DEPARTMENT OF COMMERCE AND LABOR
BUREAU OF FISHERIES
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MARINE ISOPODS COLLECTED IN THE PHILIPPINES BY THE U. S. FISHERIES STEAMER ALBATROSS IN 1907-8

Bureau of Fisheries Document No. 736

WASHINGTON
GOVERNMENT PRINTING OFFICE
1910

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Our knowledge of the Philippine isopods is limited to a few species. No one paper has been published treating exclusively of the forms from those islands, but in a number of papers and general works mention has been made occasionally of an isopod from the Philippines. The first author who described a Philippine isopod was Carl Semper, in 1868, and he described the species known as *Ægа spongiophila*, which was found living in a sponge, *Euplectella aspergillum*. Robby Kossmann in 1872 described a number of Bopyridæ. Later J. C. Schiœdte and Fr. Meinert in 1879–84 and Semper in 1880 described other isopods from the Philippines.

Only four of the known species previously recorded from the Philippines were collected by the *Albatross* expedition in 1907–8; these are *Probopyrus ascendens* Semper, *Rocinela orientalis* Schiœdte and Meinert, *Cymothoa stromatei* Bleeker, and *Ægа spongiophila* Semper. Many of the species collected there at this time, however, have been already described and recorded from other places not far distant, such as Japan, Java, Ceylon, Sulu Sea, Nicobar Islands, New Guinea, Isle of Pines, New Britain, India, Amboina, the Society Islands, Singapore, Hongkong, etc. These known species were described by the following authors: Leach, in 1818; Dana, in 1853; Bleeker, in 1857; Miers, in 1878–1884; Hansen, in 1890; Bonnier, in 1900; Stebbing, in 1902–1905; and Nobili, in 1906. The works of other authors have been studied in this connection: H. Milne Edwards, Haswell, Whitelegge, Filhol, Hilgendorf, Thomson, Koebel, Lanchester, Bouvier and A. Milne Edwards, Beddard, Baker, Haller, Chilton, Heller, Max Weber, etc.

In addition to the known isopods collected by the *Albatross* in the Philippines this expedition obtained thirty-eight species new to science, three of them the types of new genera.

CYMOTHOIDEA or FLABELLIFERA.

Family CIROLANIDÆ.

Genus BATHYNOMUS A. Milne Edwards.

Bathynomus döderleini Ortmann.

Bathynomus döderleini Ortmann, Proc. Acad. Nat. Sci. Phila., 1894, p. 191–193. Bouvier, C. R. Acad. Sci., vol. 132, p. 643–645. A. Milne Edwards and Bouvier, Mem. Mus. Comp. Zool., Harvard College, vol. 22, no. 2, 1902, p. 159–165, pl. 7, 8. Richardson, Proc. U. S. Nat. Mus., vol. 37, 1909, p. 78.

Locality: Stations 5282, off Point Talin, Luzon; 5301, off Pratas Island, China Sea; and 5348, Palawan Passage, Point Tabonan. Five specimens. Depth: 248 to 375 fathoms.

Bathynomus affinis, sp. nov.

This species is very close to *Bathynomus döderleini* Ortmann,[a] but differs in having nine teeth on the posterior margin of the terminal abdominal segment instead of seven; in having the inner branch of the uropoda with the posterior margin almost straight and the outer postlateral angle abruptly produced in an acute process or tooth; in having a well-marked carina on the epimera of the last four segments of the thorax, which is only faintly marked in *B. döderleini;* and in the less conspicuous median carina of the terminal abdominal segment.

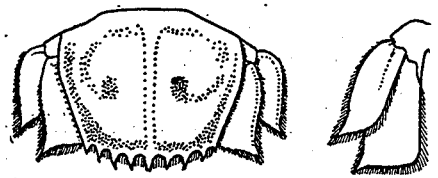


FIG. 1.—*Bathynomus affinis.* Caudal segment and uropoda. × 4.

One specimen was taken at station 5259, Caluya Island (S), S. 73° W., 12 mi. (11° 57′ 30″ N., 121° 42′ 15″ E.) at a depth of 312 fathoms, in gray mud and globigerin ooze. The type is catalogue number 40908, United States National Museum.

Bathynomus propinquus, sp. nov.

This species is close to *Bathynomus giganteus* A. Milne Edwards, but differs in the shape of the terminal abdominal segment, the number of teeth on the posterior margin being the same; in the much narrower outer branch of the uropoda; in the differently shaped inner branch, which is more produced at both the inner and outer postlateral corners; in the longer second antennæ, which extend to the middle of the fifth thoracic segment, while in *B. giganteus* they extend only to the middle of the fourth segment; in having a carina on the epimera of the last three segments of the thorax; and in the differently shaped frontal lamina.

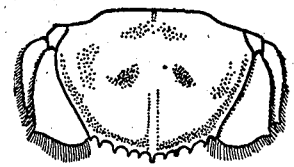


FIG. 2.—*Bathynomus propinquus.* × 4.

One specimen was taken, at station 5284, off Santiago, western Luzon, at a depth of 422 fathoms. The type is catalogue number 40909, United States National Museum.

Genus CIROLANA Leach.

Cirolana orientalis Dana.

Cirolana orientalis Dana, U. S. Expl. Exp., Crust., XIV, 1853, p. 773, pl. LI, fig. 7 a–d. Hansen, Vidensk. Selsk. Skr. (6), naturvidenskabelig og mathematisk Afd., V, 3, 1890, p. 353–354, pl. IV, fig. 4–4 h. Stebbing, Willey's Zool. Results, 1901, pt. V, p. 633.

Locality: A large number of specimens from Cataingan Bay; one specimen from Papahag, Tawi Tawi; a few specimens from Papahag Island, Tawi Tawi, found on a floating slice of bread; twenty specimens from San Miguel Bay. Depth: Shore.

[a] Proc. Acad. Nat. Sci. Phila., 1894, p. 191–193. See also A. Milne Edwards and Bouvier, Mem. Mus. Comp. Zool., Harvard College, vol. 22, no. 2, 1902, p. 159–165, pl. 7, 8.

A label accompanying the specimens from Cataingan Bay reads: "Very ravenous, attacking small fishes, first devouring eyes, then gills, then working into body cavity—all of this is done inside of ten minutes."

Dana's specimens were from the Sulu Sea, Hansen's from Nangkovry, Nicobar Islands, Stebbing's from Conflict Group, New Guinea, and Isle of Pines.

Cirolana albicaudata Stebbing.

Cirolana albicaudata Stebbing, Willey's Zool. Results, 1902, pt. V, p. 631–632, pl. LXVII B.

Locality: One specimen, a female, from Santa Cruz, Marinduque Island (electric light); three specimens, two males and a female, from Tomindao Island anchorage (electric light); thirteen specimens from Java Island anchorage (electric light); no locality, twenty specimens; three specimens from Sabayan Bay, Mindoro; one specimen from Port San Pio V, Camiguin Island. Stebbing's specimens were from Barawon, Blanche Bay, New Britain.

Cirolana epimerias, sp. nov.

Body ovate, 14 mm. long: 5.5 mm. wide. Surface smooth. Color, yellow.

Head wider than long, 1.5 mm.: 2.5 mm. Eyes very small, composite, and situated in the anterolateral angles. Anterior margin of head widely rounded and without any median point. There is a slight elevation on the posterior margin in the median line. The first pair of antennæ have the first two articles short and subequal. The third article is 1.5 times the length of the second. The flagellum, composed of five articles, extends to the middle of the fifth peduncular article of the second antennæ, or a little beyond the anterolateral angle of the first thoracic segment. The second antennæ have the first two articles short and subequal; the third is about twice as long as the second; the fourth and fifth are subequal and each is twice as long as the third; the flagellum, composed of sixteen articles, extends to the posterior margin of the third thoracic segment. The frontal lamina is short and broad, about twice as long as wide.

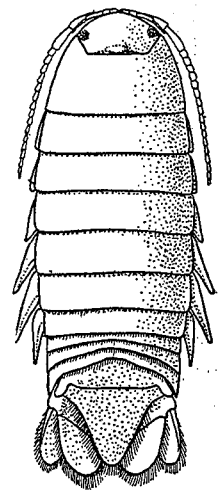


FIG. 3.—*Cirolana epimerias.* × 4.

The first segment of the thorax is the longest, being 2 mm. long; the five following segments are subequal, each being 1.5 mm.; the seventh segment is the shortest, being 1 mm. long. All the segments, except the first, are provided with epimera; those of the second and third segments do not reach beyond the postlateral angles of the segments; those of the last four extend beyond the posterior margins of the segments; those of the fifth, and especially the sixth, are greatly produced and extend outward laterally in a most conspicuous way.

The first abdominal segment is entirely concealed by the seventh thoracic segment; the three following segments are very short, all three together measuring 1 mm.; the fifth segment is long, being 1 mm.; the sixth or terminal segment is a little wider than long, 2.5 mm.: 3 mm. It is triangular in shape, with sides converging to a rounded extremity armed with six spines. The inner branch of the uropoda is large and widely rounded posteriorly and extends beyond the extremity of the terminal abdominal segment; the outer branch is narrower and shorter than the inner branch and also posteriorly rounded.

The posterior margins of the last two segments of the thorax and the first three abdominal segments, the margins of the uropods, and the terminal abdominal segment are fringed with short thick hairs.

The first three pairs of legs are short, the last four pairs elongate. All are furnished with spines.

The female differs from the male in not having conspicuously produced epimera and in not having the segments of the thorax and abdomen fringed with hairs.

Three specimens, two males and one female, were collected at station 5664, Macassar Strait, Kapoposang Light, at a depth of 400 fathoms. Type specimen, catalogue number 41022, United States National Museum.

Cirolana excisa, sp. nov.

Body ovate, about twice as long as wide, 4 mm.: 8.5 mm. Surface smooth. Color yellow, marked with numerous black arborescent marks.

Head wider than long, 1 mm.: 2 mm., with the anterior margin rounded and produced in a small median point. Eyes small, black, composite, round, 0.5 mm.: 0.5 mm., separated by a distance of 1 mm. and situated in the lateral angles. The first pair of antennæ have the first two articles of the peduncle short and subequal; the third article is as long as the first two taken together. The flagellum, composed of sixteen articles, extends a little beyond the peduncle of the second antennæ. The second antennæ have the first three articles of the peduncle short and subequal; the last two are subequal and each is about as long as the first three taken together. The flagellum, composed of about thirty-three articles, extends to the postlateral angle of the fourth thoracic segment. The frontal lamina is short and broad, about twice as long as wide.

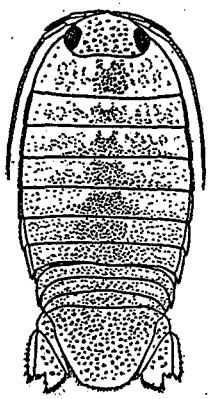
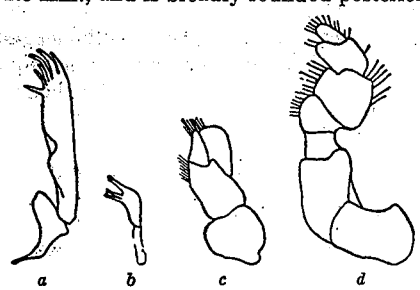


FIG. 4.—*Cirolana excisa.* × 6.

The first segment of the thorax is a little longer than any of those following; the last two are slightly shorter than any of the preceding segments. Epimera are present on all the segments except the first, and do not extend beyond the postlateral angles of the segments except those of the last two, which are acutely produced.

The first segment of the abdomen is not visible; the second is almost entirely concealed; the three following are subequal in length, with the lateral angles of the third and fourth segments reaching those of the fifth segment. The sixth or terminal segment is a little wider than long, 2 mm.: 2.5 mm., and is broadly rounded posteriorly, with the posterior margin furnished with seven teeth, and about eight spines. The inner branch of the uropoda is broad and longer than the terminal abdominal segment; it is obliquely truncate with the outer postlateral angle produced, the posterior margin furnished with five teeth and the outer margin incised, with two teeth within the incision. The outer branch is narrow, and produced to an acute extremity ending in two teeth, both margins being dentate. The uropods and the terminal abdominal segment are fringed with hairs on the margins.



a *b* *c* *d*

FIG. 5.—*Cirolana excisa.* *a*, First maxilla (outer lobe); *b*, first maxilla (inner lobe); *c*, second maxilla; *d*, maxilliped. × 77½.

The first three pairs of legs are short, the last four pairs long, and all are spinulose.

Three specimens were collected at station 5554, Jolo Island and vicinity, Cabalian Point (Jolo), at a depth of 25 fathoms. Type, catalogue number 41012, United States National Museum.

This species is similar to *Cirolana japonica* Hansen,[a] but differs in the form of the inner branch of the uropoda and in the form of the second maxillæ.

[a] Vidensk. Selsk. Skr. (6), v, pt. 3, 1890, p. 349-351, pl. iv, fig. 2 a-l.

Cirolana curta, sp. nov.

Body oblong-ovate, three times longer than wide, 6 mm.: 18 mm. Surface smooth. Color yellow, marked with numerous black marks, close together; uropods and abdomen yellow, with black marks only at the base.

Head wider than long, 1.5 mm.: 3.5 mm., with the anterior margin produced in a small median point, on either side of which is a small excavation. Eyes large, quadrate, about as wide as long, 1 mm.: 1 mm., composite, situated in the anterolateral angles and separated by a distance of 1.5 mm. at the anterior extremity. The first pair of antennæ have the first two articles of the peduncle short and sub-equal; the third is a little longer than the first two taken together, and extends to the end of the third article of the peduncle of the second antennæ. The flagellum, composed of fourteen short articles, extends to the end of the fourth article of the peduncle of the second antennæ. The first two articles of the peduncle of the second antennæ are short and subequal; the third and fourth are subequal and each is a little longer than the first two taken together; the fifth is about 1.5 times the length of the preceding article; the flagellum, composed of nineteen articles, extends to the postlateral angles of the second thoracic segment. The frontal lamina or interantennal plate is long and narrow.

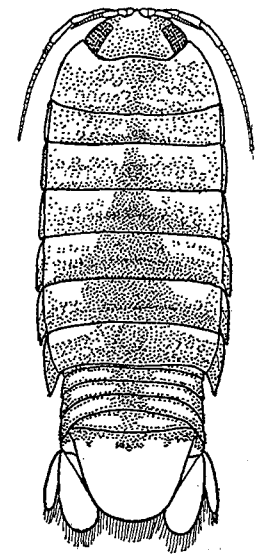
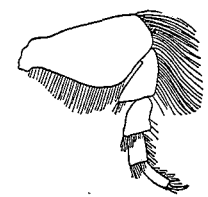


FIG. 6.—*Cirolana curta.* × 4¾.

The first segment of the thorax is twice as long as the second, being 2 mm. in length; the last five segments are subequal, each being 1.5 mm. long. All except the first are furnished with wide epimera, those of the second and third segments not produced beyond the posterior margin of the segments, while those of the last four are but little produced. All are crossed by a transversely oblique carina.



Seventh leg. × 7¼.

The first five segments of the abdomen are short, the first being partly covered by the seventh thoracic segment; the second, third, and fourth are 0.5 mm. long, the fifth being about 0.75 mm. The sixth or terminal segment is a little wider than long, 3 mm.: 4 mm., and is widely rounded posteriorly. The inner branch of the uropoda is very wide and long, and extends 0.5 mm. beyond the tip of the abdomen; it is widely rounded posteriorly. The outer branch is short and narrow, about 0.75 mm. shorter than the inner branch and about one-third as wide; it is posteriorly rounded. Both branches and the terminal abdominal segment are fringed with long hairs and furnished with a few spines.

The legs are furnished with spines and hairs; those of the last four pairs have the basis very much enlarged and fringed with extremely long hairs, especially the seventh pair.

Only one specimen, the type, was obtained, at station 5565, between Jolo and Tawi Tawi, Dammi Island, at a depth of 242 fathoms. Catalogue number 41013, United States National Museum.

This species differs from *Cirolana schiödtei* Miers[a] in the form of the frontal lamina and the shape of the abdomen and uropoda. It also differs from *C. tenuistylis* Miers[a] in the form of the abdomen and uropoda. It differs from *Cirolana rossii* Miers[b] in the shape of the eyes and of the uropoda. It is also different from *C. japonica* Richardson and *C. lata* Haswell.

[a] Zoological collections of the *Alert*, 1884, p. 302, 304, pl. xxxiii, fig. A. B.

[b] Catalogue of the Stalk and Sessile-eyed Crustacea of New Zealand, 1876, p. 109, pl. iii, fig. 3.

Genus EURYDICE Leach.

Eurydice orientalis Hansen.

Eurydice orientalis Hansen, Vidensk. Selsk. Skr. (6), naturvidenskabelig og mathematisk Afd., v, 3, 1890, p. 369–370, pl. vi, fig. 2–2h.

Locality: A large number of specimens, all females, were collected at Nasugbu, Luzon, and one female was taken at Busin Harbor, Burias Island, by electric light. One specimen, no locality, electric light; one from anchorage, Nato, Luzon; nine from Cabugao Bay; fifty from Mahinog, anchorage, Camiguin Island. Hansen's two specimens, both males, were from Java.

Family BARYBROTIDÆ.

Genus BARYBROTES Schiœdte and Meinert.

Barybrotes agilis Schiœdte and Meinert.

Barybrotes agilis Schiœdte and Meinert, Nat. Tidsskr. (3), 1879–1880, p. 283–284, pl. iii, fig. 11–13.
Barybrotes indus Schiœdte and Meinert, Nat. Tidsskr. (3), 1879–1880, p. 281–283, pl. iii, fig. 1–10, pl. iv, fig. 1.
Barybrotes agilis Hansen, Vidensk. Selsk. Skr. (6), v, pt. 3, 1890, p. 403–405, pl. ix, figs. 3–3s.

Locality: Varadero Bay, Mindoro; one specimen. Schiœdte and Meinert had one specimen from the Bay of Bengal, another from the sea of Java, and another from Gaspar Straits.

Family ALCIRONIDÆ.[a]

Genus ALCIRONA Hansen.

Alcirona tuberculata, sp. nov.

Body oblong-ovate, 7.5 mm. long and 3 mm. wide. Color yellow.

Head wider than long, 1 mm.: 1.75 mm., with the anterior margin rounded. Eyes moderately large, composite, and situated at the postlateral angles. First pair of antennæ with the peduncle composed of two short articles, the first of which is about twice as long as the second; flagellum, composed of fourteen articles, extends to the middle of the first thoracic segment. Second pair of antennæ with a peduncle of five articles, the first two of which are short and subequal; the third is about equal to the first two taken together; the last two are also subequal, and each about as long as the first three taken together; flagellum, composed of twenty articles, extends to the posterior margin of the third thoracic segment.

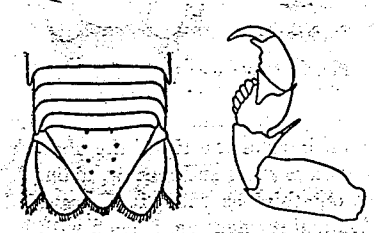


FIG. 7.—*Alcirona tuberculata*. *a*, Abdomen, × 9½; *b*, first leg of male, × 20½.

The first segment of the thorax is a little longer than any of the following five segments, which are subequal, and the seventh is a little shorter. Epimera are present on all the segments except the first. The first two are narrow, with rounded extremities, and do not extend beyond the posterior margin of the segments. The two following have the posterior extremities acutely produced and extending just a little beyond the postlateral angles. The last two are also acutely produced, and they extend some distance beyond the postlateral angles of the segments.

The first segment of the abdomen is entirely concealed; the three following segments are subequal; the fifth is a little longer than any of the preceding; the sixth or terminal

[a] It does not seem necessary for the reasons given to change the family name to Corallanidæ, as Stebbing has suggested, nor to change Cirolanidæ to Eurydicidæ nor Arcturidæ to Astacillidæ.

segment is triangular, with apex rounded and furnished with six small spines and numerous hairs. Its dorsal surface has two parallel rows of four small tubercles, one row on either side of the median line. The outer branch of the uropoda is produced to an acute extremity and does not reach beyond the extremity of the abdomen; the inner branch is about twice as wide, more rounded at the extremity, and extends just a little beyond the extremity of the abdomen. Both branches are fringed with hairs and furnished with spines.

The first three pairs of legs are prehensile and have the merus armed with five (in the male, four in the female) stout and blunt spines, close together with lateral edges meeting. The propodus has a process at the inner distal angle and has the inferior margin rather irregular in outline. The last four pairs of legs are ambulatory and are furnished with a few spines.

Only two specimens, a male and a female, were collected at station 5141, Jolo Light, S. 17° E., 5.50 mi. (6° 09′ 00″ N., 120° 58′ 00″ E.). Depth, 29 fathoms, in coral and sand. Type specimens, catalogue number 40910, United States National Museum.

This species can be distinguished from all the known species of the genus by the parallel rows of tubercles on the abdomen and the difference in the prehensile legs.

Genus LANOCIRA Hansen.

Lanocira gardineri Stebbing.

Lanocira gardineri Stebbing, Fauna and Geography of the Maldive and Laccadive Archipelagoes, ii, pt. 3, 1904, p. 706–707, pl. li A; Ceylon Pearl Oyster Fisheries Report, 1905, pt. iv, p. 19.

Locality: Station 5108, Corrigidor Strait, N. 39° E., 22.50 mi. (14° 05′ 25″ N., 120° 19′ 45″ E.). (Two males and five females.) Depth: 13 fathoms. Stebbing's specimens were from Mahlosmadulu atoll and Galle reef; also Cheval Paar and "Gulf of Manaar."

The specimens collected by the *Albatross* differ from the type as described by Stebbing in having the apex of the terminal abdominal segment more rounded and less truncate and in not having the dorsal surface of this segment furnished with setæ in the male; the abdomen of the female is furnished with setæ. Otherwise they seem to agree perfectly, and have the head of the male with the frontal margin produced and upturned and with the two small tubercles on the posterior portion of the head between the eyes.

Family ARGATHONIDÆ.

Genus ARGATHONA Stebbing.

Argathona setosa, sp. nov.

Body oblong-ovate, 4.5 mm. wide and 20 mm. long. Color yellow, with a few scattered small black dots about the middle of the anterior half and on the entire posterior half of the body.

Head about twice as wide as long, 1 mm.: 2 mm., with the anterior margin a little produced in the middle and slightly upturned. The eyes are large, composite, oval in shape and situated in the postlateral angles. They are separated by a distance in front equal to the length of one eye. The first pair of antennæ have the peduncle composed of two articles, the first of which is about 1.5 times longer than the second; the flagellum, composed of thirteen articles, extends to the end of the fourth peduncular article of the second pair of antennæ or to the posterior margin of the head. The second antennæ have the first two articles short and subequal; the third is about 1.5 times longer than either of the first two; the fourth and fifth are subequal, and each is about three times longer than the third; the flagellum, composed of twenty articles, extends to the posterior margin of the third thoracic segment.

The segments of the thorax are subequal. Epimera are present on all the segments with the exception of the first. The first two are narrow, with posterior extremities rounded and not extending beyond the posterior margins of the segments. The third

has the posterior extremity slightly produced beyond the postlateral angle of the segment. The last three have the posterior extremities very acutely produced and extending considerably beyond the postlateral angles of the segment, the last reaching as far as the postlateral angles of the third abdominal segment.

The first abdominal segment is entirely concealed by the seventh thoracic segment. The three following segments are short and subequal. The fifth segment is a little longer in the middle than any of the preceding segments. The sixth or terminal segment is triangular, with apex rounded-truncate and furnished with hairs. The outer branch of the uropoda is narrow and produced to a blunt extremity. The inner branch is twice as wide as the outer branch, has the posterior margin straight in the middle, with the inner postlateral angle rounded and the outer postlateral angle produced to a blunt extremity. The last three segments of the thorax, the abdomen, and the uropoda are thickly covered with stiff setæ, or spines, those on the abdomen becoming denser and longer. The first three pairs of legs are prehensile, the last four pairs ambulatory. The prehensile legs have the merus armed with four spines.

Only one specimen, a female, was collected at station 5254, Linao Point, N. 44° E., 1 mi. (7° 02′ 00″ N., 125° 37′ 45″ E.), at a depth of 21 fathoms, in sand and coral. Type specimen, catalogue number 40911, United States National Museum.

I have placed this species in Stebbing's genus *Argathona*,[a] notwithstanding the slight difference in the form of the second maxilla, which, instead of ending in a curved,

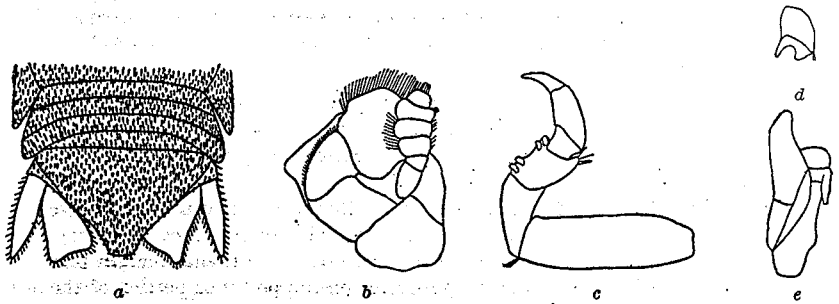


FIG. 8.—*Argathona setosa.* *a*, Abdomen, ×9⅓; *b*, maxilliped, ×27½; *c*, first leg, ×20½; *d*, first maxilla, ×38⅓; *e*, second maxilla, ×51⅓.

sharp unguis, seems to end bluntly. There is also an additional article to the maxillipeds, but this may have been overlooked in Stebbing's specimen.

This species is very similar to Stebbing's species, *Argathona normani*, but differs in lacking tubercles on the last two thoracic segments and on the fourth, fifth, and sixth segments of the abdomen. The shape of the inner branch of the uropods is also different. Stebbing's specimens were from the Gulf of Manaar and south of Galle.

Argathona sulcata, sp. nov.

Body oblong-ovate, 2.5 times longer than wide, 8 mm.: 20 mm. Surface smooth. Color light yellow.

Head wider than long, 2 mm.: 3.5 mm. Anterior margin rounded and produced in the middle in a very small, median point. Eyes twice as long as wide, 0.5 mm.: 1 mm., composite, and situated in the postlateral angles. The first pair of antennæ have the peduncle composed of two articles, the first somewhat dilated; the flagellum, which is composed of thirteen articles, extends to the posterior margin of the head. The second pair of antennæ have the first three articles short and about equal, and do not extend beyond the peduncle of the first antennæ; the fourth and fifth articles are long and slender, and extend to the end of the first thoracic segment; the flagellum, composed of thirty-seven articles, extends to the posterior margin of the sixth thoracic segment.

[a] Ceylon Pearl Oyster Fisheries Report, 1905, pt. IV, art. XXIII, p. 16–18, pl. III A.

The first and fourth segments of the thorax are subequal, each being 2 mm. long; the second, third, fifth, and sixth are subequal, each being 1.5 mm. in length; the seventh segment is slightly shorter than the sixth. All the segments except the first are provided with epimera, those of the second and third segments being rounded posteriorly and not extending beyond the postlateral angles of the segments; those of the last four segments become gradually more acute and more produced beyond the postlateral angles of the segments, the epimera of the seventh segment reaching the postlateral angles of the third abdominal segment.

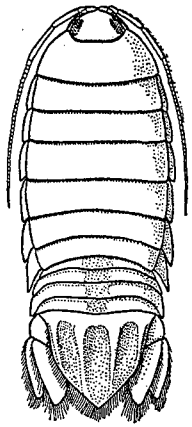


FIG. 9.—*Argathona sulcata.* ×2½.

The first segment of the abdomen is entirely concealed by the last thoracic segment; the three following segments are short and subequal; the fifth is a little longer than any of the preceding segments. The sixth or terminal segment is nearly as long as wide, 5 mm.: 5.5 mm., is triangular in shape, with apex acute. On the dorsal surface are four longitudinal carinate ridges, one on either side of the median line and one on either side along the lateral margin. Between these carinæ are three grooves or sulcate regions. The inner branches of the uropoda do not extend beyond the extremity of the abdomen; they have the outer posterior angle roundly produced. The outer branch is slightly shorter than the inner branch and is ovate. The margins of the uropods are coarsely crenulate; those of the terminal abdominal segment are minutely crenulate; all are furnished with hairs.

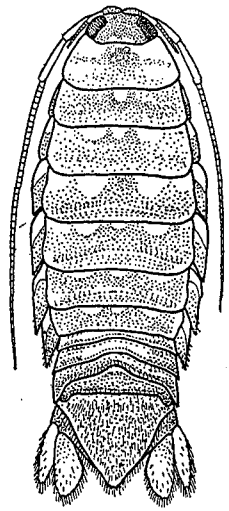


FIG. 10.—*Argathona similis.* ×3.

The first three pairs of legs are prehensile; the last four pairs ambulatory.

Only one specimen was collected, at station 5453, east coast of Luzon, Legaspi Light, at a depth of 146 fathoms. Type specimen, catalogue number 41010, United States National Museum.

Argathona similis, sp. nov.

This species is close to *Argathona setosa*, but differs in its larger size, being 7 mm.: 19 mm.; in its longer antennæ, those of the first pair extending to the end of the fourth peduncular article of the second pair and those of the second pair extending to the end of the third abdominal segment on one side and to the end of the sixth thoracic segment on the other; in having the terminal abdominal segment more acute and tipped with four setæ; in the differently shaped inner branch of the uropoda; and in the wider space between the eyes.

One specimen, a male, was collected at Limbé Strait, Celebes. Type, catalogue number 41015, United States National Museum.

Family ÆGIDÆ.

Genus ÆGA Leach.

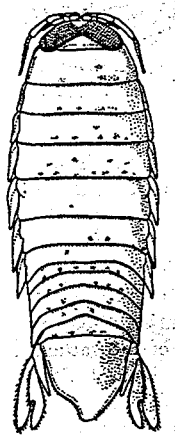
Æga excisa, sp. nov.

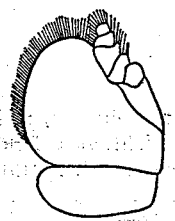
Body oblong-ovate, 13 mm. wide and 36 mm. long. Color, in alcohol, yellow. Surface punctate.

Head wider than long, 3 mm.: 7.5 mm., with the anterior margin produced in a small median point. Eyes large, oval, meeting in the center of the head and occupying most of the dorsal surface. There is a small V-shaped space in front of the eyes, and

a larger one posterior to them. The first pair of antennæ have the first two articles rather large and dilated, the second article being somewhat smaller than the first; the third article is about as long as the first two articles taken together. The flagellum is composed of eight articles and extends to the middle of the last article of the peduncle of the second antennæ. The second pair of antennæ have the first three articles of the peduncle short and subequal; the last two are subequal in length and each is about as long as the first three taken together. The peduncle extends to the posterior margin of the head. The flagellum is composed of thirteen articles on one side and nineteen on the other and extends to the posterior margin of the first thoracic segment.

First and fourth segments of thorax each 3 mm. long; second, third, and sixth segments each 2.5 mm. in length; fifth segment 3.5 mm.; seventh segment 1.5 mm. Epimera present on all the segments except the first. The first two are long and narrow, with rounded extremities, and do not extend beyond the posterior margin of the segments; the last four have the posterior extremities acutely produced and extending beyond the postlateral angles of the segments, the last three being more acute and longer than the preceding. All are furnished with a longitudinal carina, and there is also a carina on the lateral margins of the first thoracic segment.





Maxilliped. ×9⅝.

FIG. 11.—*Ægа excisa*. ×1½.

The first segment of the abdomen is partly covered by the seventh thoracic segment; the second, third, and fourth segments are subequal in length, each being 1.5 mm. long; the fifth segment is 2 mm. long in the middle portion; the terminal segment is triangulate, but the tip is broken, so that its exact shape is questionable. The branches of the uropoda are equal in length; the outer is long and narrow with the extremity narrowly rounded. The inner has a rather deep emargination on the exterior margin about two-thirds the length of the branch. The peduncle of the uropoda is produced in an acute process which extends to the emargination of the inner branch.

The first pair of prehensile legs have four spines on the merus, the second have six spines on the merus and one at the distal extremity of the ischium, the third pair have seven spines on the merus and two on the ischium at the distal extremity.

Only one specimen, a female, comes from station 5173, Jolo Light, N. 82° E., 6.75 mi. (6° 02′ 55″ N., 120° 53′ 00″ E.). Depth, 186 fathoms, in shells and coral. Catalogue number 40912, United States National Museum.

The shape of the abdomen and uropoda somewhat resemble *Pseudæga punctata* Thomson,[a] but the eyes and antennæ are totally different.

Ægа dubia, sp. nov.

Body of female oblong-ovate, more than three times longer than wide, 6 mm.: 19 mm. Color yellow, with numerous black and brown arborescent spots close together and covering the entire surface of the body except the posterior half of the terminal segment of the abdomen and the uropoda.

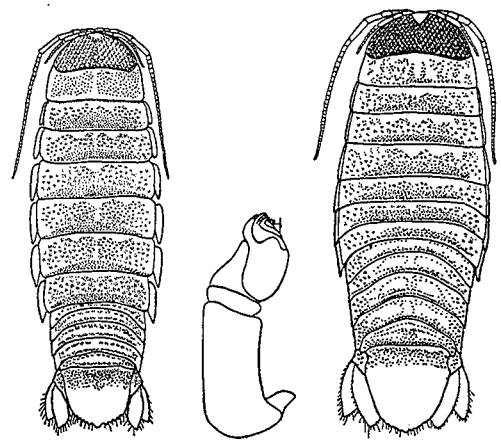
Head twice as wide as long, 2 mm.: 4 mm., with the anterior margin widely rounded. Eyes large, meeting in the middle of the head and covering the entire dorsal surface, with the exception of a small V-shaped place in front, and extending under on the ventral side as far as the mouth parts. The first pair of antennæ have the first two

[a] Trans. N. Zeal. Inst., vol. XVI, 1883, p. 234.

articles subequal and not dilated; the third is about as long as the first two taken together. The flagellum is composed of twelve articles and extends to the posterior margin of the head. The second antennæ have the first three articles short, the first and third about equal in length and the second shorter; the fourth is about 1.5 times longer than the third, and the fifth 1.5 times longer than the fourth. The flagellum is composed of about thirty articles and extends to the middle of the fourth thoracic segment.

The first three segments of the thorax and the seventh segment are subequal, each being 1.5 mm. long; the fourth, fifth, and sixth segments are equal in length, each being 2 mm. long. Epimera are present on all the segments of the thorax except the first. The first two are in the form of narrow plates with rounded extremities not extending beyond the posterior margins of the segments; the following four pairs are acutely produced posteriorly and extend beyond the postlateral angles, being increasingly longer and more acute.

The first segment of the abdomen is partly covered by the seventh thoracic segment. The following three segments are subequal and each is about 0.75 mm. long; the fifth segment is 1 mm. long; the sixth or terminal segment is 3 mm. long and 3.5 mm. wide at the base, with sides gradually converging to a rounded extremity which has five small dentations on either side of a triangular median one. The uropoda are similar in shape, with the posterior extremity obliquely truncate and the lateral and posterior margins dentate; the inner branch extends to the extremity of the abdomen; the outer branch is shorter and smaller than the inner branch.



a *b* *c*

FIG. 12.—*Ægа dubia*. *a*, Female, × 2⅔; *b*, maxilliped, × 27½; *c*, male, × 4.

The first pair of prehensile legs have one spine on the merus and one on the carpus; the two following pairs have three spines on the merus and two on the carpus; the following four pairs are ambulatory and covered with numerous spines.

The male is similar to the female, but differs in its smaller size, being only 14 mm. long and 5.5 mm. wide, and in the different length of the segments of the thorax, the first being 1.5 mm., the following four subequal and each 1 mm. long, and the sixth and seventh together equal to 1 mm.

Only two specimens, a male and a female, were collected at station 5218 (type locality), Amina Sola Island (E.), N. 10° W., 2 mi. (13° 11′ 15″ N., 123° 02′ 45″ E.), at a depth of 20 fathoms, in coarse sand, and station 5134, Balukbaluk Island (N.), S. 59° W., 6.25 mi. (6° 44′ 45″ N., 121° 48′ 00″ E.), at a depth of 25 fathoms, in fine sand. Type specimen, catalogue number 40913, United States National Museum.

The female of this species is very similar to the female of *Ægа ommatophylax* Stebbing[a] but the male is entirely different from the male of that species. The female of the present species is much larger than the female of *Ægа ommatophylax* and has a small V-shaped space in front of the eyes on the dorsal surface not shown in Stebbing's figure.

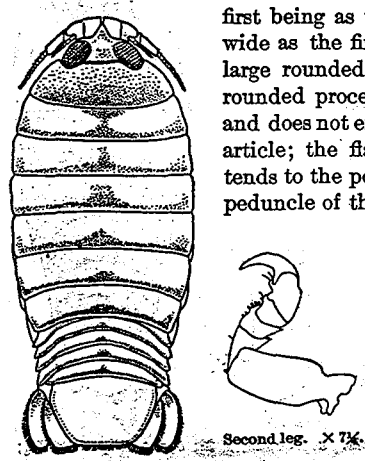
[a] Ceylon Pearl Oyster Fisheries Report, 1905, pt. IV, p. 21–23, pl. IV, V (A).

This species is very close to *Rocinela vigilans* Haswell,[a] but differs in having a small V-shaped space on the dorsal surface of the head in front of the eyes, and in having the posterior extremity of the abdominal segment and the uropods denticulate, which are described by Haswell as "smooth, entire." *Rocinela vigilans* may have been referred to the wrong genus, but at present it is impossible to do otherwise than accept the author's account and figures of this form. It is also close to *Æga cyclops* Haswell, which is not figured and is briefly described.[b]

Æga truncata, sp. nov.

Body ovate, a little more than twice as long as wide, 15 mm.: 34 mm. Surface smooth. Color yellow, marked with small brown dots.

Head wider than long, 2.5 mm.: 7 mm., with the anterior margin produced in a median triangular process very acute and long, the length of the head, including the process, being 3.5 mm. The eyes are large, oval, composite, placed in an obliquely transverse position and occupying most of the dorsal surface of the head, being 1.5 mm. apart. Each is 3 mm. in length and 1.5 mm. wide. The first pair of antennæ have the first two articles greatly dilated and flattened, the first being as wide as long (1.5 mm.); the second article is as wide as the first and has the anterior angle produced in a large rounded process, the posterior angle in a very small rounded process; the third article is short and very narrow and does not extend beyond the anterior process of the second article; the flagellum is composed of eleven articles and extends to the posterior margin of the head or to the end of the peduncle of the second pair of antennæ. The second pair of antennæ have the first and fourth articles of the peduncle short and subequal; the second and third together are equal in length to the first; the fifth is twice as long as the fourth; all are rather dilated and flattened. The flagellum is composed of sixteen articles and extends to the posterior margin of the first thoracic segment. The frontal lamina is broader anteriorly than posteriorly; the sides are straight and slightly converging; the anterior margin is almost straight, but on close observation is seen to be produced in a small median point.



Second leg. × 7½.

FIG. 13.—*Æga truncata*. × 1½.

The first segment of the thorax is the longest and is 4 mm. in length; the five following segments are subequal and each is 3 mm. long; the seventh is the shortest, being 2.5 mm. long. The first segment has no epimera, but there is a distinct carina on the lateral margin on either side. The following six segments are provided with wide epimera, on each of which there is a double oblique carina. All the epimera are rounded posteriorly and none are very much produced.

The first segment of the abdomen is concealed in the middle of the dorsal surface but is visible at the sides; the second and third segments are subequal in length and each is 1 mm. long; the fourth segment is about 1.25 mm. in length; the fifth is 1.5 mm. long; the sixth or terminal segment is 9 mm. wide at the base and is 6.5 mm. long. The sides curve slightly and converge to a truncate extremity, the postlateral angles being rounded. The branches of the uropoda are subequal in length and reach the extremity of the terminal abdominal segment; the outer branch is slightly narrower than the inner branch and has the posterior extremity rounded; the inner branch is posteriorly truncate. The margins of the uropods and the terminal abdominal segment are smooth and furnished with hairs but no spines.

[a] Proc. Linn. Soc., New South Wales, vol. v, 1880, p. 472.
[b] Ibid., vol. vi, 1881, p. 192.

The first three pairs of legs are prehensile, and have the propodus unarmed, the merus armed with one spine, the carpus with seven. The last four pairs are ambulatory and furnished with a few spines.

Five specimens were collected, at station 5501–3, North Mindanao and vicinity, Opol (Mindanao) at a depth of 214–226 fathoms, and station 5517, North Mindanao and vicinity, Point Tagolo Light (Mindanao) at a depth of 169 fathoms. They were found in siliceous sponges. Type specimen, catalogue number 40934, United States National Museum.

Æga approximata, sp. nov.

Very close to *Æga synophthalma* Richardson,[a] but differs in having the first antennæ with a flagellum composed of fifteen articles, extending to the posterior margin of the first thoracic segment; in having the second antennæ with a flagellum composed of nineteen articles extending to the posterior margin of the third thoracic segment; in having the outer postlateral angles of all the epimera acute; in having the terminal abdominal segment more rounded and less triangular, with the margins crenulate and a very small V-shaped excavation in the center, which in *A. synophthalma* is produced in a small point; and in having a longer line of contact of the eyes, making the space in front of the eyes and behind the eyes more shallow.

Only one specimen was found, at station 5348, Palawan Passage, Point Tabonan, at a depth of 375 fathoms. Type, catalogue number 40940, United States National Museum.

Æga spongiophila Semper.

Æga spongiophila Semper, Arch. Naturg., XXXIII, 1867, p. 84; Ann. Mag. Nat. Hist. (4), II, 1868, p. 29. Miers, Journ. Linn. Soc., XIII, 1880, p. 509, pl. XXIV, fig. 3–5. Schiœdte and Meinert, Nat, Tidsskr. (3), XII, 1879–80, p. 378–380, pl. IX, fig. 11–16.

Locality: Station 5371, near Marinduque, Tayabas Light, at a depth of 83 fathoms; one specimen.

This species has been previously recorded from the Philippines by the authors mentioned above. It lives in the sponge, *Euplectella aspergillum*.

Æga antennata, sp. nov.

Body oblong-ovate, 43 mm. long and 16 mm. wide. Surface punctate. Color light-brown.

Head more than twice as wide as long, 3 mm.: 8 mm., with the front produced in a long acute median point extending 1.5 mm. beyond the anterior margin. Eyes large, oval, composite, twice as long as wide, 2 mm.: 4 mm., and separated by a distance of 2 mm. at their anterior extremities. The first pair of antennæ have the basal article of the peduncle twice as wide as long, 1 mm.: 2 mm., extending 0.5 mm. beyond the median point and having the inner anterior angle produced in an acute process directed inward; the second article is also short, but narrower than the first, and has the outer anterior part produced in a rounded process; the third article is slender and elongate; the flagellum, composed of fourteen articles, extends to the posterior margin of the head or to the end of the peduncle of the second antennæ. The second antennæ have the first three articles of the peduncle short, the first and third subequal, the second about half as long as either of the other two; the fourth is twice as long as the third; the fifth is 1.5 times the length of the fourth; the flagellum, composed of fourteen articles, extends two-thirds the length of the first thoracic segment.

The first four segments of the thorax are long and nearly subequal, the first being 4.5 mm., the second and fourth 4 mm., and the third 3.5 mm. The last three segments gradually decrease in length, the fifth being 3 mm., the sixth 2.5 mm., and the seventh 2 mm. Epimera are present on all the segments except the first, those of the second and third segments not reaching beyond the postlateral angles of the segments and

[a] Proc. U. S. Nat. Mus., vol. 37, 1909, p. 81.

having the outer postlateral angle produced in an acute point, the posterior margin below rounded the epimera of the last four segments become gradually more acute and more produced beyond the postlateral angles of the segments. All are furnished with an obliquely longitudinal carina.

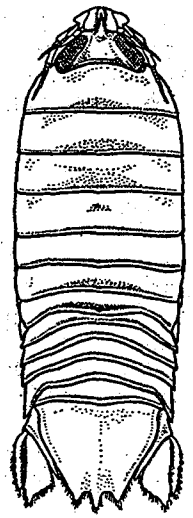


FIG. 14.—*Ægа antennata.* ×1½.

The first segment of the abdomen is partly covered by the last thoracic segment; the three following segments are subequal and each is 2 mm. long; the fifth segment is a little longer than any of the preceding ones, being 2.5 mm. in length. The sixth or terminal segment is a little wider than long, 10 mm.: 12 mm. (including the median terminal tooth). The sides gradually converge to the posterior extremity, which is 5 mm. wide. The posterior margin is produced in three long acute teeth, the median tooth being 2 mm. long, the lateral teeth each 1 mm. The outer branch of the uropoda is shorter and narrower than the inner branch and is posteriorly acute; the inner branch has the outer postlateral angle acutely produced, the inner rounded. The inner branch does not quite reach the extremity of the median tooth of the terminal abdominal segment.

The first three pairs of legs are prehensile, the last four pairs ambulatory.

A single specimen was obtained, at station 5626, between Gillolo and Kayoa Island, at a depth of 265 fathoms. Type, catalogue number 41014, United States National Museum.

Ægа acuticauda, sp. nov.

Body oblong-ovate, almost three times as long as wide, 11 mm.: 31 mm. Surface punctate. Color yellow.

Head more than twice as wide as long, 2.5 mm.: 5.5 mm. Anterior margin produced in a small acute median point, on either side of which is a rather deep excavation for the reception of the basal article of the first antennæ. The eyes are large, composite, oval, 1.5 mm. wide and 2.5 mm. long and separated at the anterior extremity by a distance of 1.5 mm. The first pair of antennæ have the first two articles short, the first about 1.5 times longer than the second and also wider; the third article is long and slender, a little longer than the first two taken together, and extends to the end of the fourth article of the peduncle of the second antennæ. The flagellum is composed of eleven articles and extends a little beyond the peduncle of the second antennæ and a little beyond the postlateral angle of the head. The second antennæ with a flagellum of thirteen articles, extend to the posterior margin of the first thoracic segment.

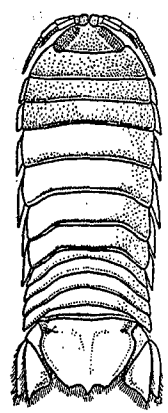


FIG. 15.—*Ægа acuticauda.* ×1½.

The first, second, and seventh segments of the thorax are subequal, each being 2 mm. long; the second is 1.5 mm. in length; the fourth, fifth, and sixth are each 3 mm. long. Epimera are present on all the segments except the first, those of the second and third segments not extending beyond the posterior margins of the segments, while those of the last four segments are acutely produced beyond the postlateral angles of the segments, each having two obliquely longitudinal carinæ.

The first five segments of the abdomen are short and subequal, each being about 1.5 mm. long, the first being partly covered by the last thoracic segment. The sixth or terminal segment is 6.5 mm. long : 8 mm. wide at the base, and has three teeth on the posterior margin, the median one being acute, the two lateral ones obtuse, and shorter than the median tooth. The uropoda are about as long as the terminal abdominal segment. The inner branch is wide and has the outer postlateral angle produced in an acute process, the inner postlateral angle widely rounded. The outer branch is narrow, and rather acutely produced posteriorly. The branches of the uropoda and the margins of the terminal segment of the abdomen are fringed with hairs.

The first three pairs of legs are prehensile, the last four pairs ambulatory.

Only one specimen was obtained, at station 5397, between Samar and Masbate, Bugtun Island, at a depth of 134 fathoms. Type, catalogue number 41011, United States National Museum

This species is similar to *Ægа ecarinata* Richardson,[a] from the Atlantic coast of North America.

Ægа magnoculis Richardson.

Ægа magnoculis Richardson, Proc. U. S. Nat. Mus., vol. 37, 1909, p. 80–81.

Locality: Stations 5536, Pitt Passage, Gomomo Island, at a depth of 1,262 fathoms, and 5671, Macassar Strait, Chenoki Point, at a depth of 960 fathoms; two specimens.

The specimen from station 5671 has the first two epimera more acutely produced at the outer postlateral angles than any of the specimens heretofore obtained.

Genus ROCINELA Leach.

Rocinela orientalis Schiœdte and Meinert.

Rocinela orientalis Schiœdte and Meinert, Nat. Tidsskrift (3), XII, 1879–80, p. 395–396, pl. XIII, fig. 1–2. Stebbing, Ceylon Pearl Oyster Fisheries Report, 1905, pt. IV, art. XXIII, p. 24–25.

Locality: One specimen from station 5158, Tinakta Island (N.), N. 89° W., 1.90 mi. (5° 12′ 00″ N., 119° 54′ 30″ E.), at a depth of 12 fathoms, in coarse sand and shells, and another from station 5596.

Semper's specimens were from the Philippine Islands. Schiœdte and Meinert's were from Lapenig (1 specimen) Pandanin (1 specimen), and Calcutta (1 specimen). Stebbing's were from off Negombo, off Uluwitti, off Chilaw Paar, and southeast of Modragan Paar.

Genus SYSCENUS Harger.

Syscenus infelix Harger.

Syscenus infelix Harger, Report U. S. Comm. of Fish and Fisheries for 1878, pt. 6, 1880, p. 387–390; Bull. Mus. Comp. Zool., Harvard College, vol. XI, 1883, no. 4, p. 100–102, pl. 3, fig. 5–5a; pl. 4, fig. 3–3h. Richardson, Proc. U. S. Nat. Mus., vol. 37, 1909, p. 85.

Locality: Stations 5621 and 5623, between Gillolo and Makyan Island, at a depth of 272–298 fathoms; two specimens.

This species has been previously recorded from Japan. The terminal abdominal segment is not quite as acute as in the specimens from the Atlantic coast of North America.

Syscenus intermedius, sp. nov.

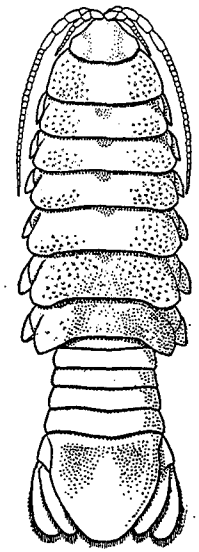


FIG. 16.—*Syscenus intermedius.* ×2⅔

This species in some respects is similar to *Syscenus infelix* Harger, and in other respects is similar to *Syscenus latus* Richardson. It is similar to *S. infelix* in the shape of the head, the general shape of the body, and the segments of the abdomen, but differs in having longer first and second antennæ and in having the terminal segment of the body rounded at the apex, approaching *S. latus* in these characters. The first antennæ, with a flagellum of ten articles, extend to the extremity of the peduncle of the second antennæ. The second antennæ, with a flagellum of twenty-five articles, extend to the posterior margin of the fourth thoracic segment.

Only one specimen was collected, at station 5301. Type, catalogue number 41009, United States National Museum.

[a] Proc. Biol. Soc. Washington, vol. XII, 1898, p. 39–40.

Family CYMOTHOIDÆ.

Genus ANILOCRA Leach.

Anilocra dimidiata Bleeker.

Anilocra dimidiata Bleeker, Crust. Ind. Archip., II, 1857, p. 31, fig. 10-10a. Schiœdte and Meinert, Nat. Tidsskr. (3), XIII, 1881–1883, p. 111–113, pl. VIII, fig. 5–6. Stebbing, Willey's Zool. Results, 1902, pt. V, p. 639–640; Ceylon Pearl Oyster Fisheries Report, 1905, pt. IV, p. 26.

Locality: Busin Harbor, Burias Island; Maribojoc Bay, Bohol Island; Pasacao, Ragay Gulf. Schiœdte and Meinert's specimens were from the Indian Sea, near Batavia; Stebbing's were from Karuana, British New Guinea, and Palk Bay.

A label accompanying the specimens reads: "Color, dull slaty blue. Attached to nuchal region of *Scolopsis*. H. M. S."

The specimens, three females and three males, have ten articles to the second antennæ, as described by Doctor Stebbing. The first antennæ are geniculate and the dactyli of the first four pairs of legs are swollen in the middle in a nodule. In the males the uropoda extend a little beyond the abdomen, the outer branch being a little longer than the inner branch. The terminal segment of the abdomen also appears a little wider than figured by Schiœdte and Meinert.

A number of young specimens were collected at the same locality as that of the adults, and also at San Miguel Harbor, Ticao Island, by electric light, and Tomindao Island anchorage.

Anilocra cavicauda, sp. nov.

Body ovate-elongate, about three and a half times longer than wide, 10 mm.: 36 mm. Color, uniformly dark yellow. Surface smooth.

Head wider than long, 3 mm.: 5 mm., subtriangular, with the front produced in a rounded truncate process. Eyes large, oval, composite, and placed in the postlateral angles of the head. First pair of antennæ composed of eight articles, the first three of which form the peduncle. The first antennæ are geniculate at the articulation of the third and fourth articles, and the third article is dilated with the distal angles projecting beyond the insertion of the fourth article. The first antennæ extend to the posterior margin of the head. The second antennæ are composed of ten articles and extend to the posterior margin of the first thoracic segment.

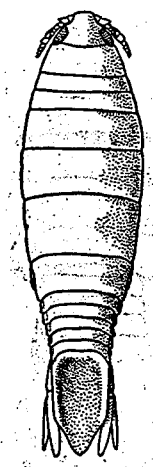


FIG. 17.—*Anilocra cavicauda.* × 1½.

The first thoracic segment is 2.5 mm. long; the second is 1.5 mm. long; the third is 2 mm. in length; the fourth is 3 mm. long; the fifth 4 mm.; the sixth 5.5 mm.; and the seventh 3.5 mm. Epimera are present on all the segments with the exception of the first; they extend to the posterior margin in the second and third segments; in the fourth and fifth segments they extend almost to the middle of the lateral margin; in the sixth segment they extend just to the middle of the lateral margin; in the seventh segment they extend a little beyond the middle of the lateral margin.

The first five segments of the abdomen are subequal, each being 1 mm. long. They converge slightly from the first to the fifth and have the lateral margins upcurved. The fifth segment has the posterior margin produced on either side near the lateral margin in a long acute process about 1 mm. in length. The sixth or terminal segment is almost twice as long as wide, 5 mm.: 9 mm. The sides converge slightly to within 3 mm. of the extremity, where the width is 4 mm.; from that point they converge rapidly to a pointed extremity. The sides, to within 3 mm. of the extremity, curve upward, so that the dorsal surface is extremely concave. The inner branches of the uropoda extend to the tip of the abdomen. The peduncle is 3 mm. long and the inner branch 6 mm. The outer branch is 5 mm. long and is also narrower than the inner branch. Both branches are acute posteriorly, the outer branch being slightly more acute than the inner branch.

The first four pairs of legs are short and have the dactylus inflated in the center. The last three pairs gradually increase in length; there is no carina on the bases of any of the legs.

This species is very close to *Anilocra longicauda* Schiœdte and Meinert [a] from Singapore but differs in the longer terminal abdominal segment, which is also differently shaped and concave; in the longer uropoda, the outer branch being shorter, and both being narrower and more acute.

Only one specimen, a female, was taken at Paudanon Island. Type, catalogue number 40936, United States National Museum.

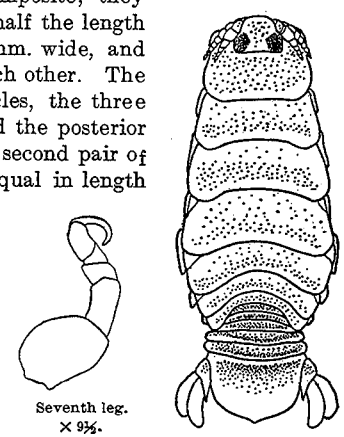
Genus LOBOTHORAX Bleeker 1857.

Synonym, *Saophra* Schiœdte and Meinert.

Lobothorax lævis, sp. nov.

Body ovate, a little more than twice as long as wide, 8.5 mm.:20 mm. The thorax gradually widens from the first segment, which is 5.5 mm., to the fifth segment, which is 8.5 mm. wide. The surface of the body is perfectly smooth. Color yellow, marked with numerous small, black, irregularly shaped dots.

The head is wider posteriorly than anteriorly, being 2.5 mm. wide posteriorly and gradually narrowing to a truncate anterior, which is 1.5 mm. wide. In length the head is 2 mm. The eyes are large, distinct, composite; they are situated in the postlateral angles and extend half the length of the lateral margin, being 1 mm. long and 1 mm. wide, and separated by a distance of only 0.5 mm. from each other. The first pair of antennæ are composed of eight articles, the three first being large and dilated; they extend beyond the posterior margin of the head by the last three articles. The second pair of antennæ are composed of nine articles and are equal in length to the first pair of antennæ.



Seventh leg. × 9½.

FIG. 18.—*Lobothorax lævis.* × 2⅜.

The first segment of the thorax has the anterolateral angles produced in a horn-like process on either side, surrounding the head, and extending along its lateral margins to a point halfway between the eyes and the frontal margin. The first four segments are the longest, each being 3 mm. in length, with the exception of the second, which is 2.5 mm. The last three are conspicuously smaller and gradually decrease in length, the fifth being 1.5 mm. long, the sixth 1 mm., and the seventh 0.5 mm. in length. The fifth segment is the widest and the thorax gradually becomes narrower to the seventh segment, which is 6.5 mm. wide. The epimera are narrow plates which do not reach the posterior margins of the segments.

The abdomen is deeply immersed in the thorax. The first five segments together are equal to 3 mm., the last two being slightly longer than the first three. The first two have the lateral parts covered by the seventh thoracic segment. The sixth or terminal segment is 3.5 mm. long and 5.5 mm. wide. It is rounded posteriorly, with

[a] Nat. Tidsskr. (3), XIII, 1881–1883, p. 113–116, pl. VIII, fig. 7–8.

the apex produced in a point. The outer branch of the uropoda is slightly shorter than the inner branch; both branches are similar in shape, oar-like, with the posterior margins rounded.

All the legs are prehensile, with a high carina on the basis of the last four pairs, which gradually increases in size, being very high on the seventh pair.

Only one specimen, an adult female, was taken, at station 5402, Capitancillo Island Light, S. 37° W., 16.8 mi. (11° 11′ 45″ N., 124° 15′ 45″ E.) at a depth of 188 fathoms, in green mud. Type, catalogue number 40935, United States National Museum.

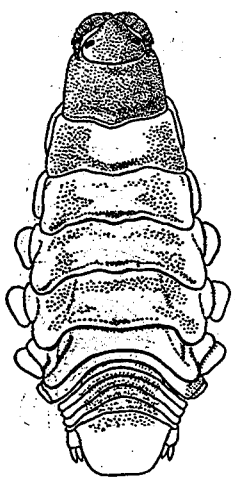
Only two other species of this genus are known, *L. typus* Bleeker and *L. auritus* Schiœdte and Meinert. This species is very close to *Lobothorax auritus* Schiœdte and Meinert[a] from the Philippine Islands, but differs in having the front of the head less triangular and more truncate, in having larger eyes, in having the dorsal surface of the body smooth and not impressed or caniculate, in the longer outer branch of the uropoda and the difference in shape of both branches, and in the smaller size of the species.

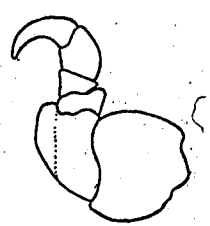
Genus MEINERTIA Stebbing.

Meinertia guttata, sp. nov.

Body oblong-ovate, 18 mm. long, and 8.25 mm. wide at its greatest breadth. Color yellow and thickly covered with small black dots.

Head triangular in shape, 2 mm. long and 2.5 mm. wide at the base. The eyes are small, round, placed at the sides of the head, about the length of one eye from the posterior margin. The first pair of antennæ are dilated, flattened, composed of seven articles and extend to the posterior margin of the eye. The first three articles are large and subequal, the four following are short. The second pair of antennæ are also dilated and flattened and composed of seven articles. They extend to the posterior margin of the head.





Seventh leg. ×15½

FIG. 19.—*Meinertia guttata*. ×3⅜

The anterolateral angles of the first thoracic segment extend as far as the posterior margin of the eye. The first segment is longer than any of those following, being 2.5 mm. in length. The following four segments are subequal and each is 2 mm. long; the sixth segment is 1.5 mm.; the seventh 0.5 mm. in length. The thorax increases in breadth from the first segment. The first segment is 4 mm. wide; the second and third are 5.5 mm.; the fourth is 6.5 mm.; the fifth is 8.25 mm.; the sixth 8 mm.; the seventh 6 mm. Epimera are present on all the segments with the exception of the first; the first two are rather long and narrow; the four following are shorter, with the anterior portion broader than the posterior portion, those of the fifth and sixth segments being twice as broad anteriorly as posteriorly when viewed laterally.

The abdomen is abruptly narrower than the thorax, the first segment being only 3 mm. wide and deeply immersed in the last segment of the thorax. The second segment is wider, being 4.5 mm. in width, and the three following are nearly as wide. The first five segments are subequal in length and are each about as long as the seventh thoracic segment, 0.5 mm. The sixth or terminal segment is 4 mm. wide at the base and tapers a little to the extremity, which is 3 mm. wide. This segment is 2.5 mm.

[a] *Saophra aurita* Schiœdte and Meinert, Nat. Tidsskr. (3), XIII, 1881–1883, p. 284–286, pl. XI, fig. 3–4.

long. The posterior extremity is slightly excavate in the middle. The uropoda do not reach the extremity of the last abdominal segment; both branches are narrow and short, the inner slightly shorter than the outer.

The legs are all prehensile; there is a carina on the basis of the last four pairs which gradually increases in height; the ischium of these legs is also produced on the inner margin in a wide process.

About 7 specimens of this species, all females, were collected at Jolo, ship's side, by electric light.

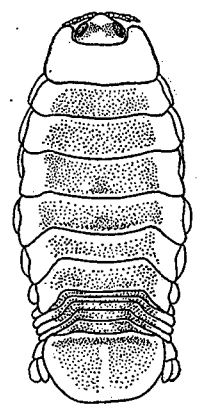
This species differs from *Meinertia trigonocephala* (Leach) [a] and *Meinertia oxyrrhynchæna* (Koelbel) [b] in the shape of the terminal abdominal segment, the length of the uropoda, the shape of the epimera, and the structure of the legs. It is also a much smaller species than *M. trigonocephala*. This species is similar to *Meinertia huttoni* (Filhol). [c]

Type specimen, catalogue number 40914, United States National Museum.

Meinertia parva, sp. nov.

Body ovate-elongate, a little more than twice as long as wide, 9 mm.: 19 mm. Surface smooth. Color yellow, marked with numerous brown dots, close together.

Head, wider than long, 2 mm.: 3 mm., subtriangular in shape, with the front obtuse. Eyes large, composite, distinct, and placed in the postlateral angles; they are 1 mm. in length, and are separated at their anterior extremities by a distance of 2 mm. The first antennæ are short and are not dilated; they are composed of eight articles and extend to the end of the sixth article of the second antennæ. The second antennæ are composed of eleven articles and reach the anterolateral angles of the first thoracic segment.



Seventh leg. ×7¼.

FIG. 20.—*Meinertia parva*. ×2⅜.

The first five segments of the thorax are subequal, each being 2 mm. long; the sixth segment is 1.25 mm. in length; the seventh is 1.5 mm. The anterolateral angles of the first segment are produced forward in rounded processes which extend half the length of the head (1 mm.). The epimera of the second and third segments are narrow plates which extend to the postlateral angles of these segments; the epimera of the four following segments extend about two-thirds of the lateral margins and do not reach the posterior angles of the segments.

The abdomen is deeply immersed in the thorax. The first two segments are the shortest, and are subequal; the three following are nearly subequal, and each is almost twice as long as either of the first two. The first segment, instead of being narrow as is usual in this genus, has the lateral parts extending as far as those of the following three segments and is fully as wide. The fifth segment, however, has the lateral parts concealed by the preceding segment, which is also unusual in this genus. The sixth or terminal segment is 4 mm. long : 6.5 mm. wide and has the posterior margin widely rounded. The branches of the uropoda are short, oval, the inner one slightly longer and narrower than the outer and both shorter than the terminal abdominal segment, not reaching the extremity of that segment by 1 mm.

The legs are all prehensile, and there is a carina, which is not very high, on the basis of the last four pairs.

Only one specimen, a female, was taken, at Opol, Mindanao. Type, catalogue number 40938, United States National Museum.

[a] See Schiœdte and Meinert, Nat. Tidssks. (3), XIII, 1881–1883, p. 358–364, pl. XVI, fig. 1–2.

[b] Idem., p. 368–371, pl. XVI, fig. 10–13.

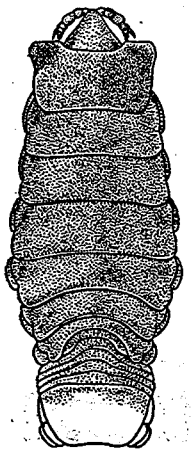
[c] *Ceratothoa huttoni* Filhol, Mission de l' Ile Campbell, t. III, pt. 2, 1885, p. 446–448, pl. 55, fig. 7, pl. 49, fig. 2.

Meinertia angulata, sp. nov.

Body oblong-ovate, 20.5 mm. long and 13.5 mm. wide. Surface smooth. Color, bluish, marked with small yellow spots on the sides of the segments.

Head triangular with the apex rounded, 2 mm. long: 2.5 mm. wide at the base. Eyes almost vanishing; first pair of antennæ, composed of seven articles, extend to the posterior margin of the head. All the articles are flattened and somewhat dilated. The second pair of antennæ, composed of eight articles, are not longer than the first pair; the last two articles are minute.

The first segment of the thorax is produced on either side of the head in a rectangular process. These processes extend but a short distance and give the segment a rectangular appearance; they are concave, with the lateral margins upcurved. This segment is a little wider anteriorly than posteriorly, being 6 mm. wide in the region of the anterolateral processes and 5.5 mm. at its posterior extremity. The first segment is 3 mm. long, the second and fourth are each 2.5 mm. in length, the third is 2.75 mm., the fifth is 2 mm., the sixth is 1.5 mm., and the seventh 0.75 mm. long. All except the first are furnished with epimera which do not reach the posterior extremities of the segments, but in the first two extend beyond the anterolateral angles.



Seventh leg. ×7½.

FIG. 21.—*Meinertia angulata*. ×2¾.

The first five segments of the abdomen are short, the first four being about 0.5 mm. each in length, the fifth being almost 1 mm. The first segment is narrow and is deeply immersed in the thorax. The sixth or terminal segment is wider than long, 3 mm.: 5 mm., and has the extremity bilobate, with a slight emargination in the middle. The uropoda are not longer than the extremity of the terminal abdominal segment. Both branches are ovate and about equal in size and length.

The legs are all prehensile, with a carina on the basis of the last four pairs, which is extremely high on the last two.

Only one specimen was obtained, at Port San Pio, in a small stream near the mouth. Type, catalogue number 41008, United States National Museum.

Genus RENOCILA Miers.

Renocila ovata Miers.

Renocila ovata Miers, Ann. Mag. Nat. Hist. (5), v, 1880, p. 464–465, pl. xv, fig. 11–14. Schiœdte and Meinert, Nat. Tidsskr. (3), xiv, 1883–84, p. 416–417.

Locality: Bubuan Island, southwest side. Parasite on tail of snapper.

One specimen, a male, agrees in every respect with Miers's description of this species, except that the body is narrower and the posterolateral angles of the sixth and seventh thoracic segments are more diverging. Miers's specimens were both females. Schiœdte and Meinerts's specimen from Amboina was also a female.

Genus CYMOTHOA Fabricius.

Cymothoa stromatei Bleeker.

Cymothoa stromatei Bleeker, Acta Soc. Scient. Indo-Neerland., II, 1857, p. 35–36, fig. 13.
Cymothoa eremita [Bruennich] Schiœdte and Meinert, Nat. Tidsskr. (3), xiv, 1883–84, p. 259–266, pl. vii, fig. 3–13.
Cymothoa stromatei Lanchester, Proc. Zool. Soc. London, 1902, vol. 2, pt. 2, p. 377.

Localities: Three females and four males were collected at Bubuan Island, Jolo. One male was collected at Nogas Point, Panay.

A note accompanying seven of the specimens reads: "Parasitic in mouths (gill chamber?) of a barracuda-like fish. The male from Nogas Point was taken from the side of a fish (*Iniistius*).

This species has been collected before in the Sea of Batavia, in the Indian and Pacific oceans, at Madras, Pulo Penang, Singapore, Java, Bangka, Mabatua, Menado, Bohol, "Marineles, Ubay," Legaspi, the Society Islands, and Japan. It has been found on the tongue of *Apolectus niger*, and on *Psettodis erumei*.

Genus LIVONECA Leach.

Livoneca propinqua Richardson.

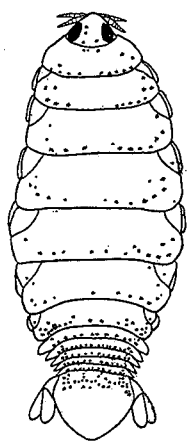
Livoneca propinqua Richardson, Proc. U. S. Nat. Mus., xxvii, 1904, p. 37–38; Proc. U. S. Nat. Mus., xxxvii, 1909, p. 87.

Locality: Station 5111, Sombrero Island, S. 41° E., 4.50 mi. (13° 45′ 15″ N., 120° 46′ 30″ E.), at a depth of 236 fathoms in green mud. Parasite from macrurid. Station 5409, Capitancillo Light, N. 19° W., 22 mi. (10° 38′ N., 124° 13′ 08″ E.), at a depth of 189 fathoms in green mud. One specimen from station 5135 I have referred doubtfully to this species.

Livoneca triangulata, sp. nov.

Body of adult female oblong-ovate, a little more than twice as long as wide, 5 mm.: 11 mm. Color, in alcohol, yellow, with a few scattered black, star-like markings. The terminal, abdominal segment is without markings, except at the base.

The head is a little wider than long, being 1 mm.: 1.25 mm. It is widely triangular in front. The eyes are large, oval, composite. The first pair of antennæ are composed of eight articles and extend two articles beyond the anterolateral angles of the first thoracic segment. The second pair of antennæ are also composed of eight articles and extend two articles beyond the first pair of antennæ.



Seventh leg. ×20½.

FIG. 22.—*Livoneca triangulata*. × 5.

The first two segments of the thorax are subequal and each is about 1 mm. long. The following four segments are subequal and each is nearly 1.5 mm. in length. The seventh segment is the shortest and is only about 0.75 mm. Epimera are present on all the segments except the first and are in the form of narrow plates with extremities rounded, reaching two-thirds the length of the lateral margin of the second segment and half the length of the lateral margin in all the following segments.

The first five segments of the abdomen are short and subequal, with the lateral parts produced in acute processes. The first segment is the widest and extends a little beyond the sides of the last thoracic segment. The following four segments gradually become a little narrower. All five segments together only measure a little over 1 mm. in length. The sixth or terminal segment is a little wider than long, 2 mm.: 2.5 mm., and is posteriorly triangular. The branches of the uropoda are similar, subequal, elongate-oval in shape, and do not reach the extremity of the abdomen.

All seven pairs of legs are prehensile and have the basis furnished with a moderately high carina.

Three adult females and one young female were collected at Tonimdao Island anchorage, by electric light. Type specimen, catalogue number 40915, United States National Museum.

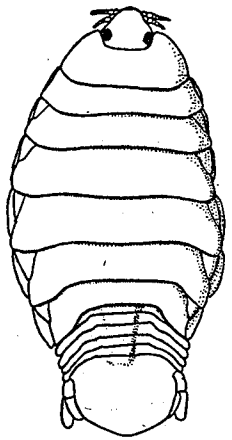
This species is similar to *Livoneca indica* H. Milne Edwards,[a] but differs in the size of the species, the present one being much smaller than *L. indica;* in the shape of the terminal abdominal segment and in the size of the first two epimera.

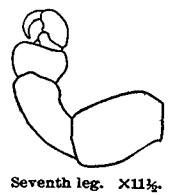
Livoneca philippinensis, sp. nov.

Body oblong-ovate, twisted a little to the right, nearly twice as long as wide, 8.5 mm.: 16 mm. Color, in alcohol, yellow.

Head wider than long, 1.5 mm.: 2 mm., with the anterior margin widely rounded. Eyes small, round, and situated in the postlateral angles. The first pair of antennæ are composed of six articles and extend two articles beyond the anterolateral angles of the first thoracic segment. The second pair of antennæ are composed of seven articles and are not longer than the first antennæ.

The first, third, and sixth segments of the thorax are subequal in length and each is 1.5 mm. long; the second and seventh segments are subequal and each is 1 mm. long, the second segment being just a little more than 1 mm.; the fourth and fifth segments are each 2 mm. in length. Epimera are present on all the segments except the first, in the form of long, narrow plates, which reach the postlateral angles of the segments in the second, third, and seventh segments. Those of the fourth segment extend a little more than one-half of the lateral margin; those of the fifth segment two-thirds of the lateral margin, and those of the sixth segment three-fourths of the lateral margin.





Seventh leg. ×11½.

FIG. 23.—*Livoneca philippinensis.* ×3⅜.

The first five segments of the abdomen are short and subequal, and all together are but little over 2 mm. in length. The sixth or terminal segment is a little wider than long, being 3.5 mm.: 4.5 mm., and has the posterior margin triangularly rounded. The branches of the uropoda are short, similar, subequal, and do not reach the tip of the terminal segment; they are oblong-oval in shape. The seven pairs of legs are prehensile. The basis of the last four pairs is furnished with a low carina.

Only one specimen, a female, was collected, at station 5143, Jolo Light, S. 50° W., 3.40 mi. (6° 05′ 50″ N., 121° 02′ 15″ E.), at a depth of 19 fathoms in coral and sand. Type, catalogue number 40916, United States National Museum.

This species is similar to *L. lunelii* Haller,[b] but differs in the shape of the terminal abdominal segment, the longer uropoda, and the smaller size. It is also similar to *L. sinuata* Koelbel,[c] from the Mediterranean.

Livoneca frontalis, sp. nov.

Body ovate, twisted a little to one side, a little more than twice as long as wide, 9.5 mm.: 20 mm. Surface smooth. Color yellow, with a few black dots on the head and on the lateral margins of the thorax.

Head triangular in shape, 2 mm. long: 2.5 mm. wide at the base, with the front produced in an obtuse extremity. The eyes are small, distinct, black, composite, and placed in the postlateral angles. They are about 1 mm. long by 0.5 mm. wide and are separated by a distance of 1.5 mm. The first antennæ are composed of eight

[a] Hist. Nat. Crust., III, 1840, p. 262. Schiœdte and Meinert, Nat. Tidsskr. (3) XIV, 1883–84, p. 362–365, pl. XV, fig. 3–5.

[b] Archiv für Natur-geschichte, I, 46th year, 1880, p. 393, pl. XVIII, fig. 11.

[c] See Schiœdte and Meinert, Nat. Tidsskr. (3), XIV, 1883–84, p. 378–381, pl. XVI, fig. 7–8.

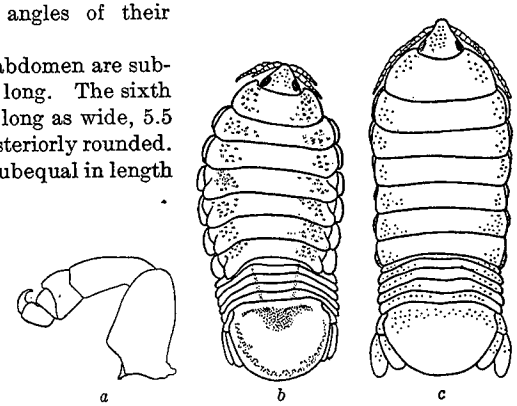
articles and extend to the posterior margin of the head or to the end of the sixth article of the second antennæ. The second antennæ are composed of twelve articles and extend a little beyond the extremity of the first antennæ.

The first segment of the thorax is the longest, being 2 mm. in length. The following six segments are subequal, each being about 1.5 mm. long. The epimera of all the segments reach the postlateral angles of their respective segments.

The first five segments of the abdomen are subequal, each being about 0.5 mm. long. The sixth or terminal segment is about as long as wide, 5.5 mm. long: 6 mm. wide, and is posteriorly rounded. The branches of the uropoda are subequal in length and width and are 1 mm. shorter than the terminal abdominal segment. They are narrow, with rounded extremities.

The legs are all prehensile with a rather high carina on the basis of the last four pairs.

Only two specimens, a male and a female, were collected, at Balistid, Sablayan. The male differs from the female in having a longer frontal process to the head, which is truncate, in having longer antennæ and longer uropoda.



a *b* *c*

FIG. 24.—*Livoneca frontalis.* *a*, Seventh leg, × 7¼; *b*, female, ×2; *c*, male, × 4.

This species resembles somewhat *Livoneca stewarti* Filhol[a] and *Livoneca raynaudii* H. Milne Edwards,[b] from both of which, however, it is distinct. Type specimen, catalogue number 40937, United States National Museum.

Livoneca, sp.?

One imperfect specimen of a species of *Livoneca* was collected at Jolo, on the shore.

Genus RHIOTHRA Schiœdte and Meinert.

Rhiothra callipia Schiœdte and Meinert.

Rhiothra callipia Schiœdte and Meinert, Nat. Tidsskr. (3) XIV, 1883–84, p. 319–324, pl. XII, fig. 8–13. Stebbing, Ceylon Pearl Oyster Fisheries Report, 1905, pt. IV, p. 26–27.

Locality: One specimen, a female, from Mansalay, Mindoro. Taken while dynamiting fish on the reef. Schiœdte and Meinert's specimens were from the Indian Ocean, the islands of Mauritius and Paláos.

The present specimen differs from Schiœdte and Meinert's description of the type in having six articles to the first pair of antennæ and eight to the second pair and in having the inner branch of the uropoda slightly longer than the outer.

PLEOPODIAS, gen. nov.

Head slightly immersed in thorax. Eyes distinct. First pair of antennæ with first three articles large, dilated. First antennæ long, extending to the middle of the first thoracic segment. Second antennæ long, extending to the middle of the second thoracic segment.

Thorax with epimera distinct on last six segments.

Abdomen not abruptly narrower than the thorax but somewhat narrower and with the segments, from the first to the terminal, gradually becoming narrower. Ter-

[a] Institut de France. Academie des Sciences. Passage de Venus sur le soleil du 9 Decembre, 1874. Missien de l'Ile Campbell, t. III, pt. 2, no. 1, p. 450–451, pl. LV, fig 6.

[b] See Schiœdte and Meinert, Nat. Tidsskr. (3), XIV, 1883–84, p. 367–372, pl. XV, fig. 9–13.

minal segment longer than wide and with the posterior margin rounded. Uropoda long and narrow and extending beyond the extremity of the abdomen. The pleopods are large and conspicuous in a dorsal view, and surround the entire abdomen.

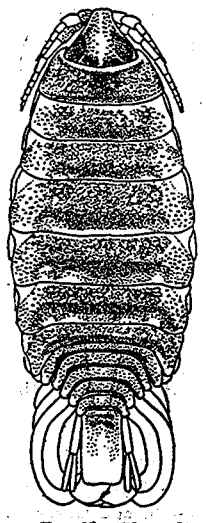
The legs are prehensile, the last pair being abruptly longer than the others, with the merus, carpus, and propodus elongated.

The type of the genus is *Pleopodias elongatus*, new species, the description of which follows.

Pleopodias elongatus, sp. nov.

Body oblong-ovate, a little over 2.33 times longer than wide, 9 mm.: 22.66 mm. Length of head and thorax 16 mm. Color yellow, covered with black and brown arborescent spots, very close together and more or less confluent in the dorsal region of the body.

Head almost as long as wide, 3 mm.: 3.5 mm., triangulate with the front produced in a truncate extremity, which is 1 mm. wide. The eyes are large, oval in shape, and situated in the postlateral angles of the head; they extend half the length of the lateral margin. The first pair of antennæ have the first three articles dilated and gradually increasing in size (the first is hidden in a dorsal view by the frontal process of the head); the following five articles become gradually narrower, but all are about equal in length. The first antennæ extend to the middle of the first thoracic segment. The second antennæ are composed of twelve articles and extend to the middle or a little beyond the middle of the second thoracic segment; the first two articles are short and subequal; the next two are subequal and each is about as long as the first two taken together; the fifth is very long, twice as long as the fourth; the sixth is 1.5 times as long as the fourth and is shorter than the fifth; the following six articles are quite short, each being half as long as the sixth or less than half.



Seventh leg. ×7¼.

FIG. 25.—*Pleopodias elongatus*. ×2¾.

The first three segments of the thorax and the sixth are about equal in length, each being 2 mm. long; the fourth segment is 3 mm. in length; the fifth 2.5 mm., and the seventh 1 mm. The head is slightly immersed in the first segment of the thorax, the anterolateral angles of which extend one-third the length of the eyes. Epimera are present on all the segments with the exception of the first; they are narrow plates, extending to about the middle of each segment.

The abdomen is not abruptly narrower than the thorax, but the segments gradually become narrower from the first to the terminal segment, the first being 6 mm. wide at the base and the sixth segment 2 mm. wide. The last thoracic segment is 8 mm. wide. The first abdominal segment is about half as long as the following four segments. All four segments measure only 3 mm. in length. The sixth or terminal segment is long and narrow, 3.66 mm. long and 2 mm. wide. Its extremity is rounded. The uropods extend about 0.66 mm. beyond the extremity of the terminal segment; the branches are equal in length, about 2 mm. each, and are long and narrow, with parallel sides and rounded extremities. The pleopods are large and conspicuous in a dorsal view, as they extend below the extremity of the abdomen and project at the sides.

The legs are all prehensile, the bases without carinæ. Seventh pair abruptly longer than the others and with the propodus, carpus, and merus elongated.

Only one specimen, a female, was collected, at station 5268, Matocot Point, S. 50° E., 5.80 mi. (13° 42′ 00″ N., 120° 57′ 15″ E.), at a depth of 170 fathoms, in sand and pebbles. The type is in the United States National Museum, catalogue number 40917.

A number of young *Cymothoidæ* are from the following localities: Romblon, Bongao, Bongao Islands; San Miguel Harbor, Ticao Island; Tomindao Island; Busin Harbor, Burias Island; Panabutan Bay, Mindanao; Port Binanga; Nasugbu, Luzon; and station 5128, Nogas Island (W.) N. 6° E., 32.50 mi. (9° 52′ 10″ N., 121° 49′ 35″ E.); Varadero Bay, Mindoro; Port Matoloi, Luzon; Batanavan Island; Endeavor Strait; Sablayan Bay, Mindoro; Mansalay, Mindoro.

Family SPHÆROMIDÆ.

Genus CYMODOCE Leach.

Cymodoce longistylis Miers.

Cymodocca longistylis Miers, Zool. Coll. of the *Alert*, 1884, p. 305-306, pl. XXXIII, fig. c.

Locality: One specimen, a male, from Tomindao Island anchorage, electric light. Miers's specimens were from Thursday Island, Torres Straits, and Singapore.

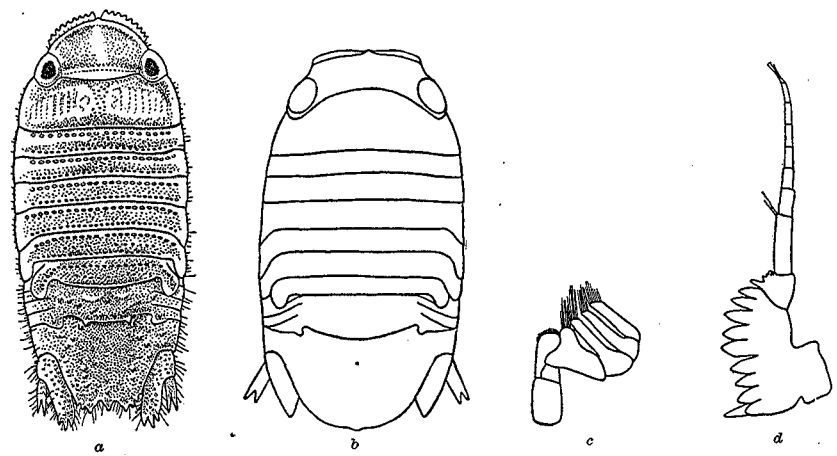


FIG. 26.—*Cymodoce multidens*. *a*, Male, ×9⅜; *b*, female, ×14½; *c*, maxilliped, ×27½; *d*, first antenna, ×27⅜.

Cymodoce multidens, sp. nov.

This species is very close to *Cymodoce tuberculosa* Stebbing,[a] but differs in having the anterior margin of the head produced in one small median point instead of two; in having the first article of the first pair of antennæ furnished with a row of nine teeth instead of five and an additional tooth just anterior to the row, situated at the proximal extremity of the joint; in having one tooth on the second article of the first antennæ; in not having the first abdominal segment produced backward in "two prominent posterior projections,"[b] but in having a small tubercle on either side with another just above it.

Further comparisons of the two species are impossible, because the descriptions of Stebbing, Whitelegge, and Baker differ. Stebbing says the anterior margin of the

[a] Annals and Magazine of Natural History, ser. 4, vol. XII, 1873, p. 95, pl. III, fig. 1.
[b] See Baker.

head is produced in "two small nostril-like prominences in the center; a lower frontal margin is adorned with ten teeth or turrets, divided into two sets of five, and exhibiting between them a still lower frontal plate with two shining lobes." Baker[a] says, "There are five teeth on the anterior border of the first peduncular joint of the antennule, with a sixth smaller outermost," and "the epistome has two projecting teeth transversely placed on the anterior portion." Whitelegge[b] says, "First antennæ with the basal joint stout, about three times as long as broad, without the marginal denticles."

The male of *Cymodoce multidens* has two or three teeth on either side of the postlateral margin of the terminal abdominal segment. These are not shown in Stebbing's figure of *Cymodoce tuberculosa*, nor in Baker's figure, neither are they mentioned in the descriptions of these authors. Whitelegge, however, says, "laterally, the sides are convex, and ornamented with two clusters of small tubercles, those situated distally are seated on a slight, oblique ridge."

The flagellum of the first antennæ is composed of seven articles in *C. multidens*. Neither Stebbing nor Baker give the number of articles for the flagellum of either the first or second antennæ of *C. tuberculosa*. Whitelegge[b] gives fourteen for the first antennæ and nineteen for the second pair. The second pair in *C. multidens* have a flagellum of ten articles. The epistome has two long projecting teeth, one on either side of the median line.

The body of the female is smooth, with the posterior margin of the terminal segment rounded, with only a slight indication of the median excavation with its central lobe or tooth. The first article of the peduncle of the first antennæ is not furnished with teeth in the female as it is in the male.

A number of specimens of this species, about forty, males and females, were collected at station 5141 (type locality), Jolo Light, S. 17° E., 5.50 mi. (6° 09′ 00″ N., 120° 58′ 00″ E.), at a depth of 29 fathoms, in coral and sand, on the surface of a sepia-brown sponge. One male was taken at station 5145, Jolo Light, S. 16° E., 0.85 mi. (6° 04′ 30″ N., 120° 59′ 30″ E.), at a depth of 23 fathoms, in coral and sand and shells.

The type is in the United States National Museum, catalogue number 40918.

The species described by Whitelegge[c] as *Cymodoce inornata* is very similar to the female of *Cymodoce tuberculosa* Stebbing. Whitelegge had but one specimen and that was a female.

Cymodoce japonica Richardson.

Cymodoce japonica Richardson, Proc. U. S. Nat. Mus., vol. 31, 1906, p. 7–8 (male).
Cymodoce affinis Richardson, Proc. U. S. Nat. Mus., vol. 31, 1906, p. 11–12 (female).
Cymodoce japonica Richardson, Proc. U. S. Nat. Mus., vol. 37, p. 92, 1909.

Locality: Opol, Mindanao; one specimen.

The tubercles on the surface of the body are more prominent than in the specimens from Japan.

Cymodoce inornata Whitelegge.

Cymodoce inornata Whitelegge, Mem. Aus. Mus., IV, 1902, pt. 4, p. 263–265.

Locality: Station 5481, between Samar and Leyte, Cabugan Grande Island, at a depth of 61 fathoms; one specimen. Whitelegge's specimen was from Wollongong, Australia.

[a] Trans. Roy. Soc. South Australia, vol. 32, 1908, p. 140–141.
[b] Mem. Aus. Mus., 1902, pt. 4, p. 258.
[c] Op. cit., p. 263–264.

Cymodoce tripartita, sp. nov.

This species is also close to *Cymodoce tuberculosa* Stebbing. The first antennæ agree with that species in having a row of five spines on the first article of the peduncle. There is also an additional spine on the lower margin. The anterior margin of the head is also produced in two small points in the middle as in that species, and the first abdominal segment also has the two backward-projecting processes on the posterior portion. It differs, however, from that species in having three teeth on the epistome instead of two and in having the posterior portion of the abdomen different from that species. The median lobe of the posterior margin of the abdomen extends beyond the lateral teeth and is not separated from them by a notch on either side. The median lobe also terminates in a small spine. The median portion of the dorsal surface of the abdomen is raised above the lateral portions in a triangular elevation extending backward from the median terminal lobe. The entire surface of the abdomen is covered with small tubercles, and two larger ones are placed, one on either side, just below the posterior projections of the anterior portion of the abdomen. There are also two larger tubercles on the inner branch of the uropoda, one below the other.

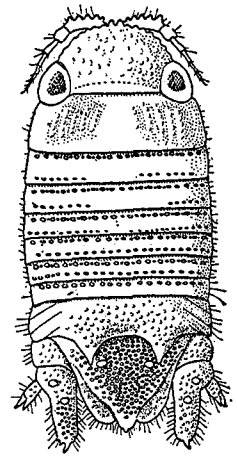


FIG. 27.—*Cymodoce tripartita*. Male. ×16.

Two males and two females of this species were collected at Jolo, from the interior of a pearl oyster. Type specimen, catalogue number 40919, United States National Museum.

Genus CILICÆOPSIS Hansen.

Cilicæopsis whiteleggei (Stebbing).

Cilicæa whiteleggei Stebbing, Ceylon Pearl Oyster Fisheries Report, 1905, pt. IV, p. 39–40, pl. IX (A), (B).

Locality: Station 5158, Tinakta Island (N.), N. 89° W., 1.90 mi. (5° 12′ 00″ N., 119° 54′ 30″ E.), at a depth of 12 fathoms, in coarse sand and shells. One male. Stebbing's specimens were from Cheval Paar, Gulf of Manaar; off Galle; off Foul Point; Trincomalee, station XXIV.

Genus CILICÆA Leach.

Cilicæa latreillii Leach.

Cilicæa latreillii Leach, Dict. Sci Nat., 1818, XII, p. 342. Desmarest, Consid. gén. Crust., 1825, p. 296, pl. 48, fig. 3. Guérin, Iconogr. Règne Animal, 1836, pl. 30, fig. 4.
Næsea latreillii Milne Edwards, Hist. Nat. Crust., 1840, III, p. 218.
Cilicæa crassicaudata Haswell, Proc. Linn. Soc. N. S. Wales, 1881, V, p. 475, pl. 17, fig. 3.
Cilicæa latreillii Miers, Zool. Coll. Alert, 1884, p. 308.
Cilicæa crassicaudata Whitelegge, Mem. Austral. Mus., 1902, IV, p. 273, fig. 35.
Cilicæa latreillii Stebbing, Ceylon Pearl Oyster Fisheries Report, 1905, IV, p. 36–39, pl. III (B), VIII.

Localities: Station 5169, Sibitu Island (S. E.), N. 38° E., 8 mi. (4° 32′ 15″ N., 119° 22′ 45″ E.), at a depth of 10 fathoms, in coral and sand. Station 5174, Jolo Light, E., 2.60 mi. (6° 03′ 45″ N., 120° 57′ 00″ E.), at a depth of 20 fathoms, in coarse sand. Station 5141, Jolo Light, S. 17° E., 5.50 mi. (6° 09′ 00″ N., 120° 58′ 00″ E.), at a depth of 29 fathoms, in coral and sand. Two males and two young specimens.

BOTRYIAS, gen. nov.

Head without eyes. Frontal margin produced in the middle in a process continuous with the frontal lamina, which is produced anteriorly in two long, rounded processes. Maxillipeds with the fourth, fifth, and sixth articles produced into lobes or processes.

Lateral parts of seventh thoracic segment not produced in processes as those of the preceding segments.

Abdomen composed of two segments, the last triangular with posterior margin rounded, entire. Uropods with both branches of nearly equal length and similar in shape.

Legs similar, ambulatory.

Last two pairs of pleopods (fourth and fifth pairs) similar in appearance, of fleshy aspect, with neither branch two-jointed.

The type of the genus is *Botryias fructiger*, sp. nov.

Botryias fructiger, sp. nov.

Body ovate, almost twice as long as wide, 3.5 mm.: 6 mm. Surface of body covered with large tubercles, each one surmounted with a cluster of small bodies having a stem or peduncle and a flat round disk on top. Color yellow, with thorax and head orange. The small disk-like bodies are white.

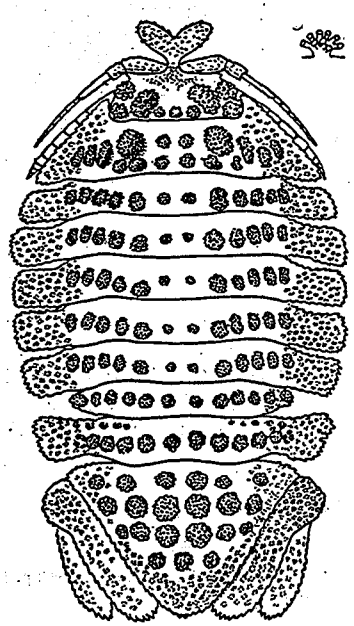


FIG. 28.—*Botryias fructiger*. × 12.

Head wider than long; anterior margin straight, with acute anterolateral angles. Front produced in the middle between the antennæ in a process continuous with the frontal lamina, which projects anteriorly in two elongated rounded processes, one on either side of the median line. Eyes absent. The basal article of the first antennæ is large, about three times as long as wide; the second article is a little more than half as long as the first; the third article is twice as long as the second, and extends almost to the end of the peduncle of the second antennæ. The flagellum, composed of seven articles, extends to the end of the third article of the flagellum of the second antennæ. The second antennæ with a flagellum of nine articles, extends to the postlateral angle of the first thoracic segment. There are nine tubercles on the head, five in a transverse line, one in the median line, and two on either side, the outer ones very large. Lateral to these are two tubercles on either side. All are surmounted with a cluster of small bodies, composed of a stem or peduncle and a flat, round disk on top.

The first segment of the thorax is a little longer than any of the following, which are about equal in length. Each of the segments have a transverse row of twelve tubercles, six on either side of the median line, each surmounted with a cluster of bodies, having a stem or peduncle which is surmounted by a flat, round disk. There are about fifteen to eighteen of these bodies on each tubercle. On the first segment the lateral tubercles are larger and are not placed in a regular transverse line. The lateral parts of the segments are produced in elongated processes, with straight lateral margins, and are surrounded on all three sides by a fringe of sharp teeth close together. On the dorsal surface of these lateral parts of the segments are numerous small bodies, similar to those on the tubercles. The seventh segment is not produced laterally in processes.

The abdomen consists of two segments, the first of which is short and has a transverse row of ten tubercles, similar to those on the thorax. At the sides, just lateral to the four median tubercles, is an upper transverse row of four tubercles on either side and the lateral parts of this segment are produced on either side in an elongated process similar to those of the thorax, but double-lobed on the lateral margin, fringed with teeth and having numerous small bodies on the dorsal surface. The sixth or terminal segment is triangular, with apex rounded. On the dorsal surface are three transverse rows of six tubercles, three on either side of the median line, and a fourth row of three tubercles, one in the median line and one on either side, all similar to those before described. Below the last row of tubercles the dorsal surface is covered with the small disk-like bodies, and the entire margin of the segment is fringed with sharp teeth. The branches of the uropoda are of nearly equal length, the inner, immovable branch being a little wider than the outer branch; they extend to the extremity of the terminal abdominal segment. Both are fringed on all the margins with sharp teeth and have small disk-like bodies on the dorsal surface. They are posteriorly rounded.

All the legs are similar, ambulatory.

The pleopods of the fourth and fifth pairs have both branches similar, of fleshy appearance and without marginal setæ. The exopod of the fifth pair is not two-jointed.

This genus belongs, therefore, to the section of eubranchiate Sphæromidæ of Hansen, but corresponds to none of the described genera.

Only one specimen was collected, at station 5661, Flores Sea, Cape Lassa, at a depth of 180 fathoms. Type, catalogue number 41024, United States National Museum.

IDOTEOIDEA.

Family ARCTURIDÆ.

Genus ARCTURUS Latreille.

Arcturus cornutus Beddard.

Arcturus cornutus Beddard, Proc. Zool. Soc. Lond., 1886, pt. 1, p. 108; Challenger Report, Zool., vol. 17, pt. 48, 1886, p. 93–94, pl. XIX, fig. 6–12.

Locality: Station 5621, between Gillolo and Makyan Island, at a depth of 298 fathoms, and station 5605, Gulf of Tomini, Celebes, Dodepo Island, at a depth of 647 fathoms. Two specimens. Beddard's specimen was from off Samboangan.

Arcturus parvus, sp. nov.

Body elongate-ovate, covered with long spines; 8 mm. long : 1.5 mm. wide.

Head with a deep median excavation. Eyes large, round, composed of numerous ocelli. There are two long spines on the anterior portion of the head, between the eyes, one on either side of the median line, and two long ones on the posterior portion, one on either side of the median line, and one small spine on either side of these. The first pair of antennæ have the first two articles subequal, the first somewhat dilated; the third article is elongated, about as long as the first two taken together. The first

two articles of the peduncle of the second antennæ are short and subequal, the first being almost wholly concealed, the second armed with one long spine at its extremity; the third article is elongate and armed with six or eight spines; the fourth article is longer than the preceding and is armed with a series of four or six spines and a spine at the distal extremity; the fifth article is longer than the preceding one and is unarmed. The flagellum is broken.

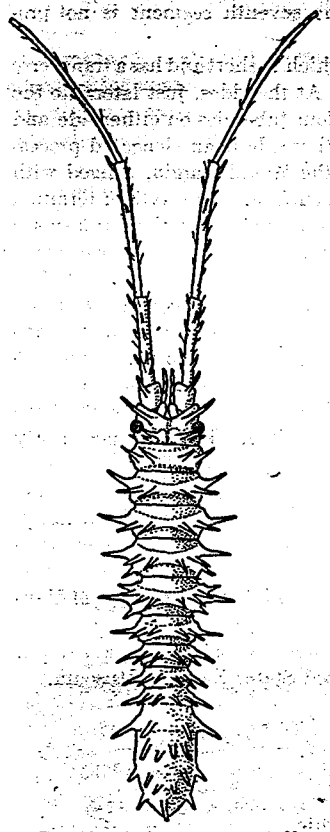


FIG. 29.—*Arcturus parvus*. ×6½.

All the segments of the thorax are armed each with a transverse row of four long spines, two on either side of the median line. All, except the first, have a long spine on either side close to the lateral margin, near the epimeron. The fourth segment also has one postlateral spine on either side and the fifth segment has two anterolateral spines and one postlateral spine. The total number of spines on the first segment is four; the total number of spines on the second, third, sixth, and seventh segments is six; the total number on the fourth segment is eight, and the total number on the fifth segment is twelve. The lateral margin of the head has two small spines on either side; the lateral margin of the first thoracic segment has three small spines. Each epimeron is produced in one or two small spines.

The first two free segments of the abdomen are furnished each with four spines in a transverse row, two on either side of the median line. The third segment is fused with the terminal segment, and also has four spines in a transverse row, two on either side of the median line, the lateral spines being very long. The last or terminal segment has eight spines on the dorsal surface, four on either side of the median line, and four spines on the lateral margins, two on either side below the transverse median line. The abdomen ends in an obtuse point. Just above this obtuse point is a long posteriorly directed spine on the dorsal surface.

The legs are also covered with spines.

Only one specimen was obtained, at station 5636, Pitt Passage, Gomomo Island, at a depth of 1,262 fathoms. Type, catalogue number 41016, United States National Museum.

Arcturus hirsutus Richardson.

Arcturus hirsutus Richardson, Proc. U. S. Nat. Mus., vol. 27, 1904, p. 41–43; Proc. U S. Nat. Mus., vol. 37, 1909, p. 97–98.

Locality: Station 5605, Gulf of Tomini, Celebes, Dodepo Island, at a depth of 647 fathoms; one specimen, which I have doubtfully referred to this species.

Arcturus myops Beddard.

Arcturus myops Beddard, Proc. Zool. Soc. Lond., 1886, pt. 1, p. 106; Challenger Report, Zool., vol. 17, pt. 48, 1886, p. 100, pl. xxii, fig. 5–8, pl. xxv, fig. 8.

Locality: Station 5664, Macassar Strait, Kapoposang Light, at a depth of 400 fathoms. Beddard's specimens were from off New Zealand.

ASELLOIDEA or ASELLOTA.

Family JANIRIDÆ.

Genus JANIRA Leach.

Janira caudata, sp. nov.

Body oblong-ovate, about 2.5 times longer than wide. Color dark yellow. Surface of body smooth.

Head wider than long, with the anterolateral angles produced; the anterior margin between the lateral angles also triangularly produced, in a wide process, not reaching beyond the lateral angles. Eyes large, composite, round, and situated close to the lateral and posterior margins, a small space intervening. The first pair of antennæ have the basal article large, dilated, and produced at the inner distal extremity in a small, rounded process. The second article is about half as wide and half as long as the first; the third and fourth are subequal and both together about as long as the second; the fifth is a little longer than either of the two preceding; the sixth or terminal article is minute. The first four articles of the second antennæ are short, the third being provided with a scale. The second antennæ are broken at the end of the fourth article.

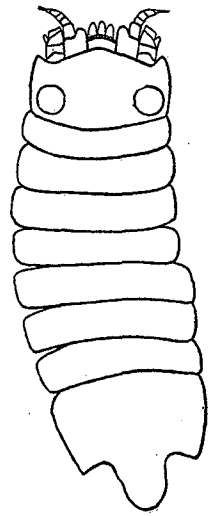


FIG. 30.—*Janira caudata*. ×4½.

The seven segments of the thorax have the lateral margins straight, with no indication of epimera.

The terminal segment of the body, the abdomen, has the postlateral angle acute on either side and the posterior margin produced in a long median process rounded at the extremity. The uropoda are lost in the only specimen.

Legs all alike in structure, simple, ambulatory.

One specimen, a male, was collected at station 5218, Anima Sola Island (E.) N. 10° W., 2 mi. (13° 11′ 15″ N., 123° 02′ 45″ E.), at a depth of 20 fathoms, in coarse sand. Type, catalogue number 40920, United States National Museum.

BOPYROIDEA or EPICARIDEA.

Family BOPYRIDÆ.

Genus PROBOPYRUS Giard and Bonnier.

Probopyrus ascendens (Semper).

Bopyrus ascendens Semper, Die Naturl. Existenzbedingungen der Thiere, I, 1880, p. 181, fig. 38.
Probopyrus ascendens Giard and Bonnier, Bull. Scient., XIX, 1888, p. 3, pl. II–III. Max Weber, Zool. Ergebnisse einer Reise in Niederlandisch Ost Indien, II, 1892, p. 555. Bonnier, Trav. Station Zool. Wimereux, 1900, p. 345–346.

Locality: Amboina market; Amboina stream; two specimens. Giard and Bonnier's specimens were from the island of Amboina. Semper's specimens were found in the Philippines.

MEROCEPON, gen. nov. = Cancricepon

This genus is very close to *Cancricepon* Giard and Bonnier, but differs in having three median dorsal bosses, one on the fifth, one on the sixth, and one on the seventh thoracic segment. In *Cancricepon* there are four dorsal bosses. In *Grapsicepon* Giard and Bonnier and in *Portunicepon* Giard and Bonnier there are two. In *Trapezecepon*

Bonnier there are no dorsal bosses. In *Tylokepon* Stebbing there are bosses on the last two thoracic segments, but that of the sixth segment is trifed. In *Scyracepon* Tattersall there are six bosses, one on each of the last six segments of the thorax. In *Cardicepon* Nobili there is one large median boss on the sixth thoracic segment.

This genus is closer to *Scyracepon* Tattersall than to any of the other genera mentioned. It differs, however, from that genus, in having but three median dorsal bosses on the thorax of the female, in having the outer branches of the first pair of pleopoda leaf-like and much larger than any of the other branches, and in having the abdomen of the male distinctly segmented.

The type of the genus is *Merocepon xanthi*, new species, the description of which follows.

Merocepon xanthi, sp. nov. = Cardicepon xanthi

Body of adult female ovate, rather asymetrical in outline. Color, in alcohol, yellow.

Head large, bilobate in front, and surrounded, except in the posterior part, by a wide border, wider at the sides than in front. Eyes absent. The antennæ are situated on the ventral side and are not visible in a dorsal view; the first pair are minute and seem to be composed of two articles; the second pair are composed of three articles.

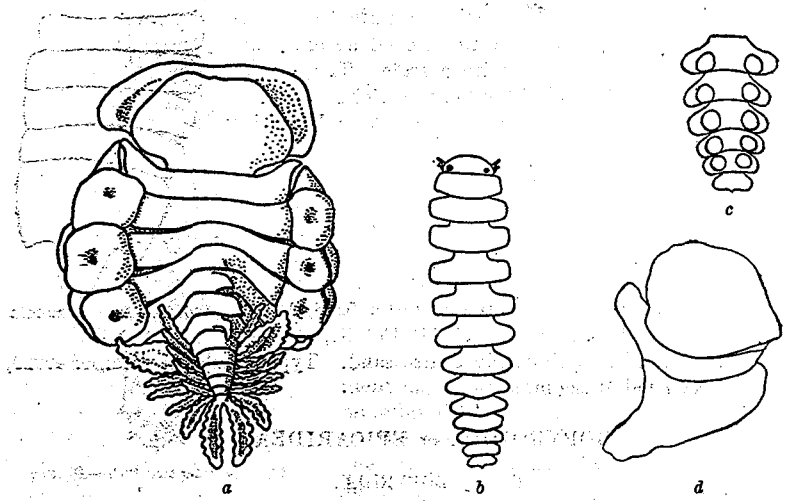


FIG. 31.—*Merocepon xanthi*. *a*, Female, ×16; *b*, male, ×27½; *c*, abdomen of male (underside), ×41; *d*, first lamella of marsupium, ×20½.

The seven thoracic segments are equal in length in the middle of the dorsal region. The second, third, and fourth have large pleural bosses, rounded and with a small depression in the center. Lateral to these pleural bosses, which are very prominent and conspicuous, are the pleural lamellæ of the segments. The pleural bosses are not present on the first or the last three segments. The last three segments have each a median dorsal boss, that of the sixth segment being the largest, and that of the seventh somewhat hook-shaped.

The first five segments of the abdomen have pleural lamellæ in the form of long, narrow appendages, with tuberculiform margins. The five pairs of pleopods are double branched, with the outer branches elongate and similar to the pleural lamellæ of the abdominal segments with the exception of the first, which are leaf-like; the inner branches are small and difficult to see. The uropoda consist of a pair of elongate lamellæ similar to the pleural lamellæ of the abdomen.

The marsupial plates are large, bounding a large cavity, and overlapping on the ventral side so as to completely cover the eggs. The seven pairs of legs are small and feeble.

The male is narrow, elongate. The head has the anterior margin rounded; eyes distinct and situated in the postlateral angles.

The seven segments of the thorax are distinct, with the lateral margins rounded and not contiguous, but widely separated.

The six segments of the abdomen are distinct, with lateral margins rounded, separated at the sides, and gradually becoming narrower to the last, which is produced posteriorly in a small median triangular process. There are five pairs of small, rounded, sac-like pleopoda.

Only one specimen was collected, by Dr. Paul Bartsch at Tileg Lubang Island. It was taken from the branchial cavity of *Phymodius ungulatus* (Milne Edwards). Type, catalogue number 40921, United States National Museum.

Genus CRYPTIONE Hansen.

Cryptione lævis, sp. nov. ? Pleurocryptella? Pseudione?

Body of adult female ovate, more or less asymmetrical in outline. Color, in alcohol, yellow.

Head deeply immersed in the first thoracic segment, bilobed in front and with a wide border on the anterior portion. Eyes absent. The first pair of antennæ have the first article large and dilated; the two following articles minute. The second antennæ are composed of four articles.

All seven segments of the thorax are distinct. Lateral bosses are present on the first four segments. Lateral to these are the pleural plates, which are present on all seven segments, occupying the entire lateral margin in all but the second and third. On one side of the body the pleural plates of the first four segments are wider than on the other side.

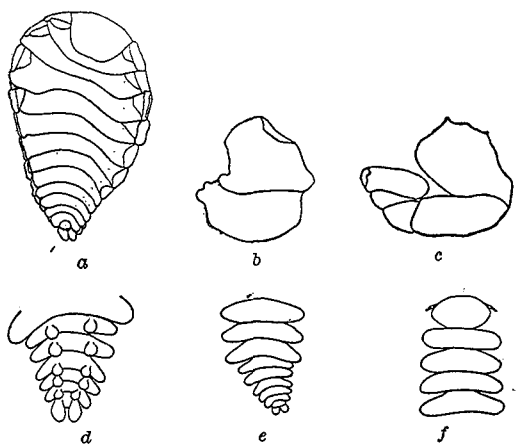


FIG. 32.—*Cryptione lævis*. *a*, Female, ×4½; *b*, first lamella of marsupium, ×9⅜; *c*, seventh leg of female, ×27½; *d*, abdomen of male (under side), ×20½; *e*, posterior half of male, ×11½; *f*, anterior half of male, ×11⅛.

The six segments of the abdomen are distinct, short pleural lamellæ being present on all except the last. There are five pairs of smooth double-branched pleopoda, the inner branch of each pair being leaf-shaped; the outer branch having two lobes, being V-shaped. The uropoda consist of a pair of short leaf-like lamellæ attached to the terminal segment of the abdomen.

The marsupial cavity is not completely inclosed by the five pairs of lamellæ.

The male is narrow, elongate. The head is large, transversely oval, without eyes. All seven segments of the thorax are distinct, with the lateral margins not contiguous, but separated. All six segments of the abdomen are distinctly separated, the last one being small and provided with a pair of small, short, rounded appendages, the uropoda. On the ventral side are five pairs of simple sac-like pleopoda, a pair for each of the first five segments of the abdomen.

Two males and three females of this species were collected, at station 5110, Corregidor Light, at a depth of 135 fathoms, and station 5121, Malabrigo Light, N. 14° W., 9 mi. (13° 27′ 20″ N., 121° 17′ 45″ E.), at a depth of 108 fathoms, in dark-green mud. Type specimen, catalogue number 40922, United States National Museum.

This species differs from *Cryptione elongata* Hansen[a] in having the pleopoda of the female not tuberculate, but smooth, and the outer branches differently shaped, in the differently shaped distal half of the first lamellæ of the marsupium and in the appearance of the terminal abdominal segment of the male.

Genus MUNIDION Hansen.

Munidion laterale, sp. nov.

Body of adult female somewhat asymmetrical, nearly twice as long as wide, 8.5 mm.: 16 mm. Color, in alcohol, yellow.

Head large, deeply immersed in the first thoracic segment and with a rather wide border on the anterior portion. Eyes absent.

The seven segments of the thorax are distinct. Lateral bosses are present on the first four segments. All seven segments have pleural lamellæ, which extend the entire length of the lateral margin.

All six segments of the abdomen are distinct, the terminal segment being small and triangular in shape. The first five have the pleural lamellæ well developed, leaf-like; the sixth segment has no pleural lamellæ. There are five pairs of double-branched pleopoda with leaf-like lamellæ. The uropoda are biramous, the branches long and subequal. The five pairs of incubatory lamellæ do not quite meet on the ventral side, but leave a small opening.

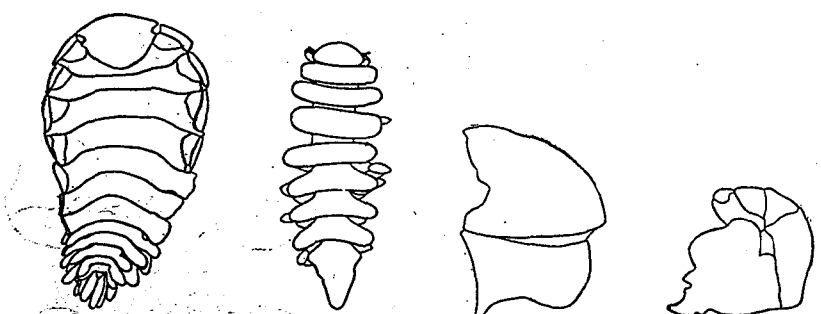


FIG. 33.—*Munidion laterale*. *a*, Female, ×2½; *b*, male, ×9½; *c*, first lamella of marsupium, ×7½; *d*, seventh leg of female, ×15½.

The legs are all prehensile and have the basis furnished with a high carina.

The male is narrow, elongate. The head is small, transversely oval, and without eyes. All seven segments of the thorax are distinct. The segments of the abdomen are fused in a single piece, the sides of which are somewhat sinuous. There are no pleopoda or uropoda.

One male and one female were collected, at station 5247, Dumalag Island (S.) S. 78° W., 4 mi. (7° 00′ 00″ N., 125° 137′ 00″ E.), at a depth of 135 fathoms, in mud. They were found in the branchial cavity of a galatheid. Type specimen, catalogue number 40923, United States National Museum.

This species differs from *Munidion princeps* Hansen[b] in the form of the lateral bosses, in the smaller pleural lamellæ of the abdomen, which do not conceal the abdominal segments dorsally, in the differently shaped distal half of the first lamella of the marsupium, and in the differently shaped abdomen of the male.

[a] Bull. Mus. Comp. Zool., Harvard College, vol. XXXI, no. 5, 1897, p. 112–115, pl. III, fig. 5–5a; pl. IV fig. 1–1g.

[b] Bull. Mus. Comp. Zool., Harvard College, vol. XXXI, no. 5, 1897, p. 115–117.

Genus PSEUDIONE Kossmann.

Pseudione fibriata, sp. nov.

Body of adult female oblong-ovate, more or less asymmetrical, 8 mm.: 14 mm. (including abdominal appendages). Color, in alcohol, yellow.

Head large, deeply immersed in the first thoracic segment and with a rather wide frontal border. Eyes absent. First pair of antennæ composed of three or four articles, the first of which is the largest; second pair of antennæ composed of five articles.

All seven segments of the thorax distinct. Lateral bosses are present on the first four segments. Lateral to these are the pleural plates, which occupy the anterior half of the lateral margin and are drawn out in irregular branching processes. The posterior half of the lateral margin is also drawn out in numerous finger-like processes. The last three segments have the lateral margins produced in finger-like processes, which in turn are branched.

All six segments of the abdomen are distinct, the sixth or last segment being very small. The first five are provided with large leaf-like pleural plates, which are tuberculate. The sixth segment has no pleural plates. There are five pairs of double-branched leaf-like pleopoda, the margins and surfaces of which are tuberculate. The uropoda are attached to the terminal segment and consist of a pair of simple leaf-like appendages, also tuberculate. The five pairs of incubatory plates overlap in the middle of the ventral side of the thorax and completely inclose the marsupial cavity. The seven pairs of legs are prehensile and have the basis furnished with a high carina.

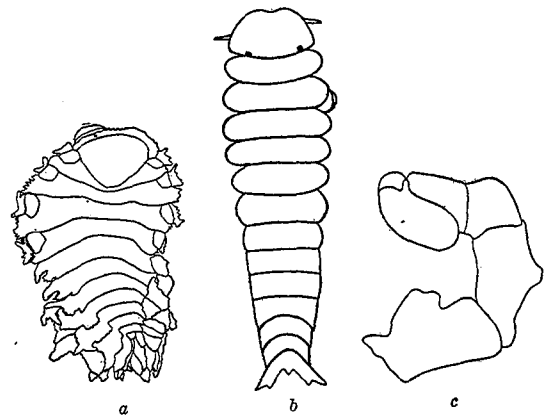


FIG. 34.—*Pseudione fibriata*. *a*, Female, ×2½; *b*, microniscus stage, ×41; *c*, seventh leg of female, ×20½.

Two males in the cryptoniscian stage and one immature male probably in the microniscus stage were taken. Only one adult specimen, a female, was collected, at station 5126, Nogas Island (W.) S. 26° 30′ E., 11.75 mi. (10° 34′ 45″ N., 121° 47′ 30″ E.), at a depth of 742 fathoms, in soft green mud. Type, catalogue number 40924, United States National Museum.

Pseudione retrorsa, sp. nov.

Body of adult female oblong-ovate, 9 mm.: 14 mm. (including abdominal appendages). Color, in alcohol, yellow.

Head deeply immersed in the first thoracic segment and with a narrow frontal border becoming wider at the sides. Eyes absent. First pair of antennæ composed of four articles; second pair composed of five articles.

All seven segments of the thorax distinct. Lateral bosses are present on the first four segments. Lateral to these are the pleural plates, which occupy only about half of the lateral margin. The pleural plates of the last three segments occupy almost the entire lateral margin.

All six segments of the abdomen are distinct, the sixth or terminal segment being very small and rounded posteriorly. Pleural plates are developed on the first five segments, but are not present on the sixth. There are five pairs of double-branched

pleopoda, the branches being leaf-like and elongate, extending a considerable distance beyond the pleural lamellæ of the abdomen. The uropoda consist of a pair of elongated appendages, attached to the terminal abdominal segment and reaching to the extremity of the branches of the uropoda. The five pairs of incubatory plates overlap in the median line on the ventral side so as to completely inclose the marsupial cavity. All seven pairs of legs are prehensile and have the basis furnished with a high carina.

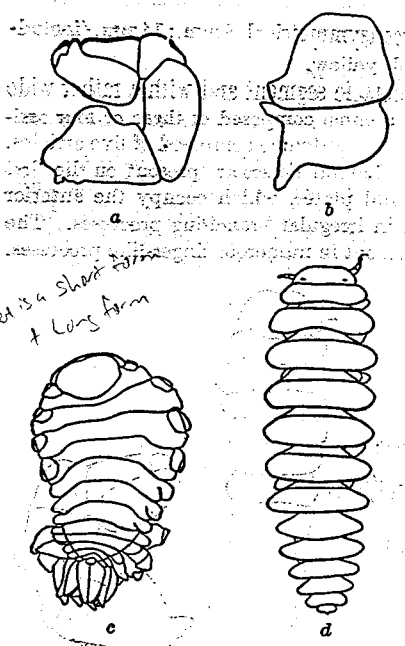


FIG. 35.—*Pseudione retrorsa.* *a*, Seventh leg of female, ×20½; *b*, first lamella of marsupium, × 7½; *c*, female, ×2½; *d*, male, × 9½.

The male is narrow, elongate. Head with the anterior margin rounded. Eyes small, distinct. All seven segments of the thorax distinctly separated, with lateral margins not contiguous. All six segments of the abdomen distinctly separated. Last segment small, and with a small, median triangular point on the posterior margin. There are no pleopoda, but on the ventral side of the first five segments is a thickening of the surface on either side of the median line. There are no uropoda.

One male and one female were collected, at station 5124, Point Origon, S. 56° E., 20.75 mi. (12° 52′ 00″ N., 121° 48′ 30″ E.), at a depth of 281 fathoms, in soft green mud. They were found in the branchial cavity of a galatheid. Type specimen, catalogue number 40925, United States National Museum.

Pseudione incerta, sp. nov.

Body asymmetrical; surface smooth.

Head somewhat bilobate; frontal margin narrow, produced at either side in acute anterolateral angles. Eyes absent. First pair of antennæ short, composed of about two or three articles; second pair of antennæ composed of five or six articles.

First and second segments of thorax extremely short in the middle of the dorsal surface. First four segments provided with lateral bosses; lateral to these the anterior margin, as well as the posterior margin, is produced in a process or lobe. The last three segments are also each produced in a lateral process.

All six segments of the abdomen are distinct, with lateral parts not much produced. Each is provided with a pair of double-branched pleopoda, the inner branches being not much smaller than the outer branches in the first three, but exceedingly small in the last two pairs, while the outer branches are as large as those of the first three pairs. The uropoda are a pair of simple elongate lamellæ, similar in size and shape to the outer branches of the pleopoda, but differing in the possession of a small acute process on the inner side of the lateral margin near the base.

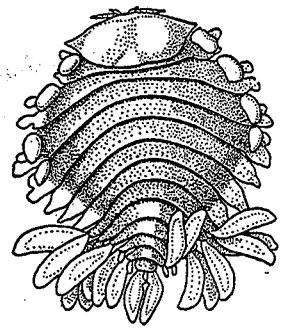


FIG. 36.—*Pseudione incerta.* ×6.

There are five pairs of incubatory plates, which do not entirely enclose the marsupial pouch. The first pair have the distal half produced in a rounded process, but the lobe is not defined.

All the legs are prehensile. The male is unknown.

Only two specimens, an adult female and an immature female, were collected at station 5543, north Mindanao and vicinity, Tagolo Light, at a depth of 162 fathoms. Type specimen, catalogue number 41007, United States National Museum.

PARIONE, gen. nov.

Body of adult female ovate, rather asymmetrical. Head large, deeply immersed in the first segment of the thorax.

All seven segments of the thorax distinct. Lateral bosses present on the first four. Pleural plates present on all seven segments; on the first four segments they extend only half the length of the lateral margin and are lateral to the lateral bosses; on the last three segments they occupy almost all of the lateral margin.

The six segments of the abdomen are distinct, the last being very small. Pleural lamellæ are present on all but the last segment and are not large. There are five pairs of double-branched pleopoda and a pair of simple single-branched uropoda. The pleopoda and uropoda extend a considerable distance beyond the abdomen.

The male has all seven segments of the thorax distinct. There are but five abdominal segments, the last of which is very small. No pleopoda are present, but on the ventral side of the first four abdominal segments the surface is thickened and elevated on either side of the median line. There are no uropoda.

The type of the genus is *Pseudione paucisecta* Richardson.[a] The second species of the genus is the next described in this paper.

This genus is very close to *Pseudione* Kossmann, but differs principally from that genus in that the male has but five distinct segments to the abdomen instead of six.

Parione lamellata, sp. nov.

Body of adult female ovate, more or less asymmetrical. Color, in alcohol, pale yellow.

Head large, deeply immersed in the first thoracic segment, and with a narrow frontal border, which becomes wider at the sides. Eyes absent. The first pair of antennæ are composed of three articles; the second antennæ of five.

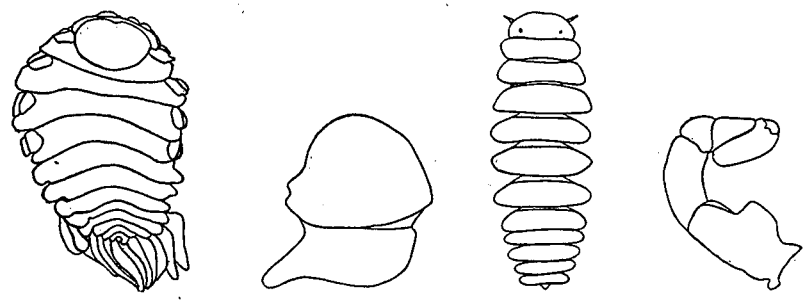


FIG. 37.—*Parione lamellata.* *a*, Female, ×3½; *b*, first lamella of marsupium, ×9½; *c*, male, ×9½; *d*, seventh leg of female, ×20½.

All seven segments of the abdomen are distinct. There are lateral bosses on the first four segments. Lateral to these are the pleural plates, which extend only half the length of the lateral margin. The pleural plates of the last three segments are large and occupy almost the entire lateral margin.

[a] Proc. U. S. Nat. Mus., vol. XXVII, 1904, p. 85–86.

The six segments of the abdomen are short and distinctly separated. Pleural lamellæ are present on all except the last, but these lamellæ gradually become smaller. The sixth or terminal segment is very small. There are five pairs of double-branched pleopoda, both branches being large, leaf-like, and tuberculate; they extend a considerable distance beyond the lamellæ of the abdominal segments. The uropoda are attached to the sixth or terminal segment of the abdomen and consist of a pair of long leaf-like appendages as long as the branches of the pleopoda. There are five pairs of incubatory lamellæ, which do not quite enclose the marsupial cavity. The lamellæ are tuberculate. The seven pairs of legs are prehensile and have the basis furnished with a high carina.

The male is narrow, elongate. The head is large, with the anterior margin rounded. Eyes are distinct. All seven segments of the thorax are distinct, with lateral margins not contiguous. The abdomen is short, composed of five segments, the fifth or terminal segment being small and triangular in shape. There are no pleopoda or uropoda, but on either side of the median line on the ventral side there is an elevation and thickening on the first four abdominal segments.

Only two specimens, a male and a female, were collected, at station 5197, Baliscasag Island, S. 22 mi. (9° 52′ 30″ N., 123° 40′ 45″ E.), at a depth of 174 fathoms, in green mud. Type specimen, catalogue number 40926, United States National Museum.

Genus ORBIONE Bonnier.

The uropoda are biramous in the female of this genus and not single-branched as described by Bonnier. This genus differs from *Gigantione* Kossmann, as it also does from *Parapenæon*, in having all six segments of the abdomen of the female lamellate, while in those genera only five segments of the abdomen of the female are lamellate. It also differs from *Gigantione* in the appearance of the male, which is figured herein for the first time.

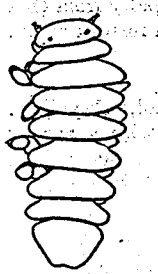


FIG. 38.—*Orbione penei*. Male. × 15½

Orbione penei Bonnier.

Orbione penei Bonnier, Travaux de la Station Zool. de Wimereux, VIII, 1900, p. 280–282, pl. XII.

Locality: Station 5181, Antonia Island (S.), S. 63° W., 6.60 mi. (11° 36′ 40″ N., 123° 26′ 35″ E.), at a depth of 26 fathoms, in mud and fine sand. Bonnier's specimen was from Hongkong.

A male and a female were collected by the *Albatross* and the male is here figured. Heretofore the male has been unknown.

Genus PARAPENÆON Richardson.

The uropoda are biramous in the female of this genus and not single-branched as heretofore stated, agreeing in this respect with *Orbione* Bonnier as amended (see above). It differs, however, from *Orbione* in having the abdomen of the female with five segments lamellate, while in *Orbione* the abdomen of the female has six segments lamellate. The female of *Parapenæon* differs from the female of *Pleurocrypta* in having the uropoda biramous (they are single-branched in *Pleurocrypta*) and in having pleura developed on the segments of the thorax.

The female of this genus is similar to the female of *Gigantione* Kossmann, but the male differs from the male of that genus in having all the segments of the pleon united and not distinct as in *Gigantione*, and in the absence of pleopoda and uropoda, which are well developed in the male of *Gigantione*.

Parapenæon bonnieri (Nobili).

Orbione bonnieri Nobili, Atti R. Accad. Sc. Torino, vol. 41, 1906, p. 1102–1104, fig. 2.

Locality: Station 5165, Observation Island, N. 70° W., 6.40 mi. (4° 58′ 20″ N., 119° 50′ 30″ E.), at a depth of 9 fathoms, in coral; one specimen. Nobili's specimen was from Singapore.

In the *Albatross* specimen the pleural lamellæ of the abdominal segments of the female are not quite as long as those of Nobili's specimen. Nobili's figure can not be correct, because the uropoda appear as lamellæ of the sixth segment.

Family DAJIDÆ.

Genus HOLOPHRYXUS Richardson.

Holophryxus giardi Richardson.

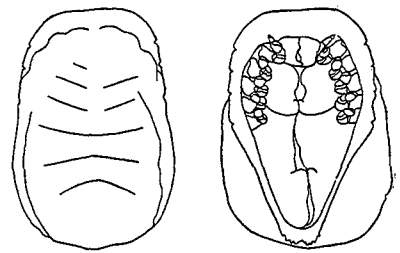
Holophryxus giardi Richardson, Proc. U. S. Nat. Mus., XXXIII, 1908, p. 690–692; XXXVII, 1909, p. 123.

Locality: One specimen, a female, from Station 5185, Lusaran Light, N. 23° E., 25.50 mi. (10° 05′ 45″ N., 122° 18′ 30″ E.), at a depth of 638 fathoms, in green mud. The type specimen came from Toporkov Island, Harbor of Nikolski, Bering Island.

Genus ZONOPHRYXUS Richardson.

Zonophryxus trilobus, sp. nov.

This species is very close to *Zonophryxus retrodens* Richardson, but has four instead of three small indentations on the lateral border of the anterior half of the body. The border surrounding the body on the ventral side begins to converge about the middle toward the posterior portion, where it becomes very narrowly rounded. There are four teeth on either side of the median line on the posterior border, which are not visible in a dorsal view. On the dorsal surface are six indistinct lines indicating the coalesced thoracic segments.



a *b*

FIG. 39.—*Zonophryxus trilobus*. *a*, Dorsal view; *b*, ventral view. × 2½.

Only one specimen, a female, was collected, at station 5259, Caluya Island (S.), S. 73° W., 12 mi. (11° 57′ 30″ N., 121° 42′ 15″ E.), at a depth of 312 fathoms, in gray mud and globigerina. Host unknown. Type, catalogue number 40927, United States National Museum.

ONISCOIDEA.

Family LIGYDIDÆ.

Genus LIGYDA Rafinesque.

Ligyda exotica (Roux).

Ligia exotica Roux, Crust. Médit., 1828, p. 3, pl. XIII, fig. 9.
Ligia gaudichaudii H. Milne Edwards, Hist. Nat. Crust., III, 1840, p. 157. Dana, U. S. Expl. Exp., Crust., XIV, 1853, p. 741, pl. XLIX, fig. 6a–h.
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Locality: Kowloon, China, shore; three specimens.

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