

A Collection of Crabs from Aor Island, South China Sea.

By M. W. F. TWEEDIE, M.A., C.M.Z.S.

In June, 1938, I spent two weeks on Aor, a small island situated about 50 miles due east of Mersing in Johore. In the strait between the island and an islet off its northern tip there is a fringing coral reef and a collection of crustacea was made from it. A few were collected between tide marks, but the greater number was obtained by diving at low tide over the permanently submerged part of the reef and bringing to the surface pieces of coral which were put into an attendant boat and taken on shore to be broken up.

The Stomatopoda taken on this expedition have been reported on (Tweedie, 1949); the common *Gonodactylus chiragra* (Fab.) was taken in addition to the two species mentioned.

My thanks are due to Miss A. M. Buitendijk for assistance in identifying some of the Xanthidae when I visited Leiden in 1947. She also examined the Dromiidae and Oxyrhyncha which are commented on in her paper in this journal (pp. 59-81).

The material collected of *Trapezia* (Xanthidae) was sent for study to Dr. F. A. Chace, who has not yet completed his examination of them.

I have used the abbreviations cb. and cl. to indicate breadth and length of carapace.

Family Dromiidae

Cryptodromia tuberculata var *pileifera* Alcock.

A male and a female, which are commented on by Miss Buitendijk on p. 60 of this journal.

Family Maiidae

Two species in this family were collected and have been identified by Miss Buitendijk who reports on them in this journal.

Micippa platipes Rupp., p. 68.

Tylocarcinus styx (Herbst.), p. 66.

Family Portunidae

Charybdis annulata (Fabr).

LEENE, 1938, p. 60.
A male, cb. 47 mm.

Neptunus longispinosus (Dana).

ALCOCK, 1899, p. 40.
BALSS, 1924, p. 3; 1938, p. 31.

The single specimen taken was identified by Dr. B. N. Chopra by comparison with material in the Indian Museum.

Thalamita admeta (Herbst).

ALCOCK, 1899, p. 82.
BORRADAILE, 1903, p. 203.

This is the commonest Portunid found and occurs between tide-marks. A good series was obtained and all appear to belong to the typical form as indicated by Borradaile's key.

The first male pleopod is illustrated at fig. 2b.

Thalamita danae Stimpson.

ALCOCK, 1899, p. 77; p. 79 (*T. stimpsoni*).
SHEN, 1934, p. 52.

A small male and female.

Opinion still seems to be divided as to whether this species and *T. stimpsoni* A.M.E. are distinct. I follow Shen in uniting them, but Sakai (139, p. 415, 416) maintains the two species.

Thalamita picta Stimpson.

ALCOCK, 1899, p. 79.
SHEN, 1937, p. 135.
SAKAI, 1939, p. 417.

A single male.

Thalamita pryma (Herbst).

ALCOCK, 1899, p. 78.
CALMAN, 1900, p. 22.
LAURIE, 1906, p. 418.
MONTGOMERY, 1931, p. 427-430.
SHEN, 1937, p. 133.
SAKAI, 1939, p. 416.

It has become customary to refer to *prymna* all forms of *Thalamita* in which the front is cut into eight lobes, the basal antennal joint exceeds in breadth the diameter of the orbit and bears a row of spines, and the fourth antero-lateral tooth is small or rudimentary, and to maintain as specifically distinct a number

of forms differing in the absence of spines on the basal antennal joint and in the fourth antero-lateral tooth not being smaller than the rest, although Kossman regarded all these forms as conspecific with *prymna* and Alcock (1899, p. 76) endorsed his view.

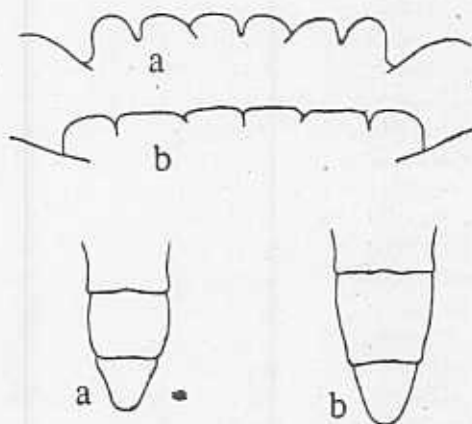


Fig. 1. Outline of frontal lobes and distal abdominal segments of *Thalamita prymna*, form a (a) and form b (b).

But even the more restricted designation of the species is not without complications. Montgomery (1931, p. 430) provides a key to the varieties of *T. prymna* (taking the view of Kossman and Alcock referred to above), and distinguishes four forms having the characters of *T. prymna sensu strictiore*. These are: *T. prymna* (Herbst), *T. prymna* var *annectans* Laurie, *T. prymna* var *pelsarti* Montgomery and the form described under "a" by Calman (1900, p. 22). It would appear that the names *prymna* and *annectans* in the key should be transposed, as the author makes it clear in his text (p. 428) that, in his opinion the transverse ridge on the gastric region is not continued to the lateral margin in *prymna* whereas in *annectans* it is so.

In the present collection there are two forms which have the characters of *T. prymna* in the more restricted sense, but which appear to be distinct. I will follow Calman's practice and designate them a and b.

a. This is the common form found around Singapore; one specimen was taken at Aor. The carapace and chelipeds are covered with a dense tomentum and the spinulation and granulation of the wrist and hand is just as described by Montgomery for his var. *pelsarti*. It differs from *pelsarti* (and agrees with Montgomery's conception of *prymna*) in having the mid-gastric transverse ridge without lateral continuations to the notch

between the first and second antero-lateral teeth. The fourth of these teeth could be described as "rudimentary" or "not so complete a rudiment" with equal propriety. The outline of the frontal lobes and that of the last two male abdominal segments are illustrated at fig. 1a.

b. A female is in the collection from Aor and a larger male was taken at Horsburgh Lighthouse in 1934, also in the South China Sea, about 80 miles south of Aor. The carapace is almost hairless, pilose only between the bases of the antero-lateral spines and in front of the lateral parts of the anterior granular ridge. The mid-gastric ridge is continued laterally to the notch between the first and second antero-lateral teeth and the fourth tooth is smaller than in *a*, quite rudimentary. The chelae have the lower surface of the palm quite smooth and only a faint central granular crest on the inner surface; of the two longitudinal ridges on the outer surface of the palm, the lower is faintly granular, the upper more distinctly so, the space between them is smooth and hairless, the whole cheliped being almost devoid of tomentum. The frontal lobes are remarkably square cut and closely approximated, they are illustrated, together with the male abdomen, at fig. 1b.

Shen, when he reported on the Raffles Museum Portunidae in 1937, had examined specimens of *a* and the Horsburgh Lighthouse specimen of *b*, but made no distinction between them.

Catoptrus nitidus A.M.-E.

TESCH, 1918B, p. 179.

BALSS, 1938A, p. 29.

Ten specimens, the largest 9.7 mm. cb.

Family Xanthidae

Actaea armata (A.M.-E.).

ODHNER, 1925, p. 72.

One small male, cb. 14 mm.

Actaea cavipes (Dana).

ALCOCK, 1898, p. 147; 148 (*A. fossulata*).

ODHNER, 1925, p. 68.

WARD, 1934, p. 18 (*A. fossulata*).

SAKAI, 1939, p. 493.

TWEEDIE, 1947, p. 29.

A series of 25, the largest a male, 19.5 mm. cb.

I have compared this series with specimens from Christmas Island (including the one referred to *A. fossulata* by Ward in 1934) and from Cocos Keeling Islands. Those from the two Indian Ocean localities have the carapace less pitted, so that the

regions and antero-lateral teeth are better defined than in the series from Aor. Specimens from the two regions do not, however, display the respective characters of *cavipes* and *fossulata* as formulated by Alcock, and in all other respects are so alike that I regard them as certainly conspecific. This evidence of variability supports Odhner's action in reducing *fossulata* (Girard) to the synonymy of *cavipes* (Dana).

Actaea hirsutissima (Rupp.).

ALCOCK, 1899, p. 141.

ODHNER, 1925, p. 69.

A series of six, the largest 23 mm. cb.

The species is very common on reefs round Singapore Island, where much larger specimens have been obtained; the largest in the collection is 37 mm. cb.

Actaea rufopunctata (H.M.-E.).

ALCOCK, 1899, p. 142.

ODHNER, 1925, p. 60.

One small male.

Actaea speciosa (Dana).

ALCOCK, 1899, p. 143.

ODHNER, 1925, p. 62.

A male and three females, the largest 17.5 mm. cb.

Atergatis integerrimus (Lam.)

Atergatis floridus (L.).

Both found on the reef between tide marks. They are among the commonest reef crabs around Malaya.

Atergatopsis lucasii Montrouzier.

MONTROUZIER, 1865, p. 160.

A. MILNE. EDWARDS, 1865, p. 256; 1873, p. 190.

BALSS, 1935, p. 137.

A male of cb. 37 mm.

This appears to be a very rare crab. Since its discovery in New Caledonia it has been reported only once, by Balss, from

"Paulau" (? Palau in the Carolines).

The first pleopod is illustrated at fig. 2a.

Platypodia granulosa (Rupp.).

ALCOCK, 1899, p. 101.

BALSS, 1938B, p. 53 (*P. cristata*).

BUITENDIJK, 1941, p. 304.

On the reef between tide marks.

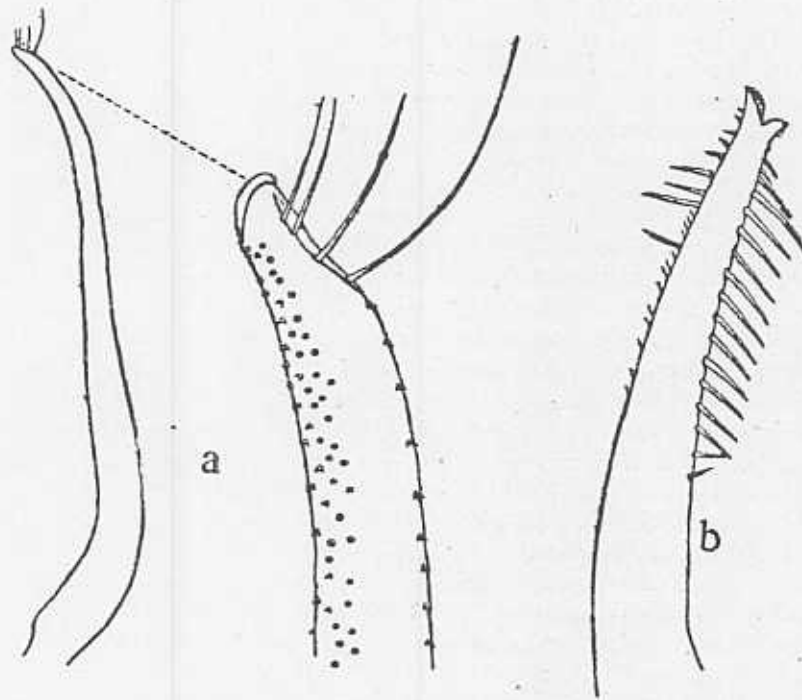


Fig. 2. First male pleopods of a, *Atergatopsis lucasii* and b, *Thalamita admeta*.

Miss Buitendijk examined a series from the collection, including specimens from Aor Island, Malacca Strait and near Singapore. She remarks on them as follows:—

“In some of the specimens from Aor Island the row of granules on the upper margin of the palm is almost cristiform, but they clearly belong to the present species and not to *cristata* (A.M.—E., 1865, p. 246, pl. 16, fig. 1) for this crest is very slightly developed, and moreover the carapace is less distinctly lobulated and the granules smaller than is usual in Milne-Edwards' species.”

It was such specimens (from near Singapore) that were referred by Dr. Balss (1938B, p. 53) to *P. cristata*, which does not, so far as I know, occur on or near the Malayan coasts.

Platypodia semigranosa (Heller).

BUITENDIJK, 1941, p. 308.

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A single female, identified by Miss Buitendijk, who comments as follows:—

"The lobulation of the carapace is slightly less distinct than is usual in this species and the surface of the palm is granular all over, both characters which recall *P. tomentosa* (De Man, 1888, p. 246, pl. 8, fig. 4). Its identity is confirmed, however, by a male collected by the Snellius Expedition at Sissie, which shows the same characters but is proved by the form of its pleopods to be *semigranosa*".

Euxanthus exsculptus (Herbst).

ALCOCK, 1899, p. 110 (*E. melissa*).

SAKAI, 1939, p. 451.

A female, cb. 49 mm., a smaller male and two juveniles.

Lophozymus pulchellus A.M.-E.

BALSS, 1938A, p. 40.

Two males and three females, the largest a female of 15.5 mm. cb.

Xanthias lamarckii (H.M.-E.).

ALCOCK, 1899, p. 157.

BALSS, 1938A, p. 50.

SAKAI, 1939, p. 466, 467.

Two males and a female.

Genus **Neoliomera** Odhner

ODHNER, 1925, p. 25.

When he established this genus Odhner included in it nine species, a key to which is given on p. 28 of his paper, and all of which he described and figured. Since 1925 two species have been described, *N. sakagutii* Sakai (1939, p. 478) from Japan and *N. striata* Buitendijk (1941, p. 296) from Obi Latoe in the Moluccas.

Three species are in the present collection, one of which appears to be new.

Neoliomera insularis (White).

ODHNER, 1925, p. 32.

WARD, 1932, p. 241

SAKAI, 1939, p. 477.

Three males and four females, the largest a male of 23 mm. cb. A field note describes them as bright crimson in life.

Neoliomera variolosa (A.M.-E.).

ODHNER, 1925, p. 30.

Four males and two females, the largest a male of cb. 21 mm.

Neoliomera ovata sp.n., fig. 3.

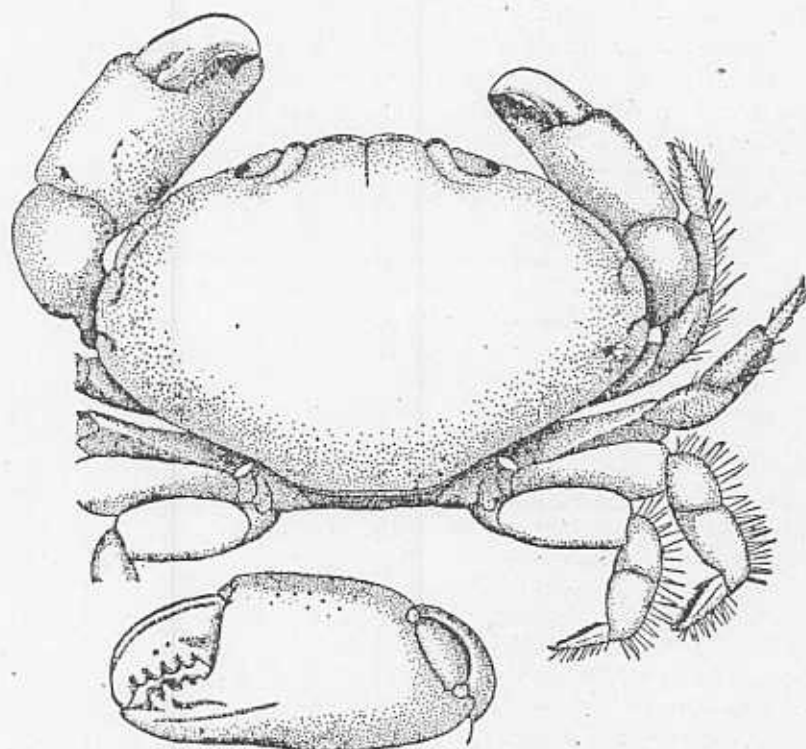


Fig. 3. *Neoliomera ovata* sp.n. Dorsal view and larger chela.

Type, a female of cb. 18.7, cl. 12.6 mm. Paratype and only other specimen, a female 15.3 x 10 mm.

Description. Carapace oval appearing perfectly smooth, a fine even granulation being visible only under strong magnification. Regional sculpturing of the carapace is almost obsolete being confined to the lobes of the front and a short groove extending back from the median frontal incision; faint, shallow grooves limiting the orbital regions; even fainter submarginal grooves on the second and third antero-lateral lobes, that on the third extending only on its anterior half; a very short, shallow groove between the third and fourth (last) antero-lateral lobes. These lobes are faintly defined by shallow indistinct notches, the anterior three broad, the fourth small. The usual submarginal groove at the posterior margin is clearly marked.

The antennal region and maxillipeds are similar to those of *N. insularis*.

The chelipeds are unequal, the left the larger in both specimens. The palms are smooth without any granules, faintly punctate on their upper outer surface. The fingers are grooved and toothed as shown at fig. 3.

The walking legs are smooth, the meri compressed but without keels. The joints distal to the meri are rather sparsely beset with golden hairs; there are no hairs whatever on the cephalothorax.

The colour of the preserved specimens is white, and the crab was probably red in life. The fingers are unpigmented; those of *N. insularis*, taken at the same time, are coloured brown.

Affinities. *N. ovata* is nearest to *N. insularis*, with which it agrees in the absence of hair and of visible granulation of the carapace. The inflated carapace with almost wholly obsolete sculpture, the lack of visible granules on the chelae and the unkeeled joints of the legs immediately distinguish *ovata*. *N. sakagutti* Sakai agrees with *ovata* in having the carapace inflated and the sculpture obsolete; in this species, however, the carapace is visibly granular and the abdomen, external maxillipeds and walking legs are covered with downy fur.

Key to the species of *Neoliomera*, adapted from that of Odhner with three additional species. Page and figure references are to the text and plate II of Odhner, 1925.

1. Carapace smooth, without visible granulation 2.
— Surface of carapace granular 3.
2. Sculpture of carapace distinct; meri of legs strongly keeled. *insularis* (p. 32, fig. 14).
— Carapace ovate with sculpture practically obsolete; meri of legs not keeled *ovata* sp.n.
3. Sculpture of carapace almost obsolete, the bifurcation of the median frontal groove which embraces the tip of 3 M is not defined 4.
— Sculpture distinct or indistinct, but the bifurcation of the median frontal groove is always defined 5.
4. Surface of carapace hairy; its antero-lateral borders crested *praetexta* (p. 34, fig. 15).
— Surface of carapace hairless, its borders not crested *sakagutti* (Sakai, 1939).
5. Areolation of carapace well defined, 2M being divided by a longitudinal groove. 6.
— Areolation weakly defined or nearly absent, 2 M, if defined, is entire 7.
6. Lateral borders strongly lobed; 1M defined *sabaca* (p. 31, fig. 11).

- Lateral borders almost entire; 1M not defined
sundaica (p. 31, fig. 12).
- 7. Surface of carapace beset with numerous transverse rows of granules, between which it is smooth
striata (Buitendijk, 1941).
- Granules of the carapace not arranged in transverse rows 8.
- 8. Carapace nearly twice as broad as long, cb/cl more than 1.8 9.
- Carapace less broad, cb/cl less than 1.7 10.
- 9. Two short transverse parallel grooves running inwards on each side from the lateral margin *richtersi* (p. 33, fig. 13).
- No such transverse parallel grooves *pubescens* (p. 28, fig. 6, 7).
- 10. Antero-lateral borders strongly lobed *variolosa* (p. 30, fig. 10).
- Antero-lateral borders weakly lobed *intermedia* (p. 29, fig. 8).
- Antero-lateral borders without any trace of lobes
nobilii (p. 30, fig. 9).

***Chlorodopsis pilumnoides* (White).**

BALSS, 1938A, p. 59; 1938B, p. 56.

SAKAI, 1939, p. 505.

A male of cb. 33 mm.

Balss (1938B) reports a male from Sultan Shoal, near Singapore, cb. 60, cl. 40 mm. as the largest recorded. Another male from Horsburgh Lighthouse, South China Sea, also in the Raffles Museum Collection measures 63 x 42.5 mm.

***Chlorodopsis nigrocrinita* (Stimpson).**

SAKAI, 1939, p. 504.

A series, the largest a male of 13.5 mm cb.

These specimens conform closely to Sakai's description of the species.

***Phymodius ungulatus* (H.M.-E.).**

GORDON, 1934, p. 37, 38.

One male of cb. 18 mm.

***Eriphia laevimana* Latr. and var. *smithii* McLeay.**

ALCOCK, 1898, p. 214, 216.

SAKAI, 1939, p. 522, 523.

Two specimens of the *forma typica* and one of the variety.

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The male pleopods appear to me to be identical and I suspect that this is a case of dimorphism within a single species.

Glabropilumnus laevimanus (Dana).

BALSS, 1933, p. 31; 1938A, p. 70; 1938B, p. 61.

A series from the reef between tide marks.

Tetralia glaberrima (Herbst).

ALCOCK, 1898, p. 223.

SAKAI, 1939, p. 553.

A series.

Domoecia hispida Eyd. and Soul.

ALCOCK, 1898, p. 230.

SAKAI, 1939, p. 553.

A male and a female.

Family Gecarcinidae

Gecarcoidea humei (Wood Mason).

TWEEDIE, 1947, p. 36, 37.

I have given my reasons (l.c.) for adopting the above combination to designate *Gecarcoidea lalandii* H.M.-E. (= *Hylaeocarcinus humei* Wood Mason).

Three specimens from Aor, a male of 94 mm. cb. a female of 80 mm. and another damaged female are abundantly distinct from *G. h. natalis* and judging from my notes on topotypical material of *G. h. humei* (1947, p. 38, 39), are separable from the typical form. I had no hesitation in maintaining the very distinct geographical race *natalis*, which there is every reason to suppose is endemic to Christmas Island, but I prefer not to give a trinomial designation to the Aor form at present. I have no specimens of the typical race now with which to compare it, and in any case a comprehensive survey of the species throughout its range should precede the naming of any but the most isolated and atypical forms.

The specimens from Aor appear to differ from *G. h. humei* chiefly in the greater number of spines on the dactylar ridges of the legs. The spines on the unpaired upper posterior ridges, which I found to range from one to eight on the dactyli of *natalis* and from six to twelve in three specimens of *humei*, range from ten to twenty-five in the Aor specimens. When a complete count is made of the spines on these ridges on all eight legs the number in the two intact specimens from Aor is 115 and 155. Analogous figures for *humei* were 75 and 81 and the average in *natalis* is 33.

In the single male from Aor the sixth abdominal segment has its median length: basal breadth ratio 1: 1.82, indicating a broader abdomen than in *humei*.

The "scars" on the carapace, whose greater development chiefly distinguishes *natalis* from *humei*, are in the Aor form even smaller than in the typical race.

Their present colour, and my recollection of it in life, is very similar to that described for *humei* by Wood Mason.

It is interesting to note that in respect of the three morphological characters considered the Aor form bears a similar relation (though in a far less degree) to *humei* as *humei* does to *natalis*. That is to say that while of the three forms *natalis* has the largest carapace scars, the fewest dactylar spines and the narrowest male abdomen, in the Aor race these features are respectively the smallest, most numerous and broadest.

Family Grapsidae

Grapsus strigosus (Herbst).

TESCH, 1918A, p. 71.

Three small specimens.

Pachygrapsus minutus A.M.-E.

TESCH, 1918A, p. 77.

Three ovigerous females.

Sesarma punctata (A.M.-E.).

TWEEDIE, 1940, p. 109.

Two males and seven females from a brackish swamp.
My record of 1940 refers to this series.

Family Hapalocarcinidae

Hapalocarcinus marsupialis Stimpson.

CALMAN, 1900, p. 43.

Four specimens collected from "galls" in a branching coral,?
Pocillopora.

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