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THE DANISH EXPEDITION TO SIAM 1899-1900

V. Brachyura

by

Mary J. Rathbun
(Washington D. C.)

With 2 plates and a map

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THE DANISH EXPEDITION TO SIAM 1899-1900

D. Kgl. Danske Vidensk. Selsk. Skrifter. 7. Række, naturvidensk. og mathem. Afd. V. 4

V. Brachyura

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With 2 plates and a map



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The crabs here described are the result of the exploration by Dr. TH. MORTENSEN of the eastern coast of the Gulf of Siam from Koh si Chang, near the head of the gulf, to Koh Kong at the south, in about 11° north latitude. The passages formed by the numerous islands fringing the mainland proved to be an excellent collecting ground. Operations were continued for a period of about four months (from December, 1899, to March, 1900) and from the shore line to a depth of 30 fathoms. The collection obtained is a large one, comprising 204 species, and probably represents a large proportion of the fauna actually existing there. A few specimens are from Singapore.

The Gulf of Siam occupies a somewhat central position in the marine Asiatic fauna, being midway between the Chinese and Japanese seas on the one hand and the Indian Ocean on the other, while in an intermediate direction radiates the Malayan Archipelago. While the Brachyura are in general Indo-Pacific in character, 72 per cent of the previously known species being enumerated by ALCOCK in his "Materials for a Carcinological Fauna of India," yet there are certain features which seem to be peculiar to the Gulf of Siam. Of the twenty-seven new species, three represent as many new genera, and one makes necessary a new subfamily. Several of these forms are catometopous crabs with a semicircular carapace, that is, with a squarish posterior, and an arcuate anterior outline, the antero-lateral angles being rounded off. The collection is noticeably rich in species of this build, belonging to the families *Gonoplacidae* (subfamilies *Rhizopinæ* and *Hexapodinæ*) and *Pinnotheridae*. Next in importance are the *Leucosiidae* which number 31 species.

One is struck with the many minute specimens in the collection; their presence may be attributed either to the zeal of the collector or to their relative abundance in this sheltered arm of the sea.

The classification used in this paper is that of BORRADAILE (cf. Ann. Mag. Nat. Hist. (7), XIX, June, 1907, 457—486). In the case of species included in ALCOCK's memoir above mentioned,¹ synonymical references are restricted to that work, which contains full synonymy and descriptions.

The types of new species are in the Copenhagen Museum and a set of cotypes is in the United States National Museum.

¹ Journ. Asiat. Soc. Bengal, LXIV, 1895; LXV, 1896; LXVII, 1898; LXVIII, 1899; LXIX, 1900.

The new forms described are as follows:—

- Heteronucia mesanensis*, sp. nov.
Cryptonemus mortenseni, sp. nov.
Philyra olivacea, sp. nov.
Arcania siamensis, sp. nov.
Rhynchoplax coralicola, sp. nov.
Cleistostoma lingulatum, sp. nov.
Camptandrium paludicola, sp. nov.
Acmæopleura rotunda, sp. nov.
Sesarma (Chiromantes) siamense, sp. nov.
Pinnotheres bürgeri, sp. nov.
 — *lanensis*, sp. nov.
 — *quadratus*, sp. nov.
 — *nigrans*, sp. nov.
 — *kamensis*, sp. nov.
 — *kutensis*, sp. nov.
 — *siamensis*, sp. nov.
Mortensenella forceps, gen. et sp. nov.
Asthenognathus hexagonum, sp. nov.
Litocheira cristata, sp. nov.
Megæsthesius sagedæ, gen. et sp. nov.
Typhlocarcinopsinae, subfam. nov.
Typhlocarcinops canaliculata, gen. et sp. nov.
Thaumastoplax orientalis, sp. nov.
 — *chuenensis*, sp. nov.
Lambdophallus anfractus, sp. nov.
Pilumnus borradailei, sp. nov.
Actumnus changensis, sp. nov.
Heteropanope sexangula, sp. nov.

In order to secure these new forms for this collection a preliminary description of them was published in the Proceedings of the Biological Society of Washington, Vol. XXII, June 25, 1909, pp. 107—114, in a paper entitled "New Crabs from the Gulf of Siam."

The following new names are given to previously known species:—

- Uca manii*.
Pinnotheres alcocki.
Hypocolpus haanii.
Portunus (Lupocycloporus) innominatus.

These names likewise were first published in the paper quoted. The drawings were made by Miss VIOLET DANDRIDGE.

Tribe **Brachyura.**
Subtribe **Oxystomata.**
Family **Dorippidæ.**

Dorippe dorsipes (Linnæus).

Dorippe dorsipes ALCOCK, LXV, 277, 1896.

Between Koh Mesan and Cap Liant, 9 fath.; II. 4; 1 juv. Koh Kam, 5 fath., gravel; II. 6; 1 juv. Koh Kahdat, 5–8 fath., sandy mud; II. 16 and III. 4; 1 juv. North side of Koh Mesan, 10–15 fath., stones, shells; II; 1 juv. Tung Kaben, 6 fath., sand, mud, phanerogams; II. 22; 1 ♀. Koh Lan, 30 fath., mud; III. 2; 1 juv. Koh Kram, 30 fath.; III. 2 and 21; 1 juv.

In the adults that I have examined, the carapace of both sexes is broader than long. In young specimens the eyes project laterally beyond the external spine of the orbit.

Dorippe facchino (Herbst).

Dorippe facchino ALCOCK, LXV, 278, 1896.

Coast of Lem Ngob, 0–1 fath., stones and sand; XII; 1 ♀. Koh Kahdat, 8–10 fath., mud; I. 27; 1 ♀. Koh Kahdat, 5–8 fath., sandy mud; II. 16 and III. 4; 3 ♀ ovigerous. Sound at Koh Chang, 3–5 fath., soft clay; 1900; 1 juv., soft shell.

Dorippe astuta Fabricius.

Dorippe astuta ALCOCK, LXV, 280, 1896.

Mouth of the river, Paknam-wen, in Chinamen's tow-nets; I. 30; 1 ♂. Koh Chik; II. 2; 1 ♀ ovigerous. Koh Chang, near the Station, low water; III. 10; 1 juv.; crept about with a large leaf over it.

The third segment of the male abdomen has a blunt transverse ridge which is bilobed.

Family **Leucosiidæ.**

Subfamily **Leucosiinæ.**

Oreophorus rugosus Stimpson.

Oreophorus rugosus STIMPSON, Smithson. Misc. Coll., XLIX, 159, pl. XIX, fig. 6, 6 a, 1907.

Koh Kam, 5 fath., gravel; II. 6; 1 ♀ immature.

Tlos muriger Adams and White.

Tlos muriger ADAMS and WHITE, Zool. Samarang, Crust., 58, pl. XIII, fig. 2, 1848.

N. of Koh Kut, 10 fath.; I. 23; 1 ♂. Koh Chuen, 30 fath., shell bottom; II; 1 ♀ juv. 6 miles East of Cap Liant, 9 fath., shell bottom; II. 1; 1 ♀.

Nursia lar (Fabricius).

Parthenope lar FABRICIUS, Entom. Syst., Suppl., 354, 1798.

Nursia hardwickii LEACH, ALCOCK, LXV, 181, 1896.

Singapore, 2—3 fath.; XII. 4; 1 ♂ 1 ♀. Between Koh Kut and Koh Kahdat, 10 fath., shell bottom; I. 10; 2 ♂ 3 ♀. North of Koh Kut, 10 fath.; I. 23; 1 ♀. North of Koh Chuen, 15 fath., mud, shells; II. 5; 1 ♀ juv. The Gulf at Rayong, 7—10 fath., sand, mud, shells; II. 8; 1 ♂ 1 ♀. North of Koh Kut, 15 fath.; III. 4; 1 ♀ ovigerous. Koh Lan, 30 fath., mud; III. 2; 1 ♀ juv. Between Koh Chuen and Koh Chang, 15 fath., mud; III. 3; 1 ♀ immature.

The species "*Parthenope Lar* Fabricius" has remained till now neglected, its author having classified it according to its general appearance without reference to the mouth parts. The original description is as follows:—

"P. thorace inaequali quadridentato: margine spinoso, chelis laeuibus.

"Habitat in India Dom. Daldorff.

"Corpus paruum obouatum. Rostrum truncatum, vix exsertum. Thorax inaequalis dentibus duobus in medio duobusque in linea dorsali postice eleuatis, acutis. Spinae marginalis utrinquetris planae, acutae: intermedia longiore. Chelae longissimae at omnino laeues."

The type specimen is in the Museum at Copenhagen.

MILNE EDWARDS had doubts as to the assignment of the species, for he says:—¹

"Si le Lambre lar. (*Parthenope lar*. Fabr. Supp. p. 354) appartient réellement à la tribu des Parthénopeiens, il paraît devoir se ranger parmi les Lambres, et il se distinguerait facilement de toutes les autres espèces par ses pinces qui sont tout-à-fait lisses."

Heteronucia mesanensis Rathbun.

Heteronucia mesanensis RATHBUN, Proc. Biol. Soc. Washington, XXII, 107, 1909.

As in the typical species of the genus, *H. vesiculosa* Alcock (LXV, 177, pl. VIII, fig. 1), the surface is closely set with vesiculous granules. The carapace is one-fourth broader than long, subglobular, very uneven; a narrow triangular area in the middle is bordered by a deep groove and embraces the cardiac and mesogastric regions, the cardiac region being also separately convex; branchial region nodulous and tuberculous, the larger protuberances in the anterior half; an inconspicuous tubercle on the hepatic region. The lateral margin begins with a tubercle at the angle of the buccal cavity, on the pterygostomian region there is a large

¹ Hist. Nat. Crust., I, 358, 1834.

obtuse-angled prominence, the anterior margin of which is nearly transverse and in line with the eye when viewed from above; behind it a smaller prominence, from which a row of tubercles curves backward and strongly upward to a point opposite the middle of the cardiac region. Posterior margin slightly convex. Front and orbits together nearly one-half as wide as the carapace; front with a median furrow, edge subtruncate, faintly bidentate, outer angles rounded. Orbit small, orbicular.

Outer maxilliped strongly bent near its middle so that the merus of the endognath is nearly at a right angle to the ischium. Abdomen of female with third to sixth segments fused.

Chelipeds knobby like the carapace; arm widening a little distally, palm extremely thick near its proximal end, fingers no longer than palm, opening vertically, curving inward, grooved, ridges finely granulate, prehensile edges evenly denticulate and overlapping, the dactylus lying within the pollex, and nearly as wide as the pollex.

This species differs from those hitherto described, in lacking conical tubercles on the carapace, and in the palm being as long as the fingers.

Dimensions. — Female, length 3.7 mm., width 4.5 mm.

Localities. — Between Koh Mesan and Koh Chuen, 15 fath.; II. 6; one ♀ ovigerous, type. Between the same islands, 30 fath., stones; II. 5; one ♀ adult.

***Ebalia woodmasoni* Alcock.**

Plate I, fig. 17.

Ebalia woodmasoni ALCOCK, LXV, 188, pl. VII, fig. 3, 1896.

Koh Kahdat, 1 fath., sandy bottom, sponges, dead corals; I. 11; 2 ♀ ovig.
Koh Kahdat, 4—5 fath., sand, stones, coral; II. 15—18; 1 ♀ ovig.

These specimens agree well with Alcock's description, but not so well with his figure, which represents the front considerably wider. The largest female is 6.7 mm. long, 6.7 mm. wide.

***Nucia tuberculosa* A. Milne Edwards.**

Nucia tuberculosa A. MILNE EDWARDS, Nouv. Arch. Mus. Hist. Nat., X, 44, pl. II, fig. 5, 5a, 1874.

Between Koh Mesan and Koh Chuen, 30 fath., stones; II. 5; 1 ♂ 1 ♀ immature.

Surface of body and limbs closely covered with acute granules or tubercles. Carapace subglobular, slightly hexagonal; a little broader than long, with the front set off by a furrow. Regions faintly indicated. Front more than one-third width of carapace. Merus of maxillipeds sharply acuminate. Chelipeds not much longer

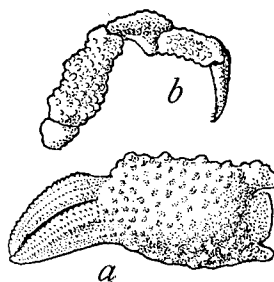


Fig. 1.

Heteronucia mesanensis,
type ♀, 4.5 mm. wide:
a, chela; b, leg.

than the carapace; palm so swollen as to be subglobular; fingers almost as long as palm, their opposed edges meeting.

Dimensions. — Length of ♂, 2 mm., width 2·2 mm.

Persephona fugax (Fabricius).

Myra fugax ALCOCK, LXV, 202, 1896.

South of Koh Bidang, 9 fath., mud, shells; I. 18; 1 ♀. North of Koh Kut, 10 fath.; I. 23; 1 ♂. 4—6 miles S. of Koh Samit, 14—18 fath.; II. 1; 1 ♀. Koh Kahdat, 5—8 fath., sandy mud; II. 16 and III. 4; 2 ♂. Between Koh Chuen and Koh Chang, 15 fath., mud; III. 3; 1 ♀ with Rhizocephalid parasite in abdomen.

Persephona pentacantha (Alcock).

Myra pentacantha ALCOCK, LXV, 204, 1896.

Singapore, 2—3 fath.; XII. 4; 1 ♀ juv. Koh Kahdat, 5—8 fath., sandy mud; II. 16 and III. 4; 1 ♀ mature. Tung Kaben, 6 fath., sand, mud, phanerogams; II. 22; 1 ♀ immature.

The measurements of these 3 females are as follows:— Singapore, length 9·8 mm., without spine 8 mm., width 7·8 mm. Koh Kahdat, length 17·1 mm., without spine 14·9 mm., width 13·7 mm. Tung Kaben, length 21·9 mm., without spine 19 mm., width 17·1 mm.

The series indicates that the species is distinct from *P. fugax*. The two smaller females have the characters given by ALCOCK. The largest one, not adult, differs from the smaller ones in being less rough, in having the spinule of the postero-lateral margin and those of the antero-lateral margin reduced to large granules as in adult *fugax*. This species differs from *P. fugax* in lacking the fringe of hair along the inner part of the apposed edges of the external maxillipeds.

Persephona affinis (Bell).

Myra affinis ALCOCK, LXV, 205, 1896.

Koh Kam, 5 fath., gravel; II. 6; 1 ♀ juv. Between Koh Mesan and Koh Chuen, 15 fath., stones; II. 6; 1 ♂. Between Koh Riat and Koh Mesan, 3—5 fath., sand, algæ; II. 7; 1 ♀ juv. Gulf of Rayong, 7—10 fath., sand, mud, shells; II. 8; 1 ♂ 2 ♀ juv. Koh Chuen, 30 fath., shell bottom; II; 2 ♂ 1 ♀ juv., 1 ♀ ovig. Koh Kram, 30 fath.; III. 2 and 21; 1 ♂.

The only adult ♂ is that from Koh Kram, the only adult ♀ comes from Koh Chuen. The ♀ differs much from the ♂, as the surface is very much smoother, the granules are smaller and further apart, so that while the carapace appears rough to the naked eye, the granules do not stand out sharply as in the ♂.

Persephona elegans (Bell).

Plate I, fig. 12.

Myra elegans ALCOCK, LXV, 208, 1896.

Twenty-one specimens of this rare species were taken at nine stations:—

West of Koh Kong, 10—15 fath.; I. 24; 3 ♂. South of Koh Kut, 17—20 fath., mud; I. 28; 2 ♂. 10—12 miles west of Koh Chang, 20 fath., mud; I. 29; 4 ♂ 2 ♀ ovig. 20 miles south of Koh Samit, 20 fath.; I. 31; 3 ♂ 1 ♀ ovig. 4—6 miles south of Koh Samit, 14—18 fath.; II. 1; 1 ♀ ovig. Koh Kahdat, 5—8 fath., sandy mud; II. 16 and III. 4; 1 ♀ ovig. 7 miles NW. to W. of Koh si Chang, 10 fath., mud; II. 24; 1 ♂. Between Koh Chuen and Koh Chang, 15 fath., mud; III. 3; 1 ♂ 1 ♀ ovig. Sound at Koh Chang, 3—5 fath., soft clay; 1900; 1 ♀ juv.

Dimensions. — Length of largest ♂ (Koh Kong), 19·5 mm., width 10·5 mm. Length of largest ♀ (between Koh Chuen and Koh Chang), 18·3 mm., width 10·4 mm.

Leucosides longifrons (de Haan).*Leucosia longifrons* ALCOCK, LXV, 217, 1896.

Koh Kahdat, 4—5 fath., sand, stones, coral; II. 15—18; 1 ♀ juv. South of Koh Mak, 5—6 fath.; II. 17; 1 ♀ juv.

The largest of these specimens is 10·8 mm. long. The front is shorter and more distinctly tridentate than in adults with which they have been compared. The color markings (now very faint) consist of numerous fine brownish wavy lines running inward and backward from the antero-lateral margins, and a few small spots along the lateral margins.

Leucosides longifrons pulcherrima (Miers).

Plate I, fig. 14.

Leucosia longifrons var. *pulcherrima* ALCOCK, LXV, 219, 1896.

Koh Kahdat, 4—5 fath., sand, stones, coral; II. 15—18; 1 ♂ 1 ♀ immature.

Both have the same color pattern:— two red rings on the posterior half of the carapace, and two larger trefoils of the same color on the anterior half, each enclosing three white spots, two large and one small.

Leucosides urania (Herbst).

Plate I, fig. 1.

Leucosia urania ALCOCK, LXV, 220, 1896.

West coast of Koh Chang, a little north of the small islands, 10 fath., mud bottom, dead shells; I. 16; 1 ♂. Koh Lan, 30 fath., mud; II. 3; 1 ♂ 1 ♀. Koh Kahdat, 5—8 fath., sandy mud; II. 16 and III. 4; 2 ♂ 1 ♀.

Largest specimen, a male (Koh Kahdat), 30·3 mm. long, 24·9 mm. broad.

These specimens differ from ALCOCK's description as follows:— The hand is not as broad as long, the dactyli of the legs are a little longer than their propodi;

the color is different:— Specimens that have been in alcohol $6\frac{1}{2}$ years have the carapace and chelipeds above smoky, with the carapace light yellowish behind and with a longitudinal row of faint light spots either side of the middle; legs banded with deep yellowish.

Leucosides haswelli (Miers).

Plate I, fig. 16.

Leucosia haswelli ALCOCK, LXV, 222, 1896.

Koh Chuen, 30 fath., shell bottom; II. 1900; 1 ♂.

In this specimen there are 19 or 20 lateral tubercles, beginning at the anterior end of the hepatic region and extending to the level of the base of the first ambulatory leg; tubercles mostly large; on the antero-lateral margin there are one or two small tubercles or granules just behind the front, followed by 7 or 8 large, spaced tubercles; on the postero-lateral margin the tubercles are smaller than those immediately preceding, diminish regularly backward, and are crowded close together. These tubercles, as well as those on the upper surface of the arm and inner margin of wrist and hand are bright red. The hand has, below the inner edge, a row of faint granules extending its whole length; outer margin of hand rather sharp.

Leucosides whitei (Bell).

Leucosia whitei ALCOCK, LXV, 225, 1896.

Koh Chuen, 30 fath., shell bottom; II. 1900; 1 ♀.

Leucosides hæmatosticta (Adams and White).

Leucosia hæmatosticta ALCOCK, LXV, 229, 1896.

4 miles S. of Koh Sakait, 9 fath., shell bottom; II. 3; 1 ♀ juv. Koh Kam, 5 fath., gravel; II. 6; 1 ♂ juv. Between Koh Chuen and Koh Chang, 15 fath., mud; III. 3; 1 ♂.

Leucosides margaritata (A. Milne Edwards).

Leucosia margaritata ALCOCK, LXV, 230, 1896.

Between Koh Kahdat and Koh Kut, 6 fath., sandy clay; I. 9; 1 ♀. North of Koh Kut, 10 fath.; I. 23; 1 ♂. 15 miles west of Koh Kut, 30 fath. (s. m.); I. 28; 1 ♂. Between Koh Chuen and Koh Chang, 15 fath., mud; III. 3; 1 ♀.

Leucosides craniolaris (Linnæus).

Leucosia craniolaris ALCOCK, LXV, 231, 1896.

Singapore, 2—3 fath.; XII. 4; 2 ♀ (1 ovig.). 10—12 miles west of Koh Chang, 20 fath., mud; I. 29; 1 ♂ 1 ♀ ovig. 20 miles south of Koh Samit, 20 fath., mud; I. 31; 1 ♀. Koh Kahdat, 5—8 fath., sandy mud; II. 16 and III. 4; 2 ♂ 2 ♀ (1 ovig.). Tung Kaben, 6 fath., sand, mud, phanerogams; II. 22; 3 ♂. Between Koh Chuen and Koh Chang, 15 fath., mud; III. 3; 1 ♂. North of Koh Kut, 15 fath., mud; III. 4; 1 ♀ ovig.

Leucosides vittata (Stimpson).

Leucosia vittata ALCOCK, LXV, 232, 1896; STIMPSON, Smithson. Misc. Coll., XLIX, 149, pl. XVIII, fig. 3, 3a, 1907.

Sound at Koh Chang, 3—5 fath., soft clay; 1900; 2 juv.

Onychomorpha lamelligera Stimpson.

Onychomorpha lamelligera ALCOCK, LXV, 236, 1896; STIMPSON, Smithson. Misc. Coll., XLIX, 164, pl. XIX, figs. 8, 8a, 1907.

North of Koh Kam, 10 fath., shell bottom; II. 6; 1 ♂. Koh Lan, 30 fath., mud; III. 2; 1 ♀ ovig.

The abdomen of the male has only three segments, the second to sixth inclusive being fused and bilobed in its widest part.

Cryptocnemus mortenseni Rathbun.

Cryptocnemus mortenseni RATHBUN, Proc. Biol. Soc. Washington. XXII, 107, 1909.

Nearly related to *C. pentagonus* Stimpson. Carapace equally broad, but with the margin of the posterior half regularly arched, without postero-lateral angles;

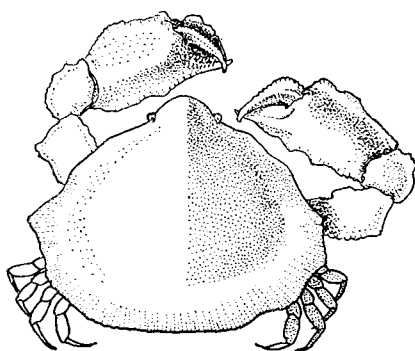


Fig. 2. *Cryptocnemus mortenseni*, type ♂, 3.8 mm. wide.

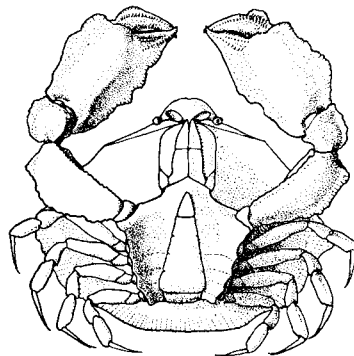


Fig. 3. *Cryptocnemus mortenseni*, type ♂, 3.8 mm. wide, ventral view.

margin of anterior half slightly angled at the hepatic region; front ascending, its edge arcuate, not acute as in *C. pentagonus*, forming a very shallow reentering angle with the hepatic margin. Carapace smoothly rounded in the middle and surrounded by a thin striated rim as in *Onychomorpha lamelligera*; rim widest in the postero-lateral portion; from the hepatic angle its sharp edge is continued downward to the anterior margin of the buccal cavity, and forms the lower edge of a narrow facet, of which the upper margin, or true margin of the carapace, is bluntly edged and in its outer portion not well defined.

Merus of outer maxilliped as long as the ischium.

Chelipeds about $1\frac{1}{4}$ times as long as the carapace, nearly naked. Inner and outer margins of arm and propodus and outer margin of wrist and dactylus with

a striated crest like that on the carapace. The palm measured along its outer edge is about $1\frac{1}{4}$ times its greatest width; immovable finger broadly triangular, sharp-pointed; dactylus strongly bent down.

The legs may be entirely concealed beneath the carapace; they have thin cristiform edges and very slender dactyli.

Dimensions. — Male type, length 3 mm., width 3.8 mm.

Localities. — Koh Chuen, 30 fath., shell bottom; I. 2; 1 ♂, type, immature. North of Koh Mesan, 15 fath., stones, shells; II. 5; 1 ♀ immature.

Philyra anatum (Herbst).

Cancer anatum HERBST, Naturg. Krabben u. Krebse, I, 93, pl. II, fig. 19, 1783.

Philyra globulosa MILNE EDWARDS, ALCOCK, LXV, 245, 1896.

East of Koh Chang, 6 fath., seine; I. 25; 1 ♂. Off Koh Kut, 6 fath.; I. 26; 1 ♀ juv. Among the small islands west of Koh Chang, 4–5 fath., mud; III. 9; 1 ♂. Sound at Koh Chang, 3–5 fath., soft clay bottom; 1 ♂ 3 juv.

Philyra olivacea Rathbun.

Plate II, fig. 17.

Philyra olivacea RATHBUN, Proc. Biol. Soc. Washington. XXII, 108, 1909.

Carapace convex, elongate oval, with a well defined hepatic facet; a depression either side of the cardiac and intestinal regions. Surface coarsely punctate, and, on the more elevated portions, granulate. From the postero-lateral margin two oblique lines run inward and converge, forming a small triangular area.

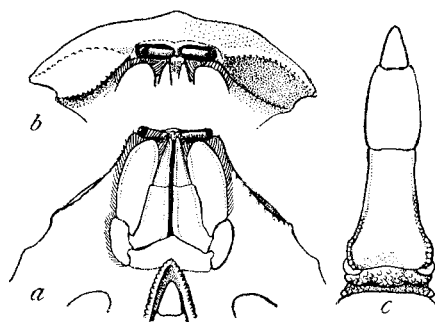


Fig. 4. *Philyra olivacea*, type ♂, 7.8 mm. wide: a, lower view of anterior half; b, front view; c, abdomen.

Front subtruncate, with a median furrow, and a slight point at the middle of the margin; the ends of the maxillipeds are visible in a dorsal view. Eyes long and slender. The lower margin of the hepatic facet has a strong tooth at its posterior third. The lateral margin of the carapace is angled at the posterior end of the facet, and again a short distance behind that point, at the widest part of the carapace; edge between these angles straight. Posterior margin narrow, prominent and trilobate; in the ♂ the outer lobes or teeth are much more prominent than in the ♀.

Sternum granulate; in the male there is a strong line of granules bordering the anterior half of the abdominal cavity. External maxillipeds with the edges granulate, the exognath broadly oval at the extremity, the merus of the endognath narrow, its outer edge straight. In the ♀ there is a fringe of hair near inner edge of endognath.

The chelipeds in the adult male are $1\frac{1}{2}$ times, in the adult female $1\frac{1}{4}$ times, the length of the carapace; surface granulous, the granules coarser along the inner

and outer margins, and on the lower surface of the arm; hand partly smooth, $\frac{2}{3}$ as wide as its outer length; outer edge straight, inner convex; dactylus $\frac{1}{4}$ longer than outer edge of palm; opposed edges of fingers denticulate throughout. Legs slender, the first pair reaching past the wrist by half the length of their dactyli; last two joints hairy.

The ♂ abdomen consists of 5 pieces, the third, fourth and fifth segments being fused; first and second and outer edge of third granulous; third bilobed; penultimate segment unarmed and wider than the terminal half of the preceding segment. The basal half of the ♀ abdomen, as well as the margins of the long segment, are coarsely granulous.

The color of the carapace in alcohol is olive green, chelipeds yellowish-brown, legs mostly dark reddish-brown.

Length of type ♂, 9 mm., width 7.8 mm.

Locality. — Coast of Lem Ngob (seine); XII. 26; 1 ♂ (type) 1 ♀.

Near *P. fuliginosa* Tozzetti (Zool. Magenta, Crost., p. 201, pl. XII, fig. 3a—g, 1877), from Java, but differs in wanting a postero-lateral angulation, and in the form of the ♂ abdomen and chela.

***Pseudophilyra tridentata* Miers.**

Plate I, fig. 2.

Pseudophilyra tridentata ALCOCK, LXV, 250, 1896.

Between Koh Mesan and Koh Chuen, 38 fath., stones; II. 7; 1 ♂. Koh Kahdat, 4—5 fath., sand, stones, coral; II. 15—18; 1 ♀ ovig.

***Pseudophilyra melita* de Man.**

Plate I, fig. 13.

Pseudophilyra melita ALCOCK, LXV, 253, 1896.

Between Koh Mesan and Cap Liant, 9 fath.; II. 4; 4 ♂ 2 ♀. Koh Kam, 5 fath., gravel; II. 6; 1 ♀ ovig. Between Koh Riat and Koh Mesan, 3—5 fath., sand, algæ; II. 7; 2 ♂ 1 ♀ ovig.

Subfamily Iliinæ.

***Myrodes eudactylus* Bell.**

Myrodes eudactylus ALCOCK, LXV, 255, 1896.

Lem Ngob, mangrove swamp; XII. 23, 24 or 27; one cheliped only. 4 miles south of Koh Sakait, 9 fath., shell bottom; II. 3; 1 ♀ immature. North of Koh Chuen, 15 fath., mud, shells; II. 5; 1 ♀. Koh Chuen, 30 fath., shell bottom; II; 3 ♂ 5 ♀. Koh Kahdat, 4—5 fath., sand, stones, coral; II. 15—18; 2 ♂ 2 ♀ 4 juv. Koh Kahdat, 5—8 fath., sandy mud; II. 16 and III. 4; 1 ♂ 1 ♀ juv. South of Koh Mak, 5—6 fath.; II. 17; 1 ♂ 5 juv. Between Koh Rin and Cliff Rock (north of Koh Kram), 15 fath.; III. 2; 1 ♀ immature. Koh Kram, 30 fath.; III. 2 and 21; 1 ♀ juv.

***Iphiculus spongiosus* Adams and White.**

Iphiculus spongiosus ALCOCK, LXV, 256, 1896.

Singapore, 2—3 fath.; XII. 4; 1 ♂. Koh Kahdat, 8—10 fath., mud; I. 27; 1 ♀ juv. 12 miles east of Koh Mak, 20 fath., large seine; I. 28; 1 ♂. South of Koh Kut, 17—20 fath., mud; I. 28; 1 ♂. 15 miles west of Koh Kut, 30 fath. (s. m.); I. 28; 1 ♂. 10—12 miles west of Koh Chang, 20 fath., mud; I. 29; 2 ♂ 2 ♀. 20 miles south of Koh Samit, 20 fath., mud; I. 31; 1 ♂. 4—6 miles south of Koh Samit, 14—18 fath.; II. 1; 1 ♀ ovig. North of Koh Kut, 15 fath., mud; III. 4; 1 ♂ 2 ♀.

***Arcania septemspinosa* (Fabricius).**

Arcania septemspinosa ALCOCK, LXV, 265, 1896.

South of Koh Kut, 17—20 fath., mud; I. 28; 4 ♀ (2 ovig.). 15 miles west of Koh Kut, 30 fath. (s. m.); I. 28; 1 ♀ juv. 10—12 miles west of Koh Chang, 20 fath., mud; I. 29; 1 ♀ juv. 20 miles south of Koh Samit, 20 fath., mud; I. 31; 2 ♂ 2 ♀ (1 ovig.). Between Koh Chuen and Koh Chang, 15 fath., mud; III. 3; 1 ♂. North of Koh Kut, 15 fath., mud; III. 4; 1 ♂.

***Arcania siamensis* Rathbun.**

Plate I, fig. 11.

Arcania siamensis RATHBUN, Proc. Biol. Soc. Washington, XXII, 108, 1909.

Near *A. septemspinosa* (Fabricius), from which it differs in few particulars: Carapace more subglobular, the branchial regions being more swollen. Surface densely covered with granules visible to the naked eye. The seven marginal spines shorter than in *A. septemspinosa*; the long lateral spine is less than one-third as wide as the carapace; the five posterior spines are short, subequal, the median one very slightly longer than the others.

Locality. — Sound at Koh Chang, 3—5 fath., soft clay bottom; 1900; 1 ♀ immature (type), 1 small ♂. A ♂ from Singapore, collected by E. DESCHAMPS, is in the U. S. National Museum.

Length of type ♀, with spine, 17.5 mm.; without spine 15.7 mm.; width, with spines, 24.5 mm.; without spines 15.5 mm.

***Arcania undecimspinosa* de Haan.**

Arcania undecimspinosa ALCOCK, LXV, 266, 1896.

Koh Kam, 5 fath., gravel; II. 6; 1 ♂ incomplete.

***Ixa cylindrus* (Fabricius).**

Ixa cylindrus ALCOCK, LXV, 271, 1896.

4 miles south of Koh Sakait, 9 fath., shell bottom; II. 3; 1 ♂. Koh Kahdat, 5—8 fath., sandy mud; II. 16 and III. 4; 1 ♀ ovig. Tung Kaben, 6 fath., sand, mud, phanerogams; II. 22; 1 ♂.

Family Calappidæ.

Subfamily Calappinæ.

Calappa lophos (Herbst).

? *Calappa lophos* ALCOCK, LXV, 144, 1896 (not *C. guerini* Capello).

20 miles south of Koh Samit, 20 fath., mud; I. 31; 1 ♂. 4 miles south of Koh Sakait, 9 fath., shell bottom; II. 3; 1 ♀. Koh Kam, 5 fath., gravel; II. 6; 1 ♂ 1 ♀ 3 juv. Between Koh Mesan and Cap Liant, 5—8 fath., sand, stones; II. 7; 3 juv. Gulf of Rayong, 7—10 fath., sand, mud, shells; II. 8; 2 juv. Tung Kaben, 6 fath., sand, mud, phanerogams; II. 22; 1 juv. Koh Chuen, 30 fath., shell bottom; II; 1 juv.

The specimens are all small, the largest being 48·5 mm. wide. I have for comparison an adult ♀ 76 mm. wide from Japan, which has the characteristics of DE HAAN's fig. 1, pl. XX (Fauna Japonica, Crustacea), and differs from ALCOCK's description (loc. cit.) in having its extreme length (54·7 mm.) more than $\frac{2}{3}$ of its extreme breadth; in the front projecting forward beyond the level of the orbits; in having the anterior border of the endostomial septum convex and not incised. In the series of 14 Siamese specimens the width increases with age; a specimen 6 mm. long is only 6·5 wide, while one 2·5 mm. long is a little longer than wide.

Perhaps ALCOCK had a species other than *C. lophos* and conspecific with *C. guerini* Capello.

Subfamily Matutinæ.

Matuta banksii Leach.

Matuta banksii ALCOCK, LXV, 158, 1896.

Between Koh Mesan and Cap Liant, 9 fath.; II. 4; 2 juv. Between Koh Mesan and Cap Liant, 5—8 fath., sand, stones; II. 7; 1 juv. Koh Kam, 5 fath., gravel; II. 6; 2 juv. Between Koh Riat and Koh Mesan, 3—5 fath., sand, algæ; II. 7; 1 ♂ 1 ♀ 4 juv. Koh Kahdat, 4—5 fath., sand, stones; II. 15—18; 1 ♂ 1 ♀ 2 juv.

Matuta lunaris (Forskål).

Matuta victor ALCOCK, LXV, 160, 1896.

Southwest coast of Koh Chang, sand, in shrimp net; I. 18; 2 juv. Coast of Koh Kong; I. 23; 13 ♂ 7 ♀. Koh Chik; II. 2; 1 ♂. Shore outside the mangrove at the Station on Koh Chang; III. 11; 1 ♀.

Subtribe **Brachygnatha**.
Superfamily **Oxyrhyncha** or **Inachidea**.

Family **Hymenosomidæ**.

Rhynchoplax coralicola Rathbun.

Rhynchoplax coralicola, RATHBUN, Proc. Biol. Soc. Washington, XXII, 108, 1909.

Closely allied to *R. setirostris* Stimpson¹ (which I have not seen) and distinguished chiefly by having only one lateral spine instead of two.

Adult female. — Shell very thin and soft, spotted with fine black dots, and sparingly hairy, some of the hairs long and hooked. Carapace ovate, with a reentering angle above the base of the last leg, and a rostrum consisting of a long median spine and two very short lateral spines; regions indicated by fine impressed lines. Carapace bordered by a raised rim, passing behind the rostrum and above the well-marked and almost forward-pointing antero-lateral spine. A small post-ocular tooth. Eyes large, reaching forward as far as the lateral spines of the rostrum.

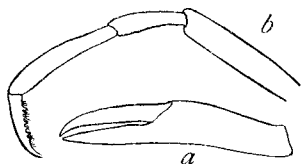


Fig. 5. *Rhynchoplax coralicola*, type ♀, 1.7 mm. wide: *a*, chela; *b*, leg.

Epistome deep. Merus and ischium of endognath subequal in length; merus obliquely cut on the antero-internal border; exognath posteriorly exposed. Chelipeds feeble, unarmed; fingers as long as palm. Legs longer than chelipeds, unarmed except the dactyli which are spinulose.

Dimensions. — Length, including rostrum, 2.2 mm.; excluding rostrum 1.8 mm.; width 1.7 mm.

Type locality. — Singapore, on coral reef; XII. 5; one adult ♀.

Family **Inachidæ**.

Subfamily **Inachinæ**.

Achæus lacertosus Stimpson.

Achæus lacertosus ALCOCK, LXIV, 172, 1895; STIMPSON, Smithson. Misc. Coll., XLIX, 20, pl. III, fig. 7, 1907.

Koh Chuen, 30 fath., shell bottom; I. 2; 1 ♀ ovig. Between Koh Riat and Koh Mesan, 3—5 fath., sand, algæ; II. 7; 1 ♀ ovig. Tung Kaben, 6 fath., sand, mud, phanerogams; II. 22; 1 ♀ ovig. Koh Kram, 30 fath., III. 2 and 21; 1 ♀.

Achæus affinis Miers.

Achæus affinis MIERS, ALCOCK, LXIV, 172, 1895.

Koh Kam, 5 fath., gravel; II. 6; 1 ♀. Between Koh Rin and Cliff Rock (N. of Koh Kram), 15 fath.; III. 2; 1 ♂. Koh Kram, 30 fath.; III. 2 and 21; 3 ♂ 4 ♀ 1 ovig.

¹ Smithson. Misc. Coll., XLIX, 148, 1907.

Paratymolus pubescens Miers.

Paratymolus pubescens MIERS, Proc. Zool. Soc. London, 1879, 45, pl. II, fig. 6.

Singapore, 2—3 fath.; XII. 4; 2 ♀ ovig. Koh Kahdat, 4—5 fath., sand, stones, coral; II. 15—18; 1 ♀. Koh Kahdat, 4—5 fath., sand, stones; II. 6; 1 ♀ ovig. Tung Kaben, 6 fath., sand, mud, phanerogams; II. 22; 1 ♂ juv., soft shell.

I think that this is MIERS'S species, although all the Siamese specimens have a posterior gastric tubercle, smaller than the two anterior tubercles. As in his figure, there is a single large tubercle on the postero-lateral margin. The larger of the antero-lateral tubercles is further back than shown in the figure. There are four tubercles in the oblique line on the dorsal surface of the branchial region; the two anterior tubercles are the larger.

Subfamily Acanthonychinæ.

Menæthius monoceros (Latreille).

Menæthius monoceros ALCOCK, LXIV, 197, 1895.

Koh Kahdat, among algæ; II. 19; 5 ♂ 4 ♀ ovig. 2 juv. Koh Kahdat, 1 fath., sandy bottom, sponges, dead corals; I. 11; 2 ♂ 2 ♀ ovig. Koh Chik; "animal green, covered with green algæ and among green algæ;" II. 11; 1 ♂. Koh Chang, 1 fath., coral; I—III; 1 juv.

Subfamily Pisinæ.

Halimus hilgendorfi (de Man).

Hyastenus hilgendorfi ALCOCK, LXIV, 209, 1895.

Between Koh Mesan and Cap Liant, 9 fath.; II. 4; 1 ♀ ovig. Between Koh Mesan and Cap Liant, 5—8 fath., sand, stones; II. 7; 1 ♀ ovig. Koh Kram, 30 fath.; III. 2 and 21; 1 ♂, with the right rostral horn bifurcate, almost from the base.

Halimus diacanthus (de Haan).

Hyastenus diacanthus ALCOCK, LXIV, 210, 1895.

Between Koh Kut and Koh Kahdat, 10 fath., shell bottom; I. 10; 1 juv. Koh Kam, 5 fath., gravel; II. 6; 1 ♂ 2 ♀ (1 ovig.). Between Koh Mesan and Koh Chuen, 15 fath., stones; II. 6; 1 ♀ ovig. Between Koh Riat and Koh Mesan, 3—5 fath., sand, algæ; II. 7; 1 ♀ ovig. Koh Chuen, 30 fath., shell bottom; 3 ♂ 4 ♀ 2 juv. Between Koh Rin and Cliff Rock (N. of Koh Kram), 15 fath.; III. 2; 1 ♀ juv. Koh Kram, 30 fath.; III. 2 and 21; 1 ♂ 1 ♀ 2 juv.

Halimus spinosus (A. Milne Edwards).

Hyastenus spinosus ALCOCK, LXIV, 211, 1895.

Koh Chuen, 30 fath., shell bottom; II; 1 ♂. Koh Kahdat, 5—8 fath., sandy mud; II. 6 and III. 4; 1 ♂ 1 ♀. Koh Kram, 30 fath.; III. 2 and 21; 3 ♂ 6 ♀. Between Koh Chuen and Koh Chang, 15 fath., mud; III. 3; 1 ♂ 1 ♀.

Halimus planasius (Adams and White).*Hystenus planasius* ALCOCK, LXIV, 212, 1895.

Koh Kam, 5 fath., gravel; II. 6; 1 juv. North side of Koh Mesan, 10—15 fath., stones, shells; II; 1 juv. Koh Chuen, 30 fath., shell bottom; II; 6 juv. Between Koh Rin and Cliff Rock (N. of Koh Kram), 15 fath.; III. 2; 1 juv. Koh Kram, 30 fath.; III. 2 and 21; 9 juv.

Halimus oryx (A. Milne Edwards).*Hystenus oryx* ALCOCK, LXIV, 214, 1895.

Singapore, 2—3 fath.; XII. 4; 2 juv. Singapore, coral reef; XII. 5; 1 ♀ juv. South of Koh Mak, 5—6 fath.; II. 17; 1 ♂ juv. In this specimen there is a short spine at the postero-lateral angle, as in de Man's figure (Arch. f. Naturg., LIII, pt. 1, pl. VII, fig. 2, 1887).

Phalangipus longipes (Linnæus).*Egeria arachnoides* ALCOCK, LXIV, 223, 1895.

Singapore, 2—3 fath.; XII. 4; 2 legs only. Koh Kam, 5 fath., gravel; II. 6; 1 ♂ 1 ♀. Koh Chuen, 30 fath., shell bottom; II; 2 ♂ 1 ♀ 4 juv. Koh Kram, 30 fath.; III. 2 and 21; 1 ♂ 1 ♀.

Doclea canalifera Stimpson.*Doclea canalifera* ALCOCK, LXIV, 228, 1895; STIMPSON, Smithsonian. Misc. Coll., XLIX, 7, pl. I, fig. 4, 1907.

Koh Kahdat, 5—8 fath., sandy mud; II. 16 and III. 4; 1 ♀ immature and soft shell. Koh Kram, 30 fath.; III. 2 and 21; 1 juv.

Doclea tetraptera Walker.*Doclea tetraptera* ALCOCK, LXIV, 231, 1895.

4 to 6 miles south of Koh Samit, 14—18 fath.; II. 1; 1 ♂ juv. 3 ♀ (2 ovig.). Koh Kahdat, 5—8 fath., sandy mud; II. 16 and III. 4; 1 ♂. Between Koh Chuen and Koh Chang, 15 fath., mud; III. 3; 2 ♂ juv. 1 ♀ juv. North of Koh Kul, 15 fath., mud; III. 4; fragment of carapace.

Subfamily **Schizophrysinæ**.**Chlorinoides aculeatus** (Milne Edwards).*Chlorinoides aculeatus* ALCOCK, LXIV, p. 241, 1895.

Between Koh Mesan and Koh Chuen, 30 fath., stones; II. 5; 1 ♀. Koh Kam, 5 fath., gravel; II. 6; 1 ♀ juv. Koh Chuen, 30 fath., shell bottom; II; 1 ♂ juv. North side of Koh Mesan, 10—15 fath., stones, shells; II; 1 ♀ juv., 1 juv. Between Koh Rin and Cliff Rock (N. of Koh Kram), 15 fath.; III. 2; 1 ♂ 3 ♀. Koh Kram, 30 fath.; III. 2 and 21; 2 ♂ 2 ♀.

Micippa philyra (Herbst).

Micippa philyra ALCOCK, LXIV, 249, 1895.

Koh Kahdat, 1 fath., sandy bottom, sponges, dead corals; I. 11; 1 ♀. Between Koh Mesan and Koh Chuen, 15 fath., stones; II. 6; 1 ♀ ovig. Koh Kahdat, 4—5 fath., sand, stones, coral; II. 15—18; 1 ♂ 2 ♀ (1 ovig.). South of Koh Mak, 5—6 fath.; II. 17; 3 ♂.

Micippa thalia (Herbst).

Micippa thalia ALCOCK, LXIV, 251, 1895.

Between Koh Kut and Koh Kahdat, 10 fath., shell bottom; I. 10; 1 juv. Koh Kam, 5 fath., gravel; II. 6; 1 ♂ 1 juv. Off Koh Sakait, sand; II. 23; 1 ♂. Koh Kram, 30 fath.; III. 2 and 21; 1 ♂.

Family Parthenopidæ.**Subfamily Parthenopinæ.****Parthenope (Parthenope) longimanus** (Linnæus).

Lambrus longimanus ALCOCK, LXIV, 260, 1895, and synonymy.¹

Singapore, 2—3 fath.; XII. 4; 1 juv. West of north end of Koh Kut, 11 fath.; I. 27; 1 ♂. 20 miles E. S. E. of Koh Samit, 13—14 fath., sandy mud, shells; II. 2; 1 ♀. N. of Koh Chuen, 15 fath., mud, shells; II. 5; 1 ♂ juv. Koh Kam, 5 fath., gravel; II. 6; 1 ♂ adult, 1 ♀ juv. Between Koh Mesan and Cap Liant, 5—8 fath., sand, stones; II. 7; 1 ♂ 3 juv. Koh Chuen, 30 fath., shell bottom; II. 1 ♂ 6 juv. Between Koh Rin and Cliff Rock (N. of Koh Kram), 15 fath.; III. 2; 1 ♂ juv. Koh Kram, 30 fath.; III. 2 and 21; 1 ♂ juv. N. of Koh Kut, 15 fath., mud; III. 4; 1 ♀.

Parthenope (Platylambrus) echinata (Herbst).

Lambrus (Platylambrus) echinatus ALCOCK, LXIV, 264, 1895.

Parthenope (Platylambrus) echinata RATHBUN, Bull. U. S. Fish Comm. for 1903, pt. III, 883, pl. XV, fig. 8, 1906.

Gulf of Rayong, 7—10 fath., sand, mud, shells; II. 8; 1 juv. Koh Lan, 30 fath., mud; III. 2; 1 ♀. Between Koh Rin and Cliff Rock (N. of Koh Kram), 15 fath.; III. 2; 2 juv. Koh Kram, 30 fath.; III. 2 and 21; 2 juv.

Parthenope (Rhinolambrus) longispinis (Miers).

Lambrus (Rhinolambrus) longispinis ALCOCK, LXIV, 266, 1895.

Between Koh Kut and Koh Kahdat, 10 fath., shell bottom; I. 10; 1 juv. 4 miles south of Koh Sakait, 9 fath., shell bottom; II. 3; 1 juv. Koh Kam, 5 fath., gravel; II. 6; 3 ♀ 1 juv. Between Koh Riat and Koh Mesan, 3—5 fath., sand, algæ; II. 7; 1 juv. Between Koh Mesan and Cap Liant, 5—8 fath., sand, stones; II. 7; 1 juv. 2 miles south of Koh Tulu, 10 fath., sandy mud, shells; II. 9; 1 juv. Koh

¹ The mark of interrogation should be omitted before "*Parthenope longimanus* Fabr."

Chuen, 30 fath., shell bottom; II; 1 juv. Koh Kahdat, 5—8 fath., sandy mud; II. 16 and III. 4; 2 juv. North of Koh Kut, 15 fath., mud; III. 4; 1 ♀.

Parthenope (Rhinolambrus) pelagica (Rüppell).

Lambrus (Rhinolambrus) pelagicus ALCOCK, LXIV, 267, 1895.

Koh Kahdat, 4—5 fath., sand, stones, coral; II. 15—18; 3 ♂ 1 ♀ 1 juv.

Parthenope (Aulacolambrus) hoplonotus (Adams and White).

Lambrus (Aulacolambrus) hoplonotus ALCOCK, LXIV, 273, 1895.

Singapore, 2—3 fath.; XII. 4; 2 chelipeds only. Between Koh Kut and Koh Kahdat, 10 fath., shell bottom; I. 10; 1 ♂. South of Koh Mak, 5—6 fath.; II. 17; 1 ♂.

Parthenope (Pseudolambrus) calappoides (Adams and White).

Lambrus (Parthenolambrus) calappoides ALCOCK, LXIV, 275, 1895.

Between Koh Mesan and Koh Chuen, 15 fath., stones; II. 6; 2 ♀ juv. Between Koh Riat and Koh Mesan, 3—5 fath., sand, algæ; II. 7; 1 ♀ juv. North side of Koh Mesan, 10—15 fath., stones, shells; II; 1 ♀ ovig.

Parthenope (Pseudolambrus) harpax (Adams and White).

Plate I, fig. 7.

Lambrus (Parthenope) Sandroekii HASWELL, Proc. Linn. Soc. N. S. W., IV, 452, pl. XXVII, fig. 2. 1879.

Lambrus (Parthenolambrus) harpax ALCOCK, LXIV, 278, 1895.

Between Koh Mesan and Cap Liant, 9 fath.; II. 4; 1 juv. North side of Koh Mesan, 10—15 fath., stones, shells; II; 1 ♂ juv. Koh Chuen, 30 fath., shell bottom; II; 2 ♀. Koh Kram, 30 fath.; III. 2 and 21; 1 ♀.

Cryptopodia fornicata (Fabricius).

Cryptopodia fornicata ALCOCK, LXIV, 282, 1895.

Between Koh Kut and Koh Kahdat, 10 fath., shell bottom; I. 10; 1 ♀ 2 juv. Tung Kaben, 6 fath., sand, mud, phanerogams; II. 22; 2 ♂. Koh Kahdat, 5—8 fath., sandy mud; II. 16 and III. 4; 1 ♂. North of Koh Kut, 15 fath., mud; III. 4; 1 ♀ immature.

Cryptopodia lævimana Miers.

Plate I, fig. 5.

Cryptopodia spatulifrons var. *lævimana* MIERS, Ann. Mag. Nat. Hist. (5) IV, 27, 1879.

Between Koh Mesan and Koh Chuen, 15 fath., stones; II. 6; 1 ♀ immature.

Compared with *C. fornicata* of equal size, the carapace is longer and narrower, about 1½ times as broad as long; the triangular median depression is nearer the posterior margin than the tip of the front, while the reverse is true in *fornicata*. Surface tubercular along the ridges and along the posterior and postero-lateral margins. The hands are broader and lower, a line of granules runs lengthwise along the middle of the under surface. Crests on the legs entire.

Gonatonotus pentagonus White.

Gonatonotus pentagonus WHITE, Proc. Zool. Soc. London, XV, 58, 1847; ADAMS and WHITE, Zool. Samarang, Crust., 33, pl. VI, fig. 7, 1848.

Between Koh Kut and Koh Kahdat, 10 fath., shell bottom; I. 10; 1 ♀ 1 juv. Koh Chuen, 30 fath., shell bottom; H; 5 ♂ 3 ♀ (2 ovig.) 5 juv. Koh Kahdat, 5—8 fath., sandy mud; II. 16 and III. 4; 1 ♀ ovig. Between Koh Rin and Cliff Rock (N. of Koh Kram), 15 fath.; III. 2; 1 ♂ 1 ♀ 1 juv. Koh Kram, 30 fath.; III. 2 and 21; 2 ♂ 3 ♀ (2 ovig.) 5 juv. On *Plococidaris bispinosa* (Lamk.), off Koh Kram, 30 fath., stones, shells; II. 23; 1 ♂ 1 ♀ ovig. 2 juv. Koh Kahdat, 8—10 fath., mud; I. 27; 1 juv. Koh Chuen, 30 fath., shell bottom; I. 2; 5 juv.

Subfamily Eumedoninæ.

Zebrida adamsii White.

Zebrida adamsii WHITE, Proc. Zool. Soc. London, XV, 121, 1847; ADAMS and WHITE, Crust. Zool. Samarang, 24, pl. VII, fig. 1, 1848.

On *Salmacis bicolor* Ag., off Koh Kram, 30 fath., stones, shells; II. 23; 1 ♀. Between Koh Mesan and Cap Liant, 5—9 fath.; II. 4—7; 1 ♀ ovig. On *Toxopneustes pileolus* (Lamk.), north side of Koh Mesan, 10—15 fath.; II. 5; 2 ♂. Koh Chuen, 30 fath., shell bottom; I. 2; 1 ♀ juv. Koh Kram, 30 fath.; III. 2 and 21; 1 ♂ juv. 1 juv.

The young specimens have the legs proportionally longer and narrower, and the projections small and inconspicuous. The smallest individual, 2 mm. long, has short blunt frontal lobes, the tip only of the lateral lobe is directed forward, the chelipeds and legs are unarmed, the latter slender, the propodus of the last pair only having a feeble projecting point on its posterior edge.

This is the crab mentioned by Dr. MORTENSEN in his work on the Siam-Echinoidea I. (Zool. Res. Danish Exped. to Siam 1899—1900. II. Mém. Acad. R. d. Sci. Copenhagen. 7. sér. I. 1904 p. 66 and 120) which was found on *Salmacis bicolor*, var. *rarispinus* Ag. and *Toxopneustes pileolus* (Lamk.), devouring “the spines (probably the muscles only), pedicellariæ and tube feet, quite cleaning the test; it mostly follows one area from the top downwards.”

Superfamily Brachyrhyncha or Cancridea.

Family Ocypodidæ.

Subfamily Ocypodinæ.

Ocypode ceratophthalma (Pallas).

Ocypoda ceratophthalma ALCOCK, LXIX, 345, 1900.

Coast of Koh Mak, sandy shore; I. 9; 4 juv. Coast at north point of Koh Chang; I. 15; 1 juv. West coast of Koh Chang; I. 16; 2 juv. Coast of Koh Mesan; II. 4—5; 1 juv. Koh Pløt; II. 10; 3 juv. Koh Kahdat; II. 18; 1 ♂.

Ocypode macrocera Milne Edwards.

Ocypoda macrocera ALCOCK, LXIX, 347, 1900.

Koh Kong, sandy beach; I. 24; 1 ♀ 1 juv.

Uca annulipes (Milne Edwards).

Gelasimus annulipes ALCOCK, LXIX, 353, 1900.

Mangrove swamp, Lem Ngob; XII. 23, 24 and 27; 8 ♂ 1 ♀. River on the west coast of Koh Chang (not above the limit to which the salt water enters at high water); I. 16; 1 juv. Koh Chang, stony coast at low water; I; 1 ♂.

Uca manii Rathbun.

Gelasimus acutus DE MAN, ALCOCK, LXIX, 360, 1900. Not *G. acutus* STIMPSON, which is synonymous with *U. dussumieri* (MILNE EDWARDS).

Uca manii RATHBUN, Proc. Biol. Soc. Washington, XXII, 114, 1909.

Mangrove swamp, Lem Ngob; XII. 23, 24 and 27; 11 ♂ 3 ♀ (2 ovig.).

Subfamily **Macrophthalminæ**.

Macrophthalmus verreauxi Milne Edwards.

Macrophthalmus verreauxi ALCOCK, LXIX, 377, 1900.

Between Koh Mesan and Cap Liant, 5—8 fath., sand, stones; II. 7; 1 ♂ 1 juv. Koh Kahdat, 4—5 fath., sand, stones, coral; II. 15—18; 4 ♂ 1 ♀ ovig. Koh Kahdat, 5—8 fath., sandy mud; II. 16 and III. 4; 1 ♀ ovig. South of Koh Mak, 5—6 fath.; II. 17; 2 ♂.

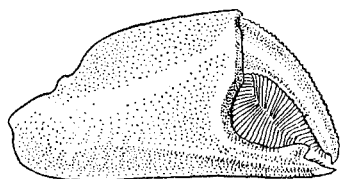


Fig. 6. Chela of *Macrophthalmus verreauxi*, Koh Mak, ♂, 8.5 mm. wide.

In these specimens, the longest of which, a male, is 5.9 mm. long by 8.8 mm. wide, the tips of the three lateral teeth are equidistant from the median line, but the first sinus is deeper than the second, so that the teeth are successively smaller.

The chela figured by MILNE EDWARDS (Ann. Sci. Nat. (3) Zool., XVIII, pl. IV, fig. 25c, 1852) must represent that of a female, as the immovable finger in the male is armed with a strong spine on its distal half (fig. 6).

Macrophthalmus dentatus Stimpson.

Macrophthalmus dentatus STIMPSON, Smithsonian. Misc. Coll., XLIX, 96, pl. XIII, fig. 1, 1907.

Between Koh Kahdat and Koh Kut, 6 fath., sandy clay; I. 9; 7 ♂ 7 ♀ (3 ovig.). North of Koh Kut, 10 fath.; I. 23; 1 ♂. Two miles south of Koh Tulu, 10 fath., sandy mud, shells; II. 9; 1 ♀ ovig. Sound at Koh Chang, 3—5 fath., soft clay; 1900; 2 ♂ 2 ♀ 1 ovig. Gulf of Siam (without further locality); 2 ♂ 2 ♀ ovig. 1 juv.

Macrophthalmus crassipes Milne Edwards.

Macrophthalmus crassipes ORTMANN, Zool. Jahrb., Syst., X, 345, 1897.

Shore outside the mangrove at the Station on Koh Chang; III. 11; 2 ♂.

Macrophthalmus convexus Stimpson.

Plate II, fig. 3.

Macrophthalmus convexus ALCOCK, LXIX, 378, 1900; STIMPSON, Smithson. Misc. Coll., XLIX, 97, pl. XIII, fig. 2, 1907.

Shore outside the mangrove at the Station on Koh Chang; III. 11; 1 ♂.

Macrophthalmus serratus White (?), Stimpson.

Macrophthalmus serratus WHITE (?) in ADAMS and WHITE, Zool. Samarang, Crust., 51, 1848; STIMPSON, Smithson. Misc. Coll., XLIX, 96, pl. XIII, fig. 3, 1907.

North of Koh Kong, 8 fath., mud bottom; I. 23; 1 ♂ 1 juv. Off Koh Kut, 6 fath.; I. 26; 2 ♀. North of Koh Kut, 15 fath., mud; III. 4; 1 ♂. Sound at Koh Chang, 3—5 fath., soft clay bottom; 1900; 20 juv.

Macrophthalmus erato de Man.

Macrophthalmus erato ALCOCK, LXIX, 381, 1900.

Koh Chang, stony coast at low water; I; 2 juv. Koh Kahdat, among algæ; II. 19; 1 juv.

Cleistostoma lingulatum Rathbun.

Cleistostoma lingulatum RATHBUN, Proc. Biol. Soc. Washington, XXII, 108, 1909.

Surface somewhat setose, setæ retaining mud. Carapace convex, finely sculptured, regions slightly indicated, fine frost-like granulation scattered over the surface, the granules forming clumps and thickened lines on the elevated parts; lateral borders sinuous, forming an obtuse angle at the anterior third where the carapace is widest, and a minute tooth at the anterior angle. Below the postero-lateral margin there is a subtriangular and nearly vertical facet, not visible in a dorsal view. Front between one-third and one-fourth the greatest width of the carapace, almost vertically deflexed, the vertical portion comprising two transverse, oval, concave surfaces separated on the median line. Upper border of orbit more oblique than in *C. dotilliforme* Alcock,¹ lower border spinulose. Above and parallel to the posterior margin, a line of granules; intervening area smooth.

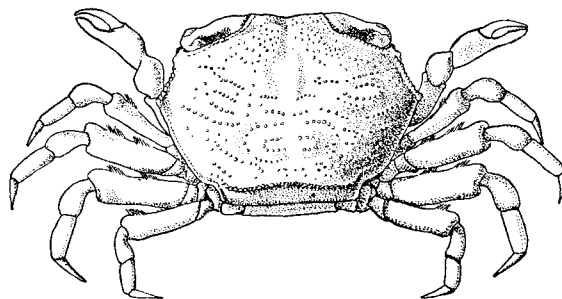


Fig. 7. *Cleistostoma lingulatum*, type ♀, 4.5 mm. wide.

¹ Jour. Asiat. Soc. Bengal, LXIX, 373, 1900; Illus. Investigator, X, pl. LXIV, fig. 1.

The epistome is narrower than in related species and its median tooth is long and lingulate. The exognath of the outer maxillipeds is entirely concealed; the merus of the endognath is longer than the ischium, has a deep sulcus near and parallel to its outer margin and is much narrowed anteriorly; the carpal segment is correspondingly small; the ischium has its distal inner corner produced beyond the otherwise transverse suture; an oblique line of hair is continued backward from this inner angle. Lower surface of carapace regularly granulous and setose.

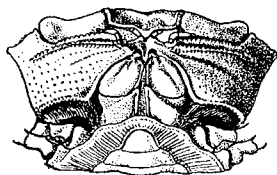


Fig. 8.
Cleistostoma lingulatum,
antero-ventral view of type ♀,
4.5 mm. wide.

Legs rather narrow and subcylindrical; the second and third pairs have each two tubercles, the first and fourth pairs each one tubercle, on their anterior margin, the tubercles fringed with hair; dactyli slender and sharp.

Dimensions. — Immature female, length 3.1 mm., width 4.5 mm., width of front 1.3 mm.

Type locality. — Mangrove swamp, Lem Ngob; XII, 23; 1 ♀ juv.

This species seems to lean towards the genus *Ilyoplax* Stimpson,¹ in having the exognath concealed; but in *Ilyoplax*, the carapace is soft, the legs have tympana, and the second pair is conspicuously the longest. Our species differs from *C. dilatata* de Haan² and *C. dotilliforme* Alcock in having the merognath narrower anteriorly, the epistome narrower (approaching the Mictyrinæ), and the non-flattened merus joints of the legs.

Subfamily Mictyrinæ.

Dotilla wichmanni de Man.

Dotilla wichmanni DE MAN, in Weber's Zool. Ergeb. einer Reise in Niederl. Ost-Indien, II, 308, pl. XVIII, fig. 8, 1892; Zool. Jahrb., Syst., VIII, 577, 1895.

Coast of Koh Kong; I. 23; 2 ♀ 1 juv. Koh Kong, sandy beach; I. 24; 9 ♂ 9 ♀ (1 ovig.). "These small crabs make small balls of sand, thrown out from their holes."

Family Gecarcinidæ.

Cardisoma carnifex (Herbst).

Cardisoma carnifex ALCOCK, LXIX, 445, 1900.

Koh Kahdat; II. 18; 3 specimens. Lem Ngob; 1 specimen.

Family Grapsidæ.

Subfamily Grapsinæ.

Grapsus grapsus tenuicrustatus (Herbst).

Grapsus grapsus tenuicrustatus RATHBUN, Bull. U. S. Fish Comm. for 1903, pt. III, 838, 1906.

Koh Kahdat; I. 11; 1 ♂.

¹ Smithsonian. Misc. Coll., XLIX, 100, 1907.

² Fauna Japon., Crust., 55, pl. VII, fig. 3, 1835.

Metopograpsus messor (Forskål).

Metopograpsus messor ALCOCK, LXIX, 397, 1900.

Coast of Lem Ngob, 0—1 fath., stones, sand; XII; 1 ♂. Koh Chang, 1 fath., coral; I—III; 1 juv.

Metopograpsus latifrons (White).

Metopograpsus latifrons KINGSLEY, Proc. Acad. Nat. Sci. Phila., 1880, 191.

Metopograpsus maculatus ALCOCK, LXIX, 398, 1900.

Mangrove swamp, Lem Ngob; XII. 23, 24 or 27; 1 juv. Coast of Koh Kong; I. 23; 1 ♂. North of Koh Chang, under leaves, seaweed, &c.; II. 10; 2 juv.

Metopograpsus quadridentatus Stimpson.

Metopograpsus quadridentatus STIMPSON, Smithson. Misc. Coll., XLIX, 115, pl. XVI, fig. 2, 1907.

Coast of Lem Ngob, 0—1 fath., stones and sand; XII; 1 ♂ 1 ♀ ovig. Koh Chang, stony coast at low water; I; 1 ♂ 3 ♀ ovig.

Subfamily **Varuninæ**.**Varuna litterata** (Fabricius).

Varuna litterata ALCOCK, LXIX, 401, 1900.

Mangrove swamp, Lem Ngob; XII. 23, 24 or 27; 1 ♀. Between Koh Mesan and Koh Chuen, on and under plants, surface; II. 5; 1 juv.

Camptandrium Stimpson.

Camptandrium STIMPSON, Proc. Acad. Nat. Sci. Phila., X, 106 [52], 1858; Smithson. Misc. Coll., XLIX, 137, 1907.

Carapace hexagonal, with the antero-lateral margins oblique and dentate. Fronto-orbital distance two-thirds, and front between one-third and one-fourth, the greatest width of the carapace. Front steeply inclined. Orbits large, shallow; inferior margin and infra-orbital crest approximated. Antennules oblique, in deep fossæ; septum broad. Antennæ with the basal joint small, rounded; flagellum standing in the orbital hiatus.

Epistome of moderate length (fore and aft). Buccal cavity large, much broader than long. Maxillipeds slightly or not at all gaping; endognath wide, the ischium not much longer than wide, merus wider than ischium and wider than long, outer margin convex, overlapping the exognath, outer angle strongly produced forward, palpus articulating at the middle of the anterior margin. Exognath narrow.

Chelipeds small and weak, much shorter, and in the male no more massive than the legs and resembling those of the female of *Uca* (= *Gelasimus*). Fingers hollowed at tip. Legs compressed, third pair longest; dactyli slender.

Resembles *Cyrtograpsus* Dana¹ in its general aspect but differs in the more deflexed front, slender chelipeds and large maxillipeds.

¹ Proc. Acad. Nat. Sci. Phila., V, pp. 247 and 250, 1851.

Camptandrium paludicola Rathbun.

Camptandrium paludicola RATHBUN, Proc. Biol. Soc. Washington, XXII, 109, 1909.

Immature female. Surface uneven, regions well marked, and ornamented with a few tubercles regularly placed: two transversely on the cardiac region, one on the intestinal region, four small in a square on the mesogastric region, one on each protogastric region, two diagonally at the inner part of the branchial region. Width of front one-third the greatest breadth of the carapace; lower edge visible from above, faintly bilobed; the two superior lobes are separated from each other and from the margin of the orbit by a deep furrow. The inner margin of the orbit is

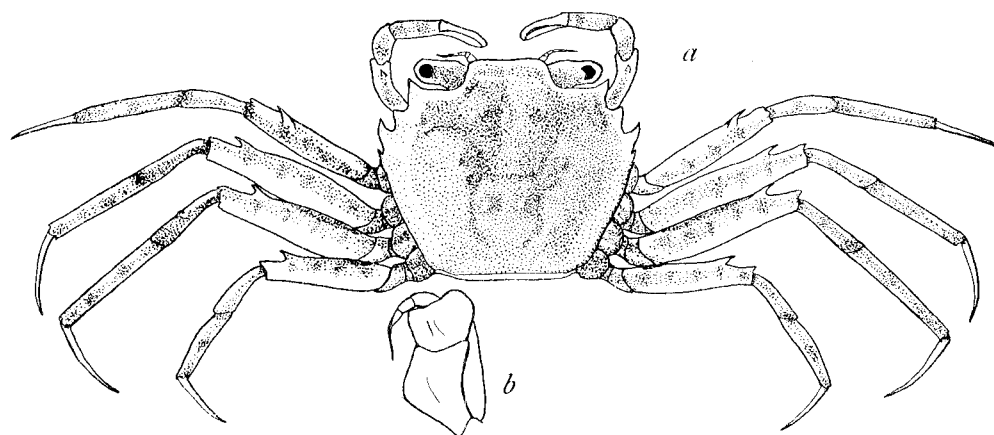


Fig. 9. *Camptandrium paludicola*, type ♀, 5.3 mm. wide: a, dorsal view; b, maxilliped.

oblique, the posterior margin nearly transverse, the outer angle an acutely pointed tooth which forms one of three large antero-lateral teeth. The first interval is wider than the second; the carapace is widest between the tips of the teeth of the third pair; behind, and at the base of, the third tooth, a much smaller tooth. Postero-lateral margin longer than antero-lateral.

Chelipeds feeble, about as long as carapace, subcylindrical. Subterminal spine on outer margin of arm. Wrist elongate. Palms over twice as long as wide. Fingers as long as palm, narrowly gaping, broadly hollowed at tips. Legs with the merus joints a little dilated, and bearing a triangular spine on the distal third of the anterior border. Third pair two and a half times as long as carapace; second pair not much shorter than the third; first and fourth pairs of subequal length. Dactyli about three-fourths as long as their respective propodi, slightly curved. Legs crossed by broken dark-colored bands.

Length of immature female 4.3 mm., width 5.3 mm.

Type locality. — Mangrove swamp, Lem Ngob; XII. 23, 24 or 27; one immature female (soft shell), and one young, only 1.5 mm. long.

This species is distinguished from the type species, *C. sexdentatum* (Smithson.

Misc. Coll., XLIX, 138, pl. XVII, fig. 4), by the wider front, narrower posterior margin, and by the spine on the merus joints of the legs.

Acmaeopleura rotunda Rathbun.

Acmaeopleura rotunda RATHBUN, Proc. Biol. Soc. Washington, XXII, p. 109, 1909.

Carapace about as long as broad, subcircular, a little convex, widest at the middle; fronto-orbital distance not much less than width of carapace; front about one-third width of carapace, bilobed with a shallow sinus and separated from the inconspicuous orbital angle by a slight furrow. Eyes stout, filling the orbits. Outer angle of orbit not advanced. Lateral margin acute. Surface of carapace and chelipeds rough with granulations.

Antennules obliquely folded. Antennæ very slender, as long as the major diameter of the orbit. Epistome short, well defined. Buccal cavity widening a little anteriorly, with the anterior angles rounded off. Outer maxillipeds not gaping, the endognath very wide, merus and ischium subequal in length and width, but much wider than long; the inner half of the anterior margin is occupied by a notch, and the palpus articulates at the middle of the margin. Exognath narrow.

Chelipeds of moderate size, inner margin of wrist rounded, fingers meeting, tips crossing and curved inward. The right cheliped in the single specimen is much reduced, probably abnormally so. Legs narrow, unarmed; first three pairs subequal, fourth pair much smaller; last three joints subcylindrical, dactyli very slender and moderately curved.

Length of male 2 mm., width 1.75 mm., fronto-orbital width 1.7 mm., width of front 0.7 mm.

Type locality. — South of Koh Kut, 17—20 fath., mud; I. 28; 1 ♂ juv.

I am not sure that this species should be included in *Acmaeopleura*, not having seen a specimen of *A. parvula* Stimpson (Smithson. Misc. Coll., XLIX, 130, pl. XI, fig. 4), or a figure of its maxillipeds. The carapace of *A. parvula*, according to STIMPSON'S figure, is widest in the anterior half, and the legs are not so slender as in our species.

Subfamily Sesarminæ.

Sesarma (*Sesarma*) *tæniolatum* White.

Sesarma tæniolatum ALCOCK, LXIX, 419, 1900.

Mangrove swamp, Lem Ngob; XII. 23, 24 & 27; 2 ♂ juv. 1 ♀ juv. Coast of Lem Ngob, 0—1 fath., stones and sand; XII; 1 ♂ juv.

Sesarma (*Sesarma*) *minutum* de Man.

Sesarma minuta DE MAN, Arch. f. Naturg., LIII, pt. 1, 377, pl. XVI, fig. 4, 1887.

Fishing-weir at Koh Kong; I. 21; 1 ♂. Koh Chang, 1 fath., coral; I—III; 4 ♂ 4 ♀ (2 ovig.).

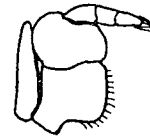


Fig. 10. Maxilliped of *Acmaeopleura rotunda*, type ♂ juv., 1.75 mm. wide.

The largest specimen is the male from Koh Kong, which is 5.2 mm. long and 6.4 mm. wide. There is a faint second tooth on the lateral margin behind the large tooth. The chelæ are unequal, but the right or smaller one is abnormal in shape and perhaps in size also. The prehensile teeth are uneven; in the larger chela, the largest tooth is at the middle of the pollex; a smaller, but enlarged tooth is on each finger next to the terminal spoon, much as in de Man's fig. 4 *b*; in the smaller chela, which is a little constricted at the base of the pollex, there is an additional large tooth at the middle of the dactylus.

Sesarma (Sesarma) smithi Milne Edwards.

Sesarma smithi MILNE EDWARDS, Arch. Mus. Hist. Nat., Paris, VII, 149, pl. IX, figs. 2, 2 *a*, 2 *b*, 2 *c*, 1854.
Sesarma smithii A. MILNE EDWARDS, Nouv. Arch. Mus. Hist. Nat., Paris, IX, 305, 1873.

Mangrove swamp, Lem Ngob; XII. 23, 24 or 27; 1 ♂.

Compared with a specimen collected by M. BALANSA at New Caledonia and determined by A. MILNE EDWARDS.

Sesarma (Chiromantes) siamense Rathbun.

Sesarma (Chiromantes) siamense RATHBUN, Proc. Biol. Soc. Washington, XXII, 109, 1909.

Carapace distinctly broader than long, widening a little posteriorly; lateral tooth slight, obtuse-angled; surface glabrous and coarsely punctate. Front half as wide as carapace; middle pair of upper lobes distinctly wider than outer pair; lower margin arcuate in front view, very faintly bilobed in dorsal view.

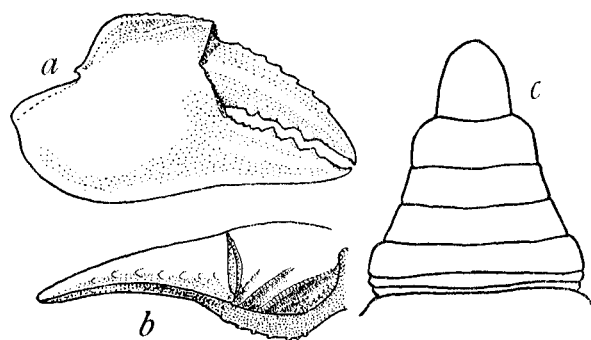


Fig. 11. *Sesarma (Chiromantes) siamense*, Koh Kong, ♂, 8.7 mm. wide: *a*, chela; *b*, top of chela; *c*, abdomen.

Anterior margin of arm with a slight obtusangular expansion; inner angle of wrist blunt. Palm higher than long, upper surface marked by oblique striæ, two of which are sharply marked, crenulate, while there are a few broken striæ near the upper angle; 6 or 7 spinules on the upper edge of the dactylus on its proximal two-thirds; a few granules on inner surface of palm; otherwise the chelæ are smooth and punctate. When the

chelipeds are folded naturally against the body, the oblique striæ of the palm are parallel to the front.

The merus joints of the legs are armed anteriorly with a sharp, subdistal spine, last three joints sparsely furnished with long fine hairs. The legs of the third pair are little more than twice as long as carapace, their merus is about two and a half times as long as wide.

Terminal segment of male abdomen very large, longer than, and more than half as wide as, the sixth segment.

A small species, the adult female measuring 8.5 mm. long, 9.5 wide in front, 9.7 wide behind, front 5.1 mm. wide.

Koh Kong, on the coast, above the water; XII. 21; 1 ♀ juv. At Government Station, right opposite Koh Kong; XII. 21; 1 ♂. Koh Kut, stony coast; I. 10; 1 ♂ 1 ♀ (type). Koh Chick, rocky coast; I. 30; 1 ♀ juv.

The shape of the carapace and the ornamentation of the movable finger are different from any other species of this group.

Sesarma (Chiromantes) haswelli de Man.

Sesarma Haswelli DE MAN, Jour. Linn. Soc. London, Zool., XXII, 175, 1888.

Mangrove swamp, Lem Ngob; XII. 23, 24 and 27; 3 ♂ 2 ♀ (1 ovig.) 2 juv.

Sesarma (Chiromantes) lividum A. Milne Edwards.

Sesarma lividum A. MILNE EDWARDS, Nouv. Arch. Mus. Hist. Nat., V, 25, 1869; IX, 303, pl. XVI, fig. 2, 1873.

River on the west coast of Koh Chang (not above the limit to which the salt water enters at high water); I. 16; 1 ♂. Klong Salakpet (River on Koh Chang); III. 15; 1 ♀.

Compared with specimens collected by M. BALANSA at New Caledonia and determined by A. MILNE EDWARDS.

In this species the pectinated ridges on the upper surface are very ill-defined.

Sesarma (Holometopus) aubryi A. Milne Edwards.

Sesarma Aubryi DE MAN, Journ. Linn. Soc. London, Zool., XXII, 168, 1888.

Koh Kut, stony coast; I. 10; 1 ♀.

Sesarma (Parasesarma) plicatum (Latreille).

Cancer quadratus FABRICIUS, Entom. Syst., Suppl., 341, 1798. Not *C. quadratus* FABRICIUS, Mant. Ins., I, 315, 1787, nor *C. quadrata* MEUSCHEN, 1781.

Sesarma quadratum ALCOCK, LXIX, 413, 1900.

Koh Kut, stony coast; I. 10; 1 ♀ juv.

River on the west coast of Koh Chang (not above the limit to which the salt water enters at high water); I. 16; 1 ♂.

Fences between rice-fields at Klong Salakpet (River on Koh Chang); 2 ♀ 2 juv.

Metaplax dentipes (Heller).

Metaplax dentipes ALCOCK, LXIX, 433, 1900.

Mangrove swamp, Lem Ngob; XII. 23, 24 or 27; 1 ♂.

Metaplax elegans de Man.

Metaplax elegans ALCOCK, LXIX, 434, 1900.

Mangrove swamp, Lem Ngob; XII. 23, 24 or 27; 3 ♂.

Subfamily Plagusiinæ.

Plagusia depressa tuberculata Lamarek.

Plagusia depressa var. *squamosa* ALCOCK, LXIX, 437, 1900.

Koh Kahdat, from driftwood; I. 11; 1 ♂.

Family Pinnotheridae.

Subfamily Pinnotherinæ.

Pinnotheres affinis Bürger.

Pinnotheres affinis BÜRGER, Zool. Jahrb., Syst., VIII, 365, pl. IX, fig. 2, pl. X, figs. 2 and 34, 1895.

18 miles west of Koh Chang, about 20 fathoms, mud; I. 31; one immature male. I have compared this specimen with one of BÜRGER'S adult female cotypes from Bohol; the male is very small, only 1·7 mm. long and 1·8 mm. wide, width of front 1·6 mm. The front is considerably wider in males than in females, as shown by BÜRGER.

Pinnotheres glaberrimus Bürger.

Pinnotheres glaberrimus BÜRGER, Zool. Jahrb., Syst., VIII, 366, pl. IX, fig. 3, pl. X, fig. 3, 1895.

Koh Kam, 5 fath., gravel; II. 6; one male very small, only 1·3 mm. in each dimension.

Pinnotheres cardii Bürger.

Plate II, fig. 8.

Pinnotheres cardii BÜRGER, Zool. Jahrb., Syst., VIII, 367, pl. IX, figs. 4 and 5, pl. X, fig. 4, 1895.

Between Koh Chuen and Koh Chang, 15 fath., mud; III. 3; 1 ♀ ovigerous. In this specimen, 5·8 mm. wide, the palms are a little longer and narrower than represented in BÜRGER'S figure, increasing slightly but regularly in width to the distal end. The legs on the left side are normal, but on the right side the second leg is abnormally developed, half again as long as on the left side.

Pinnotheres gracilis Bürger.

Pinnotheres gracilis BÜRGER, Zool. Jahrb., Syst., VIII, 368, pl. IX, fig. 6, pl. X, fig. 6, 1895.

Koh Kahdat, 5–8 fath., sandy mud, II. 16 and III. 4; 1 ♀ ovig.

This specimen is smaller than BÜRGER'S type and larger specimen; it measures 2·7 mm. long, and 3·5 mm. wide. The carapace is very thin and transparent so that the eggs are easily seen through it. The orbits are wholly ventral in position, their anterior margin a little in advance of the antennular cavities; the eyes have a small black pigment spot on the inner side. The chela increases in width from the wrist to the base of the immovable finger. Fingers very thick, each having a low white tooth at the base, that on the dactylus shutting within that on the pollex; when closed there is a very narrow slit between fingers, tips crossing. The relative lengths of the legs are as described by Bürger, but the dactyli appear a little longer in proportion to their propodi than represented in his figure; neither do I detect any lines on the anterior half of the carapace.

Pinnotheres bürgeri Rathbun.

Pinnotheres bürgeri. RATHBUN. Proc. Biol. Soc. Washington XXII, 109, 1909.

Near *P. gracilis*, having similar maxillipeds and legs, but differing in the carapace, eyes and chelipeds. Carapace of female nearly as long as wide (about 2 mm. in each dimension), nearly circular, the front a little advanced, the orbits cut out of the margin and the eyes, therefore, visible from above; eyes unpigmented.

The chelipeds differ from those of *P. gracilis*, in having the lower margin of the propodus concave below the distal end of the palm and the fingers tapering more regularly to the strongly curved tips; a slight basal prominence is present on each finger.

South of Koh Kut, 17—20 fath., mud; I. 28; 1 ♀ juv. Koh Kram, 30 fath.; III. 2 or 21; 1 ♀ juv. type.

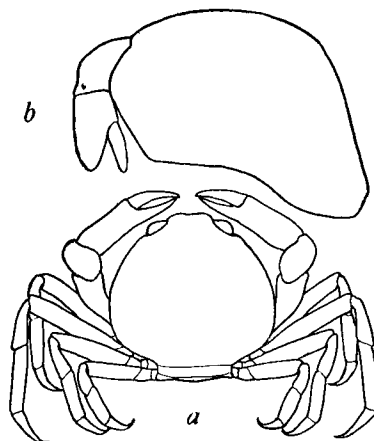


Fig. 12. *Pinnotheres bürgeri*, type ♀, 2 mm. wide: *a*, dorsal view; *b*, maxilliped.

Pinnotheres parvulus Stimpson.

Plate II, fig. 9.

Pinnotheres parvulus Ortmann, Zool. Jahrb., Syst., VII, 699, pl. XXIII, fig. 12, 1894; Stimpson, Smithsonian Misc. Coll., XLIX, 142, 1907. Not *P. parvulus* de Man, Jour. Linn. Soc. London, XXII, 105, 1887, and Arch. f. Naturg., LIII, pt. 1, 383, 1887; Bürger, Zool. Jahrb., Syst., VIII, 376, pl. IX, fig. 18, pl. X, fig. 17, 1895; and Alcock, Jour. Asiat. Soc. Bengal, LXIX, 339, 1900, which may be known as *Pinnotheres alcocki*, Rathbun (Proc. Biol. Soc. Washington, XXII, 114, 1909).

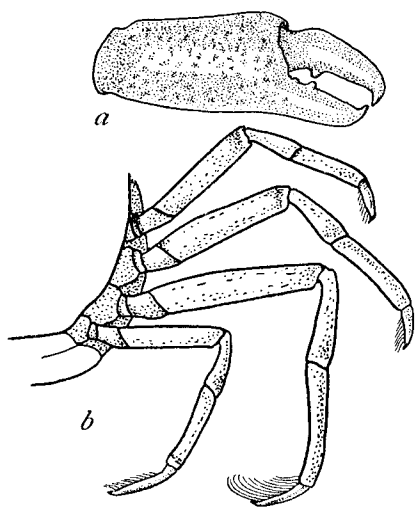


Fig. 13. *Pinnotheres parvulus*, Lem Ngob, ♀, 8.5 mm. wide: *a*, chela; *b*, legs.

Allowing for the variations probable in a species of *Pinnotheres*, it is very unlikely that the dactylus of the endognath of *P. parvulus* presents the different aspects ascribed to it. It is defined by STIMPSON as "slender, reaching to the end of the penult joint"; and it is so represented by ORTMANN; but DE MAN, BÜRGER and ALCOCK describe the dactylus as distinctly falling short of the end of the propodus.

The single specimen which I refer to *P. parvulus* agrees with STIMPSON's all too brief description, excepting as regards size and locality. The length of the type female is .14 inch or 3.5 mm., while the Siamese specimen is 7.5 mm. long and 8.5 mm. wide. The type locality is a sandy bottom in 26 fathoms, in the China Sea, while the example in hand is from a mangrove swamp at Lem Ngob.

There must, therefore, remain some doubt as to the identity of the two forms until the Pinnotherids of eastern Asia are better known.

Our specimen, a female, has a thin and yielding skin, which is speckled with fine black dots. Posterior margin a little concave. Orbits subcircular, invisible in a strictly dorsal view; eyes black. Width of front and orbits nearly one-third width of carapace.

Chelipeds stout, about as long as carapace; palms increasing in width distally, about one and a half times as long as fingers; the latter are stout, the dactylus bears an oblique tooth on its basal half, which fits in closing between two smaller teeth on the pollex.

Legs slender, especially the last pair, third pair longest, second and fourth pairs subequal, first pair shortest; merus of third pair longest, second next, first and fourth subequal; carpus of third pair longest, second pair next, others subequal; third propodus longest, second and fourth subequal, first a little shorter; dactylus of fourth pair distinctly longest, third pair next, first and second subequal.

Mangrove swamp, Lem Ngob; XII. 23, 24, 27; 1 ♀ ovig.

Besides the character of the endognath *P. alcocki* differs in having the fourth pair of legs decidedly longer than first or second pairs.

Pinnotheres lanensis Rathbun.

Pinnotheres lanensis RATHBUN, Proc. Biol. Soc. Washington, XXII, 109, 1909.

Allied to *P. parvulus* Stimpson, but differs from it chiefly by the shorter dactylus of the endognath.

A very small species, the single specimen taken (an egg-bearing female) measuring approximately 2.4 mm. long and 2.7 mm. wide. The skin is very soft and thin so that the shape as well as the size is difficult to determine with accuracy. There is however, an antero-lateral angle or shoulder, and the anterior margin between these angles is not strongly arcuate. The front is so much deflexed and incurved that the orbits are far from visible in dorsal view. The eyes are distinctly pigmented.

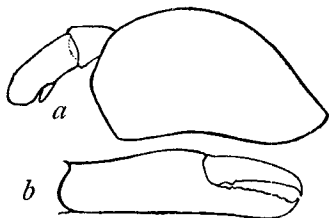


Fig. 14. *Pinnotheres lanensis*, type ♀, 2.7 mm. wide: a, maxilliped; b, chela.

Last two segments of endognath mitten-shaped, the dactylus small and attached about half way back on the propodus and reaching about to its terminal fourth. Chelipeds considerably stouter than legs. Palm about one and a third times as long as fingers, widening distally. Fingers stout, tips incurved, pollex wider at base than dactylus.

Of the legs, the second pair is a little longer than the first, its last three articles each very slightly longer than in the first pair. Third pair longest, last three articles each much longer than in second pair, dactylus twice as long as in second pair. Fourth pair subequal to first, its dactylus equal to that of third, propodus equal to that of second pair, carpus shorter than in any other pair.

Type locality. — Koh Lan, 30 fathoms, mud; III. 2; one ovigerous female.

In *P. alcocki* the fourth leg is decidedly longer than the first and second and its dactylus is the longest of all.

Pinnotheres quadratus Rathbun.

Pinnotheres quadratus RATHBUN, Proc. Biol. Soc. Washington, XXII, 110, 1909.

Belongs to BÜRGER'S section I¹, in which the dactylus of the outer maxilliped is styliform, inserted on the inner margin of the propodus, and to section *d*, in which the third and fourth ambulatories are longer than the first and second; the carapace, however, is scarcely broader than long. The dactylus of the maxilliped does not nearly reach the end of the propodus; the third pair of legs is the longest, and the dactyli of the third and fourth pairs are subequal. This brings the species near *P. palaensis* Bürger² which, however, is hexagonal in form, and noticeably broader than long.

Carapace subquadrate, with rounded corners, its length and breadth about equal (length 5.2 mm., breadth 5.3 mm.); convex in all directions, thin. Orbits ventral, transversely oblique, eyes pigmented on the ventral side near the tip; orbits and antennæ occupying one-third width of carapace.

The propodus of the maxilliped is large and spatulate and overreaches the inner angle of the merus; the dactylus is very small, linear, reaches exactly to the inner angle of the merus and is scarcely visible when the maxillipeds are folded in place, being hidden beneath the merus.

The single cheliped (on the left side) is stoutish; the palm widens distally, is slightly more than twice as long as high, and nearly twice as long as the stout fingers, which meet along their apposed edges, the tips curved inward, the dactylus overreaching the pollex; a large tooth near the base of the dactylus fits between two smaller teeth on the pollex.

Legs slender; the third leg (the longest) is 1.25 times as long as the carapace; on the right side of the unique type this leg is abnormally shortened. Fourth leg slightly longer than second, second slightly longer than first. Third merus longest, first, second and fourth subequal; carpus of all the legs subequal; third propodus longest, first, second and fourth subequal; third and fourth dactyli longest, subequal, first and second dactyli subequal.

Type locality. — Koh Chang, 1 fath., coral; I—III; 1 ♀ ovig.

¹ Zool. Jahrb., Syst., VIII, 362, 1895.

² Zool. Jahrb., Syst., VIII, 372, pl. IX, fig. 12, pl. X, fig. 12.

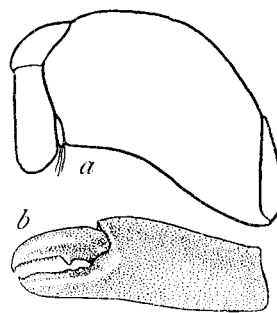


Fig. 15.

Pinnotheres quadratus,
type ♀, 5.3 mm. wide:
a, maxilliped; *b*, chela.

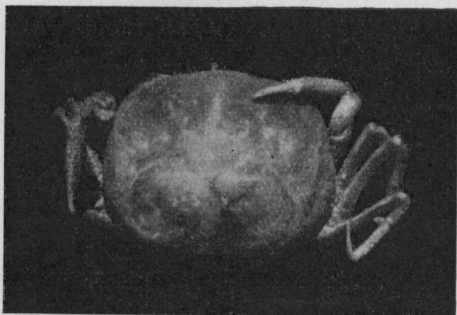
Pinnotheres nigrans* Rathbun.Pinnotheres nigrans* RATHBUN, Proc. Biol. Soc. Washington, XXII, 110, 1909.

Fig. 16. *Pinnotheres nigrans*, type ♀,
8.3 mm. wide.

A species allied to *P. latus* Bürger¹, in which the dactylus of the endognath is styli-form, inserted on the inner margin of the propodus, the dactyli of the third and fourth legs are longer than those of the first and second legs, the third leg not much longer than the others, and the carapace considerably broader than long and somewhat six-sided. Our species differs from *P. latus* chiefly in the form of the maxilliped, the dactylus not reaching the end of the propodus, and the latter tapering toward the end.

Female. — Carapace about one-fifth broader than long, very high in the middle and sloping down on all sides, regions partially indicated by pits and grooves, anterior margin advanced at the middle. Orbits not visible in dorsal view, and with the antennæ occupying about two-sevenths of the width of the carapace; orbits small, transversely oblong, corneæ black, subterminal.

Cheliped (the right only is present) not much stouter than the legs, wrist elongate, palm widest at distal end, margins almost straight, 1.5 times as long as the fingers, but not so high as the length of the fingers, which cross at the tips and do not gape.

Legs not varying much in length, third longest, second and fourth subequal, first shortest; dactyli of third and fourth pairs longest, equal, twice as long as those of the first and second pairs.

Dimensions. — Female, length 6.8 mm., width 8.3 mm.

Color. — Dark in alcohol, caused by numerous minute dots which in some places are densely crowded, especially toward the antero-lateral angles.

Type locality. — Koh Lan (west of Koh Chang); III. 9; 1 ♀ ovig.

Among the male *Pinnotheres* are three different forms which I am not able to refer to the foregoing species. All are of minute size and have the front well advanced and the eyes very large (for the genus). As, in some species where both sexes are known, the fronto-orbital region is of much more importance in the male than in the female, and the size of the crab is less in the male, it seems probable that the males under discussion belong to the genus *Pinnotheres*, and it is possible that examination of more material would indicate that one or more of these male



Fig. 17. Maxilliped of
Pinnotheres nigrans,
type ♀, 8.3 mm. wide.

¹ Zool. Jahrb., Syst., VIII, p. 363, 374, pl. IX, fig. 16, pl. X, fig. 15, 1895.

forms are conspecific with species of which the female only has been described. For example, the differences in the maxillipeds of *P. bürgeri*, female, and of *P. kutensis*, male (compare figures 12 *b* and 19 *c*) may be either sexual, or referable to their position while being drawn. Descriptions of the males follow.

Pinnotheres kamensis Rathbun.

Pinnotheres kamensis. RATHBUN, Proc. Biol. Soc. Washington, XXII, 110, 1909.

Male. — Carapace broad-ovate, with an obscure antero-lateral angle, surface coarsely punctate. Front strongly advanced beyond the orbits, slightly bilobed. Eyes large, visible from above; orbits in the lateral margin of the carapace; corneae small, black.

Inner margin of merus of maxilliped strongly angled; propodus long and narrow; dactylus inserted behind the middle of the propodus and not nearly reaching end of same.

Chelipeds stout; palms swollen, not much longer than wide and not much longer than the fingers, which gape widely; a small tooth at base of dactyl.

Legs broad, first three pairs subequal, last pair very much smaller; dactyli of all legs strongly curved, in first three pairs subequal, in fourth pair smaller.

Dimensions. — Male, length 1.4 mm., width 1.5 mm.

Type locality. — West of Koh Kam, 5 fathoms, gravel; type ♂, 1.5 mm. wide. H. 6; 1 ♂.



Fig. 18. Maxilliped of *Pinnotheres kamensis*,

Pinnotheres kutensis Rathbun.

Pinnotheres kutensis RATHBUN, Proc. Biol. Soc. Washington, XXII, 110, 1909.

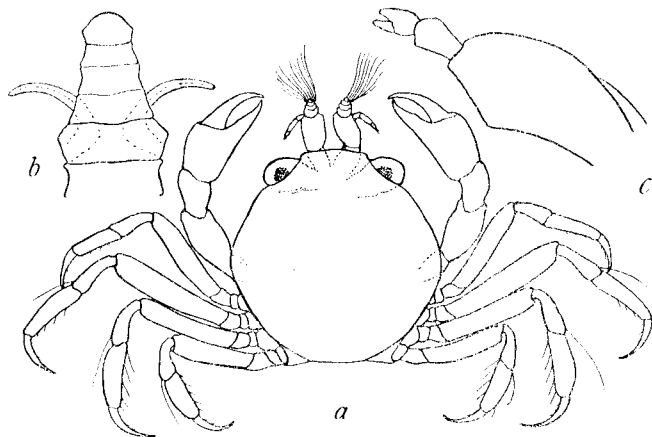


Fig. 19.

Pinnotheres kutensis, type ♂, 1.02 mm. wide: *a*, dorsal view; *b*, abdomen and appendages; *c*, maxilliped.

Male. — Carapace oblong-hexagonal, thin, transparent, margin not defined. Front advanced, subtruncate. Eyes large, projecting well beyond outline of carapace. The antennules are in an unnatural position in figure 19 *a*. The specimen was so disguised with mud and debris clinging to the hairs that it was soaked in a dilute solution of chloride of soda, which probably extended the antennules and the maxillipeds.

Sternum rough. The palpus of the maxilliped when

folded against the merus, reaches a little beyond the inner angle of the latter; the propodus is short and broad; the dactylus articulates near the middle of the propodus, which it overreaches a little, and the terminal half of which it resembles.

Hands inflated, fingers slender, gaping. Length of legs, 2 (longest) 3·14; dactyli similar, strongly curved, terminal half very slender, fourth a little shorter than the others, which are subequal; fourth merus much shorter than the others.

Length of type male 1·1 mm., width 1·02 mm.

Type locality. — South of Koh Kut, 17–20 fath., mud; I. 28; 1 ♂.

***Pinnotheres siamensis* Rathbun.**

Pinnotheres siamensis RATHBUN, Proc. Biol. Soc. Washington, XXII, 111, 1909.

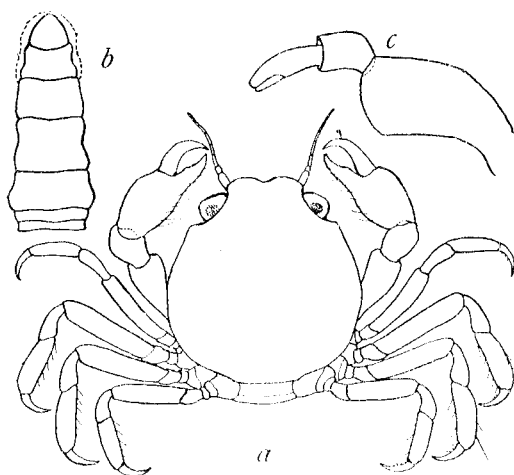


Fig. 20. *Pinnotheres siamensis*, type ♂, 1·05 mm. wide: a, dorsal view; b, abdomen; c, maxilliped.

Male. — Similar to *P. kutensis*; differs as follows: The carapace is more strongly angled behind the orbit; its surface is deeply punctate. The front is plainly bilobed. The antennæ are as long as the width of the front; in *P. kutensis*, they are not discernible, perhaps broken off. The palpus of the maxilliped is considerably longer than in the related species, the propodus especially elongate, the dactylus attached on the distal half of the propodus, not far from the middle, very narrow and reaching just as far as does the propodus. The palms of the chelipeds are much swollen, their upper and lower margins very convex. The carpal and propodal segments of the legs are wider in the

distal half than in the preceding species; dactyli of all the legs subequal. The sternum is hollowed out in a circular depression which receives the extremity of the abdomen.

Length of type male 1·1 mm., width 1·05 mm.

Localities. — South of Koh Kut, 17–20 fath., mud; I. 28; 1 ♂ (type). North of Koh Chuen, 15 fath., mud, shells; II. 5; 1 ♂.

In the specimen from Koh Chuen, the abdomen projects behind the carapace and sternum in a hemispherical protuberance visible in a dorsal view; in the type specimen the abdomen is a good deal rumped, so that one cannot be sure that its normal arrangement was as in the cotype.

Subfamily Pinnotherelinae.

***Mortensenella* Rathbun.**

Mortensenella RATHBUN, Proc. Biol. Soc. Washington, XXII, 111, 1909.

Dorsal aspect of *Pinnixa*, the carapace being very broad, subpentagonal, and the last leg reduced in size. Maxillipeds not gaping, filling the buccal cavity, with

the ischium-merus broad, oblong, longitudinal in position, the two segments subequal and subquadrate, fused, but with a faint suture line visible; palpus small, articulated on the anterior margin and near the outer angle of the merus, the three segments end to end; exognath exposed.

Differs from other genera of *Pinnotheridae* in the longitudinal direction of the maxillipeds, combined with the small palpus. The exognath is of important size as in the subfamily *Asthenognathinae*.

Type and only species:

Mortensenella forceps Rathbun.

Plate I, fig. 18.

Mortensenella forceps RATHBUN, Proc. Biol. Soc. Washington, XXII, 111. 1909.

Carapace 1.5 times as wide as long, lateral angles rounded; surface punctate and pubescent, a transverse groove through the middle. Fronto-orbital distance 4 as great as width of carapace, edge of front straight in dorsal view, sides oblique, a median furrow. Upper margin of orbit rounding into the side margin of the carapace, which margin is emphasized by a sharp raised line cut into crenulations by closed fissures. Posterior margin straight, equalling the length of the carapace; a fine sharp ridge just above and parallel to the margin. Orbits oblong, lower margin ill-defined. Epistome deep in the middle, bilobing the anterior margin of the buccal cavity. Both the anterior angles of the merus of the maxillipeds are rounded off; exognath about one-third as wide as endognath, provided with a slender palpus.

Chelipeds of male equal, smooth and punctate. Inner margin of wrist rounded. Palm well-developed, suboblong; fingers strongly curved away from each other, making a wide gape into which a large truncate tooth projects from the dactylus; extremities of fingers horizontal, very slender, sharp, tips horny. In the single female collected, only one cheliped is present; it is much smaller than in the male but similar, the horizontal extremities being proportionally longer.

First three legs similar, first and third of subequal length, second longer, about 2.5 times length of carapace. Fourth leg much reduced in length and width, reaching little beyond the merus of the third. Legs and also the arm, with granulated margins; dactyli elongate.

Sternum of male coarsely punctate; margin of abdominal cavity finely beaded. Abdomen of male narrow-triangular, with a constriction at middle of fifth segment, terminal segment oblong; the appendages of the first segment would exceed the abdomen if extended, but they are bent sharply backward opposite the posterior

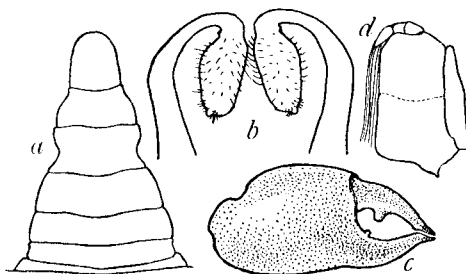


Fig. 21. *Mortensenella forceps*, ♂ cotype. 7 mm. wide: a, abdomen; b, abdominal appendages; c, chela; d, maxilliped.

margin of the first sternal segment; extremity of each appendage broadly oval. The abdomen of the mature female almost covers the sternum except at the posterior angles; margin of terminal segment trilobate.

Length of type ♂ 4.2 mm., width 6.8 mm., fronto-orbital width 2.8 mm., edge of front 1.3 mm., posterior margin 4.6 mm.

Type locality. — Outside mangroves at Koh Chang, very shallow water; III. 18; 3 ♂ (1 is type), 1 ♀ ovig.

Subfamily Xenophthalminæ.

Xenophthalmus pinnotheroides White.

Xenophthalmus pinnotheroides ALCOCK, LXIX, 332, 1900.

Between Koh Kahdat and Koh Kut, 6 fath., sandy clay; I. 9; 1 ♀. North of Koh Kut, 10 fath.; I. 23; 1 ♂ 1 ♀ 1 juv.

These specimens are all smaller than that figured by WHITE (Ann. Mag. Nat. Hist., XVIII, pl. II, fig. 2, 1846, and Zool. Samarang, Crust., pl. XII, fig. 3, 1848), the largest, a female from Koh Kut, measuring 7.5 mm. wide. The legs are slenderer than represented by WHITE, but probably as in the species below, *X. obscurus*, the legs are stouter in the adult than in the young.

Carapace and legs pubescent. Chelipeds of male, while not much longer than in the female are considerably more enlarged, the chelæ suboval, margined above and below. The propodus of the first leg is as broad as long.

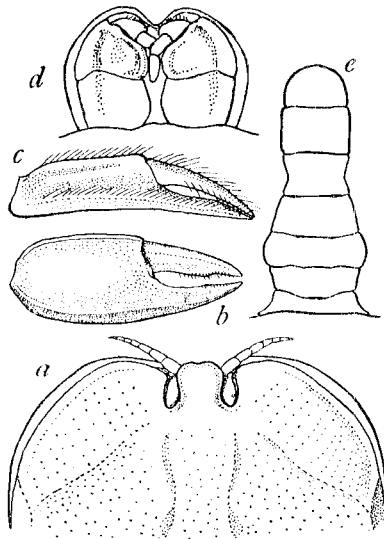


Fig. 22. *Xenophthalmus pinnotheroides*, Koh Kut: a, anterior half of ♂, 6.6 mm. wide; b, chela of same; c, chela of ♀, 7.1 mm. wide; d, maxillipeds; e, abdomen of ♂.

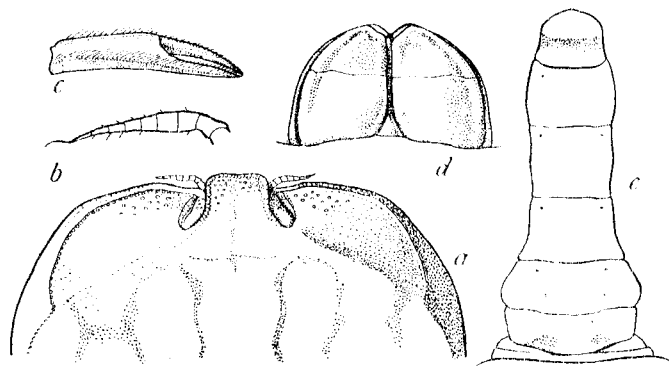


Fig. 23. *Xenophthalmus obscurus*, Koh Kut, ♂, 9.1 mm. wide: a, anterior half; b, antenna; c, chela; d, maxillipeds; e, abdomen.

Xenophthalmus obscurus Henderson.

Plate II, fig. 13.

Xenophthalmus obscurus ALCOCK, LXIX, 333, 1900.

The Sound at Koh Chang, 3—5 fath., soft clay bottom; XII. 24 to I. 6; 13 ♂ 20 ♀ (2 ovig.) 4 juv. West coast of Koh Chang, a little north of the small islands, 10 fath., mud bottom, dead shells; I.

16; 1 ♂ 2 ♀. West coast of Koh Kong, 10--15 fath.; I. 24; 1 ♂. Off Koh Kut, 6 fath.; I. 26; 2 ♂ 1 ♀.

In these specimens the ischium and merus of the outer maxillipeds are grooved near the outer border, which is contrary to ALCOCK'S description. I should be disposed to consider the Siamese specimens a separate species, did not the shading of the maxillipeds in HENDERSON'S figure (pl. XXXVI, fig. 19, Trans. Linn. Soc. London, Zool. (2), V, 1893) suggest a groove along the outer edge. In our specimens also, the low branchial ridges are connected by a ridge across the cardiac region. In this species the propodus of the first leg is distinctly longer than broad.

Subfamily Asthenognathinæ.

Asthenognathus hexagonum Rathbun.

Plate II, fig. 14.

Asthenognathus hexagonum RATHBUN, Proc. Biol. Soc. Washington, XXII, 111, 1909.

Carapace $1\frac{1}{3}$ times as wide as long, strongly hexagonal; the posterior margin very little longer than the anterior, or fronto-orbital; antero-lateral and postero-lateral margins subequal. Surface little convex, pubescent and finely punctate, medial furrows deep. Front about $\frac{1}{5}$ as wide as carapace, advanced beyond the orbits, sides oblique, lower edge straight. Orbits transverse, eyestalks tapering to the black corneæ. The granulate anterior and antero-lateral margin is continued part way on the postero-lateral margin. A small part of the carapace behind the lateral angle is strongly deflexed, the true angle being just above the base of the second leg. Posterior margin strongly rimmed.

The antennules are folded in deep fossettes. The infra-orbital ridge is strong and sharp. Buccal cavity arcuate in front, not nearly filled by the narrow outer maxillipeds. Ischium and merus of endognath subequal in length, ischium a little wider; segments of palpus end to end. Chelipeds of female feeble, little longer than carapace, almost smooth, fingers longer than palm, acute, dactylus with a sharp upper edge, pollex with a smooth ridge outside. Second leg longest, about twice as long as carapace, stout; third subequal to it; first much smaller; fourth most feeble, reaching little beyond merus of preceding pair. Male unknown.

Length of ovigerous female 5.6 mm., width 7.8 mm., fronto-orbital width 4.3 mm., width of front along lower edge 1.7 mm.

Type locality — North of Koh Kong, 8 fath., mud bottom; I. 23; 2 ♂ (1 ovig., type).

This species is very closely related to the type species, *A. inæquipes* Stimpson (Smithson. Misc. Coll., XLIX, 140, pl. XIV, fig. 1, 1907). Chelipeds and legs similar

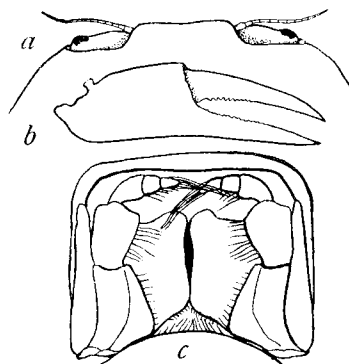


Fig. 24. *Asthenognathus hexagonum*, type ♀, 7.8 mm. wide: a, anterior border; b, chela; c, buccal cavity.

in the two species, but the carapace in *A. inaequipes* is much broader behind, so that it appears less hexagonal; the posterior margin is 1.5 times as great as the distance across front and orbits in *inaequipes*; it is just equal to that distance in *hexagonum*. In *A. japonica* (Ortmann) (= *Tritodynamia japonica* Ortmann, Zool. Jahrb., Syst., VII, 693, pl. XXIII, fig. 5, 1894), the front is arcuate, and the second leg is much longer than the third.

Chasmocarcinops gelasimoides Alcock.

Plate I, fig. 10; Plate II, fig. 12.

Chasmocarcinops gelasimoides Alcock, LXIX, 334, 1900; Illus. Zool. Investigator, Crust., pt. X, pl. LXII, figs. 2 and 3, 1902.

Between Koh Kahdat and Koh Kut, 6 fath., sandy clay; I. 9; 1 ♂ 3 ♀ (1 ovig.). South of Koh Bidang, 9 fath., mud, shells; I. 18; 1 ♀. North of Koh Kut, 10 fath.; I. 23; 1 ♂. 15 miles west of Koh Kut, 30 fath. (s. m.); I. 28; 1 ♂. South of Koh Kut, 17–20 fath., mud (large seine); I. 28; 8 ♂ 6 ♀ 1 juv.; one male was in shell of living *Amussium pleuronectes* Linnæus. 12 miles east of Koh Mak, 20 fath., large seine; I. 28; 2 ♂ 1 ♀. 10–12 miles west of Koh Chang, 20 fath., mud; I. 29; 7 ♂ 2 ♀. 20 miles south of Koh Samit, 20 fath., mud; I. 31; 1 ♂. 35 miles west of Koh Chang, 30 fath., clay; I. 31; 1 ♀ ovig. 4–6 miles south of Koh Samit, 14–18 fath.; II. 1; 3 ♂ 3 ♀. 2 miles south of Koh Tulu, 10 fath., sandy mud, shells; II. 9; 1 ♂.

Family Gonoplacidæ.

Subfamily Carcinoplacinæ.

Eucrate crenata de Haan.

Eucrate crenata ALCOCK, LXIX, 300, 1900.

15 miles E. of Koh Chuen, 10 fath., shell bottom; II. 2; 1 ♀ juv. Koh Chuen, 30 fath., shell bottom; II; 1 ♂ juv. 2 ♀ juv.

Litocheira setosa (A. Milne Edwards).

Litocheira setosa ALCOCK, LXIX, 315, 1900.

15 miles E. of Koh Chuen, 10 fath., shell bottom; II. 2; 1 juv.

A small specimen 2.6 mm. long and 3.7 mm. wide, in which the second lateral tooth is acutely pointed.

Litocheira cristata Rathbun.

Litocheira cristata RATHBUN, Proc. Biol. Soc. Washington, XXII, 111, 1909.

Carapace flat except anteriorly where it is moderately deflexed. Regions delineated, cardiac region almost quadrilateral. Antero-lateral region granulate. Surface pubescent, and *anterior border of carapace and of chelipeds and legs fringed*

with long hair. Front deflexed below the fringe, its lobes oblique and sinuous, a V-shaped median notch. The orbits have a notch above and below the outer angle, and a smaller notch near the middle of the upper margin. Of the 4 lateral teeth,

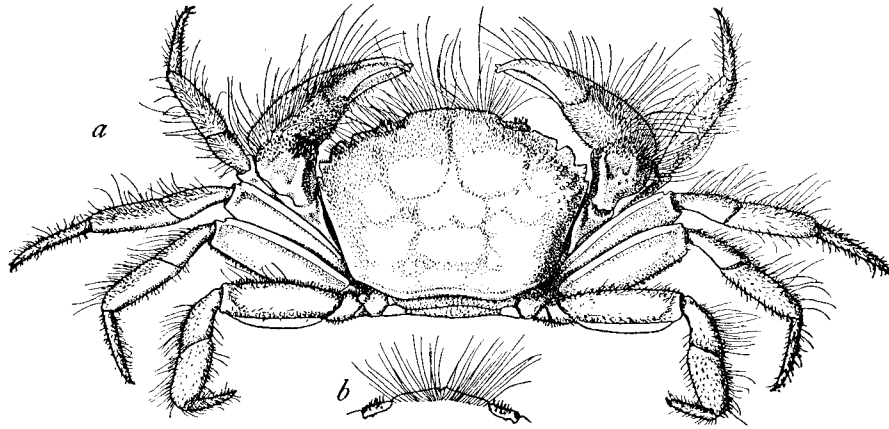


Fig. 25. *Litocheira cristata*, type ♀, 7.7 mm. wide; *a*, dorsal view; *b*, deflexed margin of front.

the first is truncate and fused with the orbital angle, the second is subacute with its outer margin truncate, the third prominent, triangular, the fourth small, acute.

Chelipeds of ♀ equal. The arm has a thin crest above, forming a tooth near the end of the segment, and a transverse subdistal ridge on the outer surface. Wrist eroded, a blunt ridge along the inner edge, and on a higher plane than the inner tooth. The chelæ are granulate, fingers long and cylindrical, brown in the terminal $\frac{2}{3}$.

Second pair of legs longest, about twice as long as the carapace. The merus of the first three pairs has a thin smooth crest on its anterior margin, of the fourth pair on its posterior margin.

Length of ♀ 5.5 mm., width 7.7 mm., fronto-orbital width 5 mm., frontal width 2.8 mm.

15 miles E. of Koh Chuen, 10 fath., shell bottom; H. 2; 1 ♀. 6 miles E. of Cap Liant, 9 fath., shell bottom; H. 7; 1 ♀. 2 miles S. of Koh Tulu, 10 fath., sandy mud, shells; H. 9; 1 ♀ type.

This species is near *Pilumnoplax ciliata* Stimpson (Proc. Acad. Nat. Sci. Phila., X, p. 94 [40], 1858), of which neither a figure nor type specimen exists, but differs in its narrower carapace, triangular third tooth of the side margin, the nondentate upper border of the arm, and in the existence of a crest on the posterior instead of the anterior border of the merus of the last leg.

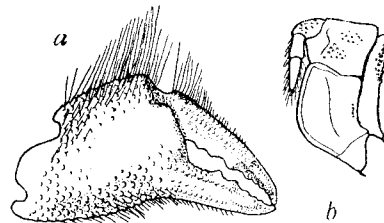


Fig. 26. *Litocheira cristata*, type ♀, 7.7 mm. wide; *a*, chela; *b*, maxilliped.

Heteroplax dentata Stimpson.

Heteroplax dentata STIMPSON, Smithsonian Misc. Coll., XLIX, 94, 1907.

Koh Kahdat, 5--8 fath., sandy mud; II. 16 and III. 4; 1 ♂ 1 ♀. 2 miles S. of Koh Tulu, 10 fath., sandy mud, shells; II. 9; 3 ♀.

Heteroplax transversa Stimpson.

Heteroplax transversa STIMPSON, Smithsonian Misc. Coll., XLIX, 95, 1907.

Between Koh Kahdat and Koh Kut, 6 fath., sandy clay; I. 9; 1 ♂ 1 ♀. Gulf of Rayong, 7--10 fath., sand, mud, shells; II. 8; 1 ♂. 2 miles S. of Koh Tulu, 10 fath., sandy mud; II. 9; 1 ♀ juv.

Subfamily Rhizopinæ.

Ceratoplax ciliata Stimpson.

Ceratoplax ciliata ALCOCK, LXIX, 320, 1900.

Gulf of Rayong, 7--10 fath., sand, mud, shells; II. 8; 1 ♂. Koh Kahdat, 4--5 fath., sand, stones, coral; II. 15--18; 1 ♂.

Ceratoplax hispida Alcock.

Ceratoplax hispida ALCOCK, LXIX, 321, 1900. Illus. Zool. Investigator, Crust., pt. X, pl. LXI, fig. 4, 1902.

Gulf of Rayong, 7--10 fath., sand, mud, shells; II. 8; 1 ♀. 2 miles south of Koh Tulu, 10 fath., sandy mud, shells; II. 9; 2 ♀ (1 ovig.).

The specimens are all small, about 2.9 mm. long \times 3.9 mm. wide.

Mertonia lanka Laurie.

Plate II, fig. 4.

Mertonia lanka LAURIE, Report Ceylon Pearl Oyster Fisheries, pt. V, Suppl. Rept. No. XL., p. 424, pl. I, fig. 11, 11 a--c, 1906.

Between Koh Mesan and Cap Liant, 9 fath.; II. 4; 1 ♀ ovigerous. Length 3.9 mm.; width 5.3 mm.

Second leg similar to the third, but slightly longer, the additional length being in the dactyl. The fourth leg is broader than the second and third, its merus and dactyl shorter, but its coxa and ischium longer than in those legs.

The markings on the wrist and hand resemble large flat squamæ.

Rhizopa gracilipes Stimpson.

Rhizopa gracilipes STIMPSON, Proc. Acad. Nat. Sci. Phila., X. 95 [41], 1858. cf. Alcock, LXIX. 322, 1900.

Sound at Koh Chang, 3--5 fath., soft clay bottom; XII. 24--I. 6; 23 ♂ 30 ♀ (1 ovig., 3 with Rhizocephalids). S. of Koh Bidang, 9 fath., mud, shells; I. 18; 1 ♀. S. of Koh Mak, 5--6 fath.; II. 17; 3 juv. Off Koh Kut, 6 fath.; I. 26; 1 ♂.

Carapace about $\frac{3}{4}$ as long as broad, postero-lateral borders slightly convergent posteriorly. Regions fairly well marked, cervical suture deep, cardiac region swollen. Surface obscurely granulate, especially toward the lateral margins. Carapace and legs covered with a very short pubescence, with marginal fringes of hair. Antero-lateral margin granulate and acute as far as the widest portion of the carapace and marked by two obscure notches.

Fronto-orbital distance over $\frac{1}{2}$ width of carapace, front $\frac{1}{4}$ width of carapace, grooved in the middle line, faintly bilobed. Orbits piriform; eyes small, black.

Buccal cavern increasing in breadth from behind forwards; merus of maxillipeds with antero-lateral angle produced and rounded; exognath of moderate width.

Chelipeds heavy, especially the chelæ, and nearly smooth, except for marginal hairs. Arm projecting little beyond the carapace, with a subterminal tooth above. Wrist granulous at the inner angle, armed with a sharp tooth. Chelæ smooth and shining, with a granulate marginal line above and below; larger palm as high as its superior length, and with a prominent tooth on the outer side projecting over the dactylus, which has a basal tooth larger than the others.

Third pair of legs over $2\frac{1}{2} \times$ length of carapace.

Dimensions. — ♂, length 7 mm., width 9.7 mm.

The merus of the outer maxillipeds is much more produced at the antero-external angle than in *Typhlocarcinus* Stimpson.

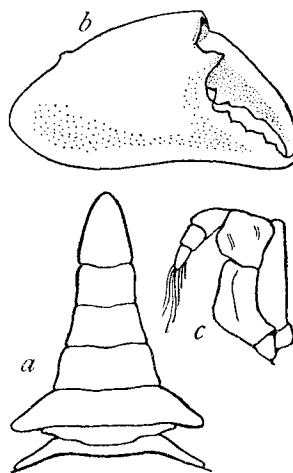


Fig. 27. *Rhizopa gracilipes*, Koh Chang, ♂, 9.7 mm. wide: a, abdomen; b, chela; c, maxilliped.



Fig. 28. Maxilliped of *Typhlocarcinus villosus*, Koh Chuen, ♀, 8.9 mm. wide.

Typhlocarcinus villosus Stimpson.

Typhlocarcinus villosus ALCOCK, LXIX, 322, 1900.

20 miles ESE. of Koh Samit, 13—14 fath., sandy mud, shells; II. 2; 2 ♀. 15 miles E. of Koh Chuen, 10 fath., shell bottom; II. 2; 2 ♀ (1 ovig.). Gulf of Rayong, 7—10 fath., sand, mud, shells; II. 8; 1 ♂ 1 ♀. 2 miles S. of Koh Tulu, 10 fath., sandy mud, shells; II. 9, 2 ♂ 5 ♀. N. of Koh Kut, 10 fath.; I. 23; 1 ♂.

Typhlocarcinus nudus Stimpson.

Plate I, fig. 6.

Typhlocarcinus nudus ALCOCK, LXIX, 322, 1900.

Singapore, 2—3 fath.; XII. 4; 1 ♂ 2 ♀. Between Koh Kahdat and Koh Kut, 6 fath., sandy clay; I. 9; 3 ♂ 1 ♀. S. of Koh Bidang, 9 fath., mud, shells; I. 18; 1 ♂ 1 ♀. W. of Koh Kong, 10—15 fath.; I. 24; 1 ♂ 1 ♀. 12 miles E. of Koh Mak, 20 fath. (large seine); I. 28; 1 ♂. 7 miles NW. to W. from Koh si Chang, 10 fath., mud; II. 24; 1 ♀. N. of Koh Kut, 10 fath.; I. 23; 1 juv.



Fig. 29. Maxilliped of *Typhlocarcinus nudus*, Singapore, ♀, 6.5 mm. wide.

Scalopidia spinosipes Stimpson.

Plate II, fig. 2.

Scalopidia spinosipes ALCOCK, LXIX, 325, 1900.

Off Koh Kut, 6 fath.: I. 26; 1 ♀ juv. S. of Koh Kut, 17—20 fath., mud (large seine); I. 28; 2 ♂ 2 ♀. 20 miles S. of Koh Samit, 20 fath., mud; I. 31; 3 ♂ 6 ♀ (1 ovig.). 35 miles W. of Koh Chang, 30 fath., clay; I. 31; 1 ♀ juv.

The largest ♂ (Koh Samit) is 14 mm. long, 19.5 mm. wide. The third, fourth and fifth segments of the ♂ abdomen are incompletely fused.

Camatopsis rubida Alcock and Anderson.

Camatopsis rubida ALCOCK, LXIX, 329, 1900.

12 miles E. of Koh Mak, 20 fath., large seine; I. 28; 1 ♂.

Megæsthesius Rathbun.

Megæsthesius RATHBUN, Proc. Biol. Soc. Washington, XXII, 112, 1909.

Allied to *Camatopsis* Alcock (Investigator Deep-Sea Brachyura, p. 75, 1899) but differs in having the eyes unpigmented, the movable part of the antennules not only excluded from the fossettes, but immensely stout, the buccal cavern anteriorly narrowed and arcuate, the outer maxillipeds touching each other, the ischium as broad as long and broader than the merus, which is subtriangular and bears the palp at its summit, exognath short and narrow.

Megæsthesius sagedæ Rathbun.

Plate II, fig. 5.

Megæsthesius sagedæ RATHBUN, Proc. Biol. Soc. Washington, XXII, 112, 1909.

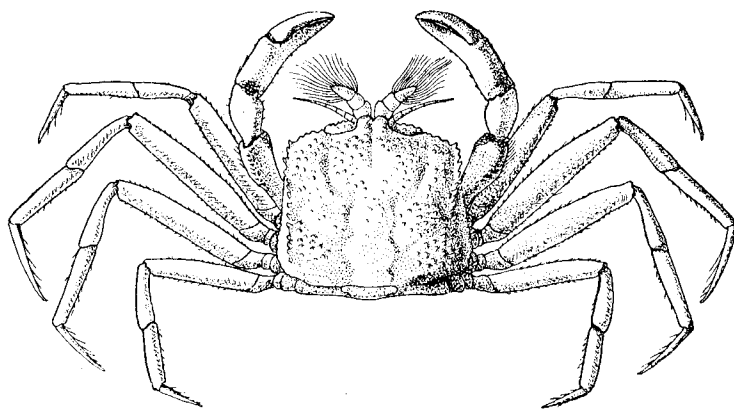


Fig. 30. *Megæsthesius sagedæ*, type ♂, 2.7 mm. wide.

Carapace pentagonal, the long postero-lateral borders parallel, forming distinct angles with the short antero-lateral borders which are in line with the orbits. Surface nearly naked, rough with sharp granules, which on the borders become spinules; very convex fore and aft, level from side to side. Front about one-fifth as wide as carapace,

bilobed by a deep groove, lobes arcuate. Eyestalks rough like the carapace, not pigmented. Epistome small. Pterygostomian region swollen.

Antennules immensely stout, the last two segments of the peduncle wider than the lobes of the front, the flagellum fringed with long hair which reaches to the sternum when the antennules are applied to the ventral surface. Antennæ slender, crowded by the antennules away from the front.

Chelipeds of the ♂ shorter and not much stouter than the legs, pubescent, rough; wrist suboval, bearing a spinule at the inner angle, fingers cylindrical, longer than the palm, the lower margin of which is spinulose.

Legs long and narrow, margins spinulose.

Abdomen of ♂ widest at the third segment; third to fifth segments fused. Length of ♂ 2·7 mm., width 2·7 mm., fronto-orbital width 1·8 mm., width of front 0·6 mm.

Singapore, 2–3 fath.; XII. 4; 1 ♂ type.

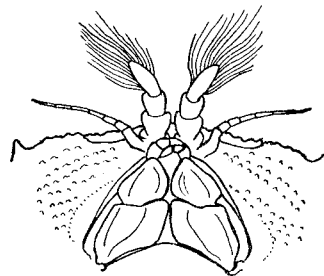


Fig. 31. *Megæsthesius sagedæ*, type ♂, 2·7 mm. wide, antero-ventral view.

Subfamily Typhlocarcinopsinæ Rathbun.

The first segment of the male abdomen covers the whole space between the last pair of legs. Otherwise, as in the Rhizopinæ, to which it bears the same relation that the Carcinoplacinae does to the Prionoplacinae. The type of the subfamily is

Typhlocarcinops Rathbun.

Typhlocarcinops RATHBUN, Proc. Biol. Soc. Washington, XXII, 112, 1909.

Differs from *Typhlocarcinus* Stimpson (cf. Alcock, LXIX. 321, 1900), chiefly in having the first segment of the ♂ abdomen very broad, covering the whole width of the sternum, and transversely grooved. Remainder of abdomen narrow.

Type and only species:

Typhlocarcinops canaliculata Rathbun.

Plate II, fig. 16.

Typhlocarcinops canaliculata RATHBUN, Proc. Biol. Soc. Washington, XXII, 112, 1909.

Carapace, chelipeds and legs sparingly hairy on the margins. Carapace three-fourths as long as wide, widest posteriorly, meso-gastric region faintly marked. Lateral margins granulate, entire.

Fronto-orbital width about three-fifths of the total width of the carapace; nearly half of the distance is occupied by the front. The latter widens anteriorly, is strongly

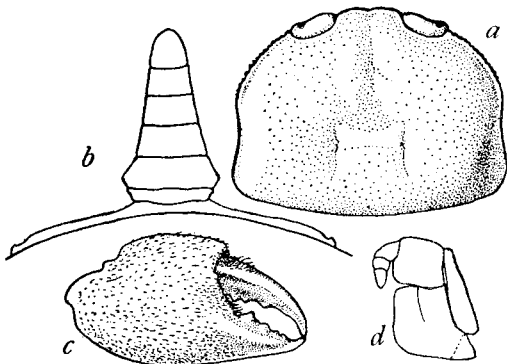


Fig. 32. *Typhlocarcinops canaliculata*, Koh Mak, ♂, 3·4 mm. wide: a, carapace; b, abdomen; c, chela; d, maxilliped.

deflexed, medially sulcate, lower margin arcuate, faintly emarginate in the middle. Orbits almost circular; eyes faintly pigmented.

Buccal cavity with sides parallel. Antero-external angle of merus of outer maxillipeds well marked but not produced.

Chelipeds about one and one-half times as long as carapace. Inner angle of wrist not prominent. Palm pubescent and on the lower half finely granulous.

Second and third legs subequal. Second pair longest, about twice as long as carapace.

Neither of the two specimens is adult, and the segments of the abdomen are not clearly marked; save for the broad first segment, the abdomen is very narrow, being at the third segment less than one-third the width of the sternum.

Length of type ♂ 2.7 mm., width 3.6 mm., fronto-orbital width 2 mm., frontal width 0.9 mm.

Between Koh Mesan and Cap Liant, 5–8 fath., sand, stones; H. 7; 1 ♂ type. S. of Koh Mak, 5–6 fath.; H. 17; 1 ♂.

Subfamily Hexapodinæ.

Thaumastoplax orientalis Rathbun.

Plate II, fig. 1.

Thaumastoplax orientalis RATHBUN, Proc. Biol. Soc. Washington, XXII, 113, 1909.

Carapace one and two-fifths times as broad as long; longitudinally very convex, transversely nearly level; naked and coarsely punctate, a faint H-shaped depression at the middle. Lateral borders marked by a raised line. The fronto-orbital distance, while about two-fifths as great as the extreme width of the carapace, occupies only a little more than half of the anterior margin, the so-called antero-lateral margin being angularly arcuate, its anterior portion transverse, a slight notch on the outer portion, postero-lateral margins sub-parallel; posterior margin convex, postero-lateral angle obliquely cut off above the insertion of the third leg.

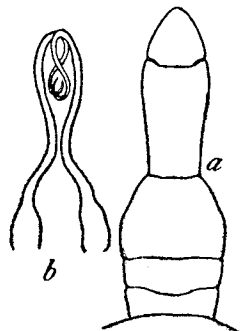


Fig. 33. *Thaumastoplax orientalis*, type ♂, 12.6 mm. wide: *a*, abdomen; *b*, abdominal appendages.

Front one-fourth the width of the carapace, posteriorly constricted, anterior margin concave, except for a broad shallow median tooth. Orbits transversely oval, appearing marginal in a dorsal view. Antennæ in the orbital hiatus; flagella three times as long as the major diameter of the orbit.

Epistome obsolete in the middle, narrow at the sides. Buccal cavity much broader than long, anteriorly arcuate, sides anteriorly divergent. Outer maxillipeds large, especially the palpus, which occupies the length of the cavity; a hiatus exists between the palpus and the ischium; there is a transverse fringe of hair across the middle of the maxillipeds, as well as a marginal fringe on the last two joints. Anterior half of

the maxillipeds nearly vertical. The maxilliped is shaped much as in the type species *T. anomalipes* Miers (Ann. Mag. Nat. Hist. (5), VIII, pl. XIV, fig. 2 b, 1881), but the propodus is as wide as long.

Chelipeds short, equal; merus with a superior subterminal spine; wrist smooth and bare except near the inner angle, where it is sharply granulate and hairy. Palms higher than long, granulate, granules arranged only partly in rows, lower edge bordered by a row of prominent sharp tubercles continued half way on the thumb. Dactylus spinulose above. Fingers narrowly gaping.

Second leg much larger than the first and third, which are subequal; upper margin of merus of second leg spinulose.

Margins of chelipeds and legs and also the pterygostomian regions long-hairy. Margins of sternal segments and of abdomen furry.

Third and fourth segments of ♂ abdomen fused, and also the fifth and sixth. The terminal segment projects between the tips of the dactyli of the two outer maxillipeds. The appendages of the first segment are much longer than the abdomen but do not project beyond it; their extremities being doubly recurved, forming together a figure 8.

Length of ♂ 9 mm., width 12.6 mm., width across front and orbits 5 mm., greatest width of front 2.8 mm.

Type locality. — N. of Koh Kut, 10 fath.; l. 23; 1 ♂.

This species differs from *T. anomalipes* Miers (Op. cit., p. 261, pl. XIV, fig. 2) in its narrower carapace, shorter, stouter claws and smaller third leg.

Thaumastoplax chuenensis Rathbun.

Thaumastoplax chuenensis RATHBUN, Proc. Biol. Soc. Washington, XXII, 113, 1909.

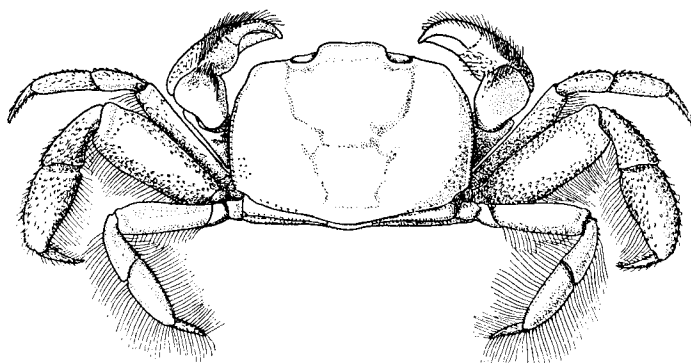


Fig. 34. *Thaumastoplax chuenensis*, type ♂, 4.8 mm. wide.

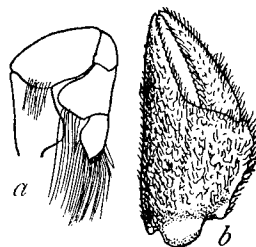


Fig. 35.

Thaumastoplax chuenensis,
type ♂, 4.8 mm. wide:
a, maxilliped; b, chela.

Differs from *T. orientalis* in a little narrower carapace, about one and one-third times as broad as long, with the gastric region sharply outlined, the cardiac region less distinctly so, the branchio-hepatic groove faint; antero-lateral margin less angled; fronto-orbital distance greater, one-half width of carapace; front widest at its lower

margin where it is nearly one-third as wide as carapace; epistome complete though narrow; legs narrower than in *T. orientalis*.

Founded on a young male, in which only the last segment of the ♂ abdomen is distinctly separated.

Length 3.5 mm., width 4.8 mm., width across front and orbits 2.5 mm., greatest width of front 1.5 mm.

Type locality. — Koh Chuen, 30 fathoms, shell bottom; II; 1 ♂.

Lambdophallus anfractus Rathbun.

Lambdophallus anfractus RATHBUN, Proc. Biol. Soc. Washington, XXII, 113, 1909.

Carapace subquadrilateral with the anterior angles rounded, one-half broader than long, convex fore and aft, anteriorly deflexed, slightly convex from side to side, gastric and cardiac regions well defined, surface short-pubescent and finely granulate and punctate. At the postero-lateral corners there is a small but very well marked lobe.

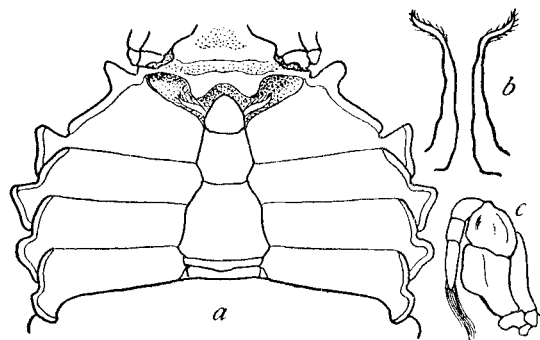


Fig. 36. *Lambdophallus anfractus*, type ♂, 7.2 mm. wide: a, sternum and abdomen; b, abdominal appendages; c, maxilliped.

Front nearly vertically deflexed, about one-fifth as broad as the greatest breadth of the carapace, subtruncate with the outer angles rounded, and with a median groove which bilobes the front in a dorsal view.

Orbit oblong-oval, about as wide as each lobe of the front and inclined downward and outward in a front view. Eyes almost immovable, pigmented.

Antennules transverse, septum narrow. Antennae more than twice as long as the major diameter of the orbit.

Epistome well defined. The buccal cavity narrows anteriorly. The inner margin of the ischium-merus is very convex, so that the space between the ischium joints is very nearly filled by the palpi, the propodal joint of which is less enlarged than in the type species *L. sexpes* (cf. pl. LXII, fig. 1 a, Illus. Zool. Investigator, Crust., pt. X). There are several fine oblique raised lines near the buccal cavity.

Chelipeds unequal in the ♂, equal in the ♀, the larger one in the ♂ one and one-half times as long as the carapace, finely granulate, fingers meeting only at tip, a low molariform tooth at base of dactyl.

Legs tomentose and granulate, third pair longest, a little more than twice as long as carapace, first pair shortest and narrowest, merus joints longitudinally furrowed.

Sternum finely granular; in the first segment is a transverse sinuous trench, to hold the curved and projecting extremities of the abdominal appendages.

The narrow ♂ abdomen has the first two segments short, no suture lines visible between the third, fourth and fifth segments, sixth segment nearly as long

as wide and widest near the middle, seventh segment subtriangular with convex sides. ♀ abdomen subovate, widest at the sinus between third and fourth segments, all segments distinct.

Length of type ♂ 4.7 mm., width 7.3 mm.

Record of specimens. — W. coast of Koh Chang, a little N. of the small islands, 10 fath., mud bottom, dead shells; I. 16; 1 ♀ ovig. Koh Chang, about 1 fath., coral; I. 17; 1 ♀. N. of Koh Kong, 8 fath., mud; I. 23; 2 ♀. Off Koh Kut, 6 fath.; I. 26; 2 ♂ (1 type) 5 ♀ (2 ovig.). 15 miles W. of Koh Kut, 30 fath., on *Chaetodiadema granulatum* Mortensen; 1 ♂. The Sound at Koh Chang, 3—5 fath., soft clay bottom; 1 ♂, 1 ♀.

Differs from the type species, *L. sexpes* Alcock (Jour. Asiat. Soc. Bengal, LXIX, p. 330, 1900) in its narrower carapace, and the different shape of the maxillipeds, abdomen and sternal trench.

This species has a suspicious resemblance to *Hexapus sexpes* de Man (Arch. f. Naturg., LIII, 1, p. 322, pl. XIII, fig. 3, 1887), but the author does not mention a sternal trench. I doubt if the species represented by him is the same as *H. sexpes* de Haan or *H. sexpes* A. Milne Edwards which appear also to be distinct from each other. The type of *Cancer sexpes* Fabricius (Entomol. Syst., Suppl. p. 344, 1798) is not extant, so that the specific name can perhaps not well be retained for de Haan's species.

(?) *Hexaplax*, sp.

Tung Kaben, 6 fath., sand, mud, phanerogams; II. 22; 1 ♂, young and soft shell, about 1.8 mm. wide.

This specimen has the form of carapace and front of *H. megalops* Doflein¹, also large reniform black eyes set in orbits similar to those of that species. The specimen is devoid of chelipeds and legs and is in too bad shape to be described with accuracy.



Fig. 37. *Hexaplax*, sp., ♂, 1.8 mm. wide: *a*, body, showing front flattened out, instead of curving downward in its natural position; *b*, maxilliped.

Family Xanthidæ.

Subfamily Xanthinæ.

Cymo melanodactylus de Haan.

Cymo melanodactylus ALCOCK, LXVII, 174, 1898.

Koh Kahdat, coral and coral blocks, 1 fath.; I—II; 2 ♂, 1 ♀.

¹ *Brachyura "Valdivia"*, p. 122, pl. XXXI, fig. 3—4, pl. I, fig. 7, 1904.

Xantho scaberrimus Walker.

Xantho (Lophoxanthus) scaberrimus ALCOCK, LXVII, 116, 1898.

Koh Chuen, 30 fath., shell bottom; II; 1 juv., 7.3 mm. in width. Unlike the adult, the fronto-orbital distance is more than half as great as the width of the carapace; the legs are longer and narrower than in the adult.

Leptodius exaratus (Milne Edwards).

Xantho (Leptodius) exaratus ALCOCK, LXVII, 118, 1898.

Coast of Lem Ngob, 0--1 fath., stones and sand; XII; 1 ♂. Koh Chik, rocky coast; I. 30; 1 ♂ 2 ♀ (1 ovig.). Koh Chang, 1 fath., coral; I--III; 1 ♂.

Leptodius sanguineus (Milne Edwards).

Xantho (Leptodius) sanguineus ALCOCK, LXVII, 119, 1898.

Koh Kahdat, 1 fath., coral and coral blocks; I--II; 1 ♀. Koh Chang, 1 fath., coral; I--III; 1 ♀.

These specimens are the *nodosus* form, figured by Dana (pl. XI, figs. 14a--g, Crust. U. S. Expl. Exped.) in which the tips of the lateral teeth are much thickened and strongly produced.

Cycloxanthops lineatus (A. Milne Edwards).

Plate II, fig. 15.

Cycloxanthus lineatus ALCOCK, LXVII, 124, 1898.

Koh Chuen, 30 fath., shell bottom; I. 2; 1 ♀ juv. Between Koh Kut and Koh Kahdat, 10 fath., shell bottom; I. 10; 1 ♀. Between Koh Mesan and Cap Liant, 9 fath.; II. 4; 1 ♂. N. of Koh Chuen, 15 fath., mud, shells; II. 5; 3 ♂ 5 ♀. Koh Kam, 5 fath., gravel; II. 6; 1 ♂ 1 ♀ ovig. Gulf of Rayong, 7--10 fath., sand, mud, shells; II. 8; 2 ♂. Koh Chuen, 30 fath., shell bottom; II; 1 ♂ 1 ♀. Koh Lan, 30 fath., mud; III. 2; 2 juv.

The specimens are all smaller than the type, the largest one (♂, Koh Kam) measuring 5.5 mm. long and 7.3 mm. wide; the outer angle of the orbit is more prominent than in larger specimens, forming a little blunt tooth similar to the next tooth on the antero-lateral margin.

Actæa nodulosa White.

Actæa nodulosa ALCOCK, LXVII, 148, 1898.

Koh Chuen, 30 fath., shell bottom, II; 1 ♀. Koh Kram, 30 fath.; III. 2 and 21; 2 ♂ juv.

Actæa savignyi (Milne Edwards).

Actæa granulata ALCOCK, LXVII, 151, 1898. Not *Cancer granulatus* LINNÆUS, 1758.

Between Koh Kut and Koh Kahdat, 10 fath., shell bottom; I. 10; 1 ♀ juv. 15 miles E. of Koh Chuen, 10 fath., shell bottom; II. 2; 1 ♀ ovig. Koh Kam, 5 fath.,

gravel; II. 6; 1 ♂ juv. 1 ♀ juv. Koh Chuen, 30 fath., shell bottom; II; 2 ♀ juv. Koh Kram, 30 fath.; III. 2 and 21; 1 ♀ juv.

Actæa calculosa (Milne Edwards).

Actæa calculosa ALCOCK, LXVII, 152, 1898.

Between Koh Mesan and Cap Liant, 9 fath.; II. 4; 1 ♂ 2 ♀ juv. Between Koh Mesan and Koh Chuen, 30 fath., stones; II. 5; 1 ♂. Between Koh Mesan and Koh Chuen, 38 fath., stones; II. 7; 1 ♂. Between Koh Mesan and Cap Liant, 5—8 fath., sand, stones; II. 7; 1 ♂ 1 juv. Koh Kram, 30 fath.; III. 2 and 21; 1 ♀ juv.

Platypodia granulosa (Rüppell).

Lophactæa granulosa ALCOCK, LXVII, 101, 1898.

Singapore, coral reef; XII. 5; 1 ♂.

Atergatis ocyroe (Herbst).

Atergatis floridus ALCOCK, LXVII, 98, 1898.

Koh Kahdat, among corals; II. 13; 2 ♂. Koh Chang, 1 fath., corals; I—III; 1 ♀ ovig. 4 juv.

Atergatis dilatatus de Haan.

Atergatis dilatatus ALCOCK, LXVII, 96, 1898.

Koh Chang, 1 fath., corals; I—III; 1 ♂ 1 juv.

Subfamily **Carpiliinæ**.

Chlorodiella niger (Forskål).

Chlorodius niger ALCOCK, LXVII, 160, 1898.

Koh Kahdat, coral and coral blocks, 1 fath.; I—II; 5 ♂ 5 ♀ (2 ovig.) 4 juv. Koh Chang, coral, 1 fath.; I—III; 2 ♂ 1 ♀.

Carpilodes rugipes (Heller).

Actæodes rugipes HELLER, S. B. K. Akad. Wiss. Wien, Math.-Naturw. Cl., XLIII, 1. Abth., 330, pl. II, fig. 20, 1861.

Carpiloxanthus rugipes HELLER, Reise Novara, Crust., 17, 1865.

Carpilodes rugipes A. MILNE EDWARDS, Nouv. Arch. Mus. Hist. Nat., Paris, I, 229, pl. XII, fig. 4, 4 a, 4 b, 1866.

Koh Chang, coral, 1 fath.; I—III; 2 ♀.

Carpilodes lophopus Alcock.

Plate II, fig. 18.

Carpilodes lophopus ALCOCK, LXVII, 84, 1898; Illus. Zool. Investigator, part VII, pl. XXXVI, fig. 2, 1899.

15 miles E. of Koh Chuen, 10 fath., shell bottom; II. 2; 1 ♀. Between Koh Mesan and Koh Chuen, 30 fath., stones; II. 5; 1 ♀. North side of Koh Mesan, 10—15 fath., stones, shells; II; 1 ♂ 1 ♀. Koh Chuen, 30 fath., shell bottom; II; 3 ♀.

The largest specimen (♀ between Mesan and Chuen) is 6.5 mm. long and 10.5 mm. wide. All are more distinctly areolated than the one figured by Alcock. The areola 1 M (of Dana) is distinct; 2 M is longitudinally divided, and there is a triangular areolet in front of the outer half; a square supra-orbital areolet; D and E are fused; 1 L, 2 L and 3 L are fused and eroded; 1 R and 2 R are fused with S; 4 L is fused with T; 5 L and 6 L are each distinct; the transverse groove across the posterior part of the carapace is deep.

Hypocolpus haanii Rathbun.

Cancer (Xantho) granulatus DE HAAN, Fauna Japon., Crust., p. 65, pl. XVIII, fig. 3, 1837. Not *Cancer granulatus* LINNÆUS, 1758.

Hypocaelus granulatus A. MILNE EDWARDS, Nouv. Arch. Mus. Hist. Nat., Paris, I, 296, pl. XVI, fig. 6, 6 a, 1866. HENDERSON, Trans. Linn. Soc. London, (2), Zool., V., p. 358, pl. XXXVI, fig. 12, 1893.

Hypocolpus haanii RATHBUN, Proc. Biol. Soc. Washington, XXII, p. 114, 1909.

Koh Kram, 30 fath.; III. 2 and 21; 1 ♂ 1 juv.

Subfamily Etisinæ.

Chlorodopsis melanochira A. Milne Edwards.

Chlorodopsis melanochira ALCOCK, LXVII, 168, 1898.

Singapore, coral reef; XII. 5; 1 ♂ 1 juv. Koh Kahdat, 1 fath., sandy bottom, sponges, dead corals; I. 11; 3 ♂ 1 ♀ ovig. 3 juv. Koh Kahdat, among algæ; II. 19; 1 ♂. Koh Kahdat, 1 fath., coral and coral blocks; I—II; 4 ♂ 6 ♀ 2 juv. Koh Chang, 1 fath., coral; I—III; 7 ♂ 10 ♀ (3 ovig.) 18 juv.

Halimede de Haan.

Halimede DE HAAN, Fauna Japon., 35, 1835 (*fragifer*).

Andromeda GISTEL, Natur. Thierreichs, p. IX, 1848.

Polycremnus GERSTÄCKER, Arch. f. Natur., XXII, pt. 1, 120, 1856 (*ochtodes*).

Three species of this genus form a regular series according to the amount of ornamentation. They are as follows:

Halimede tyche (Herbst).

Cancer tyche Herbst, Naturg. d. Krabben u. Krebse, III, Heft 2, p. 35, pl. LII, fig. 3, 1801, Ostindien.

Cancer (Halimede) fragifer de Haan, Fauna Japon., Crust., p. 47, pl. XIII, fig. 4, 1835, Japan.

Halimede thurstoni Henderson, Trans. Linn. Soc. London (2), V, p. 360, pl. XXXVI, figs. 13, 14, 1893, Tuticorin.

Halimede ochtodes (Herbst).

Cancer ochtodes Herbst, Naturg. d. Krabben u. Krebse, I, p. 158, pl. VIII, fig. 54, 1783.

Polycremnus ochtodes Alcock, Jour. Asiat. Soc. Bengal, LXVII, p. 135, 1898 and synonymy.

Polycremnus verrucifer Stimpson, Smithson. Misc. Coll., XLIX, p. 49, pl. VI, fig. 1, 1907 and synonymy.

H. tyche has the carapace, wrist and palm covered with raised, flattened and distinctly separated prominences, as shown in de Haan's figures (of *fragifer*). These prominences are pitted or irregularly grooved. The type of *C. tyche* is in the Berlin Museum; it is a small specimen 9.5 mm. long by 11.4 mm. wide, and is undoubtedly the same as *H. fragifer*.

H. thurstoni has similar flattened prominences, but fewer of them; they are restricted to the antero-lateral and suborbital regions of the carapace, the surface of the wrist, and the upper and proximal half of the palm.

H. ochtodes is without flattened prominences, but the antero-lateral protuberances of the carapace are low and rounded, the wrist and supero-proximal surface of the palm are covered with rounded tubercles. *P. verrucifer* corresponds to the young of *H. ochtodes*.

As these three species present no other differences, it is quite probable that they were derived one from another in the order named, and it would not be surprising if intermediate forms existed. The young (at least of *H. thurstoni* and *H. ochtodes*) present greater inequalities of the surface than the old.

H. tyche is not represented in the Siam collection, but the other species were taken as follows:

Halimede thurstoni Henderson.

Plate I, fig. 19. Plate II, fig. 7.

Between Koh Kut and Koh Kahdat, 10 fath., shell bottom; I. 10; 1 ♂ juv. 1 juv. Koh Kam, 5 fath., gravel; II. 6; 1 ♀ juv. 2 juv. Between Koh Mesan and Cap Liant, 5--8 fath., sand, stones; II. 7; 1 ♂ juv. Koh Chuen, 30 fath., shell bottom; II; 1 ♂ juv. 1 ♀ juv. with Rhizocephalid. Between Koh Rin and Cliff Rock (N. of Koh Kram), 15 fath.; III. 2; 2 juv. N. of Koh Chuen, 15 fath., mud, shells; II. 5; 1 juv.

Halimede ochtodes (Herbst).

Plate I, fig. 4.

The gulf at Rayong, 7--10 fath., sand, mud, shells; II. 8; 1 ♀ ovig. Koh Kahdat, 4--5 fath., sand, stones, coral; II. 15--18; 1 ♀ juv. Koh Chuen, 30 fath., shell bottom; II; 1 ♂ with large Rhizocephalid. Koh Lan, 30 fath., mud; III. 2; 1 ♀ juv.

In young specimens the lateral projections are more acute than in the adult. Length of ovigerous ♀ 31 mm., width 42.6 mm.

This species has been recorded at Hong Kong (STIMPSON), Singapore (WALKER), Penang (ALCOCK), Madras Coast (ALCOCK), East India (HERBST), Indian Ocean (ADAMS and WHITE).

Subfamily Menippinæ.

Menippe convexa Rathbun.

Menippe convexa RATHBUN, Bull. U. S. Fish Comm. for 1903, pt. III, 861, pl. XI, fig. 4, 1906.

Fishing-weir at Koh Kong; I. 21; 1 ♂.

Length 9.7 mm., width 12.9 mm. Carapace a little narrower than the type ♀, regions slightly better marked, surface showing a close flat granulation, especially in the anterior half, lateral teeth stronger, more acute. Chelipeds more unequal than in the ♀. Fine dots of a dark color on the posterior part of the carapace, legs transversely banded.

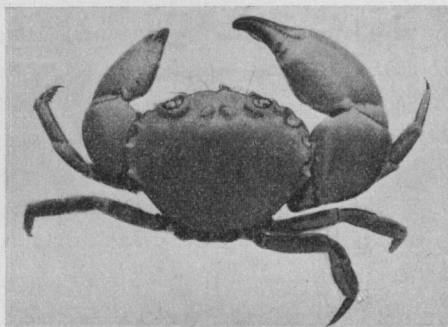


Fig. 38. *Menippe convexa*, Koh Kong, ♂, 12.7 mm. wide.

Myomenippe granulosa (A. Milne Edwards).

Menippe (Myomenippe) granulosa ALCOCK, LXVII, 179, 1898.

Coast of Lem Ngob, 0—1 fath., stones and mud; XII; 2 ♂ 5 ♀ 10 juv. Mangrove swamp, Lem Ngob; XII, 23, 24 and 27; 2 ♂ 2 ♀. Koh Chang, stony coast at low water; I; 1 ♂ 1 juv.

Eurycarcinus orientalis

A. Milne Edwards.

Eurycarcinus orientalis ALCOCK, LXVII, 210, 1898.

Mangrove swamp, Lem Ngob; XII, 23, 24 and 27; 1 ♀. Coast of Lem Ngob, 0—1 fath., stones, sand; XII; 4 ♂ 1 ♀ 5 juv. Koh Chang, stony coast at low water; I; 1 ♂ 1 ♀. Coast of Lem Ngob, above low water mark; XII, 28; 2 ♀ 8 juv. Gulf of Siam, without special locality; 1 ♂ 1 ♀. Koh Chang, coral, 1 fath.; I—III; 1 ♂ 4 ♀ (1 ovig.) 5 juv. Koh Chang, under stones on coast, extreme low water; I. 12; 1 ♂ juv.

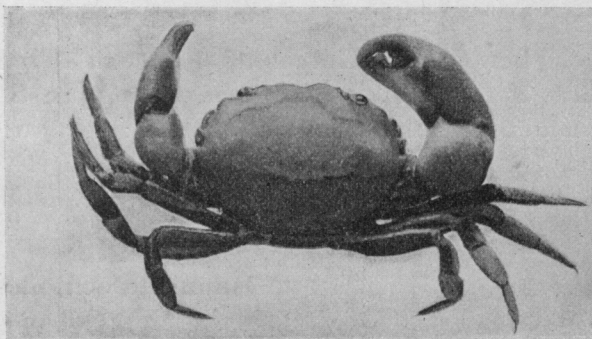


Fig. 39. *Eurycarcinus orientalis*, Lem Ngob, ♀, 13.5 mm. wide.

Pilumnus vespertilio (Fabricius).

Pilumnus vespertilio ALCOCK, LXVII, 192, 1898.

Singapore, coral reef; XII, 5; 6 ♂ 2 ♀. Between Koh Mesan and Cap Liant, 5—8 fath., sand, stones; II. 7; 1 juv. Koh Chang, 1 fath., coral; I—III; 1 juv.

***Pilumnus longicornis* Hilgendorf.**

Pilumnus longicornis ALCOCK, LXVII, 193, 1898.

Koh Kram, 30 fath.; III. 2 and 21; 1 ♀ juv. Koh Kahdat, 5—8 fath., sandy mud, II. 16 and III. 4; 1 ♀ ovig. Gulf at Rayong, 7—10 fath., sand, mud, shells; II. 8; 1 ♀. Between Koh Mesan and Koh Chuen, 15 fath., stones; II. 6; 1 juv. Between Koh Mesan and Cap Liant, 5—8 fath., sand, stones; II. 7; 1 juv.

These specimens differ from the type in having the greater part of the outer surface of the large hand, granulous and hairy; this may be due to the smaller size of the specimens.

***Pilumnus andersoni* de Man.**

Pilumnus andersoni ALCOCK, LXVII, 194, 1898.

15 miles east of Koh Chuen, 10 fath., shell bottom; II. 2; 1 ♀. Koh Chuen, 30 fath., shell bottom; I. 2; 2 ♀ 2 juv. Koh Chuen, 30 fath., shell bottom; II; 1 ♂ 5 ♀ (1 ovig.). Koh Kram, 30 fath.; III. 2 and 21; 6 ♂ 7 ♀ (2 ovig.) 12 juv. Koh Kahdat, 1 fath., coral, coral blocks; I—II; 2 ♂ 1 ♀ ovig. Koh Chang, 1 fath., coral; I—III; 2 ♂ 7 ♀ (1 ovig.) 12 juv.

The specimens are all small, the largest measuring 4 mm. long, 6 wide. The outer angle of the orbit is inclined to be spiniform, but the spine is very short, not approaching in size the other spines.

***Pilumnus edamensis* de Man.**

Pilumnus edamensis DE MAN, Arch. f. Naturg., LIII, 1, p. 302, pl. XI, fig. 5, 1887.

Koh Kahdat, 1 fath., coral and coral blocks; I—II; 1 ♂. Koh Chang, 1 fath., coral; I—III; 3 ♀. Bay at south end of Koh Chang, among large oysters; III. 14; 1 ♂.

***Pilumnus cærulescens* A. Milne Edwards, var.**

Plate I, fig. 15.

Pilumnus cærulescens ALCOCK, LXVII, 196, 1898.

Koh Kahdat, 1 fath., sandy bottom, sponges, dead coral; I. 11; 1 ♂ 2 ♀ (1 ovig.). Koh Kahdat, among algæ; II. 19; 1 ♂ juv. 1 ♀.

Corresponds well to ALCOCK's description except that the hands are not closely granulate.

***Pilumnus hirsutus* Stimpson.**

Pilumnus hirsutus STIMPSON, Smithsonian Misc. Coll., XLIX, 69, pl. IX, fig. 1, 1907. Cf. RATHBUN, Bull. Mus. Comp. Zool., XXXIX, 129, 1902.

Koh Kahdat, 1 fath., sandy bottom, sponges, dead corals; I. 11; 1 ♀ 3 juv. Between Koh Mesan and Koh Chuen, 25 fath., shells, II. 5; 1 juv. Koh Kam, 5 fath., gravel; II. 6; 3 ♂ 3 ♀ (1 ovig.). Between Koh Riat and Koh Mesan, 3—5 fath., algæ; II. 7; 1 ♀. Between Koh Mesan and Cap Liant, 5—8 fath., sand, stones; II. 7; 2 ♂ 1 ♀. Koh Kram, 30 fath.; III. 2 and 21; 2 ♂. Twelve miles east of Koh Mak, 20 fath., large seine; I. 28; 1 ♂.

A ♂ from Koh Kram is about the size of Stimpson's type and resembles his figure. The lobes of the front are more rounded and less oblique than in smaller specimens, edge minutely crenulate, and the median emargination shallower. Carapace very convex both ways. The projections of the chelipeds are sharp, spinulous. Besides the short pubescence of the surface there are numerous long hairs.

Length of carapace of ♂, 8.5, width 11.5 mm.

Pilumnus dorsipes Stimpson.

Plate I, figs. 3 and 9.

Pilumnus dorsipes STIMPSON, Smithson. Misc. Coll., XLIX, 70, pl. IX, fig. 3, 3a, 1907.

Koh Kram, 30 fath.; III. 2 and 21; 1 ♀ juv.

Length 7.9 mm., width 10.4 mm. Corresponds to ALCOCK's description fairly well. There is a bunch of subhepatic granules. The surface of the wrist and chela is covered with blunt curved spines. STIMPSON's figure shows the legs somewhat shorter, and those of the last two pairs broader.

Pilumnus borradailei Rathbun.

Plate I, fig. 8.

Pilumnus borradailei RATHBUN, Proc. Biol. Soc. Washington, XXII, p. 113, 1909.

Carapace very flat except anteriorly, about $\frac{3}{4}$ as long as broad, covered with a dense short pubescence, and long hairs, forming a fringe on the anterior border of the carapace and abundant on the chelipeds even to the finger tips and on the legs. When denuded, the regions of the carapace are fairly well marked, the surface is finely punctate, and towards the antero-lateral regions a little granular.

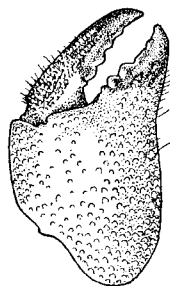


Fig. 40. Chela (denuded) of *Pilumnus borradailei*, Koh Chang, ♂, 9.4 mm. wide.

Fronto-orbital border $\frac{7}{10}$ of width of carapace, $\frac{1}{2}$ of this is occupied by the front, the two lobes of which are very oblique, convex, with a shallow median emargination, outer angles rectangular, rounded off and scarcely separated from the inner angle of the orbit. The outer of the two superior fissures of the orbit is small, the inner scarcely discernible; notch below the outer angle broad.

Antero-lateral margin crossed by three grooves which form four shallow lobes with granulated edges, which diminish in size from the first to the fourth. Postero-lateral margins slightly converging.

Chelipeds stout; merus broader than long; carpus almost smooth except for fine granules along the distal margin; palms wider than their superior length, surface covered with numerous but not contiguous small pearly granules, which are continued half way along the fingers; only the distal half or less of the fingers is dark-colored. Third pair of legs twice as long as carapace. Legs unarmed.

Length of type ♂ 7.4 mm., width 10 mm., fronto-orbital width 7.1 mm., width of front 3.5 mm.

Koh Kahdat, 1 fath., coral and coral blocks; I—II; 1 ♂ 1 ♀. Koh Chang, 1 fath., coral; I—III; 2 ♂ (1 is type).

Nearest to *P. pilosus* Fulton and Grant¹, from which it differs in lacking the naked triangular area on the palms, in having the fingers meeting when closed, and in its greater hairiness (judging from the figures of *P. pilosus*).

Actumnus setifer (de Haan).

Actumnus setifer ALCOCK, LXVII, 202, 1898.

Between Koh Mesan and Cap Liant, 5—8 fath., sand, stones; II. 7; 1 ♀. Koh Kahdat, 4—5 fath., sand, stones, coral; II. 15—18; 2 ♂ 2 ♀. North side of Koh Mesan, 10—15 fath., stones, shells; II; 1 ♂ 1 ♀. 15 miles east of Koh Chuen, 10 fath., shell bottom; II. 2; 2 ♀ (1 ovig.).

Actumnus changensis Rathbun.

Actumnus changensis RATHBUN, Proc. Biol. Soc. Washington, XXII, p. 114, 1909.

Surface almost bare, only occasional hairs, both long and short, which in no way disguise the markings.

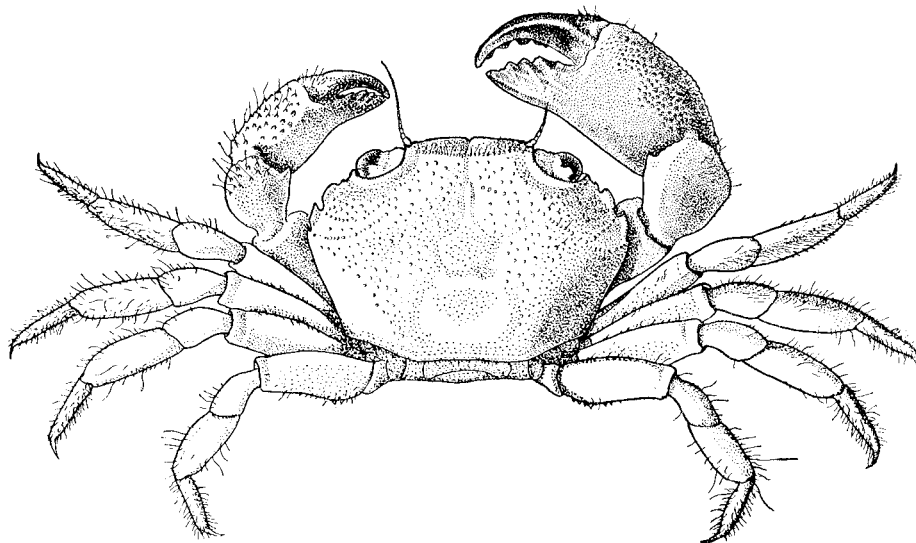


Fig. 41. *Actumnus changensis*, Koh Chang, ♂, 5.7 mm. wide.

Carapace $\frac{2}{3}$ as long as broad, regions very slightly indicated, viz., the mesogastric and cardiac; epigastric lobes slightly elevated. Frontal and antero-lateral regions dotted with separated granules; an indistinct line of granules curves inward and forward from the last lateral tooth.

Front $\frac{1}{3}$ as wide as carapace, bilobed, with a median notch, each lobe slightly convex and separated from the orbital angle by a rectangular notch.

¹ Proc. Roy. Soc. Victoria, XIX (n. s.), p. 7, pl. IV, fig. 1—4, 1906.

Orbital margin not fissured above, a triangular notch below the outer angle. The antennary flagellum arises in the orbital hiatus.

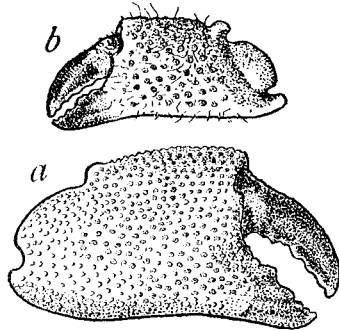


Fig. 42. *Actumnus changensis*, Koh Chang, ♂, 5·7 mm. wide: a, right chela; b, left chela.

There are three antero-lateral teeth, the first subtruncate, the second and third acutely pointed. Between the first tooth and the orbital angle there is a spinule. Postero-lateral margins considerably longer than the antero-lateral, straight.

Chelipeds very unequal, granulous, granules small, beadlike, and dense on the palms. Pollex of larger hand short, with four principal teeth. The dark color does not quite cover the surface of either thumb.

Dimensions. — ♀, length 3·8 mm., width 5·7 mm. Koh Chang, 1 fath., coral; I—III; 3 ♂ 2 ♀ (1 ♀ type).

In shape resembles *A. tomentosus* Dana (pl. XIV, figs. 2a—c, Crust. U. S. Expl. Exped.) which has the carapace without granules and covered with a tomentum.

Actumnus squamosus (de Haan).

Cancer (Pilumnus) squamosus DE HAAN, Fauna Japon., Crust., p. 50, 1835.

Actumnus squamosus A. MILNE EDWARDS, Nouv. Arch. Mus. Hist. Nat., Paris, I, p. 286, pl. XVIII, fig. 6, 6a, 6b, 6c, 1866.

20 miles E. S. E. of Koh Samit, 13—14 fath., sandy mud, shells; II. 2; 1 ♂. Between Koh Mesan and Cap Liant, 9 fath.; II. 4; 1 ♂. Off Koh Sakait, 5—6 fath., sand; II. 23; 1 ♀ ovig. Koh Chuen, 30 fath., shell bottom; II. 1 ♂ 1 ♀. Between Koh Rin and Cliff Rock, (N. of Koh Kram), 15 fath.; III. 2; 1 ♀. Koh Kam, 5 fath., gravel; II. 6; 3 ♂ 3 ♀ (1 ovig.) 2 juv.

Parapleurophrycoides roseus Nobili.

Parapleurophrycoides roseus NOBILI, Bull. Mus. Hist. Nat., Paris, 1906, No. 5, p. 9.

About 15 miles W. of Koh Kut, about 30 fath. (s. m.); I. 28; 1 juv., 1·25 mm. long, 1·4 mm. wide, front 0·6 mm.

This corresponds very well with NOBILI's preliminary description. The eyes are of huge size, projecting sideways beyond the orbits. Outer angle of orbit spiniform, as is also the lower inner angle; lower margin serrulate. Antenna standing loosely in the orbit, the joint following the basal joint barely reaching the front.

Heteropanope sexangula Rathbun.

Plate II, fig. 6.

Heteropanope sexangula RATHBUN, Proc. Biol. Soc. Washington, XXII, p. 114, 1909.

Carapace narrow, hexagonal, little convex, surface tomentose, uneven, a blunt transverse ridge on each frontal lobe, and on each protogastric lobe, and a few irregular nodules on the branchial region.

Front strongly deflexed, its lower edge bearing four small well separated lobes, the inner pair more produced (or lower down), the outer pair distinctly separated from the orbital angles.

The upper margin of the orbit has two very small notches; below the outer angle is a very large notch.

The short antero-lateral margin is cut into four teeth, first three blunt, fourth largest, acute; first fused with orbital angle, third minute.

Chelipeds and legs tomentose; chelipeds unequal in the ♀, stout, $1\frac{1}{2}$ times as long as carapace. Merus with a superior, subterminal spine; wrist nodular, with a sharp inner spine; palms granulate except on the distal portion of the larger one. Legs slender.

Length of ovigerous ♀ 5.2 mm., width 7 mm.

Gulf of Siam (special locality not given), 1 ♀.

This species in form resembles *H. eucratoides* Stimpson (Smithson. Misc. Coll., XLIX, 64, pl. VIII, fig. 2, 2a, 1907) which is a much smoother species, the hand being quite smooth.

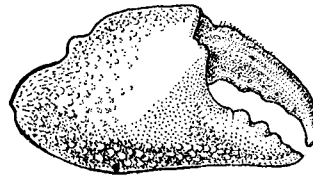


Fig. 43. Chela of *Heteropanope sexangula*, type ♀, 7 mm. wide.

Subfamily Oziinæ.

Epixanthus frontalis (Milne Edwards).

Epixanthus frontalis ALCOCK, LXVII, 185, 1898.

Koh Chik, rocky coast; I. 30; 3 ♂ 2 ♀.

Subfamily Eriphiinæ.

Eriphia sebana smithii Mac Leay.

Eriphia levinana var. *Smithii* ALCOCK, LXVII, 216, 1898.

South coast of Koh Chang, sand (shrimp-net); I. 18; 1 ♀.

Subfamily Trapeziinæ.

Trapezia cymodoce (Herbst).

Trapezia cymodoce ALCOCK, LXVII, 219, 1898.

Koh Kahdat, coral and coral blocks, 1 fath.; I—II; 1 ♀.

Tetralia glaberrima (Herbst).

Tetralia glaberrima ALCOCK, LXVII, 223, 1898.

Koh Kahdat, coral and coral blocks, 1 fath.; I—II; 7 ♂ 9 ♀ ovig. 2 juv.

Family Potamonidæ.

Subfamily Potamoninæ.

Potamon (Potamon) brousmichei Rathbun.

Potamon (Potamon) brousmichei RATHBUN, Nouv. Arch. Mus. Hist. Nat. (4), VI, 272, fig. 12 in text, pl. X, fig. 6, 1904.

River on Koh Chang; I. 5; 4 ♂ 2 ♀ 4 juv. Koh Kul, in little mountain river; 1 juv. Bay at Klong Salakpet (River on Koh Chang); III. 14; 1 ♂. Klong Salakpet (River on Koh Chang); III. 15; 2 juv.

Family Portunidæ.

Subfamily Carupinæ.

Carupa læviuscula Heller.

Carupa læviuscula ALCOCK, LXVIII, 26, 1899.

Koh Chang, among corals, 1 fath.; III; 1 ♀.

Subfamily Portuninæ.

Scylla serrata (Forskål).

Scylla serrata ALCOCK, LXVIII, 27, 1899.

Coast at Lem Ngob, 6 specimens.

“Caught in great numbers in the mangrove. It is eaten by the natives; its flavor I found quite excellent”.

Portunus sanguinolentus (Linnæus).

Neptunus sanguinolentus ALCOCK, LXVIII, 32, 1899.

At South point of Koh Chang in Sargassum; I. 8; 2 juv. (1 minute). Koh Kahdal, 1 fath., sandy bottom, sponges, dead corals; I. 11; 1 juv. (minute). 18 miles West of Koh Chang, surface; I. 31; 12 juv. (mostly minute). North of Koh Samit, surface; II. 3; 1 juv. (minute). Between Koh Mesan and Koh Chuen, on and under plants, surface; II. 5; 2 juv. North of Koh Chang, under leaves, seaweed, etc.; II. 10; 17 juv. N. side of Koh Chang, under leaves, surface; III. 8; 3 juv. (minute). South of Koh Chang, under floating Sargassum, “rain, not sun”; III. 13; 4 juv. (minute). South of Koh Chang, under floating Sargassum; III. 16; 2 juv. (minute).

Portunus pelagicus (Linnæus).

Neptunus pelagicus ALCOCK, LXVIII, 34, 1899.

Coast at Lem Ngob; XII. 30. 99; 3 specimens. Coast at Lem Ngob (scine); XII. 26; 5 ♂ 1 ♀ (all young). Coast at Lem Ngob, 0--1 fath., stones, mud; XII;

2 ♂ 2 ♀ 5 juv. Coast of Koh Kong; I. 23; 4 ♀ juv. Fishing-weir at Koh Kong; I. 21; 1 ♂. The shore outside the Mangrove at the Station on Koh Chang; III. 11; 2 juv. Outside mangroves on Koh Chang, very shallow water; III. 18; 1 juv.

Portunus (Achelous) gladiator (Fabricius).

Neptunus (Amphitrite) gladiator ALCOCK, LXVIII, 35, 1899 (Not *Amphitrite media* STIMPSON).

Between Koh Mesan and Cap Liant, 9 fath.; II. 4; 2 juv. Koh Kam, 5 fath., gravel; II. 6; 1 ♂. Between Koh Riat and Koh Mesan, 3–5 fath., sand, algæ; II. 7; 1 juv. Gulf of Rayong, 7–10 fath., sand, mud, shells; II. 8; 1 juv.

Portunus (Achelous) hastatoides (Fabricius).

Neptunus (Hellenus) hastatoides ALCOCK, LXVIII, 38, 1899.

Singapore, 2–3 fath.; XII. 4; 3 ♂ 4 ♀ (1 with Rhizocephalid). Between Koh Kut and Koh Kahdat, 10 fath., shell bottom; I. 10; 2 ♀. S. of Koh Bidang, 9 fath., mud, shells; I. 18; 1 ♀. N. of Koh Kong, 8 fath., mud bottom; I. 23; 1 ♂ 2 ♀. N. of Koh Kut, 10 fath.; I. 23; 1 ♂ juv. 1 ♀ juv. West of Koh Kong, 10–15 fath.; I. 24; 1 ♂. East of Koh Chang, 6 fath., seine; I. 25; 2 ♂ 4 ♀ (1 with Rhizocephalid). Koh Kahdat, 8–10 fath., mud; I. 27; 5 ♂ 8 ♀ (4 ovigerous). Off North point of Koh Kut, 10 fath. (large seine); I. 27; 3 ♂ 1 ♀. West of North end of Koh Kut, 11 fath.; I. 27; 2 ♀ (1 ovigerous). South of Koh Kut, 17–20 fath., mud (large seine); I. 28; 2 ♀ (1 ovig.). 15 miles west of Koh Kut, 30 fath., (s. m.); I. 28; 1 ♀, 1 juv. 10–12 miles west of Koh Chang, 20 fath., mud; I. 29; 1 ♂ 3 ♀. Sound at Koh Chang, 3–5 fath., soft elay bottom; 11 ♂ j., 17 ♀ j. 20 miles south of Koh Samit, 20 fath., mud; I. 31; 2 ♂ 4 ♀. 4–6 miles south of Koh Samit, 14–18 fath.; II. 1; 1 ♀ with Rhizocephalid, 1 juv. Koh Kam, 10 fath., gravel; II. 6; 1 ♀. Between Koh Mesan and Cap Liant, 5–8 fath., sand, stones; II. 7; 1 ♂. Gulf of Rayong, 7–10 fath., sand, mud, shells; II. 8; 1 ♂. Koh Kahdat, 5–8 fath., sandy mud; II. 16 and III. 4; 1 ♀. Tung Kaben, 6 fath., sand, mud, phanerozans; II. 22; 1 ♀.

Portunus (Achelous) spinipes (Miers).

Neptunus (Hellenus) spinipes ALCOCK, LXVIII, 39, 1899.

S. of Koh Kut, 17–20 fath., mud (large seine); I. 28; 2 ♂ 1 ♀. 10–12 miles west of Koh Chang, 20 fath., mud; I. 29; 5 ♂. 20 miles south of Koh Samit, 20 fath., mud; I. 31; 2 ♂.

Portunus (Achelous) tenuipes (de Haan).

Neptunus (Hellenus) tenuipes ALCOCK, LXVIII, 42, 1899.

4 miles S. of Koh Sakait, 9 fath., shell bottom; II. 3; 1 ♀ ovig. Gulf of Rayong, 7–10 fath., sand, mud, shells; II. 8; 1 ♂. Koh Kam, 5 fath., gravel; II. 6; 1 ♂ juv. Between Koh Riat and Koh Mesan, 3–5 fath., sand, algæ; II. 7; 1 juv. 6 miles east of Cap Liant, 9 fath., shell bottom; II. 7; 2 ♀. Koh Kahdat, 4–5 fath.,

sand, stones, coral; II. 15–18; 7 ♂. Koh Kahdat, 5–8 fath., sand, mud; II. 16 and III. 4; 2 juv.

Portunus (Achelous) tuberculosus (A. Milne Edwards).

Neptunus (Hellenus) tuberculosus ALCOCK, LXVIII, 42, 1899.

Between Koh Kut and Koh Kahdat, 10 fath., shell bottom; I. 10; 1 ♂. Between Koh Mesan and Cap Liant, 5–8 fath., sand, stones; II. 7; 1 juv. S. of Koh Mak, 5–6 fath.; II. 7; 1 juv. Koh Kahdat, 4–5 fath., sand, stones, coral; II. 15–18; 1 ♀. Koh Kahdat, 5–8 fath., sandy mud; II. 16 and III. 4; 1 ♂. Koh Kram, 30 fath.; III. 2 and 21; 2 ♀ (1 ovig.).

Portunus (Achelous) brockii (de Man).

Neptunus (Hellenus) brockii ALCOCK, LXVIII, 43, 1899.

Koh Kahdat, 4–5 fath., sand, stones, coral; II. 15–18; 1 juv. S. of Koh Mak, 5–6 fath.; II. 17; 2 ♂. Sound at Koh Chang, 3–5 fath., soft clay bottom; 1900; 1 ♂.

Portunus (Achelous) granulatus (Milne Edwards).

Neptunus (Achelous) granulatus ALCOCK, LXVIII, 45, 1899.

Koh Kahdat, 4–5 fath., sand, stones, coral; II. 15–18; 6 ♂ 2 ♀.

Portunus (Lupocycloporus) gracilimanus (Stimpson).

Neptunus (Lupocycloporus) whitei ALCOCK, LXVIII, 44, 1899.

Amphitrite gracilimanus STIMPSON, Smithson. Misc. Coll., XLIX, 77, pl. X, fig. 3, 1907

Singapore, 2–3 fath.; XII. 4; 1 ♂. Between Koh Kut and Koh Kahdat, 10 fath., shell bottom; I. 10; 1 ♂ 1 ♀. Between Koh Mesan and Cap Liant, 9 fath.; II. 4; 3 juv. Koh Kram, 5 fath., gravel; II. 6; 1 juv. Gulf of Rayong, 7–10 fath., sand, mud, shells; II. 8; 2 juv. Tung Kaben, 6 fath., sand, mud, phanerogams; II. 22; 2 juv. Koh Chuen, 30 fath., shell bottom; II; 5 ♀. Koh Lan, 30 fath., mud; 1 ♂ 1 juv. Between Koh Rin and Cliff Rock (N. of Koh Kram), 15 fath.; III. 2; 1 ♀.

Portunus (Lupocycloporus) innominatus Rathbun.

Neptunus (Lupocycloporus) gracilimanus ALCOCK (not STIMPSON) LXVIII, 45, 1899.

Portunus (Lupocycloporus) innominatus RATHBUN, Proc. Biol. Soc. Washington, XXII, p. 114, 1909.

Koh Kahdat, 8–10 fath., mud; I. 27; 1 ♀ ovig. 10 miles E. of Koh Mak, 20 fath., large seine; I. 28; 1 ♂.

Besides the distinguishing characters given by Alcock, the antero-lateral teeth are irregular, the 2nd, 3rd, 4th and 6th being smaller than the others.

Portunus (Xiphonectes) longisp. nosus (Dana).

Neptunus (Hellenus) longispinosus ALCOCK, LXVIII, 40, 1899.

Koh Kahdat, 1 fath., sandy bottom, sponges, dead corals; I. 11; 1 ♂. S. of Koh Mak, 5—6 fath., II. 7; 2 juv. Koh Kahdat, 4—5 fath., sand, stones, coral; II. 15—18; 25 ♂ 25 ♀ (13 ovig.).

Subfamily **Thalamitinæ.**

Lissocarcinus boholensis Semper.

Lissocarcinus boholensis SEMPER, in Nauck, Zeits. Wiss. Zool., XXXIV, pp. 60 and 67, 1880.

15 miles West of Koh Kut, in Salpæ, 1 ♀ immature.

This small specimen is very little broader than long (3.7 mm. long, 3.8 mm. broad)¹. The anterior two-thirds of the carapace approaches a circular form, the postero-lateral margins are concave, and meet the broad and lightly concave posterior margin (which is half as wide as the carapace) at a blunt obtuse angle. Dorsal surface nearly flat and crossed by fine transverse lines, which are very apparent and fairly continuous on the anterior half but posteriorly become fainter and more broken.

Fronto-orbital distance very little less than extreme width. Front strongly projecting and (exclusive of orbital angles) about one-third width of carapace, bilobed, with a distinct median emargination and a short median furrow, each lobe sloping backward and outward and with nearly straight margin. Inner orbital angle subacute. Orbit large, its upper border entire. Eye very large.

Antero-lateral border thin, cut into five (including the orbital) short blunt teeth, scarcely projecting, and indicated more by the furrows between them.

Basal joint of antenna narrow, its outer angle produced. The exclusion of the flagellum from the orbit is very slight. Antennules very large, obliquely folded.

Chelipeds stout, but little longer than carapace; surface finely roughened. Inner angle of wrist dentiform. Hands full, wider than their superior length, two granular ridges above and one or more obscure ridges on outer surface. Fingers deeply grooved, not gaping, and crossing some distance behind the tips. Legs narrow, first three pairs as long as chelipeds; merus of last pair one and one-half times as long as wide, its posterior border, as well as that of the merus, smooth.

Shape of carapace and front something as in *L. polybioides* Adams & White (cf. Alcock, LXVIII, p. 19, 1899), but anterior and posterior margins wider, orbits much larger, side teeth more as in *L. orbicularis* Dana (cf. Alcock, op cit., p. 20).

Charybdis cruciata (Herbst).

Charybdis (Goniosoma) crucifera ALCOCK, LXVIII, 51, 1899.

Fishing-weir at Koh Kong; I. 21; 2 ♀. S. of Koh Kut, 17—20 fath., mud (large seine); I. 28; 1 ♀ 2 juv. Paknam-wen; II. 11; 1 ♀. 18 miles W. of Koh

¹ NAUCK says, on page 67, "länger als breit", but on page 60 the dimensions are given as 14 mm. long, 17 broad. Cf. footnote on page 18.

Chang, surface; I. 31; 6 juv. S. of Koh Chang, under floating sargassum, "rain, no sun"; III. 13; 1 juv. 35 miles W. of Koh Chang, 30 fath., clay; I. 31; 1 juv.

***Charybdis lucifera* (Fabricius).**

Plate II, fig. 10.

Charybdis (Goniosoma) quadrimaculata ALCOCK, LXVIII, 54, 1899.

Coast of Lem Ngob, 0—1 fath., stones and mud; XII; 1 ♀. Fishing-weir at Koh Kong; I. 21; 1 ♂ 1 ♀ ovig.

In one of the cotypes before me of *Goniosoma quadrimaculatum* A. Milne Edwards from Batavia (pl. II, fig. 10) the first antero-lateral tooth is bluntly angled on its outer margin, but this is not the case in the three smaller specimens from the Gulf of Siam. In the two largest individuals examined the orbit is one-third as wide as the front, and in the smallest individual the orbit is somewhat wider.

***Charybdis annulata* (Fabricius).**

Charybdis (Goniosoma) annulata ALCOCK, LXVIII, 54, 1899.

Coast of Koh Kam; II. 5; 1 ♀.

***Charybdis affinis* Dana.**

Plate II, fig. 11.

Charybdis (Goniosoma) affinis ALCOCK, LXVIII, 56, 1899.

Coast of Lem Ngob (seine); XII. 26; 1 ♂.

***Charybdis anisodon* (de Haan).**

Portunus anisodon DE HAAN, Fauna Japon., Crust., p. 42, 1835.

Mouth of the river Paknam-wen, in Chinamen's tow-nets; I. 30; 1 ♀. Sound at Koh Chang, 3—5 fath., soft clay bottom; 1900; 2 juv.

***Charybdis callianassa* (Herbst).**

Charybdis (Goniosoma) callianassa ALCOCK, LXVIII, 57, 1899.

Fishing-weir at Koh Kong; I. 21; 1 ♂. Off Koh Kut, 6 fath.; I. 26; 1 ♀. Mouth of Paknam-wen (in Chinamen's tow-nets); I. 30; 3 ♂ 1 ♀.

***Charybdis variegata* (Fabricius).**

Charybdis (Goniosoma) variegata ALCOCK, LXVIII, 60, 1899.

Koh Kam, 5 fath., gravel; II. 6; 1 ♀ ovig. Koh Kahdat, 4—5 fath., sand, stones, coral; II. 15—18; 1 juv.

***Charybdis natator* (Herbst).**

Charybdis (Goniosoma) natator ALCOCK, LXVIII, 61, 1899.

Between Koh Mesan and Cap Liant, 9 fath., II. 4; 1 ♂ juv.

Charybdis ornata* (A. Milne Edwards).Charybdis (Goniohellenus) ornata* ALCOCK, LXVIII, 64, 1899.

Between Koh Kahdat and Koh Kut, 6 fath., sandy clay; I. 9; 2 juv. 20 miles south of Koh Samit, 20 fath., mud; I. 31; 1 ♂ juv. Koh Kahdat, 5–8 fath., sandy mud; II. 16. and III. 4; 1 ♂.

Thalamita crenata* (Latreille).Thalamita crenata* ALCOCK, LXVIII, 76, 1899.

Koh Chang, stony coast at low water; I; 1 ♂. Koh Chang; II. 12; 1 ♂.

Thalamita prymna* (Herbst).Thalamita prymna* ALCOCK, LXVIII, 78, 1899.

Singapore, coral reef; XII. 5; 1 ♀ with Rhizocephalid. Koh Lom (West of Koh Chang); III. 9; 1 ♀.

Thalamita chaptali* Audouin.Thalamita chaptali* ALCOCK, LXVIII, 80, 1899.

Koh Kahdat, 4–5 fath., sand, stones, coral; II. 15–18; 1 ♂, 6 mm. wide, with narrow hands, rather faintly marked, 2 spines (1 acute) on arm; penult segment of abdomen twice as wide as long. 1 ♀ ovigerous, 10·7 mm. wide, with stoutish hands, more strongly marked; 3 acute spines on arm. 1 ♀ ovigerous, 22·2 mm. wide by 16·1 long, is narrower than typical *chaptali* or *sima*, has the side teeth of *chaptali*, the frontal lobes inclining to *sima*, the hand stout, with strong markings, only the anterior one of the outer row being obsolete, 3 acute spines on arm. 35 miles West of Koh Chang, 30 fath., clay; I. 31; 1 ♂, 4 mm. wide. N. of Koh Chang, under leaves, seaweed, etc.; II. 10; 1 ♂ with lateral teeth acute, resembling those of *T. poissonii*; chelipeds narrow, hands feebly ridged. Cf. Borradaile, Fauna Maldive Ids., I, pp. 201–202, 1902, for the variations in this species and its allies.

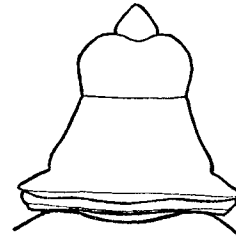


Fig. 44. Abdomen of *Thalamita chaptali*, Koh Chang, ♂, 6·3 mm. wide.

Thalamita sima* Milne Edwards.Thalamita sima* ALCOCK, LXVIII, 81, 1899.

Koh Chuen, 30 fath., shell bottom; I. 2; 2 juv. 15 miles E. of Koh Chuen, 10 fath., shell bottom; II. 2; 1 ♀, 1 juv. Between Koh Mesan and Cap Liant, 9 fath.; II. 4; 1 ♀ with Rhizocephalid. Between Koh Mesan and Koh Chuen, on and under plants, surface; II. 5; 1 juv. Koh Kam, 5 fath., gravel; II. 6; 4 ♂ 6 ♀ 17 juv. Between Koh Riat and Koh Mesan, 3–5 fath., sand, algæ; II. 7; 2 juv. Between Koh Mesan and Cap Liant, 5–8 fath., sand, stones; II. 7; 2 juv. Koh Kahdat, 4–5 fath., sand, stones, coral; II. 15–18; 1 juv. Koh Kahdat, 4–5 fath., sand,

stones, coral; II. 16; 1 juv. Tung Kaben, 6 fath., sand, mud, phanerogams; II. 22; 1 ♀ ovig. Koh Chuen, 30 fath., shell bottom; II; 1 juv. Koh Chang, 1 fath., coral; I--III; 1 juv. (both 3rd and 4th side teeth rudimentary).

Thalamita imparimanus Alcock.

Thalamita imparimanus ALCOCK, LXVIII, 87, 1899; Illus. Zool. Investigator, Crust., VIII, pl. XLVII, figs. 3, 3 a, 1900.

North of Koh Chang, under leaves, seaweed, etc.; II. 10; 1 ♂. Differs from the original description in having three spinules present on the outer surface of the wrist; no denticle at base of first side tooth. Between Koh Mesan and Cap Liant, 5–8 fath., sand, stones; II. 7; 1 juv., with a strong denticle at base of first side tooth; also spinules on wrist.

Subfamily Podophthalminæ.

Podophthalmus vigil (Fabricius).

Podophthalmus vigil (FABRICIUS) MIERS, Challenger Rept., Zool., XVII, 207, 1886.

Sound at Koh Chang, surface; I. 15; 1 ♀. (The legs thrown off after it was put in spirit). Fishing-weir at Koh Kong; I. 21; 4 ♂ 2 ♀.

Family Atelecyclidæ.

Subfamily Thiinæ.

Kraussia nitida Stimpson.

Kraussia nitida RATHBUN, Bull. Mus. Comp. Zool., XXXIX, 132, plate, fig. 13, 1902; STIMPSON, Smithsonian Misc. Coll., XLIX, 87, pl. X, fig. 4, 1907.

North side of Koh Mesan, 10–15 fath., stones, shells; II; 1 juv.

Subtribe Dromiacea.

Superfamily Dromiidea.

Family Dromiidæ.

Dromidia cranioides de Man.

Dromidia cranioides ALCOCK, LXVII, 138, 1899.

Between Koh Mesan and Cap Liant, 5–8 fath., sand, stones; II. 7; 1 ♀. Koh Chuen, 30 fath., shell bottom; II; 1 ♂, concealed under large sponge. N. of Koh Samit, surface; II. 3; was taken a specimen, one of the later larval stages of a Dromiid, perhaps this species, the last legs strongly resembling those of the adults examined.

Dromidia unidentata (Rüppell).

Dromidia unidentata ALCOCK, LXVII, 139, 1899.

Koh Chuen, 30 fath.; II; 1 ♀ with Rhizocephalid attached to, and concealed by, the abdomen. Koh Kram, 30 fath.; III. 2 and 21; 1 ♂. Koh Kahdat, 5—8 fath., sandy mud; II. 16, III. 4; 1 juv.

Cryptodromia canaliculata Stimpson.

Cryptodromia canaliculata ALCOCK, LXVII, 142, 1899; STIMPSON, Smithson. Misc. Coll., XLIX, 176, 1907.

Between Koh Mesan and Koh Chuen, 30 fath., stones; II. 5; 1 ♂ juv.

A small specimen, only 4.1 mm. long. The nodules of the wrist and hand are very strong; on the wrist are four large, and two or three small nodules; and on the upper surface of the palm five large nodules.

Conchœcetes artificiosus (Fabricius).

Conchœcetes artificiosus ALCOCK, LXVIII, 151, 1899.

20 miles E. S. E. of Koh Samit, 13—14 fath., sandy mud, shells; II. 2; 1 ♂ 1 ♀. Koh Chuen, 30 fath., shell bottom; II; 1 ♂.

The ♂ from Koh Chuen is half grown and seems intermediate between *C. andamanicus* Alcock (op. cit., p. 152) and typical *artificiosus*; the front is cut into two triangular teeth, with the inferior denticle slightly visible in dorsal view; there is a rudimentary tooth on the upper border of the orbit; no traces of lateral teeth, the sides being arcuate; subhepatic region not bounded by distinct rows of tubercles or granules.

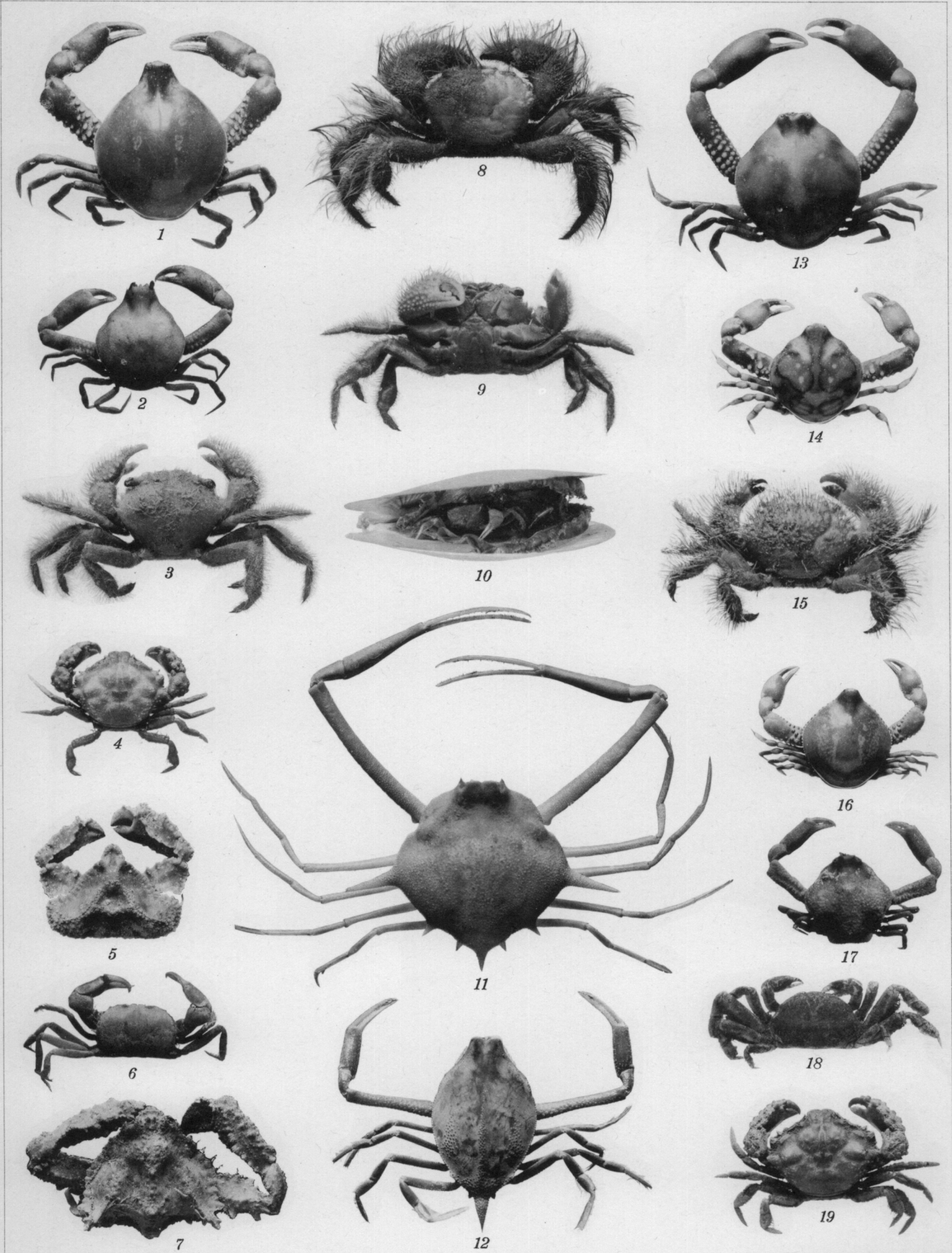
EXPLANATION OF PLATES.

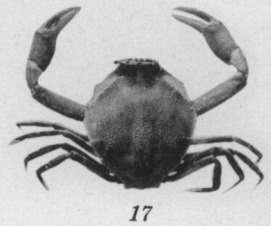
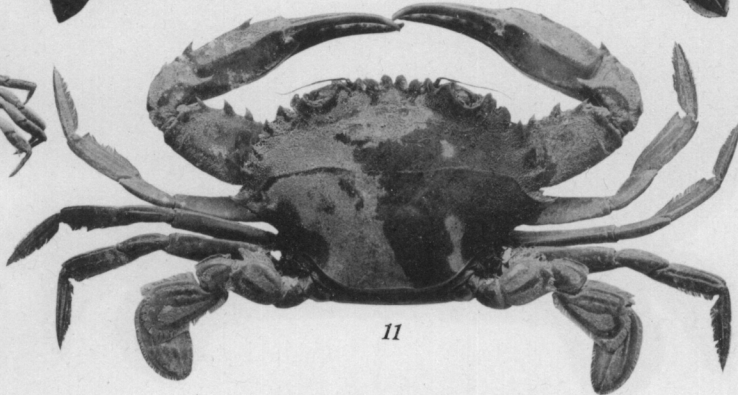
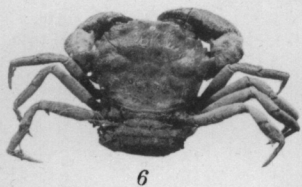
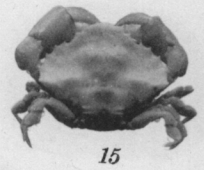
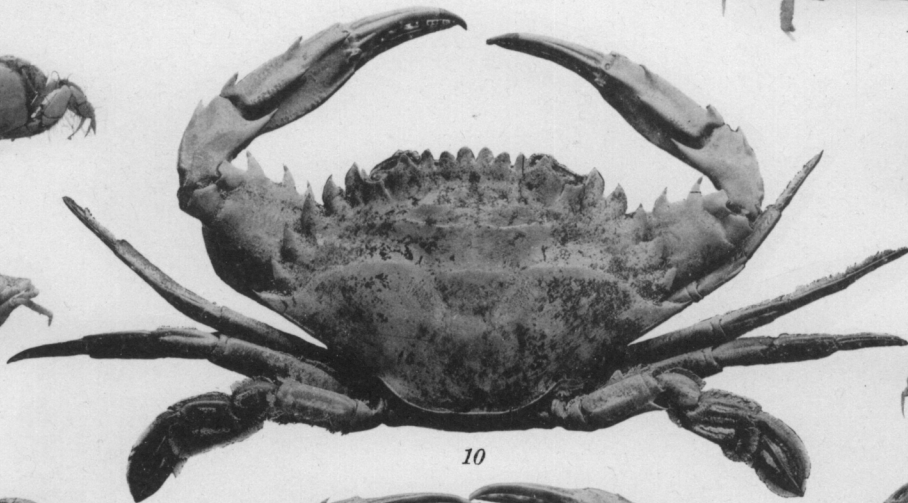
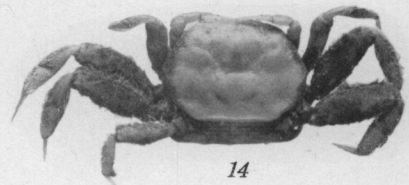
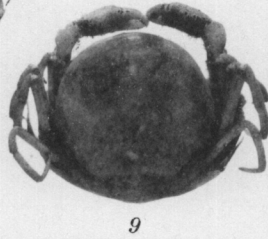
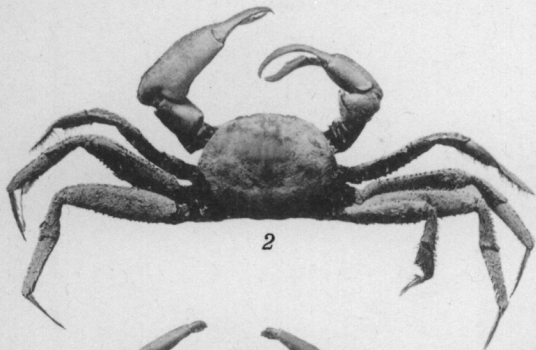
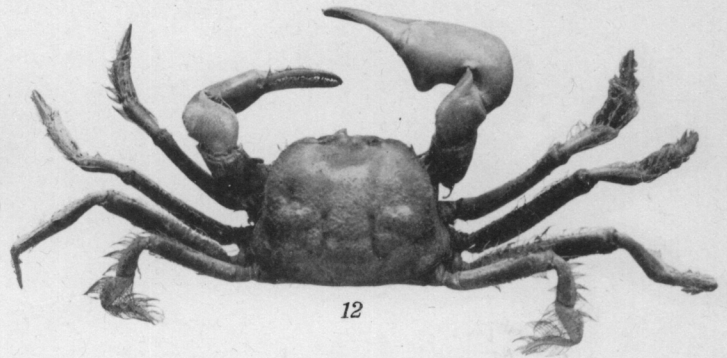
Plate I.

- Fig. 1. *Leucosides urania*, Koh Kahdat, ♂, 24.9 mm. wide.
-- 2. *Pseudophilyra tridentata*, between Koh Mesan and Koh Chuen, ♂, 6.9 mm. wide.
-- 3. *Pilumnus dorsipes*, Koh Kram, ♀ juv., 10.4 mm. wide, dorsal view. Same specimen as fig. 9.
-- 4. *Halimede ochtodes*, Koh Kahdat, immature ♀, 17.5 mm. wide.
-- 5. *Cryptopodia lavimana*, between Koh Mesan and Koh Chuen, ♀, 26.1 mm. wide.
-- 6. *Typhlocarcinus nudus*, between Koh Kahdat and Koh Kut, ♂, 6.2 mm. wide.
-- 7. *Parthenope (Pseudolambrus) harpax*, Koh Chuen, ♀, 27.7 mm. wide.
-- 8. *Pilumnus borradalei*, type ♂, 10 mm. wide.
-- 9. -- *dorsipes*, ventral view. Same specimen as fig. 3.
-- 10. *Chasmocarcinops gelasimoides*, ♂, in *Amussium pleuronectes*. ⁴¹.
-- 11. *Arcania siamensis*, type ♀, 24.5 mm. wide.
-- 12. *Persephona elegans*, Koh Chang, ♂, 9.4 mm. wide.
-- 13. *Pseudophilyra melita*, between Koh Riat and Koh Mesan, ♀, 11.3 mm. wide.
-- 14. *Leucosides longifrons pulcherrima*, Koh Kahdat, ♂, 18 mm. wide.
-- 15. *Pilumnus caeruleus*, Koh Kahdat, ♂, 10.4 mm. wide.
-- 16. *Leucosides haswelli*, Koh Chuen, ♂, 17.2 mm. wide.
-- 17. *Ebalia woodmasoni*, Koh Kahdat, ♀, 6.7 mm. wide.
-- 18. *Mortensenella forceps*, Koh Chang, ♂, 6.8 mm. wide.
-- 19. *Halimede thurstoni*, Koh Kam, ♀, 20.8 mm. wide.

Plate II.

- Fig. 1. *Thaumastoplar orientalis*, type ♂, 12.6 mm. wide.
-- 2. *Scalopidia spinosipes*, Koh Samit, ♂, 19.5 mm. wide.
-- 3. *Macrophthalmus convexus*, Koh Chang, ♂, 19.5 mm. wide.
-- 4. *Mertonia lanka*, between Koh Mesan and Cap Liant, ♀, 5.3 mm. wide.
-- 5. *Megasthesius sagedæ*, type ♂, 2.7 mm. wide.
-- 6. *Heteropanope sexangula*, type ♀, 7 mm. wide.
-- 7. *Halimede thurstoni*, Koh Kam, juv., 6.8 mm. wide.
-- 8. *Pinnotheres cardii*, between Koh Chuen and Koh Chang, ♀, 5.8 mm. wide.
-- 9. -- *parvulus*, Lem Ngob, ♀, 8.5 mm. wide.
-- 10. *Charybdis lucifera* (Fabricius). Cotype of *Goniosoma quadrimaculatum* A. Milne Edwards, ♂, 58.1 mm. wide.
-- 11. *Charybdis affinis*, Lem Ngob, ♂, 43.6 mm. wide.
-- 12. *Chasmocarcinops gelasimoides*, Koh Chang, ♂, 13.1 mm. wide.
-- 13. *Xenophthalmus obscurus*, Koh Kut, ♂, 9.1 mm. wide.
-- 14. *Asthenognathus hexagonum*, type ♀, 7.8 mm. wide.
-- 15. *Cycloxanthops lineatus*, north of Koh Chuen, ♂, 7.2 mm. wide.
-- 16. *Typhlocarcinops canaliculata*, type ♂, 3.6 mm. wide.
-- 17. *Philyra olivacea*, type ♂, 7.8 mm. wide.
-- 18. *Carpilodes lophopus*, between Koh Mesan and Koh Chuen, ♀, 10.5 mm. wide.





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PART
of

GULF of SIAM



NOTE

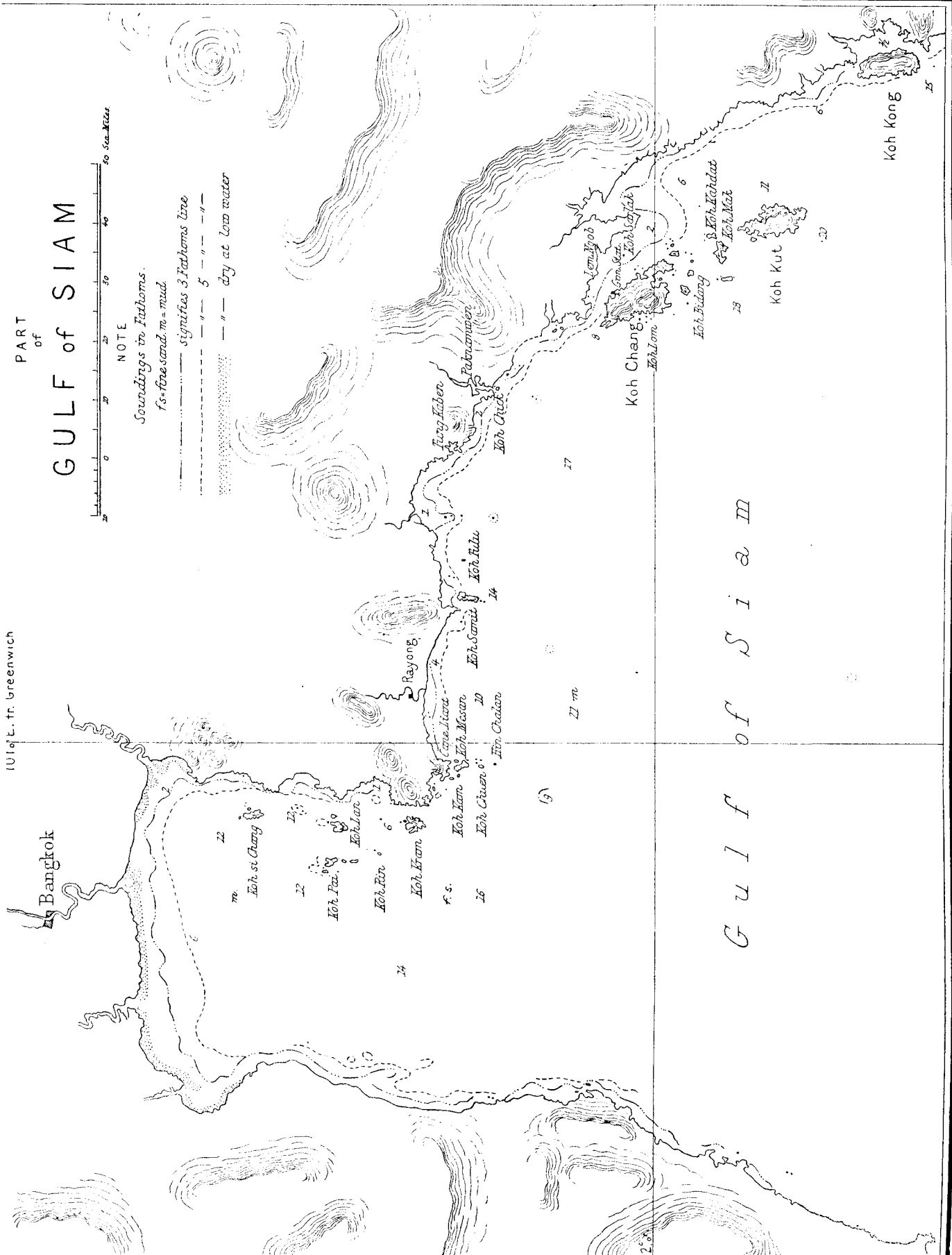
Soundings in Fathoms.

f. s. fine sand, m. mud

— — — — — signifies 3 Fathoms line

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	Kr.	Op.
VI, med 4 Tavler. 1890—92	13.	75.
1. Lorenz, L. Lysbevægelsen i og uden for en af plane Lysbølger belyst Kugle. 1890	2.	"
2. Sørensen, William. Om Forbentinger i Svømmeblæren, Pleura og Aortas Væg og Sæmmensmeltningen deraf med Hvirvelsøjlen særlig hos Siluroiderne, samt de saakaldte Weberske Knoglers Morfologi. Med 3 Tavler. Résumé en français. 1890	3.	80.
3. Warming, Eug. Lagoa Santa. Et Bidrag til den biologiske Plantegeografi. Med en Fortegnelse over Lagoa Santas Hvirveldyr. Med 43 Illustrationer i Texten og 1 Tavle. Résumé en français. 1892	10.	85.
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1. Gram, J. P. Studier over nogle numeriske Funktioner. Résumé en français. 1890	1.	10.
2. Prytz, K. Metoder til korte Tidens, særlig Rotationstidens, Udmaalning. En experimental Undersøgelse. Med 16 Figurer i Texten. 1890	1.	50.
3. Petersen, Emil. Om nogle Grundstoffes allotrope Tilstandsformer. 1891	1.	60.
4. Warming, Eug. Familien Podostemaceæ. 4 ^{de} Afhandling. Med c. 185 mest af Forfatteren tegnede Figurer i 34 Grupper. Résumé et explication des figures en français. 1891	1.	50.
5. Christensen, Odin T. Rhodanchromammoniakforbindelser. (Bidrag til Chromammoniakforbindelsernes Kemi. III.) 1891	1.	25.
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