Ann. sc. nat. (9), Zool., vol. 4, p. 230; Lenz, 1910, Voeltzkow, Reise Ostafrika, p. 546; Klunzinger, 1913, Abh. k. Leop.-Car. D. Ak. Naturf., vol. 99, p. 159.

Platypodia cristata Rathbun, 1911, Trans. Linn. Soc. London (2), Zool., vol. 14, p. 214; Balss, 1924, Denksch. Ak. Wiss. Wien, math. naturw. Kl., vol. 99, p. 6.

Snellius Expedition

Wotap, Tenimber Islands; shore or reef; October 20—23, 1929. — 1 small ♀.

Museum Leiden

Jidda; 1880; Kruyt. — 4 ♂♂, 7 ♀♀.
Bay of Batavia; 1927; W. C. van Heurn. — 1 ♀.

Description. Carapace broad; regions of the anterior part separated by distinct grooves; 2 M divided into two lobes by a rather broad, but shallow furrow; 4 and 5 L not separated; the posterior and postero-lateral part are not divided into regions. Whole carapace granular, on the anterior part the pearl-like granules are largest; a few scattered bristles.

Front slightly bilobed, grooved and emarginate in the middle and separated from the orbital margin by a distinct groove. The tumid orbital margin is granular on the upper border, with the usual fissures; under border nearly straight.

Antero-lateral margin crested and this crest, which has a smooth surface, divided into 4 lobes by three fissures; the posterior lobe is sometimes granular on the posterior part of its margin (♂ from Jidda); in other specimens however the granules are indistinct or altogether absent.

Lower surface granular and slightly furred; ♂ sternum granular too. Interantennular septum rather broad; basal antennal joint clasping the down-turned side edge of the front.

Chelipeds equal; outer surface of palm and wrist with large granules in linear series; upper border of palm with a distinct crest, granular along its upper border; inner surface of palm with small granules; a tubercle at the upper and inner angle of the wrist. Fingers fluted; cutting edges with some teeth; on the immovable finger the tooth nearest the base molar-like.

Walking-legs with a crest on the upper border of meri, propodi and carpi and on lower border of meri; outer surface of the long joints granular and with some scattered bristles.

♂ pleopod as in fig. 1 c.

Platypodia eydouxii (A. M. Edw.) (fig. 3 a)

Lophactaea eydouxii A. Milne Edwards, 1865, Nouv. Arch. Mus. Paris, vol. 1, p. 248, pl. 16 fig. 2—2 b.
Atergatis limbatus Streets, 1877, Bull. U. S. Nat. Mus., no. 7, p. 105.
Platypodia eydouxii Rathbun, 1906, Bull. U. S. Fish Comm., vol. 23, pt. 3, p. 845.

Museum Leiden

Kahala, Oahu, Honolulu; October 2, 1918; P. Buitendijk. — 1 ♀.
New Caledonia; Frank. — 1 ♂, 1 ♀.

United States National Museum

Milolii, Hawaii; January, 1930; Pohina. — 2 ♂♂, 2 ♀♀.
Kilauea, Volcano House, Hawaii; Degener. — 1 ♂, 4 ♀♀.
Oahu, between Waikiki beach and Honolulu Harbor; on reef; J. C. Bridwell. — 1 ♀.
Hawaii; U. S. Fish Comm. — 1 ♀.

Description. Front slightly bilobed, with a median groove and separated from the orbit by a small furrow.

Upper border of orbit tumid, with some granules, but less than in *granulosa;* under border slightly concave; the three usual fissures near the outer angle.

Antero-lateral border crested, divided by three fissures into four lobes.

Upper surface of carapace granular; the granules on the posterior part smaller than those on the anterior region; but everywhere the granules are larger and more isolated than in *granulosa.* Anterior part of carapace lobulated, but the grooves are narrow; no groove on the protogastric lobe.

Interantennular septum rather broad; the broad basal antennal joint clasping the down-turned edge of the front.

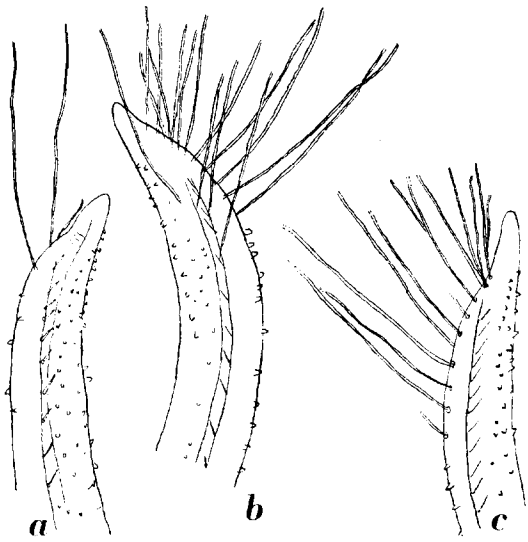

Fig. 3. a, *Platypodia eydouxi* (A. M. Edw.), apex first pleopod, ♂ from Milolii; b, *Platypodia semigranosa* (Heller), apex first pleopod, ♂ from Sissie; c, *Platypodia tomentosa* (De Man), apex first pleopod, ♂ from Banda. × 50.

Chelipeds equal; arm with crest on the upper border and its outer surface finely granular; outer surface of wrist and palm with sharp granules; a

row of granules, but no crest on the upper border of the palm. Fingers channelled, with a row of teeth on their cutting edges.

Upper border of meri, carpi and propodi of walking legs crested; under border of meri crested too; outer surface of meri, carpi and propodi granular.

Carapace, chelipeds and walking legs hairy; ventral surface of carapace hairy and finely granular.

♂ pleopod as in fig. 3 a.

This species differs from *granulosa* by the undivided 2 M, the larger and more isolated granules on the carapace and the narrower grooves between the granules.

Platypodia granulosa (Rüppell) (fig. 1 d)

Xantho granulosa Rüppell, 1830, Beschr. und Abb. 24 Arten kurzschw. Krabben, p. 24, pl. 5 fig. 3.

Lophactaea granulosa Alcock, 1898, Journ. As. Soc. Beng., vol. 67, pt. 2, p. 101 (for the older literature and synonymy); Lanchester, 1900, Proc. Zool. Soc. Londen, p. 732; Borradaile, 1902, Fauna and Geogr. Mald. and Lacc. Arch., vol. 1, pt. 3, p. 258; De Man, 1902, Abh. Senck. naturf. Ges., vol. 25, p. 582; Lenz, 1905, Abh. Senck. naturf. Ges., vol. 27, p. 348; Grant and Mc Culloch, 1906, Proc. Linn. Soc. N. S. Wales, vol. 31, p. 9; Nobili, 1906, Ann. sc. nat. (9), Zool., vol. 4, p. 231; Nobili, 1907, Mem. R. Ac. sc. Torino (2), vol. 57, p. 388; Klunzinger, 1913, Abh. k. Leop.-Car. D. Ak. Naturf., vol. 99, p. 159; Ward, 1932, Austr. Zool., vol. 7, p. 242; Sakai, 1935, Crabs of Japan, p. 163, pl. 14 fig. 2.

Platypodia granulosa Rathbun, 1906, Bull. U. S. Fish Comm., vol. 23, p. 845; Rathbun, 1910, K. Danske Vid. Selsk. Skrifter (7), vol. 5, p. 351; Pesta, 1913, Denksch. Ak. Wiss. Wien, math. naturw. Kl., vol. 88, p. 41; Rathbun, 1914, Proc. Zool. Soc. London, p. 658; Balss, 1922, Arch. f. Naturg., vol. 88, Abt. A, Heft 11, p. 125; Gordon, 1934, Rés. sc. Voyage Indes Néerl. vol. 3, fasc. 15, p. 27, textfig. 15a.

Snellius Expedition

Maratoca; reef; August 14—18, 1929. — 1 ♂, 2 ♀♀ (1 ovigerous).
Kafal, Misool group; shore and reef; October 3, October 5, 1929. — 6 ♂♂, 3 ♀♀.
Wotap, Tenimber Islands; shore and reef; October 20—23, 1929. — 3 ♂♂, 3 ♀♀.
Atapoepoe, Timor; reef; November 19, 1929. — 1 ♀.
Kera, near Timor; November 11—13, November 15—16, November 22—23, 1929. — 3 ♂♂, 1 ♀, 1 specimen with Sacculinid.
Sapoeka besar, Postiljon Islands; shore and reef; December 21—23, 1929. — 12 ♂♂, 20 ♀♀.
Bone Tamboeng, Spermonde Archipelago; shore or reef; March 2, 1930. — 1 ♂.
Obi latoe; shore and reef; April 23—27, 1930. — 5 ♂♂, 8 ♀♀.
Karaton, Nenoesa Islands; shore; May 20—21, 1930. — 2 ♂♂.
Ake Selaka, Kaoebay, Halmahera; shore or reef; May 28, 1930. — 1 ♀.
Morotai; June 3—10, 1930. — 2 ♂♂.
Kaledoepa; August 27, 1930. — 2 ♀♀.
Lembeh Strait; September 25, 1930. — 2 ♂♂, 7 ♀♀.
Boo Islands; October 5, 1930. — 1 ♀.
Batoe Merah, Amboina; October 15, 1930. — 1 ♂.

Museum Leiden

Jidda; 1881; Kruyt. — 1 ♂.
Red Sea; Rüppell; Java; Kuhl and v. Hasselt. — 1 ♂, 1 ♀.
Red Sea. — 1 ♂, 1 ♀.
Java; Kuhl and v. Hasselt. — 1 small ♂.
Java. — 1 ♂.
Celebes; April, 1878. — 1 ♂.
Timor; 1863; Wienecke. — 1 ♂.
Upolu; Mus. Godefroy. — 2 ♂♂, 3 ♀♀ (1 ovigerous).
New Caledonia; Frank. — 1 ♂, 1 ♀.
New Caledonia. — 1 ♀.

United States National Museum

Apia, Samoa; June, 1902; at mouth of river. — 1 ♂.
Apia, Samoa; July 1, 1902; outer coral reef at low tide. — fragments of 1 ♂.
Pago Pago, Samoa; August, 1902. — 3 ♂♂, 3 ♀♀.

Description. Upper surface of carapace granular, except in the grooves, which delimit the regions of the anterior part; postero-lateral and posterior part not lobulated; here the granules are smaller. 2 M is, by a distinct groove, divided over its whole length into two lobules.

Front slightly bilobed, grooved in the median and separated from the orbit by a small groove.

Upper orbital margin tumid and granular; under margin only slightly concave; the usual three fissures near the outer angle.

The crest on the antero-lateral margin is smooth and divided into four lobes by three fissures.

On the upper surface between the granules numerous short hairs, and some hairs in the grooves, still there is no question of a tomentum; some specimens are less hairy.

Basal antennal joint rather broad, clasping the down-turned edge of the front. Ventral surface of carapace finely granular and more or less hairy.

Chelipeds equal; a crest on the upper border of the finely granular arm; wrist and palm hairy and granular as the carapace; upper border of the palm not at all crest-like, but marked by a row of granules. Fingers channelled, with a row of teeth on the cutting edges.

Upper border of propodi, carpi and meri of the walking legs crested; the under border of the meri crested too; outer surface of these joints finely granular.

♂ pleopod as in Gordon's fig. 15 a; the number of hairs near the apex varies from 1 to 3; the pleopod of the ♂ from Upolu is very abnormal as it has one very long hair.

Boone's *anaglypta* from Bali probably, as already noted, belongs here.

Platypodia maculata (De Man)

Lophactaea maculata De Man, 1888, Arch. f. Naturg., vol. 53, p. 250, pl. 9 fig. 1; De Man, 1902, Abh Senck. naturf. Ges., vol. 25, p. 588.
Platypodia maculata Gordon, 1934, Rés. sc. Voyage Indes Néerl., vol. 3, fasc. 15, p. 27, textfig. 15b.

Snellius Expedition

Kera, near Timor; November 11—13, 1929. — 1 ovigerous ♀.

Museum Leiden

Moluccas; Reinwardt. — 1 ♂.

Description. Upper surface of carapace smooth, not granular, slightly pitted and distinctly lobulated in both the anterior and posterior part. 3 M consisting of 3 lobes; 2 M divided into two lobules by a longitudinal groove, but posteriorly both lobules unite; 1 and 2 L also cohere, but in the ♀ from Kera 2 and 3 L are separated by a rather shallow groove, De Man describes these lobes as cohering and in the dry specimen from the Moluccas on the right side they cohere, while they are separated by a groove on the left side. 1, 2 and 3 R as well as 4 M and 1 P are lobulated; while 2 P is separated from the posterior margin by a distinct and deep groove. The postero-lateral margins are somewhat granular and hairy with short, stiff and dark hairs.

Front not bilobed, with a median groove, separated from the orbit by a small furrow. The tumid orbital margin with the usual fissures near the outer angle; under margin not very concave.

Antero-lateral margin crested, divided by three incisions into lobes; the posterior is smallest, tooth-like.

Interantennular septum rather broad; basal antennal joint clasping the down-turned edge of the front.

Palm of chelipeds crested on the upper border; lower half of outer surface granular; on the upper half these granules unite to irregular, swollen edges; the same edges are found on the wrist, while the crested arm is finely granular. These three joints are covered with the same short hairs as are found on the postero-lateral margin. Fingers channelled; with three teeth on their cutting edges.

Walking legs smooth, only the propodi slightly roughened; carpi, propodi and dactyli more or less hairy.

Yellow, white margined spots on carapace, abdomen, chelipeds and walking legs; only a trace of violet is left on the crests of the walking legs; the dry specimen is absolutely bleached.

This species is rather rare.

Platypodia multicristata (Zehntner) (fig. 2 b)

Lophactaea multicristata Zehntner, 1894, Revue suisse Zool., vol. 2, p. 144, pl. 7 fig. 7—7 c.

Snellius Expedition

Amboina; October 14, October 17, 1930. — 1 ♂.

Description. Carapace strongly lobulated and granular; granules confluent in some places; some tufts of hairs too are found. Ventral surface granular, but here the granules are not easily visible, for the whole surface is covered by a dense coat of hairs.

Front with a median groove, distinctly bilobed, the outer lobes smaller than the median ones. Orbital margin granular and with the usual fissures near the outer angle.

Antero-lateral margin crested and that crest of a somewhat peculiar form: in two places it is spine-like produced with two groups of granules; the posterior angle of the crest is most strongly produced, here the greatest breadth is reached and a row of granules runs from the end of the crest to the postero-lateral margin. Outer margin of the crest with three fissures, which open in small holes (mentioned nor figured by Zehntner).

Interantennular septum not very broad and the basal antennal joint not clasping the granular, down-turned edge of the front.

Meri of chelipeds granular with a crest parallel with the base of the carpi; carpi with a row of granules on their upper and some granules on the lower border; moreover the outer surface is armed with four crests and some granules. Palm with a row of sharp granules on the upper border, a crest parallel with the upper border, which is armed with sharp granules as in the rest of this outer surface; those sharp granules are found on the movable finger too. Inner surface of the three joints hairy.

Upper border of all the joints of the walking legs armed with a row of spine-like granules, followed on the outer surface by some crests and granules, some of which are spine-like again on the lower part of this surface; dactyli with only the spine-like granules. Whole upper border hairy, a fringe of long hairs near the upper and lower border.

♂ pleopod as in fig. 2 b.

As already remarked by Zehntner the form of the antero-lateral margin and the front, as well as the basal antennal joint not clasping the front, make it possible that this species belongs in another genus. See also under *P. corallina* (Alcock).

Platypodia semigranosa (Heller) (fig. 3 b)

Atergatis semigranosus Heller, 1861, Verh. zool. bot. Ges. Wien, vol. 11, p. 6; Heller, 1861, Sitz. Ber. Ak. Wiss. Wien, math. naturw. Kl., vol. 43, p. 313.

Lophactaca semigranosa A. Milne Edwards, 1865, Nouv. Arch. Mus. Paris, vol. 1, p. 248; Miers, 1884, Alert, p. 517 and 527; Henderson, 1893, Trans. Linn. Soc. London (2), Zool., vol. 5, p. 355; Ortmann, 1894, Zool. Jahrb., Syst., vol. 7, p. 459; Borradaile, 1902, Fauna and Geogr. Mald. and Lacc. Arch., vol. 1, pt. 3, p. 258; De Man, Abh. Senck. naturf. Ges., vol. 25, p. 582, pl. 2 fig. 19; Nobili, 1906, Ann. sc. nat. (9), Zool., vol. 4, p. 233; Klunzinger, 1913, Abh. k. Leop.-Car. D. Ak. Naturf., vol. 99, p. 157, pl. 5 fig. 10; Ward, 1932, Austr. Zool., vol. 7, p. 242.

Platypodia semigranosa Rathbun, 1906, Bull U. S. Fish Comm., vol. 23, p. 845; Rathbun, 1911, Trans. Linn. Soc. London (2), Zool., vol. 14, p. 214; Balss, 1924, Denksch. Ak. Wiss. Wien, math. naturw. Kl., vol. 99, p. 6; Balss, 1938, Göt. k. Vet.- och Vitt.-Samh. Hand. (5), B, vol. 5, p. 37.

nec *Lophactaca semigranosa* Alcock, 1898, Journ. As. Soc. Beng., vol. 61, pt. 2, p. 101.

Snellius Expedition

Sissie, Misool group; shore or reef; October 6, 1929. — 1 ♂.

Wotap, Tenimber Islands; shore or reef; October 20—23, 1929. — 1 ♂.

Description. Dorsal surface of carapace divided by deep furrows into regions; 2 M undivided and 3 M united with 4 M; the groove between 1 and 2 M is rather indistinct; 1, 2 and 3 L are united; 4 and 5 L separated by a rather shallow groove. Anterior and antero-lateral part of the carapace with large, pearl-like, sometimes rather sharp tubercles; 3 M and the hinder part of 2 M as well as the whole posterior part of the carapace smooth. Hairs in some grooves and near the antero-lateral margin; ventral surface granular; sternum pitted.

Front grooved and emarginated in the middle, but not very distinctly bilobed. Orbit with the usual three fissures near the outer angle, which is slightly produced and separated from the concave inner border by a small incision. The blunt inner lobe of this border is slightly higher than the equally blunt outer one.

The rather sharply crested antero-lateral border is divided into four lobes, bearing rather sharp denticles; thereby this species resembles *Lophozozymus*. The denticle of the first lobe is rather blunt and situated near the posterior angle of the lobe, the second, third and fourth lobe bear a sharper tooth near their anterior border; the third moreover bears two less distinct tubercles.

Basal antennal joint clasping the down-turned edge of the front; outer maxillipeds with a row of hairs on outer, upper and inner border; meri slightly hairy.

Lower part of palm of chelipeds smooth; the rest granular, the granules becoming sharper near the upper border, which is crested, but the rather

low crest is provided with incisions; the palm and the equally granular wrist are rather hairy. Fingers channelled; the immovable one with a broad tooth near the base; this tooth ends into three slight denticulations; movable finger with some smaller teeth; both fingers dark coloured; the colouration of the immovable finger extending on the palm.

Walking legs smooth; with a crest on the upper border of meri, carpi and propodi; a row of long hairs behind this crest.

♂ pleopod as in fig. 3 b.

When A. Milne Edwards states that the legs agree with those of *granulosa*, he overlooks the fact that *granulosa* has no crested upper border of the palm.

Platypodia tomentosa (De Man) (fig. 3 c)

Lophactaca semigranosa De Man, 1888, Arch. f. Naturg., vol. 53, p. 246, pl. 8 fig. 4 (partim).

Lophactaca tomentosa De Man, 1902, Abh. Senck. naturf. Ges., vol. 25, p. 585.

Museum Copenhagen

Banda; sand, ca. 15m, taken from *Acanthogorgia*; June 15, 1922; Danish Exp. to Kei Islands. — 1 ♂.

Stat. 72, 5° 41′ N, 105° 57′ E (Java Sea); 35 m, stones; July 28, 1922; Danish Exp. to Kei Islands. — 1 small ♂ and ♀.

Description. Except on the crests of the antero-lateral margin, on palm of chelipeds and on legs the whole specimen is covered with a short, brown tomentum; dorsal surface moreover with some longer light brown hairs, while the granules are visible through the felt. Those granules are largest on the anterior and antero-lateral part of the carapace, while the meso-gastrical region and the posterior part are covered with small granules; still smaller are the granules on the antero-lateral crest. The under surface of the carapace is granular and hairy.

Front nearly straight, with a small median fissure; hardly separated from the orbit, which is provided with the usual fissures; outer angle not produced and lower border not concave.

Antero-lateral border with four lobes, the fourth smallest and the third largest.

All the regions of the carapace are separated by a distinct groove; 2 M divided into 2 lobes by a rather shallow furrow.

Inner angle of basal antennal joint clasping the down-turned edge of the front.

Wrist and palm of chelipeds granular and tomentose; upper border

of merus and palm with a distinct crest; fingers smooth, channelled; near the base of the immovable finger a rather high tooth with three distinct denticulations; movable finger with 4 very small teeth; both fingers pointed and crossed when closed.

Walking legs hairy and slightly granular.

This species differs from *semigranosa* (Heller) by the form of the antero-lateral margin; the more granular and hairy carapace; the less sinuated front and the less concave under orbital border.

The description given here is taken from a ♀ from unknown locality belonging to the Amsterdam Museum. The smaller ♂ from Banda differs by the absence of the tomentum on the middle and posterior part of the carapace; hardly any hairs are found on epi-, pro-, meso- and metagastric region, while cardiac and posterior region too are naked. The two small specimens from Stat. 72 are more hairy, but here too part of 3 M and the epigastric region are naked; the long hairs are more numerous.

Key to the East Indian species of *Platypodia*

1 Ambulatory legs not crested . . . . . *digitalis* Rathbun.
1a Cristate walking legs . . . . . 2.
2 Surface of carapace smooth . . . . . 3.
2a Upper surface of carapace more or less granular . . . . . 5.
3 Upper surface of carapace with only a few distinct regions . . . . . 4.
3a The regions of the carapace are more distinct and more numerous *maculata* (De Man).
4 Outer surface of chelipeds roughened . . . . . *anaglypta* (Heller).
4a Outer surface of chelipeds granular . . . . . *helleri* (Kossmann).
5 Postero-lateral border marked by a row of teeth . . . . *corallina* (Alcock).
5a No teeth on that margin . . . . . 6.
6 Antero-lateral margin ends in a dentiform tubercle; only one crest at the upper border of the joints of the walking legs . . . . *actaeoides* (A. M. Edw.).
6a No such dentiform tubercle; or if such a tubercle is present, then the walking legs have more crests . . . . . 7.
7 Upper border of palm crested . . . . . 8.
7a No crest on the upper border of the palm . . . . . 12.
8 Walking legs with many crests . . . . . *multicristata* (Zehntner).
8a Walking legs with only one crest, at the upper border . . . . . 9.
9 Lobes of the anterolateral border rather sharp, *Lophozozymus*-like *semigranosa* (Heller).
9a Lobes of this border blunt . . . . . 10.
10 No tomentum on the upper surface of the carapace . . . . . 11.
10a Carapace tomentose . . . . . *tomentosa* (De Man).
11 Upper surface of carapace densely granular . . . . . *cristata* (A. M. Edw.).
11a Far less granules on the upper border of the carapace . . . . *alcocki* m.
12 Side edge of carapace with wide gaps . . . . . 13.
12a No gaps in the side edge of the carapace. . . . . 14.
13 Cutting edge of immovable finger with many teeth . . *hawaiiensis* (Rathbun).

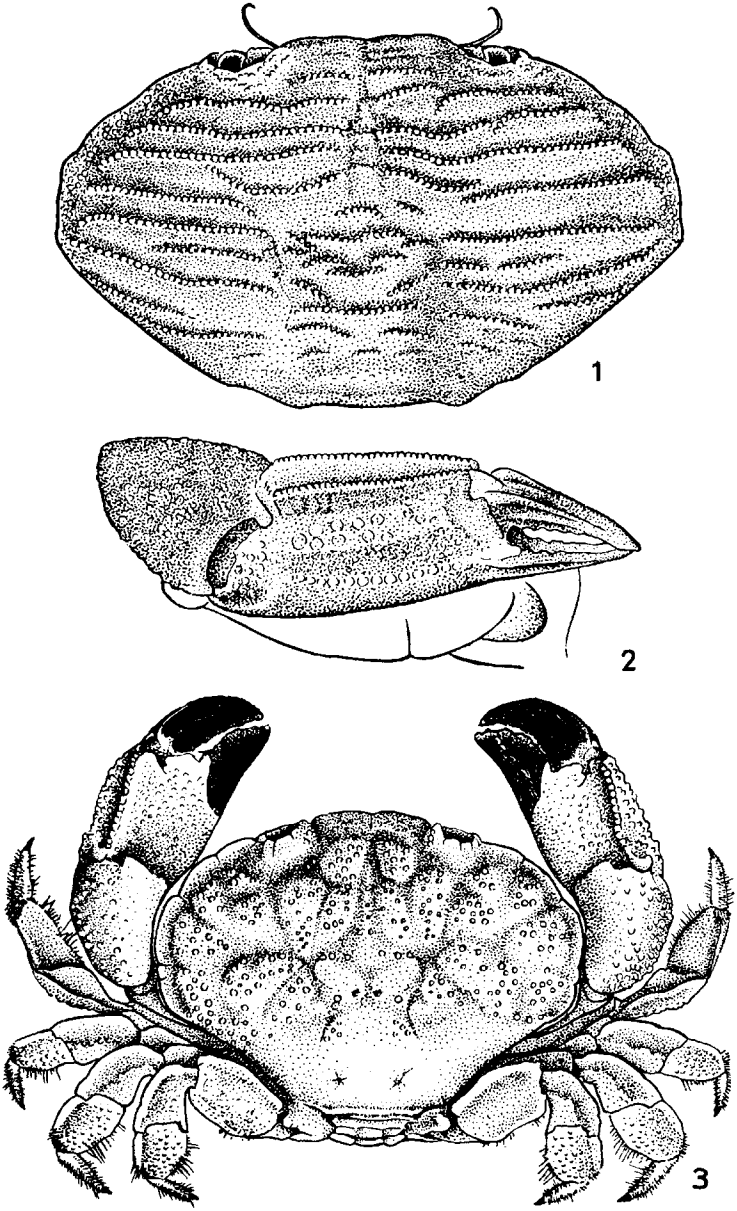

Fig. 1. *Neoliomera striata* nov. spec., from Obi latoe, dorsal view, × 6.

Fig. 2. Same specimen, right cheliped, dorsal view, × 10.

Fig. 3. *Platypodia alcocki* nov. spec., from Padang, dorsal view, × 1½.

13a Cutting edge of immovable finger with one large tooth . *fissa* (Henderson).
14 Protogastric lobes only partially or not at all divided. *eydouxii* (A. M. Edw.).
14a Protogastric lobes divided over their whole length . . . . . 15.
15 Interregional furrows broad, hairy . . . . . *violacea* (A. M. Edw.).
15a Interregional furrows less broad . . . . . *granulosa* (Rüppell).

I have not seen material belonging to *digitalis* Rathbun, which according to her, belongs in the *granulosa*-group; she describes this species, however, as without crests on the walking legs; now these crests are characteristic for the genus, and if this species really belongs here the generic diagnosis has to be altered.