

CARDED 1930

ON THE SPECIES OF THE GALATHEID GENUS, EUMUNIDA
(CRUSTACEA, DECAPODA). BY ~~ISABELLA~~ GORDON, D.Sc.,
Ph.D.

[From the PROCEEDINGS OF THE ZOOLOGICAL SOCIETY OF LONDON, 1929.]
[Published February 13th, 1930.]

INVERTEBRATE
ZOOLOGY /
Crustacea

On the Species of the Galatheid Genus, *Eumunida* (Crustacea,
Decapoda). By ISABELLA GORDON, D.Sc., Ph.D.*

(Offered for publication by permission of the Trustees of the British Museum.)

(Text-figures 1-12.)

INTRODUCTION.

For a definition of the genus *Eumunida* the reader is referred to Smith, 1883, p. 44, Henderson, 1888, p. 168, and Milne-Edwards and Bouvier, 1894, p. 308.

Specimens belonging to this genus occur with surprising rarity in the material brought back from important scientific expeditions. Five specimens of *Eumunida picta* Smith were dredged from deep water (130-158 fms.) off the north-east coast of the United States in 1880-82; the 'Albatross' found one male and one female off Chesapeake Bay (167 fms.) in 1884. Ten specimens of the same species were collected by the 'Talisman' at a depth of 200-600 metres in the Western Atlantic (Cape Bojador and Cape Verde Islands). The 'Challenger' collection contained only a single immature specimen without chelipeds—the holotype of *E. smithii* Henderson—and four specimens collected by Doflein in Japanese waters have been referred to this species by Dr. Balss (1913)*. No other material appears to have been described up to the present.

In addition to the 'Challenger' specimen and one of the 'Talisman' specimens obtained in exchange from the Paris Museum, there are thirty specimens of *Eumunida* in the British Museum collection. The greater part of this material was found on submarine cables and presented to the Museum by the Eastern and Associated Telegraph Co. In order to make the study of the genus as comprehensive as possible it was necessary to examine also specimens of *E. picta* from North America and the material in the Doflein collection. The writer takes this opportunity of expressing indebtedness to the authorities of the U.S. National Museum, who sent for study two syntypes of *E. picta*, a female from Station 1097 and a male from Station 1098 (Smith, 1883, p. 49). Thanks are also due to Dr. H. Balss, of Munich, who kindly lent the four Japanese specimens in the Doflein collection and gave permission to include descriptions of these.

The results of an examination of this material are recorded in the present paper. The specimens were readily separated into two groups according to the structure of the sternal segment to which the chelipeds are attached. Each group was further subdivided by the presence or absence of a pad of short densely-packed hair ("aire veloutée" of Milne-Edwards and Bouvier, 1900, p. 365) on the ventral surface of the palm of the cheliped. The specific characters appear to lie chiefly in the structure of the sternum and of the chelipeds, occasionally also in the number and arrangement of the spines on the dorsal surface of the carapace. With regard to the chelipeds, however, there is a considerable amount of variation within a species. Some specimens may show a decided asymmetry, one cheliped being more robust than, though of approximately the same length as, the other, while in other specimens they are quite symmetrical. The inner margin of the immovable finger may be straight in one specimen, or chela, emarginated in another, while the dactylopodite may or may not have 1-2 prominent teeth near the base. But the following characters, in addition to the presence or absence of a pad, are constant within a given species, so far as one can judge from the material at hand: (1) the length of the fingers relative to that of the palm (except in very old

* Communicated by Dr. W. T. CALMAN, F.R.S., F.Z.S.

* One ♀ referred to *E. smithii*
Parisi 1917 Atti Soc. Ital. Sc. Nat. LVI. p. 6.

males); (2) the presence or absence of spines on the palm and the arrangement of these when present; (3) the number (2 or 3) of spines near the distal end of the carpus.

Key to the Species of Eumunida.

GROUP A. A spine on each side of the sternal segment bearing the chelipeds.

- (a) A pad on the ventral surface of the palm.
 (1) No spine on the carapace posterior to the inner supraorbital spine, and palm longer than the fingers *E. picta*, p. 742.
 (2) A spine on the carapace posterior to the inner supraorbital spine, and palm shorter than the fingers *E. funambulus*, p. 744.
 (b) No pad on the ventral surface of the palm.
 (1) Fingers slightly longer than the palm *E. pacifica*, p. 746.
 (2) Fingers slightly shorter than the palm *Eumunida* sp.?, p. 748.

GROUP B. No spine on each side of the sternal segment bearing the chelipeds.

- (a) A pad on the ventral surface of the palm, which is shorter than the fingers *E. smithii*, p. 749.
 (b) No pad on the ventral surface of the palm.
 (1) Palm slender and much longer than the fingers; median processes of anterior sternal segment blunt.
 (a) Two rows of spines on the palm *E. dofleini*, p. 750.
 (β) No spines on the palm and only two spines near the distal end of the carpus † *E. leviniana*, p. 751.
 (2) Palm short, thick, and only slightly longer than the fingers; median processes of anterior sternal segment spiniform... *E. balssi*, p. 752.

Group A.

EUMUNIDA PICTA Smith.

Smith (1883), pp. 44-50; pl. 2. fig. 2; pl. 3. figs. 6-10 pl. 4. figs. 1-3 a.

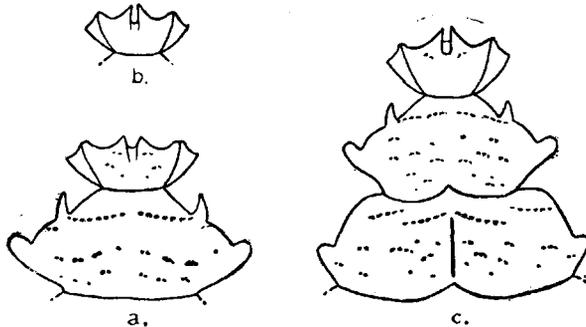
Smith (1887), p. 650 [46].

Milne-Edwards & Bouvier (1894), pp. 308-310; figs. 8, 14, 35, & 36.

Milne-Edwards & Bouvier (1900), pp. 364-366; pl. 5. fig. 1; pl. 28. fig. 26; pl. 32. figs. 20-24.

Material.—Two syntypes lent by the U.S. National Museum (♂ and ♀); one 'Talisman' specimen (♀) from Cape Bojador; two specimens (♂ and ♀) from off

Text-figure 1.

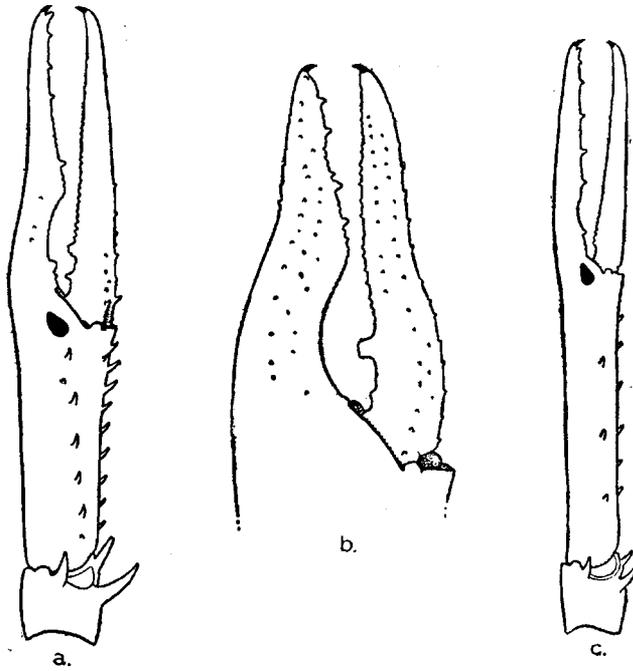


a and b, anterior sternal segments of *E. picta*; c, of *E. funambulus*. × 3.

Teneriffe (Brit. Mus. Coll., presented by H. Gray, Esq.); and one ♂ specimen from lat. 38° 13' S., long. 168° 42' 30" E., 380 fms. (Brit. Mus. Coll., presented by Dr. F. Wood-Jones).

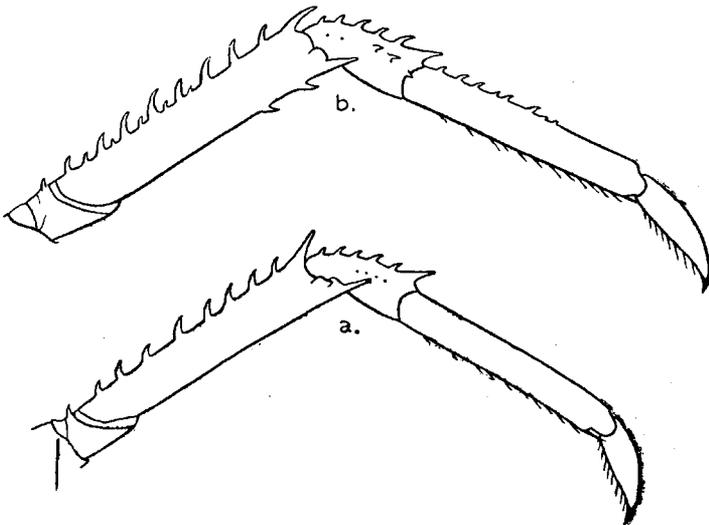
† All the other species have three spines.

Text-figure 2.



a, ventral aspect of right chela of holotype of *E. funambulus*; *b*, of old male from Madura Strait; *c*, of the 'Talisman' specimen of *E. picta*. $\times 2$.

Text-figure 3.



First walking-leg of *a*, *E. picta* ('Talisman' specimen); *b*, *E. funambulus* (holotype). $\times 2$.

Description.—Sternal segment of external maxillipeds low and rather broad, with the tips of the median projections extending very slightly beyond the level of the points of articulation of the appendages (text-fig. 1, *a*). On the dorsal surface of the carapace two groups of three spines in a line passing obliquely outward and downward from the frontal region; the anterior spine in each group larger and more pronounced than the remaining two (see Smith, 1883, pl. 2, fig. 2). Cheliped from 3.81 to 4.39 times the length of the carapace, excluding the rostrum (see Table, p. 753). Palm longer than the dactylus, armed with two rows of spines; one dorsally, the other ventrally placed (text-fig. 2, *c*). Three well-developed spines near the distal end, and two longitudinal rows of spines on the dorsal surface of the carpus. Four longitudinal rows of spines on the merus; a large spine near the distal end of the inner ventral border, and 2–3 smaller spines on the ventral surface of the ischium. No spines on the proximal dorsal margin of the propodus in the walking-legs (text-fig. 3, *a*).

For a fuller description the reader is referred to the previous literature on the species.

Remarks.—In some specimens the median processes on the anterior border of the sternal segment of the maxillipeds are more pronounced than in others. Especially is this the case in the male from the Pacific Ocean (text-fig. 1, *b*), where the anterior sternal segment approaches the form characteristic of *E. funambul* (text-fig. 1, *c*). But in all other respects this Pacific specimen agrees with the Atlantic material of *E. picta*.

As pointed out by Milne-Edwards and Bouvier (1960, p. 365), there is an oval area or pad of short hair at the base of the immovable finger (text-fig. 2, *c*). The chelipeds are wanting in the specimen from Station 1098 lent by the U.S. National Museum; in that from Station 1097 the pad is small and of the same colour as the rest of the palm, and so does not stand out so clearly as in the other specimens, where it is of a darker colour than its surroundings. It is not surprising, therefore, that Smith overlooked the presence of this felted area.

In the adult female, No. 4 (see Table), the fingers resemble those represented in text-fig. 2, *c*; in the male from the Pacific Ocean the long shallow emargination near the base of the immovable finger is almost entirely wanting in both chelipeds. In an immature male from off Teneriffe (No. 3) and in the small female from off Martha's Vineyard (U.S. Mus.) the left chela possesses an emargination while the right does not.

Distribution.—It is interesting to note that our separation of the two closely-allied species *E. picta* and *E. funambul* does not appear to coincide with a geographical separation. *E. funambul* is widely distributed over the Indo-Pacific Ocean from Aden to the Philippines. Hitherto *E. picta* has been reported only from the Atlantic Ocean, but one of the specimens in the British Museum collection comes from the Pacific Ocean, between New Zealand and Australia, and beyond the Eastern limit of *E. funambul*.

EUMENIDA FUNAMBULUS, sp. n.

Material.—Seventeen specimens, including all stages from immature forms with as yet no trace of the pad on the palm to old males with exaggerated atypical chelipeds.

Holotype.—The larger female from lat. 12° 45' N., long. 45° 17' E. (Brit. Mus. Coll. Reg. No. 1924.2.4.1).

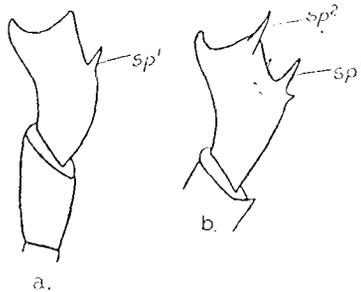
Description.—Sternum similar to that of *E. picta* (cf. text-fig. 1, *a* and *c*), but the anterior segment relatively higher with more prominent (spiniform) median projections. On the dorsal surface of the carapace (text-fig. 5), in addition to the usual three pairs of hepatic spines, a spine posterior to each inner supraorbital spine (text-fig. 5, *a*) and a small spine near each lateral margin between the first and second lateral spines (text-fig. 5, *b*). The cheliped from 3.54 to 4.45 times the

length of the carapace; palm shorter than the fingers and rather massive (text-fig. 2, *a*), with, in addition to the usual two longitudinal rows of spines, an irregular row of spinules down the mid-dorsal surface. Three prominent spines near the distal end and two longitudinal rows of smaller spines on the dorsal surface of the carpus. Four longitudinal rows of spines on the merus; on the ischium a row of closely-set spinules on the inner ventral margin with a large spine near the distal end, and in addition 3-5 spines scattered on the ventral surface. A number of small spines on the proximal dorsal border of the propodus in the walking-legs (text-fig. 3, *b*). Two prominent spines on the merus of the external maxilliped (text-fig. 4, *b*).

Remarks.—This species can readily be distinguished from all the others by the larger number of spines on the dorsal surface of the carapace. Even in the most immature specimens these five pairs of spines are present (text-fig. 5); in adult specimens there may be also a few spines or spinules near the base of the anterior lateral spine.

Text-fig. 2, *a*, represents the distal half of the right, which is similar to the left, cheliped of the holotype. There is a row of small spines on the proximal half of the outer border of the dactylus, and small tubercles and spinules are scattered

Text-figure 4.



Merus of external maxilliped, dorso-lateral aspect: *a*, *E. picta*; *b*, *E. funambulus* $\times 4$.

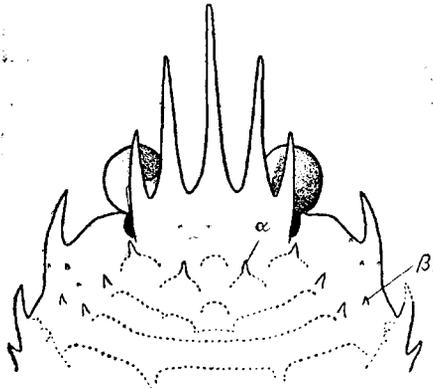
over both fingers, although they are too minute to be inserted in the illustration. In the old males with atypical chelipeds the palm is equal to, or slightly longer than, the fingers, massive, and covered with a dense felt of hair. The right chela of the old male from Madura Strait is represented in text-fig. 2, *b*; the palm of the left chela is narrower, the inner margin of the immovable finger is almost straight, and the large tooth towards the base of the dactylus is broader with crenulate margin. The old male presented by Dr. Luhn (No. 6) has both chela of the type represented in text-fig. 2 (*b*), and the fingers are thickly covered with small tubercles and spines. In some specimens, *e.g.*, that from off the Philippine Islands (No. 4, see Table, p. 753), the inner margin of both fingers is straight and there are 7-9 conical teeth at wide intervals on that of the immovable finger. The female from Madura Strait (No. 17) has a much more robust chela on the right than on the left side, and the dorsal surface of both palms is almost as thickly covered with hairs as is that of the old male. With the exception of the old male from Madura Strait, specimens from the Pacific Ocean have fewer tubercles and spines on the fingers than those from the western part of the Indian Ocean.

Another feature characteristic of *E. funambulus* and distinguishing it from most other species is the presence of spines on the propodite of the walking-legs (text-fig. 3, *b*). Of these spines there may be 9-12 on the first, 5-8 on the last

walking-leg in the adult. In immature forms, with the exception of the very smallest, a few spines are present on the first, or first and second limb.

All species belonging to group A have a well-developed spine on the ventral surface of the merus of maxilliped 3, towards the distal end (text-fig. 4, *a*; *sp.*¹).

Text-figure 5.



Anterior portion of carapace of *E. funambulus* (♂ from locality 7). × 2.

In most of the species in group B this spine is absent or poorly developed; but in *E. balssi* it is well formed, and, as in *E. funambulus*, there is a second spine on the outer surface near the distal articulation (text-fig. 4, *b*; *sp.*¹, *sp.*²).

Distribution.—This species has been found at the following localities in the Indo-Pacific:—

- (1) Lat. 12° 45' N., long. 45° 17' E., 260 fms.—the holotype (Brit. Mus. Reg. No. 1914.2.4.1) and two other specimens.
- (2) Lat. 11° 7' N., long. 124° 6' E., 154 fms.—one specimen from a cable off the Philippine Islands.
- (3) Lat. 10° 30' S., long. 126° 35' E., Sahul Bank, south of Timor, Cable Ship 'Recorder'—several specimens, together with two specimens of *E. smithii* Henderson (presented by the Eastern and Associated Telegraph Co.).
- (4) Lat. 10° 26' S., long. 123° 48' E., 150 fms.—two specimens (presented by the Eastern and Associated Telegraph Co.).
- (5) Lat. 11° 50' N., long. 51° 43' E., 400 fms., Socotra Channel—one specimen (presented by the Eastern and Associated Telegraph Co.).
- (6) On submarine cables between Aden and Bombay, 250 fms.—two specimens (presented by Dr. O. G. F. Luhn).
- (7) From Madura Strait, Java, 70–100 fms., 24th Feb., 1922, Cable Ship 'Patrol'—two specimens (presented by the Eastern and Associated Telegraph Co.).

EUMUNIDA PACIFICA, *sp. n.*

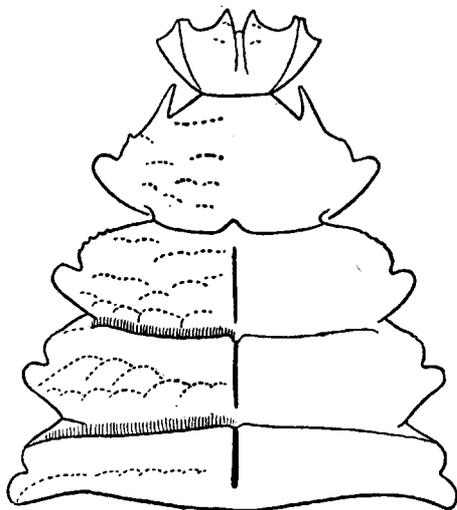
Material.—The holotype, an adult female, from lat. 10° 26' S., long. 123° 15' E., 160 fms. (Brit. Mus. Reg. No. 1916.3.29.4, presented by the Eastern and Associated Telegraph Co.).

Description.—Three pairs of spines on the dorsal surface of the carapace; as in *E. picta*, the anterior pair is most prominent. The sternal segment of the external maxillipeds relatively high and narrow, with conical median processes; characteristic pattern of the scales on third and fourth sternal segments (text-fig. 6). Cheliped 3.63 times the length of the carapace; dactylus somewhat longer than the palm, which bears two rows of spines (text-fig. 7). The usual

three prominent spines near the distal end of the carpus. Three rows of spines on the merus, that on the mid-ventral surface being absent or poorly developed. Only one spine on the ischium—that near the distal end of the inner ventral border. One spine on the ventral surface of the merus of maxilliped 3 as in *E. picta* (cf. text-fig. 4, a; sp.').

Remarks.—The chelipeds exhibit a slight asymmetry in this specimen. Part of the right limb is represented in text-fig. 7; there are no small spines on the dorsal surface of the carpus and no spines on the mid-ventral surface of the

Text-figure 6

Fig. 6.—Sternum of *E. pacifica*. $\times 3$.

Text-figure 7.

Fig. 7.—Right chela of *E. pacifica*, ventral aspect. $\times 2$.

merus. In the left cheliped the palm is somewhat narrower, the inner margin of the immovable finger is straight; there is one longitudinal row of three small spines on the dorsal surface of the carpus and a hint of a second row. Moreover, on the mid-ventral surface of the merus are four minute spines.

Until further material is available it is impossible to say whether spines are typically absent or present on the dorsal surface of the carpus, and whether the fourth row of spines on the merus is typically absent or poorly developed.

There are no spines on the dorsal border of the propodus of the walking-legs.

Distribution.—The East Indies.

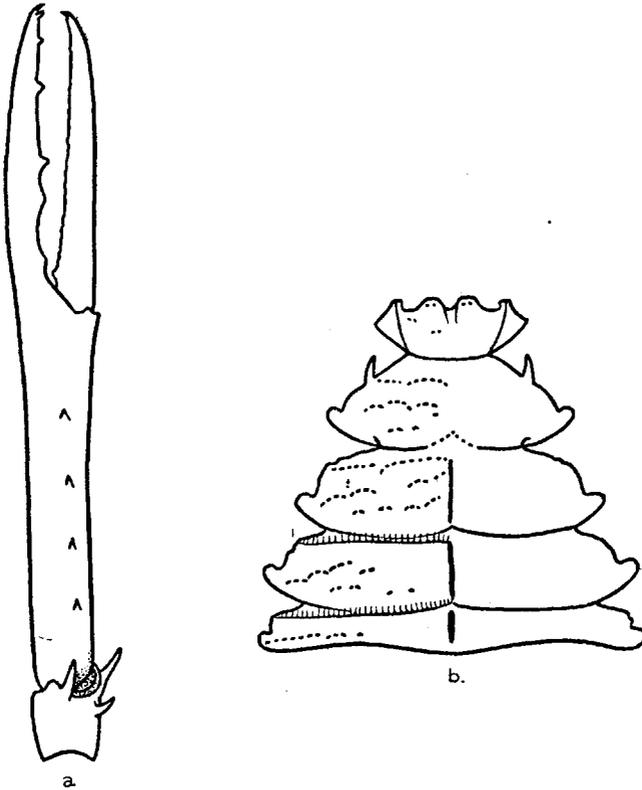
EUMUNIDA sp. ?

= *E. smithii* Balss, in part. 1913, p. 21.)

Material.—One ovigerous female, specimen No. 1114 in the Doflein collection. (This specimen will be returned to the Munich Museum.)

Description.—The sternal segment of the maxillipeds low and broad, with truncated median processes on the anterior border (text-fig. 8, *b*). Three pairs of hepatic spines, all approximately equal in length, on the dorsal surface of the carapace. Chelipeds 3.77 and 4.06 times the length of the carapace (see Table);

Text-figure 8.



Eumunida sp. ? : a, right chela, ventral aspect, $\times 3$; b, sternum, $\times 4$.

palm longer than the fingers, with 4 spines on the ventral, 1-2 on the dorsal surface (text-fig. 8, *a*). Three prominent spines near the distal end and two tubercles on the dorsal surface near the proximal end of the carpus. Three rows of spines on the merus of the cheliped and one spine on the ventral surface of the merus of the external maxilliped (*cf.* text-fig. 4, *a*; *sp.*¹).

Remarks.—This specimen is most closely allied to *E. pacifica*, from which it differs in having (1) a longer palm to the cheliped and (2) broadly-truncated median processes on the anterior border of the first sternal segment.

The right chela is represented in text-fig. 8, *a*; the left cheliped is distinctly shorter than the right (see Table, p. 753), and the inner margin of the immovable finger is straight and armed with two conical teeth. There is, as in the left cheliped

of *E. pacifica*, no row of spines on the mid-ventral surface of the merus, and, as in the right limb of *E. pacifica*, no small spines on the dorsal surface of the carpus.

Although this specimen carries ova, it has not, in all probability, attained to the adult size for the species. It is even probable that, in larger specimens, the pattern on the scales on the sternum would approximate to that of *E. pacifica* (cf. text-figs. 6 & 8, b). It seems advisable not to give this specimen any specific name for the present, but merely to indicate its position in Group A near to *E. pacifica*.

Distribution.—Japan.

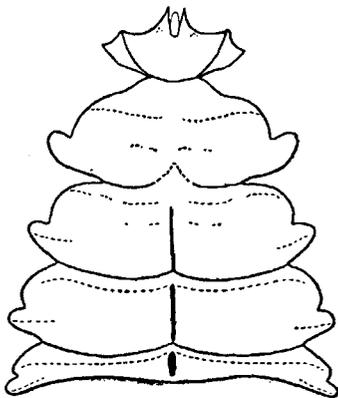
Group B.

EUMUNIDA SMITHII Henderson.

Henderson, 1885, p. 413; 1888, pp. 167-170, pl. 15, fig. 5 & 5 a. (Not=*E. smithii* Balss.)

Material.—The type-specimen and two females (one ovigerous) from Sahul Bank, south of Timor.

Text-figure 9.



Text-figure 10.

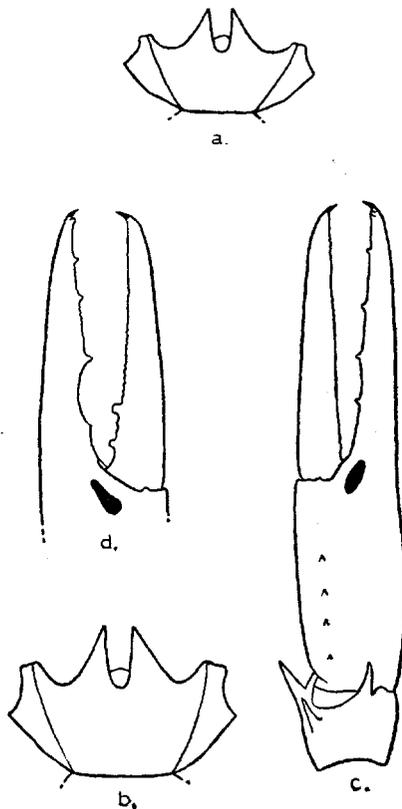


Fig. 9.—Sternum of *E. smithii* (holotype). $\times 14$.

Fig. 10.—*E. smithii*: a, sternal segment of maxillipeds (holotype); b, same of larger female; c, left and d, right chela of same. (c and d $\times 3$.)

Description.—Median processes of sternal segments of the chelipeds long and spiniform (text-fig. 9). Anterior spine on the dorsal surface of the carapace equal to or slightly smaller than the third. Palm of the cheliped short, rather massive and with only the ventral row of spines present (text-fig. 10, c). Four rows of

spines on the merus. A small spine on the merus of the external maxilliped (*cf.* text-fig. 4, *a*; *sp.*¹); no spines on the dorsal border of the propodus in the walking-legs, which are unusually short for the genus.

Remarks.—It is unfortunate that the type-specimen is immature and without chelipeds. Only three specimens in the whole of the *Eumunida* material resemble the 'Challenger' specimen as regards the structure of the anterior sternal segments—two females from Sahul Bank and specimen No. 1111 (σ) in the Doflein collection. From the nature of the chelipeds, however, it is obvious that these three specimens do not all belong to the same species. It was deemed advisable to refer the females to Henderson's species because (1) they came from an adjacent locality in the East Indies; (2) the number of transverse striæ on the carapace, anterior to the cervical groove, was the same as in the 'Challenger' specimen; (3) the propodus of the first walking-leg is only 1.5 times the length of the dactylus and 1.66 times in the type-specimen, whereas in *E. balyssi* and all the other species the ratio is as 2-3 : 1.

A comparison of *a* and *b* in text-fig. 10 shows that the lateral processes of articulation of the sternal segment of maxillipeds 3 are less prominent in the 'Challenger' specimen than in those from Sahul Bank. This difference is slight, and can hardly be regarded as of specific importance, but may be due to differences of age.

The chelæ are symmetrical in the smaller female and of the type represented in text-fig. 10, *c*. In the larger female the left is as represented in text-fig. 10, *c*; but the right chela (text-fig. 10, *d*) has a thicker palm, an emargination near the proximal end of the immovable finger, and two prominent teeth near the base of the dactylus. The spines on the mid-ventral surface of the merus are small but numerous.

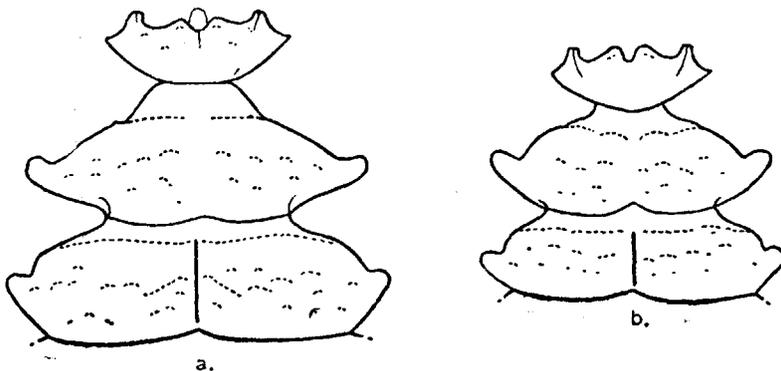
Distribution.—The East Indies; the holotype from Little Kei Island, 129 fms.; the others from lat. 10° 30' S., long. 126° 35' E. with *E. fumambulus*.

EUMUNIDA DOFLEINI, sp. n.

(=*E. smithii* Balss, 1913, p. 21, in part.)

Material.—The holotype, ovigerous female No. 1113 and female No. 1112 in the Doflein collection (returned to Munich Museum).

Text-figure 11.



a, part of sternum of *E. dofleini* (holotype); *b*, of *E. levimana* (holotype). $\times 3$

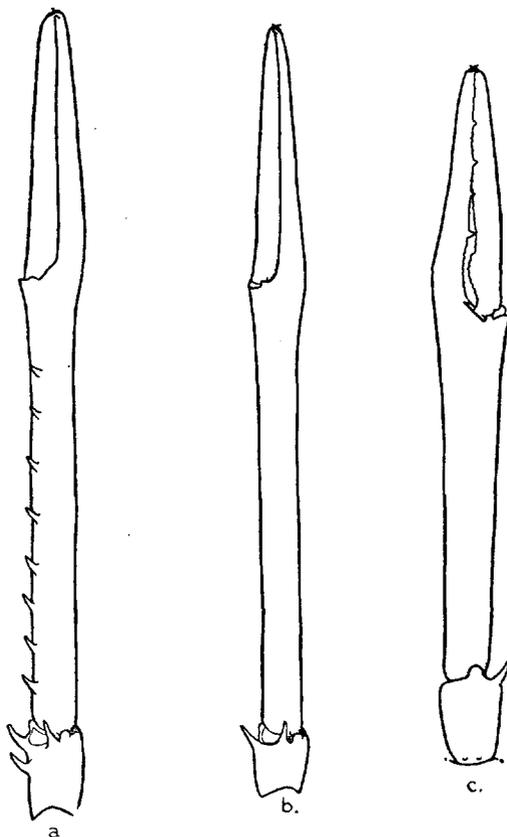
Description.—The sternum as represented in text-fig. 11, *a*. The spine on the ventral surface of the merus of maxilliped 3 (*cf.* text-fig. 4, *a*; *sp.*¹) absent or

vestigial. Chelipeds long and slender; two rows of spines on the palm; three prominent spines near the distal end and two longitudinal rows of spines on the dorsal surface of the carpus. Four rows of spines on the merus and one spine near the distal end of the inner ventral border of the ischium. A spine near the proximal end of the upper margin of the propodus in the first walking-leg, not in the others.

Remarks.—This species is most closely allied to *E. lævimana*. In the smaller specimen the median projections of the sternal segment of maxillipeds 3 reaches as far forward as the points of articulation of the appendages (*cf.* text-fig. 11, *a*). In both females the chelæ are symmetrical, the inner margin of each finger is straight, and there are 6–7 teeth on that of the immovable digit. The outer longitudinal row of spines on the carpus has 5–6 spines, there being only 2–3 in the inner row. Anterior hepatic spine well developed, the median one small or absent.

Distribution.—Japan.

Text-figure 12.



a, left chela of *E. dofteini* (holotype), ventral aspect; *b*, of *E. lævimana* (holotype);
c, of male (No. 2) of *E. lævimana*, dorsal aspect. $\times 1.5$.

EUMUNIDA LÆVIMANA, sp. n.

Material.—The holotype, an ovigerous female from lat. $11^{\circ} 5' S$, long. $121^{\circ} 30' E$, 400 fms. (Brit. Mus. Reg. No. 1916.6.19.1), and six other specimens.

Description.—Anterior sternal segments very similar to those of *E. dofleini* (cf. text-fig. 11, *a* and *b*), but the sternal segment of the chelipeds less narrowed and produced laterally. Spine on the ventral surface of the merus of maxilliped 3 absent or poorly developed. Three pairs of hepatic spines on the dorsal surface of the carapace as in *E. picta*. Chelipeds from 4.2–5.1 times the length of the carapace (see Table, p. 753); no spines on the palm, *two* spines near the distal end of the carpus, and two tubercles proximally placed on the dorsal surface (text-fig. 12, *b* and *c*). Only 2–5 small spines on the mid-ventral surface of the merus; ischium as in *E. dofleini*. No spines on the propodus of the walking-legs.

Remarks.—The median pair of spines on the dorsal surface of the carapace is small or wanting. In the type-specimen the chelipeds are quite symmetrical and the inner margin of each finger is straight (text-fig. 12, *b*), there being 6–7 conical teeth on that of the immoveable one. In the young male both chelæ are alike and similar to those of the female. In the largest male the right is similar to that of the female, but the left chela is of the type represented in text-fig. 12, *c*. The palm of the adult male is densely covered with a fine pubescence; the scales are much smaller than those of *E. dofleini*.

Distribution.—This species is recorded from the following localities in the Indo-Pacific Ocean:—

- (1) Lat. 11° 5' S., long. 121° 30' E., 400 fms.—holotype and three male specimens.
- (2) Lat. 10° 23' S., long. 120° 9' E., 350 fms.—one male and one female specimen.
- (3) South of Nicobar Islands, 560 fms.—one female.

(All specimens were presented to the British Museum by the Eastern and Associated Telegraph Co.)

EUMUNIDA BALSSI, sp. n.

Material.—The holotype, male No. 1111 in the Doflein collection (returned to Munich Museum).

Description.—Sternum similar to that of the 'Challenger' specimen (text-fig. 9). Palm of the cheliped thickly covered with hair, pad absent, as also is the dorsal row of spines (Balss, 1913, fig. 16, p. 22). Three prominent spines near the distal end of the carpus; four rows of spines on the merus and one spine near the distal end of the inner ventral border of the ischium. The anterior pair of hepatic spines smaller than the third pair as in *E. smithii*; one or two spines near the proximal end of the propodus in all walking-legs. This is the only species in Group B with *two* spines on the merus of the external maxilliped, in which respect it resembles *E. unambulus* (see text-fig. 4, *b*); the lower, ventral spine is, moreover, more prominent than is usual in Group B.

Remarks.—This is the only specimen in the Doflein collection that might have been referred to *E. smithii* (see p. 750). In addition to the differences in the chelipeds (see Key, p. 742) this species differs from *E. smithii* in having (1) longer walking-limbs with 1–2 spines on the propodi, (2) two spines on the merus of maxilliped 3, and (3) more numerous striæ on the dorsal surface of the carapace anterior to the cervical groove. This male specimen is also more thickly covered with pubescence than *E. smithii*, which is an unusually smooth form.

Distribution.—Japan.

TABLE OF MEASUREMENTS.

Specimen.	Length of cheliped.	Length of carapace (rostrum excluded).	Ratio.
GROUP A.			
<i>E. picta.</i>			
1. ♀ syntype (U.S. Mus. Stn. 1097)	mm. 59	mm. 15	3·9 : 1
2. ♀ 'Talisman' specimen	82	21·5	3·81
3. ♂ from off Teneriffe	49·5	12·5	4·0
4. ♀ " " (dried)	96	24	4·0
5. ♂ from Pacific Ocean	79	18	4·39
<i>E. funambulua.</i>			
1. ♀ from locality 1 (holotype)	84	25	3·32 : 1
2. ♂ " "	61·5	16·5	3·72
3. ♀ " "	50	14	3·57
4. ♂ from locality 2	89	20	4·45
5. ♀ from locality 3	81·5	22	3·7
6. ♂ " "	56	15·5	3·61
7. ♂ " "	52	14·5	3·59
8. ♀ " "	46	13	3·54
9. ♂ " "	31	9	3·44
10. ♀ " "	31	9·5	3·26
11. ♂ from locality 4	53	14·5	3·65
12. ♂ " "	67	18	3·72
13. ♂ from locality 5	40	12·2	3·28
14. ♂ from locality 6 (dried)	120	30	4·0
15. ♀ " "	71	20	3·55
16. ♂ from locality 7	128	32	4·0
17. ♀ " "	61	18	3·39
<i>E. pacifica.</i>			
♀ holotype	109	30	3·63 : 1
<i>Eumunida</i> sp. ?			
♀	{ 71 (right) 66 (left) }	17·5	{ 4·06 : 1 3·37 }
GROUP B.			
<i>E. smithii.</i>			
1. ♀ (ovigerous)	51	15	3·4 : 1
2. ♀	38	12·5	3·0
<i>E. dofleini.</i>			
1. ♀ holotype (ovigerous)	146	32	4·56 : 1
2. ♀ No. 1112	110	25	4·4
<i>E. laevimana.</i>			
1. ♀ from locality 1 (holotype)	138	27	5·1 : 1
2. ♂ " "	126·5	25·2	5·0
3. ♂ " "	67·5	16	4·2
4. ♂ " "	70	16	4·38
5. ♂ from locality 2	95	20	4·75
6. ♀ " "	144	29	5·0
7. ♀ from locality 3	107	22	4·86
<i>E. balssi.</i>			
1. ♂ holotype	80	16	5 : 1

LITERATURE CITED.

- BALSS, H. (1913). Abh. Akad. Wiss Math.-Phys. Kl. Supplem. 2, pt. 9, München, pp. 1-85, 2 pls., 54 text-figs.
- HENDERSON, J. R. (1885). Ann. Mag. Nat. Hist. ser. 5, vol. xvi. p. 413.
- HENDERSON, J. R. (1888). 'Challenger' Zool. vol. xxvii. pp. i-xi, 1-221, 21 pls. London.
- MILNE-EDWARDS, A., & BOUVIER, E. L. (1894). Ann. Sci. Nat. Zool. et Palæont. (7) xvi. pp. 191-327, 36 text-figs. Paris.
- MILNE-EDWARDS, A., & BOUVIER, E. L. (1900). Expéd. Scientif. 'Travailleur' et 'Talisman,' Crustacea, Decapoda, pt. 1, pp. 1-396, 32 pls. Paris.
- SMITH, S. I. (1883). Proc. U.S. Nat. Mus. vi. no. 1, pp. 1-57, 6 pls.
- SMITH, S. I. (1887). U.S. Comm. Fish and Fisheries—Report for 1885, pt. xiii. no. 21, pp. 605-705 [1-101], 20 pls.