

AUSTRALOMYSIS (Tattersall).

Two species have been taken:

- a. Rostral plate short and rounded apically; antero-lateral angles of carapace rounded *incisa*.
 aa. Rostral plate large and acute apically; antero-lateral angles of carapace acute *acuta*.

Australomysis incisa (Sars). (incised, or divided).

The body is moderately slender. The small carapace leaves the last two segments of the thorax uncovered and is only slightly produced to a rounded rostral plate in front; the antero-lateral corners are likewise rounded. The eyes are short and flattened. The scale of the second antennae is rather narrow, four times as long as broad, and is distinctly longer than the peduncle of the first antennae. The propodus of each rather feeble leg is subdivided into three joints by two transverse articulations. The telson

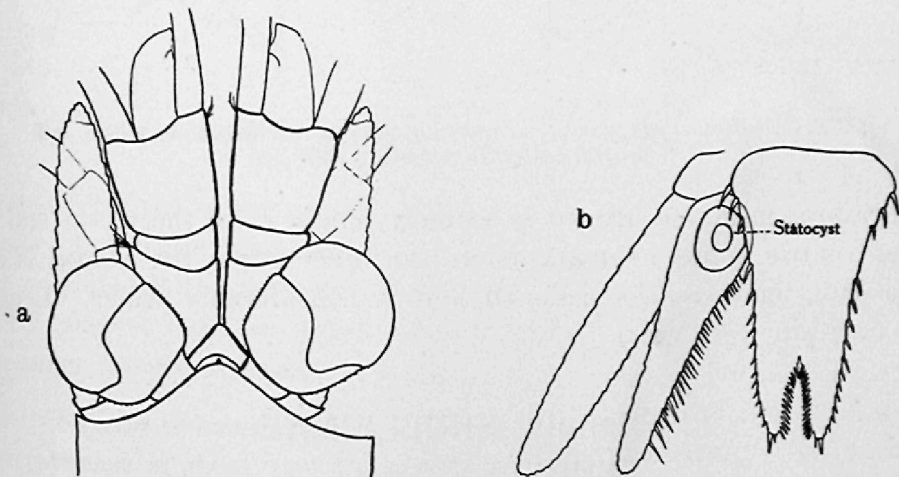


FIG. 355.—*Australomysis incisa*; a, anterior portion of body; b, telson and uropod (after Tattersall, x 38).

is subtriangular in shape, more than half as long again as its basal width, and is deeply cleft apically, the incision being one-fourth of the total length; the lateral margins are armed with spines, three near the base being separated from the others by a slightly longer interspace; the inner margin of each apical lobe is fringed with closely set spines and the apex of each lobe bears a spine slightly larger than those of the lateral edges. The branches of the uropods are narrow, the outer a little longer than the inner, which reaches a little beyond the apex of the telson; the inner edge of the endopod is armed with spines arranged in series of two or three. Length: 8 mm., or $\frac{3}{10}$ in. (S.A.M.)

Australomysis acuta (Tattersall). (acute).

This may be distinguished from the preceding species by the following characters:—The front margin of the carapace is produced to form a large, acutely pointed rostral plate, below which is a prominent pseudorostral

process; the antero-lateral angles of the carapace are acute. The eyes are more elongate and not flattened. The propodus of each leg is divided into two parts by an oblique articulation. The telson is nearly twice as long as its basal width and has an apical cleft occupying one-fifth of the length; the spines of each lateral margin are arranged in one continuous series.

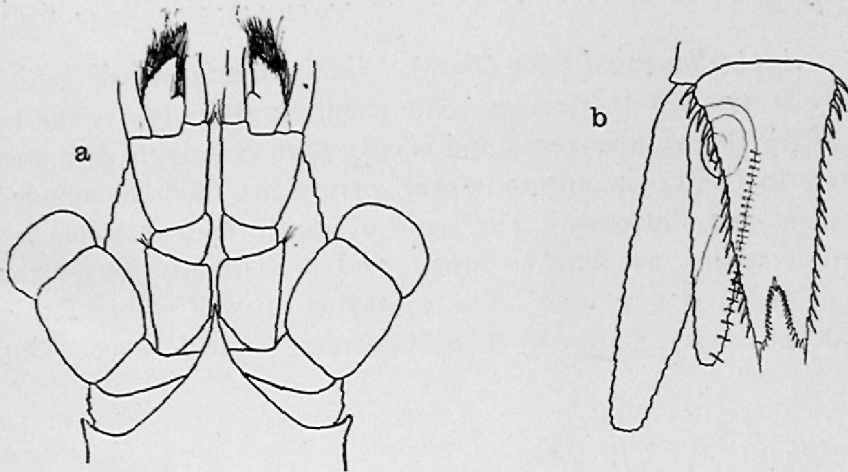


FIG. 356.—*Australomysis acuta*; a, anterior portion of body; b, telson and uropod (after Tattersall, x 39).

The inner branch of the uropod is scarcely longer than the telson and has a row of ventral spines submarginal to the inner edge; the exopod is one-third as long again as the endopod and is considerably wider. Length: 8 mm., or $\frac{3}{10}$ in. (S.A.M.)

Subfamily SIRIELLINAE.

SIRIELLA (Dana).

A genus including many species; the three described below were dredged off the Semaphore. The differences mentioned in the key are shown in the illustrations.

- a. Carapace produced into prominent pointed shoulders over the eyes *halei*.
- aa. Carapace not produced into shoulders over the eyes.
 - b. Rostral plate scarcely produced but broadly rounded. Telson broad, with three pairs of spines on the apex. Penultimate joint of legs not divided *vincenti*.
 - bb. Rostral plate produced, triangular with acute apex. Telson narrow, with two pairs of spines on the apex. Penultimate joint of legs divided into two segments . . . *australis*.

Siriella halei (Tattersall). (personal name).

The short carapace covers all but the last thoracic somite and the middle of its front margin is scarcely at all prominent, but is broadly rounded; as indicated in the key, near the rounded antero-lateral corners the carapace

is produced into acute shoulders. Below the rounded rostral projection is an acute spine, or pseudorostral process. The scale of the second antennae does not reach quite to the end of the peduncle of the first antennae. The thoracic limbs are robust; the propodus in the third to eighth pairs is divided into two segments. The telson is twice as long as its basal width and has eighteen lateral spines on each side, three near the base being

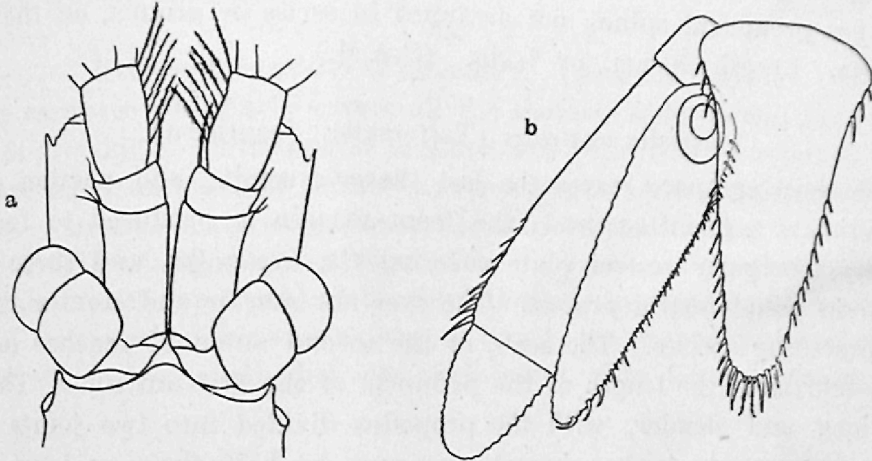


FIG. 357.—*Siriella halei*; a, anterior portion of body; b, telson and uropod (after Tattersall a, x 26; b, x 31).

separated from the others; at the apex are two long spines, between which is a pair of plumose setae and three very short spines. The outer branch of the uropods has the first joint four times as long as the second; the inner branch is shorter than the outer, longer than the telson, and has the spines on the inner margin arranged in series. Length: 12 mm., or $\frac{1}{2}$ in. (S.A.M.)

Siriella vincenti (Tattersall). (after St. Vincent Gulf).

The carapace is short and leaves the last thoracic segment exposed; the middle of its front margin is slightly produced to form a rounded rostrum, from beneath which projects a prominent pseudorostral spine. The scale of the second antennae almost reaches to the end of the peduncle of the first

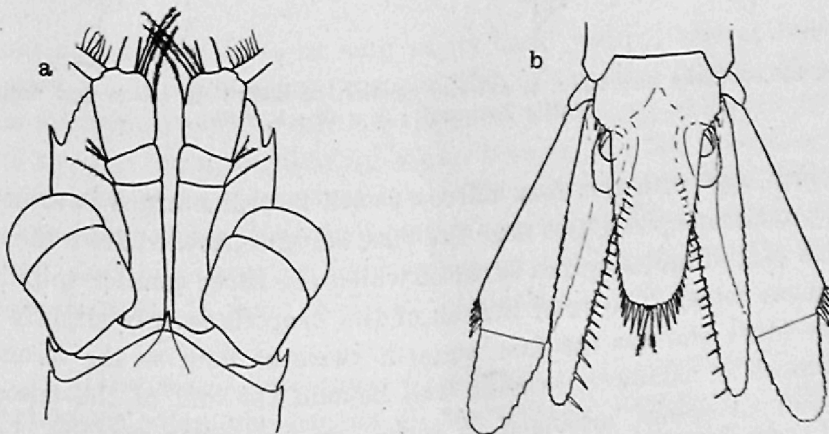


FIG. 358.—*Siriella vincenti*; a, anterior portion of body; b, telson and uropod (after Tattersall, x 35).

antennae. The legs are rather slender, with no apparent subdivision of the propodus. The telson is twice as long as its basal width, and has the apex broadly rounded; the margins are armed much as in the preceding species. The outer branch of the uropods is longer than the inner, and has its first segment two and one-half times as long as the second; the inner branch extends well beyond the apex of the telson, is much narrower than the outer, and has prominent spines, not arranged in series or groups, on the inner margin. Length: 8 mm., or $\frac{3}{10}$ in. (S.A.M.)

Siriella australis (Tattersall). (southern).

The short carapace leaves the last thoracic somite, and portion of the penultimate segment exposed; the front margin is produced to form an acutely triangular rostral plate covering the eye-stalks, and there is no apparent pseudorostral process. The eyes are shorter and stouter than in the preceding species. The scale of the second antennae reaches only to three-fourths of the length of the peduncle of the first antennae. The legs are long and slender, with the propodus divided into two joints. The telson is narrowly tongue-shaped, two and one-half times as long as its

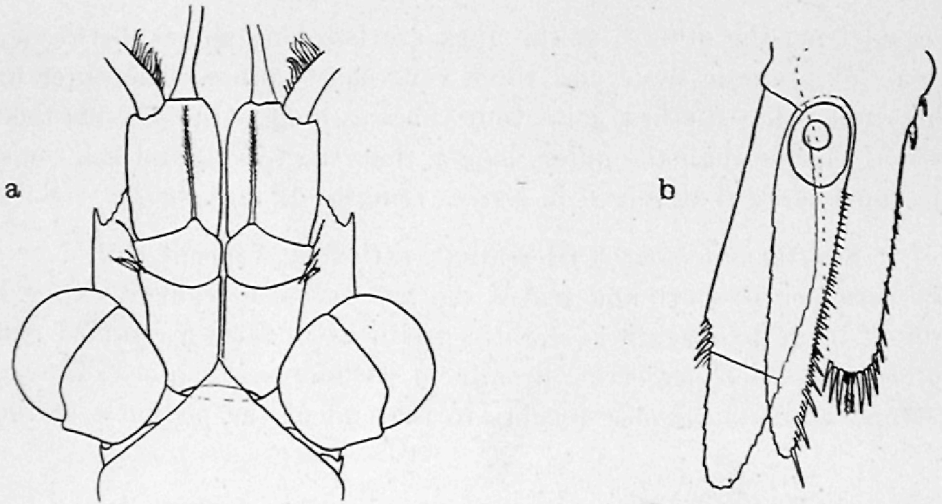


FIG. 359.—*Siriella australis*; a, anterior portion of body; b, telson and uropod (after Tattersall; a, x 22; b, x 39).

basal width, and with the apex narrow; each lateral margin is armed with sixteen prominent spines, two near the base being separated from the others; there is a pair of apical spines between which are three smaller spinules and two plumose setae. The outer branch of the uropods is only slightly longer than the inner and has the first segment twice as long as the second; the inner branch is narrower, extends well beyond the end of the telson, and has prominent spines, arranged in series, on the inner margin. Length: 10 mm., or $\frac{2}{5}$ in. (S.A.M.)

Family HETEROMYSINAE.

HETEROMYSIS (S. I. Smith).

Our two species may be separated thus:—

- a. Eye with a short, stout spine on inner edge overhanging the cornea *waitei*.
 aa. Eye without such spine *tasmanica*.

Heteromysis waitei (Tattersall). (personal name).

The carapace completely covers all the thoracic somites, and the rostral plate is prominent, subtriangular in shape, and with the apex rounded. The eyes are small, and each of them has an acute spine on the upper (or inner) border. The scale of the second antennae is broad, and reaches to the middle of the length of the terminal joint of the peduncle of the first antennae. The main branch (endopod) of the third thoracic appendages is robust, with a stout merus, which is twice as long as broad; the propodus of each of the rest of the legs is subdivided into nine joints. The telson is rather wide

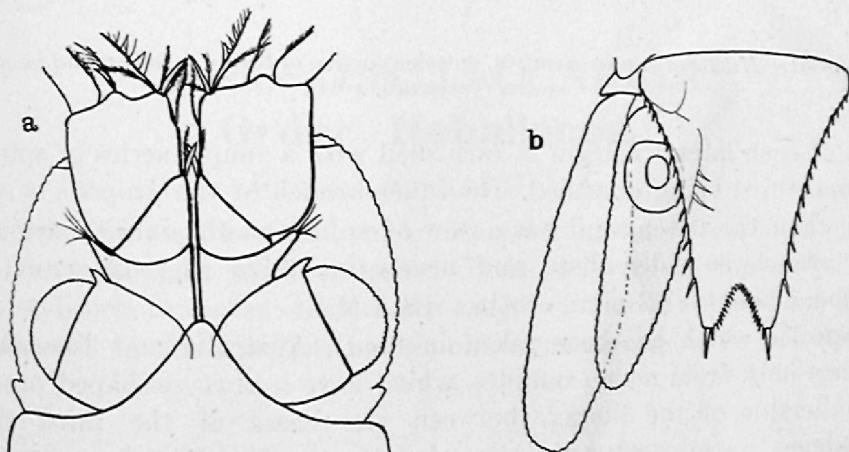


FIG. 360.—*Heteromysis waitei*; a, anterior portion of body; b, telson and uropod (after Tattersall, x 32).

(only one and a half times as long as its basal width), and is deeply cleft at the apex, the incision occupying one-fifth of the total length. The lateral margins are armed with a continuous series of spines, which extends from the base to near the apex, leaving a gap between the last lateral spine and the apical spine of each terminal lobe. The outer branch of the uropods is much longer and wider than the inner, which is one-fourth as long again as the telson, and has three or four spines on the inner margin near the statocyst. Length: 11 mm., or $\frac{7}{16}$ in. (S.A.M.)

Heteromysis tasmanica (Tattersall). (Tasmanian).

The carapace completely covers all the thoracic somites, and the rostral plate is prominent and subtriangular in shape, with the apex rather acute. The eyes are small, and have no spine on the inner margin. The scale of

the second antennae is rather broad, and is almost as long as the peduncle of the second antennae. The main branch (endopod) of the third thoracic limbs is robust, with the merus two and one-half times as long as broad; the propodus of each of the remaining legs is subdivided into seven joints. The wide telson is about one and one-third times as long as its basal width, and the deep apical cleft occupies one-fifth of its length. The distal two-

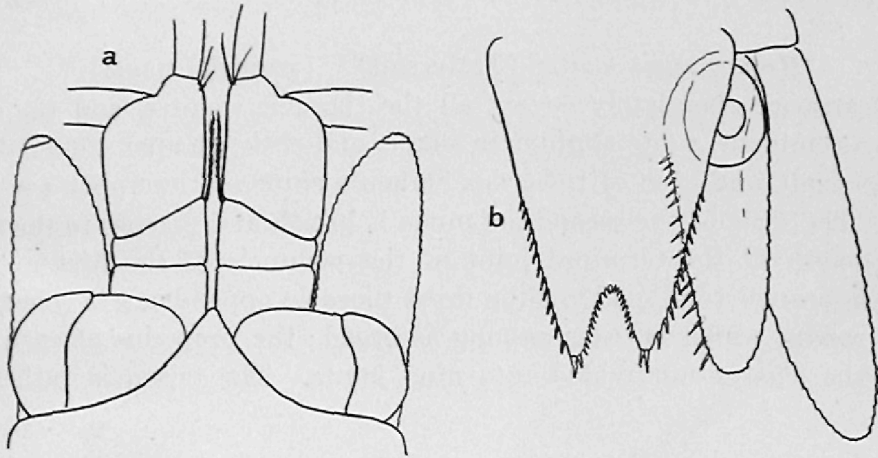


FIG. 361.—*Heteromysis tasmanica*; a, anterior portion of body; b, telson and uropod (after Tattersall, x 64).

thirds of each lateral margin is furnished with a simple series of spines, the proximal third being unarmed. The inner branch of the uropods is scarcely longer than the telson, and has a row of spines on the inner margin. The outer branch is wider than, and nearly one-third as long again as, the endopod. Length: 12 mm., or $\frac{1}{2}$ in. (S.A.M.)

A species which has been taken in South Australia and Tasmania. It is known only from male examples, which have a sausage-shaped process on the underside of the thorax, between the bases of the third thoracic appendages, an apparatus not occurring in the preceding form.

Chapter XII.—Series LEPTOSTRACA. The Leaf-legged Sea-fleas.

As previously mentioned (p. 12), the series Eumalacostraca and Leptostraca together form the important subclass of the Crustacea, known as Malacostraca; the species dealt with in Chapters II. to XI. belong to the Eumalacostraca. The Series Leptostraca includes numerous fossil species (some of which are a foot or more in length), and a few small, primitive living forms, which are referred to a single family.

The members of this series are very easily distinguished from those of the Eumalacostraca, for they have the abdomen divided into eight segments—seven somites and a telson. The seventh abdominal segment does not bear appendages and the telson terminates in a pair of movable rods, forming a fork with the telson. The thoracic somites are very short, and are not fused together; the whole thorax and part of the abdomen are loosely enclosed in a thin bivalve shell, or carapace. A rostral plate is hinged to the front of the carapace.

Division PHYLLOCARIDA.

Order Nebaliacea.

Family NEBALIIDAE.

The following may be added to the characters given above. The eyes are stalked, and the eight pairs of thoracic limbs are well developed, with leaf-like or styliform branches; these limbs are all similar in each of our genera. The pleopods of the first four abdominal segments are large two-branched

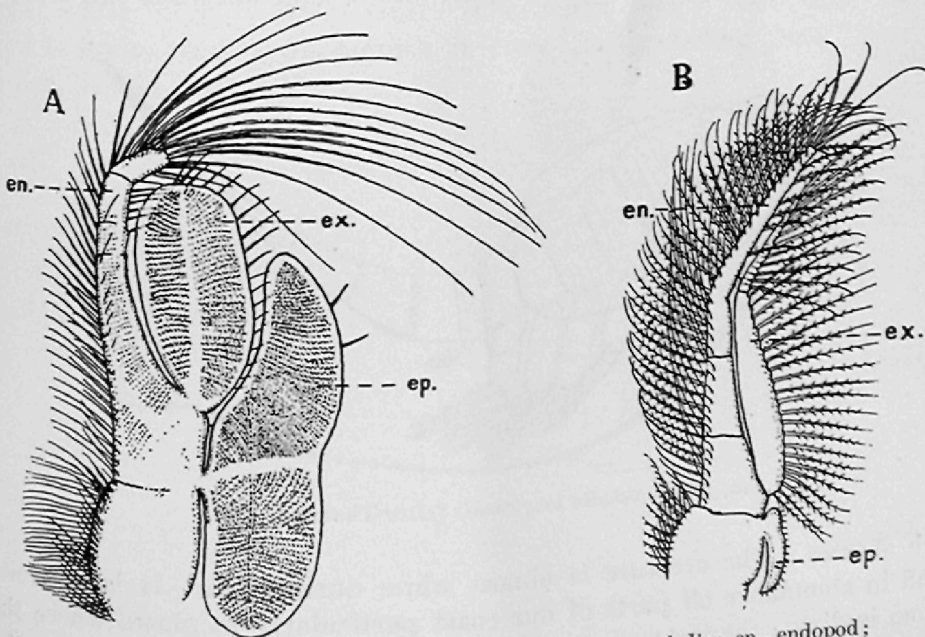


FIG. 362.—Thoracic limb of (A) *Nebalia*, and (B) *Paranebalia*; en., endopod; ex., exopod; ep., epipod (after Claus and Sars).

appendages; the inner branch of each bears a small basal lobe, furnished with hooked spines, which serve to link these swimming organs together in pairs. The appendages of the fifth and sixth abdominal segments are small, and each has only one ramus. These simple features and a reference to the illustrations, will enable the reader to recognise a member of the family.

Reproduction.—The flagellum of the second antennae is much longer in the male than in the female, and in adult males is sometimes nearly as long as the body. The male openings are situated on small elevations on the coxae of the last thoracic limbs; the oviducal apertures are inconspicuous. The eggs are packed in between the thoracic limbs, and are thus further protected by the bivalve carapace. The young hatch in this brood-pouch, and there remain until they have acquired all the general characters of their parents.

Two genera are represented in our waters:

- a. Thoracic limbs not or scarcely projecting beyond edge of carapace; each with a narrow endopod, a wide, flattened exopod, and a large expanded epipod. *Nebalia*.
- aa. Thoracic limbs projecting well beyond edge of carapace; each with endo- and exopod long and slender, and a tiny epipod *Paranebalia*.

The differences in the character of the thoracic limbs are shown in fig. 362.

NEBALIA (Leach).

Leaf-legged Sea-flea. *Nebalia longicornis* (Thomson). (long-horned).

The original figure of this species is here reproduced. In a series of ovigerous females from St. Vincent Gulf the second antennal flagellum is

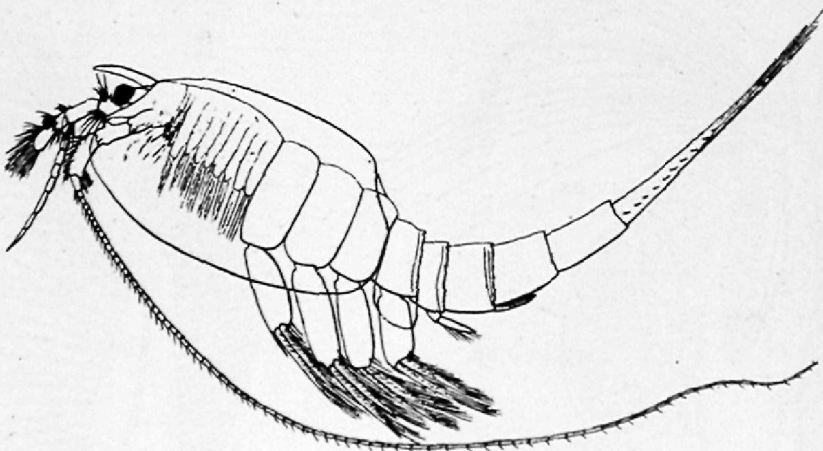


FIG. 363.—*Nebalia longicornis* (after Thomson, x 8).

much shorter. The creature is almost white during life. It is at times found in abundance off parts of our coast particularly in places where the bottom is dirty; for instance, during a recent dredging excursion near the

Outer Harbour, a number of hauls were made over sand which was odorous owing to the presence of decaying seaweed, and here the little crustacean occurred in great numbers. Length: 11 mm., or $\frac{7}{16}$ in. (S.A.M.)

PARANEBALIA (Claus).

Slender-legged Sea-flea. *Paranebalia longipes* (Sars). (long-legged).

A specimen which is referable to this, or a closely allied species, was taken in very shallow water at Marino Rocks, and others have been dredged in

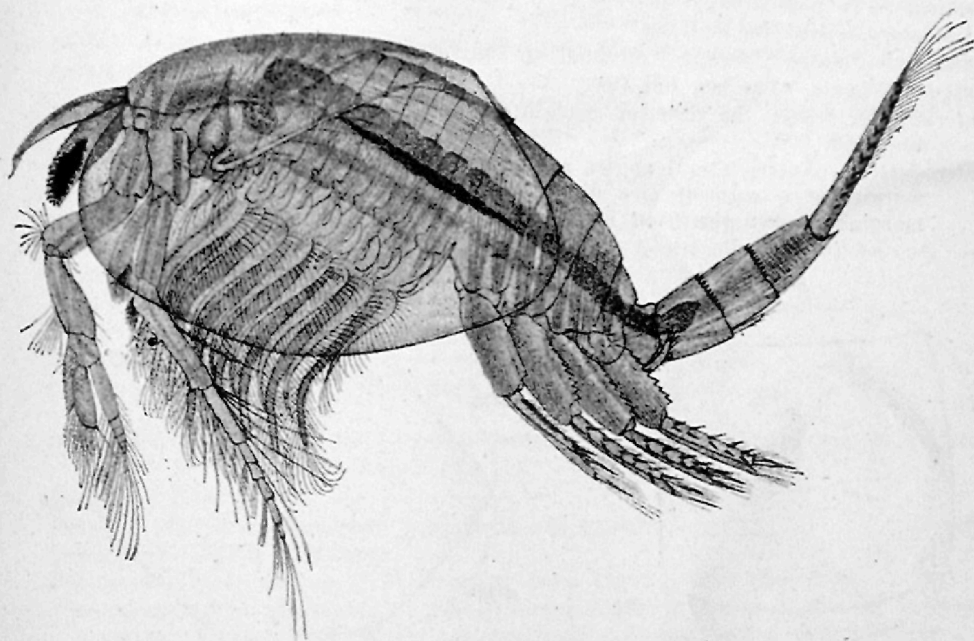
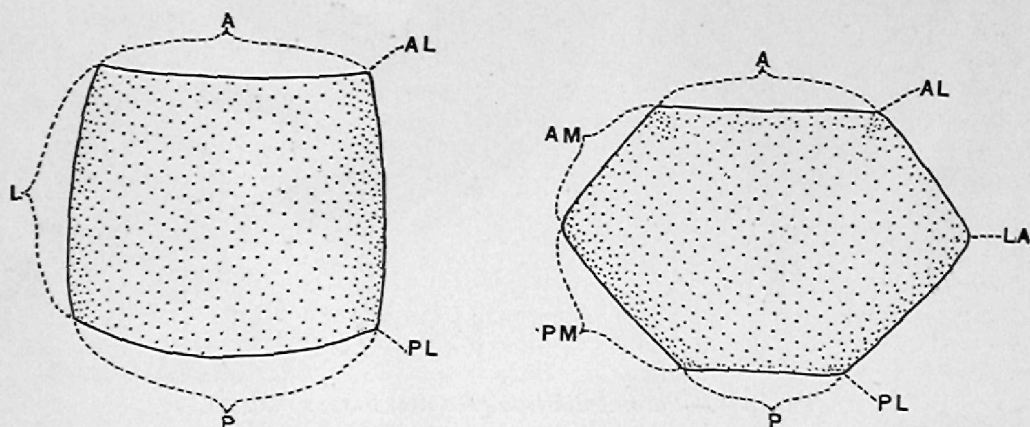


FIG. 364.—*Paranebalia longipes* (after Sars, x 13).

deeper water in St. Vincent Gulf. The much longer and more slender thoracic limbs readily distinguish it from the preceding form. Length: 9.5 mm., or $\frac{3}{8}$ in. (S.A.M.)

GLOSSARY.

- Abdomen*.—The usually distinctly jointed "tail," or hinder part of the body. The pleon.
- Acicle*.—A scale or lobe from the base of the second antennae of long-tailed Decapoda (fig. 26).
- Acuminate*.—Ending in a prolonged point.
- Aestivate*.—To pass drought periods in a state of torpor.
- Ambulatory*.—Used for walking.
- Antennae*.—Jointed "feelers" situated on the head.
- Ante-penultimate*.—The last but two.
- Anterior*.—In front; the anterior margin of a segment is the margin nearest the head.
- Antero-lateral*.—Antero-lateral angles are at the junction of the front and side margins of a segment (see diagram). Antero-lateral margins are sloping margins between the front margin and the side margins or angles.



These simple diagrams may be taken to represent outlines of the upper (dorsal) or lower (ventral) faces of segments, bodies, or parts, and indicate the designation of relative portions of the margin. In the case of a lower surface the angles and margins of the outline are often described as "inferior antero-lateral angles," "inferior anterior margin," etc., in contradistinction to the antero-lateral angles and anterior margin of the upper face.

A. Anterior (or front) margin; L. lateral (or side) margin; P. posterior (or hinder) margin; AL. antero-lateral angle; PL. postero-lateral angle; LA. lateral angle; AM. antero-lateral margin; PM. postero-lateral margin.

- Appendix masculina*.—A male appendage, or style, on the pleopods of certain Crustacea (fig. 233, e).
- Arm*.—The merus of a cheliped.
- Arthrobranch*.—A gill attached to membranes joining limbs to the body.
- Basis*.—The second joint (from the body) of a thoracic appendage (fig. 7).
- Bidentate*.—Having two teeth.
- Bifid*.—Cleft into two parts by a deep notch.
- Bilobed*.—Having two lobes; divided into two lobes.
- Biramous*.—Having two branches.
- Branchiae*.—Gills, or breathing organs, of aquatic species.
- Branchial regions*.—Large lateral areas of the carapace overlying the gills (fig. 95).
- Branchiostegites*.—Side-flaps of the carapace or shell, which protect the gills (fig. 6).
- Brood-pouch*.—A marsupium; a pouch in which eggs and young are carried by the mother (figs. 104, 255, 344, 354, etc.).
- Buccal frame or cavity*.—The frame of the mouth or mouth cavity.

Carapace.—A shield or cover, composed of the head segments fused with one or more of the thoracic segments, and covering the head and all or part of the thorax; the cephalothorax (fig. 6).

Cardiac region.—An area of the carapace overlying the heart (fig. 95).

Carina.—A ridge, or elevated line.

Carinate.—Having a carina or longitudinal elevated ridge.

Carpus.—The fifth joint (from the body) of a thoracic appendage (fig. 7).

Caudal.—Pertaining to the tail, or abdomen.

Cephalon.—The head, which see.

Cephalothorax.—See carapace.

Cervical, or branchial, groove.—A groove or series of grooves separating the anterior regions of the carapace from the hinder regions (fig. 95).

Chela.—A pincer formed by the last two joints of a limb (propodus and dactylus).

Chelate.—Having a chela, which see.

Cheliped.—A pair of limbs terminating in a chela, or pincer (figs. 6, 95, etc.).

Chitin.—The substance of which the hard outer "shell" and other parts of Arthropods is largely composed.

Ciliate.—Fringed with hairs.

Coalesced.—Or fused; grown together or united to form one body.

Commensal.—An animal living with another but not at the expense of, or interfering with, its host.

Compressed.—Flattened as if by lateral pressure; deeper than wide.

Coxa.—The first or basal joint of a limb (fig. 7).

Coral plate.—The expanded basal segment, or coxa, of a leg.

Crenulate.—Cut into tiny blunt teeth or small rounded notches.

Dactylus.—The seventh, or terminal joint, of a thoracic appendage; in a chela this is the movable finger (fig. 7).

Deflexed.—Bent down.

Dentate.—Toothed; furnished with tooth-like prominences.

Denticulate.—With tiny teeth.

Depressed.—Flattened as if by pressure from above; wider than deep.

Dimorphism.—The producing of two different forms of the same species; in some cases the male and female are strikingly different (sexual dimorphism).

Distal.—Furthest from the centre of the body (opposed to proximal).

Dorsal.—Pertaining to the back or upper surface; *dorsum*, the back.

Ecdysis.—The moulting, or casting, of the shell (fig. 11).

Endopod.—The inner branch of an appendage (fig. 5).

Endostome.—Or palate; the roof of the mouth cavity (fig. 96).

Epipod.—An appendage often attached to the coxa of a limb (fig. 7).

Epistome.—A small plate immediately in front of the mouth cavity (fig. 96).

Exopod.—The outer branch of an appendage (fig. 5).

Fingers.—The digits of a chela or pincer; the immovable finger, or thumb, is a process of the propodus; the movable finger is the dactylus (fig. 6).

Flagellum.—The usually flexible and many jointed "lash" of an antenna or feeler; as a rule narrower than, and distinct from, the stouter peduncle or base.

Fossettes.—Small cavities into which the first antennae of crabs fold (fig. 96).

Frontal region.—A small median area behind the front margin of the carapace (fig. 95).

Gastric region.—A large median area of the carapace; subdivided into epi-, proto-, meso-, and urogastric regions (fig. 95).

Gastroliths.—Tiny masses found in the stomachs of fresh water crayfishes (fig. 69).

Geniculate.—Bent like a knee.

Genital openings.—The ends (opening to the exterior) of the tubes from the testes or ovaries.

Gnathopods.—The first and second legs, when chelate, sub-chelate, or prehensile, are so called in certain groups (fig. 205).

Granules.—Very tiny elevations.