

median tubercles on the upper surface of the telson. Length: 12.5 mm., or $\frac{1}{2}$ in. (S.A.M.)

This is the type species of the genus, and was originally found in New South Wales; it has been dredged in moderately deep water (75-100 fathoms) in the Great Australian Bight off South Australia.

Group **EUBRANCHIATAE.**

In some of the Eubranchiatae the wrinkles of the outer branch of the fifth pair of pleopods render the two-jointed condition of this ramus, referred to in the key to the groups, very obscure. The presence of branchial folds on the exopod of the fifth pleopods, however, at once shows that the species can belong to neither of the other two groups.

- a. Outer branch of third pair of pleopods unjointed.
 - b. First joint of second antennae of usual shape, not expanded, as a large free plate in front of the head.
 - c. Male with processes from either sixth or seventh thoracic segments.
 - d. Male with a pair of processes from the sixth thoracic segment, but no processes from the seventh segment *Dynamene.*
 - dd. Male with no processes from sixth thoracic segment, but with a broad, four-lobed process from seventh segment *Dynamenopsis.*
 - cc. Both sexes similar, without processes from either sixth or seventh thoracic segments *Dynamella.*
- bb. First joint of first antennae expanded, protruding as a large free plate in front of the head.
 - e. Second joint of first antennae not expanded and plate-like *Amphoroidea.*
 - ee. Second joint of first antennae expanded like first joint *Amphoroidella.*
- aa. Outer branch of third pair of pleopods two-jointed.
 - f. Seventh segment of thorax of male without median process.
 - g. Second antennae unusually robust and modified as grasping organs, the last joint of the peduncle being bent at an angle to the preceding joint.
 - h. End of abdomen with a distinct median notch *Moruloidea.*
 - hh. End of abdomen with no trace of notch (our one species) or only feebly emarginate *Cassidinopsis.*

- gg. Second antennae not so modified.
- i. Body very convex and coxal plates not produced laterally . . . *Cerceis*.
 - ii. Body much depressed and flat, with coxal plates greatly produced laterally *Platycerceis*.
- ff. Seventh segment of thorax of male with a median process *Haswellia*.

DYNAMENE (Leach).

In this genus the usual male appendage of the second pleopods is not developed, even in adult specimens; the latter have a pair of backwardly directed dorsal processes from the *sixth* thoracic segment.

Dynamene ramuscula (Baker). (branching, like a twig).

The body of the male is rather narrow, strongly convex, and clothed with scattered, long hairs. The pair of processes from the hinder part of the sixth thoracic segment reach back nearly as far as the end of the abdomen; each is slightly sinuous, and is bifid apically, with one branch of the tiny fork directed downwards. The upper surface of the telsonic segment is convex and hairy, with a large tubercle in the centre, two smaller tubercles

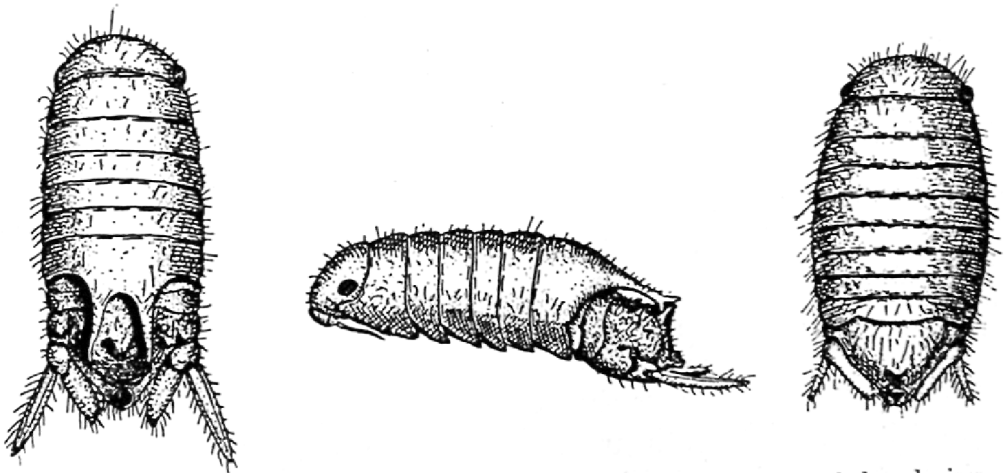


FIG. 290.—*Dynamene ramuscula*; dorsal and side views of male, and dorsal view of female (after Baker, x 8).

on each side, and one low tubercle above the base of each uropod. The terminal abdominal notch is circular, situated on a conical projection, and has the slit below completely closed. There is an extremely small median terminal process. The outer branch of the uropods is lanceolate, narrower and longer than the inner ramus, which reaches a little beyond the end of the abdomen, and is rather obtuse apically.

The female is much more oval in shape, with the legs more slender, without a pair of dorsal processes on the thorax, and with the branches of the uropods subcylindrical, short and subequal in length. The posterior notch

of the abdomen is triangular, almost closed behind, and the hinder part of the pleon has only one low median tubercle. Length: 5 mm., or $\frac{1}{4}$ in. (S.A.M.)

This form was found on sponges in St. Vincent Gulf.

DYNAMENOPSIS (Baker).

As the name implies, this genus is much like the preceding; it differs notably in the absence of processes from the sixth thoracic segment of the male, and the lobed condition of the posterior part of the dorsum of the seventh somite of the thorax.

Dynamenopsis obtusa (Baker). (blunt).

In the male the body is very convex, ovate, with the upper surface of the thorax smooth and that of the abdomen rather rough. The seventh thoracic segment is produced posteriorly so as to almost completely cover the anterior part of the abdomen, and its hinder margin is shallowly incised to form four short, rounded lobes. The telsonic segment is domed, and has a pair of submedian tubercles anteriorly, behind which is a single median

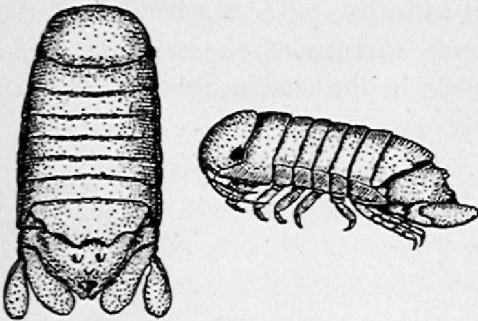


FIG. 291.—*Dynamenopsis obtusa* (after Baker, x 5).

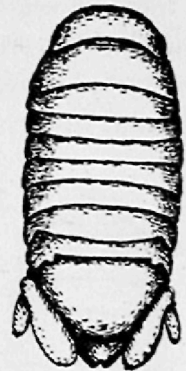


FIG. 292.—*Dynamenella parva* (after Baker, x 14).

tubercle. The posterior notch has the opening transversely ovate, closed behind and below; the sides of the abdomen are inturned below more than usual, forming an incomplete chamber for the pleopods. The legs are robust, sparsely spined, and with the usual furry pads. The branches of the uropods are subequal in size, plate-like, and suboval in shape; the outer ramus is slightly concave above. Length: 7 mm., or $\frac{9}{32}$ in. (S.A.M.)

Apparently a rare species.

DYNAMENELLA (Hansen).

Another genus very like *Dynamene*. There are, however, no processes from any of the thoracic segments, and the second pleopods of the male have an appendix masculina.

Dynamenella parva (Baker). (small).

The body is convex, oval, and with the surface smooth and almost glossy. The first segment of the abdomen is very short. The telsonic segment is strongly domed, with indication of a median longitudinal depression or

groove. The posterior notch is small and simple. The legs are strong, sparsely spined, but with dense clothing of soft woolly hair. The male appendage of the second pleopods is thick, rounded at the apex, and reaches for one-third its length beyond the inner branch. The rami of the uropods are plate-like, with rounded apices; the inner branch reaches to about the level of the end of the abdomen, but the outer is small, less than half as long as the endopod. Length: 3 mm., or $\frac{1}{8}$ in. (S.A.M.)

This tiny species was taken on the reef at Port Willunga.

AMPHOROIDEA (M. Edwards).

This and the following genus are easily separated from our other Eubranchiate genera by the expanded and enlarged first joint of the first antennae. The next genus has the second, as well as the first, joint of this pair of "feelers" thus expanded.

Two species, both described from male examples, have been recorded.

- a. Body narrow. Both branches of uropods rounded apically. *angustata*.
 aa. Body wide. Exopod of uropods acute, and endopod truncate, apically *elegans*.

Amphoroidea angustata (Baker). (narrow).

The moderately convex body is narrow, with the surface smooth; there are no dorsal projections from any of the segments, and the side-plates of the thoracic segments are nearly vertical. The telsonic segment is sub-

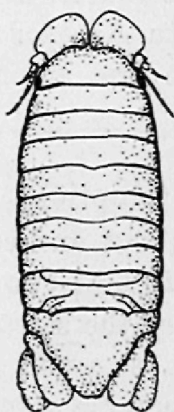


FIG. 293.—*Amphoroidea angustata*
(after Baker, x $6\frac{1}{2}$).

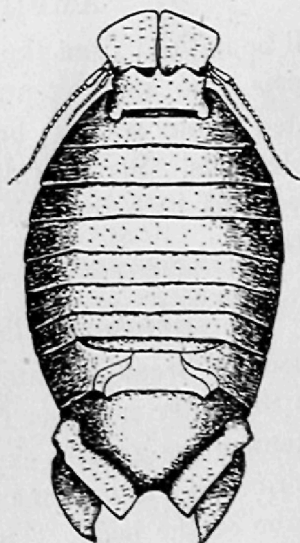


FIG. 294.—*Amphoroidea elegans*
(after Baker, x 4).

triangular in shape, domed above, with the apex rounded, and, as seen from above, with a very obscure terminal notch. The enlarged basal joints of the first antennae take the form of ovate plates, projecting well in front of the head, and with the inner margins divergent one from the other; the second segment is slightly expanded, but is small, while the joints of the

peduncle of the second antennae are also a little flattened and expanded. The legs are hairy, but almost devoid of spines. The branches of the uropods are oval in shape, with the apices rounded, and are subequal in size. Length: 7 mm., or $\frac{9}{32}$ in. (S.A.M.)

Amphoroidea elegans (Baker). (dainty).

The not very convex body is broad and ovate, with the upper surface very faintly tuberculate down the middle; the side-plates of the thorax are nearly horizontal, scarcely at all directed downwards. The anterior margin of the head is trilobed, and none of the thoracic or pleon segments has dorsal processes. The broad telsonic segment is domed above, and has the lateral margins a little concave and the posterior notch very shallow. The plate-like first joints of the first antennae are somewhat quadrate, with the inner edges a little concave, leaving a slight gap between the two. The other peduncular joints of both antennae are slender. The legs are moderately robust, hairy, but with few spines; the first pair are the smallest and the second the longest. The outer branch of the uropods is longer than the inner, broad and suboval, with the apex tapering and acute; the inner ramus is obliquely truncate at the apex. Length: 14 mm., or $\frac{9}{16}$ in. (S.A.M.)

This species has been taken only once, at Victor Harbor. The single-known specimen was found on green Algae, and was green during life, marked with minute dots.

AMPHOROIDEA (Baker).

As will be noticed from the illustrations, this genus superficially resembles *Chitonopsis*, the only genus of the next group (the Platybranchiatae) represented in our waters; but it differs greatly, of course, in the structure of the pleopods. Structurally, it is very close to *Amphoroidea*, but, as mentioned, has both first and second joints of the first antennae enlarged and plate-like.

Amphoroidella elliptica (Baker). (elliptic).

The body is broadly ovate, moderately convex above and concave below, and has the outer margins fringed with hair. The first two joints of the first antennae are greatly expanded in front, and at the sides, of the head, the anterior and lateral margins of which do not, as usual, form part of the outline of the body. The side-plates of the thoracic segments and the lateral parts of the abdomen are also much expanded. The telsonic segment is convex, with a slight median hump near the anterior margin and with no trace of a terminal notch, the apex being rounded. The almost spineless legs are subequal in size. The endopod of the uropods is large, somewhat ovate, and tapers to the rounded extremity, which reaches to or beyond the end of the abdomen; the base is expanded laterally, and the small exopod is articulated in the incision below this peduncular extension.

Apparently the male is always much smaller than the female, which is figured, but the sexes are otherwise very alike. Length: 16 mm., or $\frac{5}{8}$ in. (S.A.M.)

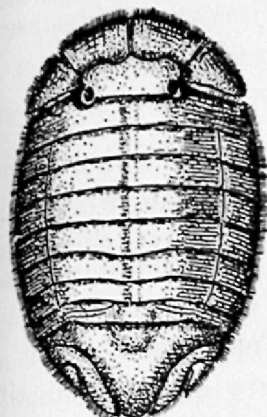


FIG. 295.—*Amphoroidella elliptica*
(after Baker, x 3).



FIG. 296.—*Moruloidea lacertosa* (after
Baker, x 4).

At the outer edge of the Port Willunga Reef, and in shallow water on Kangaroo Island and elsewhere, living sponges may be found attached to rotten limestone and other bases. This queer flattened crustacean is commonly found in small numbers on the smooth surfaces of these sponges. It much resembles a small chiton, and moves about with a similar, rather slow gliding motion.

MORULOIDEA (Baker).

In this and the following genus the peduncle of the second antennae is unusually stout, with the last joint bent at an angle, so that these appendages form grasping organs. The condition is shown in the illustration of the antennae of *Cassidinopsis* (fig. 297, b).

Moruloidea lacertosa (Baker). (brawny or robust).

The body is only moderately convex, oval in shape, and broad owing to the considerably expanded side-plates of the thorax and lateral parts of both portions of the abdomen; these expanded portions extend sideways at an angle from the body, leaving a shallow groove at their junction with the latter. The abdomen has scattered tubercles on the upper surface; the expanded sides of the anterior part end acutely. The telsonic segment is domed above and the margin of each thin lateral part is acute anteriorly, insinuate, and ends in a tooth on each side of the terminal notch, which is deep, subrectangular, and with well defined lateral angles. In a normal position the flagellum of the robust second antennae is turned at a right angle to the fifth peduncular joint, which is turned at right angles to the fourth joint. The first pair of legs are much more robust than the others. The peduncle of the uropods is acute laterally; the inner branch has the outer margin curved, forming an angle with the base, and the apex bifid, and

does not reach to the end of the telson. The exopod is shorter and narrower and ends acutely. Length: 9.5 mm., or $\frac{3}{4}$ in. (S.A.M.)

Known only from a few specimens found in St. Vincent Gulf. The female has rather smaller antennae than the male and has a median lobe in the posterior notch of the telson.

CASSIDINOPSIS (Hansen).

The second antennae are prehensile as in the preceding genus, but in our one species there is no trace of a posterior notch in the telson, whereas in *Moruloidea* a large notch is developed. In other respects the two genera are very alike.

Cassidinopsis tasmaniae (Baker). (after Tasmania).

The body is very faintly granulate anteriorly, not very convex, and with the side-plates of the thorax outstanding. The head is considerably narrower than the thorax, which has the sides nearly parallel. The short anterior part of the abdomen has the lateral parts projecting like the side-plates of the thorax. The telsonic segment is convex above with a

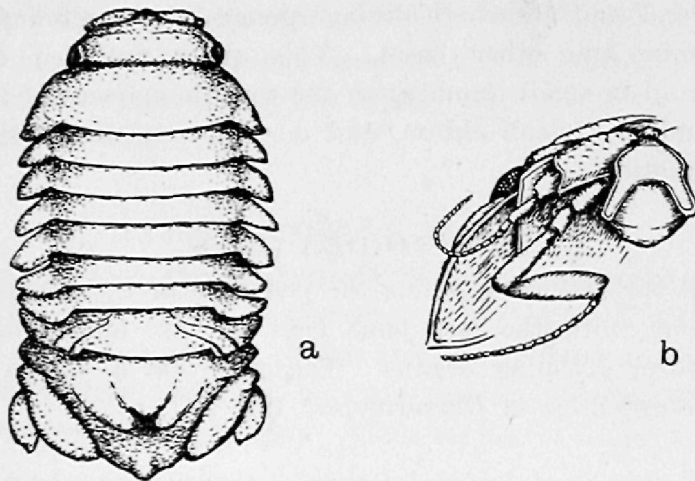


FIG. 297.—*Cassidinopsis tasmaniae* (after Baker); a, male (x 3); b, antennae, etc. (x 6).

large median hump; on each side of this, and closely approximate to it, is a more elongate lobe. The telsonic apex is slightly produced and rounded, and has no terminal notch; the inferior channel is shallow. The first pair of legs are more robust than the others and are unarmed; the remaining legs have the usual furry pads and only a few spines. The branches of the uropods are suboval in shape, with the apices subacute; the inner does not reach to the end of the abdomen and is larger than the exopod, which has a slight insinuation in the outer margin near the apex.

The female has the telsonic segment more rounded at the end than in the male, with only one median dorsal hump; also, the first legs have a few spines and the second antennae are slightly more slender. Length: 18 mm., or $1\frac{1}{16}$ in. (S.A.M.)

When alarmed the animal curls up, but does not form a really perfect sphere. Some of the very flat Sphaeromids fold like a book, a condition approached in *Cassidinopsis* and in *Moruloidea*, which show a distinct hinge at the middle of the length of the body when adopting this quiescent and presumably protective attitude. As indicated by the specific name, *C. tasmaniae* was first found in Tasmania; it has more recently been taken in shallow water in South Australia.

CERCEIS (M. Edwards).

At least six species of the genus occur. The typical forms have the body convex and ovate in shape, with the head elongate and triangular. The first two joints of the antennae are large.

- a. Telsonic segment with three conspicuous humps on dorsal surface *trilobata*.
- aa. Telsonic segment without three conspicuous humps.
 - b. Telsonic segment with a short median carina, ending in a backwardly directed spine. *acuticaudata*.
 - bb. Telsonic segment without a carina ending in a spine.
 - c. Side-plates of seventh thoracic segment of male not ending in a hook. Female with only a small and rounded median tubercle on dorsum, or with surface smooth or granulate.
 - d. Head elongate. Telson with a single median tubercle on upper surface; exopod of uropods pointed apically *tridentata*.
 - dd. Head short. Telson without a median tubercle on dorsal surface. Exopod of uropods obtuse apically.
 - e. Telson with upper surface distinctly granulate, and with a deep terminal notch *obtusa*.
 - ee. Telson with upper surface not granulate, and with a shallow terminal notch . . . *ovata*.
 - cc. Side-plates of seventh thoracic segment of male ending in a hook posteriorly. Female with a large triangular median tubercle on upper surface *trispinosa*.

Cerceis trilobata (Baker). (with three lobes).

The body is elongately ovate and the head is long. The anterior portion of the abdomen is slightly elevated in the middle. The telsonic segment has the lateral margins a little insinuate and its upper surface bears three elongate humps, which end abruptly at about the middle of the length; the posterior notch is nearly vertical, shallow as seen from above, and the median process is represented by a slight convexity. The branches

of the uropods are plate-like, not very wide, and are subequal in size; the end of each is subtruncate, with the outer angle (or apex) subacute and the truncate margin serrate.

As usual, the adult female has the body broader and the legs more slender. The uropods are much narrower than in the male, suboval in shape, with rounded apices. Nearly adult females resemble the males. Length: 8 mm., of $\frac{3}{10}$ in. (S.A.M.)



FIG. 298.—*Cerceis trilobata* (after Baker, x 5).

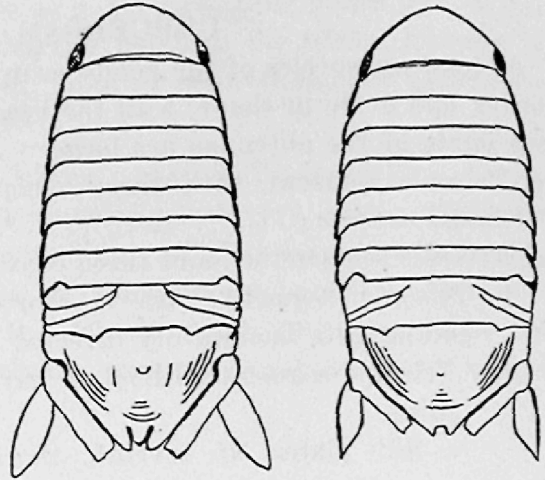


FIG. 299.—*Cerceis tridentata*, male and female (after Baker, x 3).

The species occurs on wooden jetty piles in St. Vincent Gulf. Young males and females are very much like those of *Haswellia emarginata*, but the male of the last-named form develops the distinguishing dorsal thoracic process quite early in life.

Cerceis acuticaudata (Haswell). (sharp-tailed).

This greatly resembles the next species (which is illustrated), but differs in the following characters:—On the anterior half of the telsonic segment is a median carina, which ends posteriorly in a sharp, backwardly directed spine; immediately behind this is a transverse patch of short hairs. The posterior notch of the telson is deep, rounded, and with prominent, acute lateral angles. The inner branch of the uropods is obliquely truncate at the end, with the inner apical angle rounded and the outer produced to a point, the ramus as a whole approaching an S-shape. The exopod is longer than the endopod, lanceolate with the apex acute, and with two spines at the middle of the length of the inner border, partly concealed by the short fringing hairs. During life the predominaing colour is dark green or dark olivaceous, with three somewhat indistinct bars on the body, the head, and the sides of the thorax, mottled and spotted with white. Length: 19 mm., or $\frac{3}{4}$ in. (S.A.M.)

This is a common species, and numbers may be secured by sweeping a net through weed in shallow water, or by turning over stones on reefs at low tide. It is an extremely rapid swimmer, but crawls slowly on land. When

placed on a firm surface, such as the seat of a boat, the animal may surprise one by suddenly "flipping" itself back into the water. It springs by smartly snapping the pleopods downwards, the action producing a faint "click." When disturbed under stones at low tide, it occasionally makes for water in a series of short leaps, propelling itself with the aid of the pleopods as described, until finally, with a longer jump, it reaches its objective.

Cerceis tridentata (M. Edwards). (with three teeth).

The body is elongate ovate, and the head is long. The telsonic segment has a small, median dorsal tubercle, and the posterior notch is deep and narrow; the median terminal process is slightly elevated, subtriangular in shape, and does not extend back quite to the level of the rounded lateral angles of the notch. The inner branch of the uropods is transversely truncate at the apex, and reaches a little beyond the end of the abdomen; the exopod is slightly longer, narrowly oval in shape, and pointed apically.

The body of the female is more broadly ovate and more convex than in the male, while the telson is more domed, with the median tubercle less distinct. The posterior notch of the telson is simple, shaped like an inverted U. The uropods are similar to those of the male, but smaller, and the legs are less robust. Length: 16 mm., or $\frac{5}{8}$ in. (S.A.M.)

Cerceis obtusa (Baker). (blunt).

The body is broadly oval and convex, and the head is short, not elongate, as in the preceding species of the genus. The surface of the thorax is slightly roughened with granules. The greater part of the dorsum of the telsonic segment is elevated and dome-like, with the surface distinctly granulate; the posterior notch is deep, narrower between the acute lateral angles than at its base, and with a V-shaped median process, which reaches

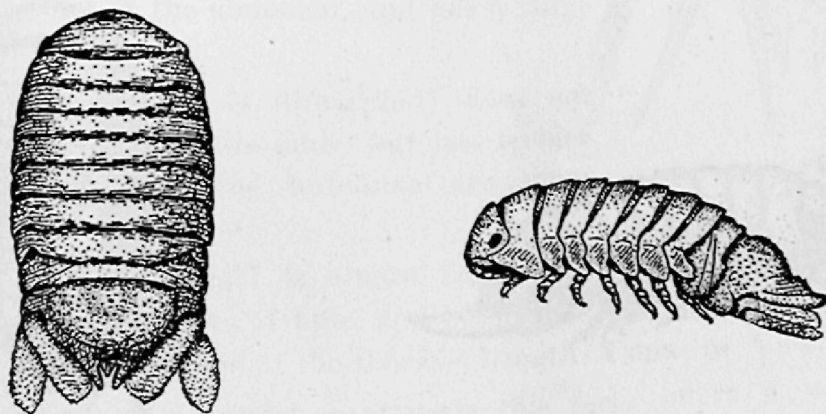


FIG. 300.—*Cerceis obtusa* (after Baker, $\times 4\frac{1}{2}$).

only to the middle of the length of the notch. The plate-like uropods are moderately broad; the inner branch is truncate at the end, which extends beyond the apex of the telson; while the exopod is subovate, and is a little longer than the endopod. Length: 9 mm., or $\frac{3}{8}$ in. (S.A.M.)

As in the case of *C. trilobata* and *C. ovata*, this species has been taken only in St. Vincent Gulf.