

TRANSACTIONS  
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- I. *On New or Rare Crustacea of the Order Cumacea from the Collection of the Copenhagen Museum.*—Part I. *The Families Bodotriidæ, Vauntomponiidæ, and Leuconidæ.* By W. T. CALMAN, D.Sc., F.Z.S., British Museum (*Natural History*).

(Received December 5, 1906; read February 5, 1907.)

[PLATES I.—IX.]

THIS paper deals with a part of a rich collection of Cumacea belonging to the Zoological Museum of Copenhagen, and entrusted to me for examination by the kindness of Dr. F. Meinert and Dr. H. J. Hansen. It also includes a description of some specimens sent to me from New Zealand by Mr. G. M. Thomson, which throw light on species represented in the Copenhagen Collection.

Altogether 30 species are dealt with, and of these 25 are regarded as new. The majority of the species are derived from collections made in New Zealand and the Gulf of Siam by Mr. H. Suter and Dr. Th. Mortensen respectively. There is no ground for supposing that these localities are unusually prolific in Cumacea, and the rich collections obtained there simply help to indicate how much remains to be done by competent collectors in investigating the micro-crustacean fauna of shallow water in tropical and southern seas.

Among the more interesting of the forms described below attention may be called to the remarkable new species for which I have established the genus *Zygosiphon*; to the very aberrant forms of Leuconidæ comprised in the new genera *Heteroleucon*,

*Paraleucon*, and *Hemileucon*, and to the long series of new species referred to the genus *Cyclaspis*. The re-discovery of Sars's *Leptocuma kingbergii* is also of interest, but the solitary specimen, though of relatively gigantic size, has not enabled me to add much to our knowledge of the species.

By the courtesy of the authorities of the Copenhagen Museum, a selection of the specimens here described has been retained for the British Museum.

*List of the Species dealt with in this Paper.*

Family BODOTRIIDÆ.

<i>Bodotria sublevis</i> , sp. n.	Gulf of Siam.
„ <i>similis</i> , sp. n.	„
„ <i>siamensis</i> , sp. n.	„
„ <i>parva</i> , sp. n.	„
<i>Cyclaspis longipes</i> , sp. n.	West Indies.
„ <i>levis</i> G. M. Thomson.	New Zealand.
„ <i>elegans</i> , sp. n.	„
„ <i>similis</i> , sp. n.	„
„ <i>uniplicata</i> , sp. n.	Gulf of Siam.
„ <i>unicornis</i> , sp. n.	West Indies.
„ <i>cingulata</i> , sp. n.	Gulf of Siam.
„ <i>thomsoni</i> , sp. n.	New Zealand.
„ <i>biplicata</i> , sp. n.	„
„ <i>triplicata</i> , sp. n.	„
<i>Eocuma longicornis</i> , sp. n.	Suez.
„ <i>lata</i> , sp. n.	Gulf of Siam.
„ <i>stellifera</i> , sp. n.	„
„ <i>producta</i> , sp. n.	Penang.
<i>Zygosiphon mortenseni</i> , gen. et sp. n.	Gulf of Siam.
<i>Iphinoë</i> sp.	„

Family VAUNTOMPSONIIDÆ.

<i>Vauntomponia cristata</i> Spence Bate.	West Indies.
„ <i>arabica</i> , sp. n.	Suez Canal, Aden.
<i>Leptocuma kingbergii</i> G. O. Sars.	Straits of Magellan.

Family LEUCONIDÆ.

<i>Leucon</i> (?) <i>heterostylis</i> , sp. n.	New Zealand.
<i>Eudorella truncatula</i> (Spence Bate).	„
<i>Eudorellopsis resimus</i> , sp. n.	„
<i>Heteroleucon akaroënsis</i> , gen. et sp. n.	„
<i>Paraleucon suteri</i> , gen. et sp. n.	„
<i>Hemileucon uniplicatus</i> , gen. et sp. n.	„
„ <i>comes</i> , sp. n.	„

## Family BODOTRIIDÆ.

## Genus BODOTRIA.

As I have elsewhere pointed out (Cumacea of Siboga Exped. p. 5), this genus is distinguished from *Cyclaspis* by very slight characters, of which the chief is the possession of a longitudinal lateral ridge on the carapace, and even this becomes inconspicuous in some of the new species described below.

*Key to the Species of Bodotria.*

- A. Endopod of uropods composed of two segments.
- a. A single lateral ridge on carapace.
    - a. Lateral ridge well-marked, extending on to free thoracic somites.
      - a'. Thoracic somites keeled dorsally . . . . . *B. scorpioides* (Mont.).
      - b'. Thoracic somites produced dorsally into laminar crests . . . . . *B. gibba* (Sars).
    - b. Lateral ridge faintly marked on carapace, not developed on thoracic somites . . . . . *B. sublevis*, sp. n.
  - b. Two distinct lateral ridges on carapace . . . . . *B. pulchella* (Sars).
- B. Endopod of uropods unsegmented.
- a. Lateral ridge well-marked, extending on to thoracic somites.
    - a. Basis of first leg (in female)  $1\frac{1}{2}$  times as long as distal segments. *B. arenosa* Goodsir.
    - b. Basis of first leg (in female) shorter than distal segments . . . . . *B. similis*, sp. n.
  - b. Lateral ridge faintly marked on carapace, not developed on thoracic somites.
    - a. Antennal tooth of carapace acute . . . . . *B. siamensis*, sp. n.
    - b. Antennal tooth of carapace rounded . . . . . *B. parva*, sp. n.

*B. pulex* Zimmer has been omitted from the key as I have seen no specimens. It has the endopod of the uropods unsegmented, and the lateral ridge faintly marked on the carapace but well-developed on the free thoracic somites.

In the collection of the Rev. Canon Norman I have examined four specimens labelled "*Cuma folinii* Fischer" from the Bay of Biscay. I have been unable to discover whether any description of this species has been published. It is closely allied to *B. arenosa*, of which, perhaps, it may be only a variety.

BODOTRIA SUBLEVIS, sp. n. (Plate I. figs. 1-3.)

*Description of adult Female.*—Total length 2.6 mm.

The carapace is a little more than two-sevenths of the total length. The dorsal edge, seen from the side, is nearly straight, with a slight notch at about one-third of the length from the hind margin. The pseudorostrum is nearly horizontal. The dorsal keel is distinct but not prominent on the carapace and thoracic somites. On

the carapace the lateral keel is distinct only in its middle portion, and its posterior end curves slightly upwards; it is not developed on the first free somite, and only a slight lateral elevation indicates its place on the posterior thoracic somites; below it on the carapace is a slightly marked elevation, not forming a distinct keel, and behind the above-mentioned notch on the dorsal surface is a slight transverse elevation, not sharply defined. Antennal tooth triangular. Basis of first legs a little shorter than the remaining segments together. Uropods longer than the last two somites together, the rami two-thirds as long as the peduncle. Endopod of two segments, the proximal nearly four times as long as the distal, with five spines on its inner edge; distal segment with two spines.

*Immature Male*.—Total length 2·6 mm.

Resembling the female, except that the carapace is still smoother, the lateral keel being the only one distinct.

*Occurrence*.—Gulf of Siam, "Koh Kam, 5 fathoms, 6/2/00." Th. Mortensen Coll., Copenhagen Museum. Co-types in British Museum.

*BODOTRIA SIMILIS*, sp. n. (Plate I. figs. 4–9.)

*Description of adult Female*.—Total length 2·15 mm.

Closely resembling in general characters *B. arenosa* Goodsir. Carapace less than two-sevenths of total length. Median dorsal keel rather prominent on the thoracic somites. Lateral keel well-marked and straight on carapace and on all except the last of the free thoracic somites. No distinct ridge below lateral keel on side of carapace. Antennal tooth triangular. Basis of first legs a little shorter than the remaining segments together. Uropods longer than the last two somites together, the exopod about three-fourths as long as the peduncle and a little longer than the endopod. Endopod unsegmented, with six small spines on the distal part of its inner edge, the last close to the slender terminal spine. Exopod with two unequal slender terminal spines and a series of setæ on the inner edge.

*Adult Male*.—Total length 2·8 mm.

There is a distinct ridge on the side of the carapace below the lateral keel. The latter is distinct on all the free thoracic somites. Basis of first legs a little longer than the remaining segments together. Rami of uropods subequal and two-thirds as long as the peduncle. Endopod with twelve spines on the inner edge.

*Remarks*.—This species resembles very closely the *B. arenosa* of British and Norwegian Seas. It is distinguished by its very much smaller size, by the shorter basis of the first legs, and by the longer rami of the uropods.

*Occurrence*.—Gulf of Siam, "Between Koh Mesan and Cape Liant" and "Tung Kaben." Th. Mortensen Coll., Copenhagen Museum. Co-types in British Museum.

BODOTRIA SIAMENSIS, sp. n. (Plate I. figs. 10–15.)

*Description of adult Female.*—Total length 2.1 mm.

Carapace about one-fourth of total length. Median dorsal keel not very prominent on carapace or on thoracic somites. Lateral keel rather faintly marked on anterior part of carapace, becoming obsolete posteriorly; not continued on to the thoracic somites. Antennal tooth narrow and acute, almost spiniform. Basis of first legs about four-fifths as long as the remaining segments together. Uropods about one-fifth longer than the last two somites together, the rami sub-equal and five-sixths as long as the peduncle. Endopod unsegmented, with nine spines on distal part of its inner edge, increasing in size distally; terminal spine slender. Exopod with three unequal terminal spines and a series of setæ on the inner edge.

A transverse band of dark pigment occupies the region of the first leg-bearing somite.

*Adult Male.*—Total length 2.75 mm.

Carapace less than one-fourth of total length. Rami of uropods about three-fourths as long as the peduncle. Endopod with ten spines along the whole length of its inner edge, increasing in size distally.

*Remarks.*—This species resembles in many ways *B. similis*, in company with which it was found; but it is distinguished from that species by the lateral keel being inconspicuous on the carapace, and absent altogether from the thoracic somites.

*Occurrence.*—Gulf of Siam, “Between Koh Mesan and Cape Liant, 5–8 fathoms”; “Koh Kam, 5–10 fathoms.” Th. Mortensen Coll., Copenhagen Museum. Co-types in British Museum.

BODOTRIA PARVA, sp. n. (Plate I. figs. 16–18.)

*Description of adult Female.*—Total length 1.5 mm.

Carapace more than two-sevenths of total length. Dorsal edge with a depression bounded behind by a slight crescentic transverse ridge near its hinder end. Two faintly marked longitudinal ridges on sides of carapace, not reaching to posterior margin nor joining the above-mentioned transverse ridge. Antennal tooth bluntly rounded. No ridges on the free thoracic somites. Basis of first legs a little shorter than the remaining segments together. Uropods slightly longer than the last two segments together, the rami subequal and rather less than two-thirds the length of the peduncle. Endopod with one spine on its inner edge about the middle of its length, and another close to the apical spine, which is long and stout; the inner edge between the two spines is coarsely serrated. The exopod has two unequal terminal spines and no setæ on its inner edge.

*Remarks.*—In having the antennal tooth of the carapace bluntly rounded and in the armature of the uropods this minute species differs from all the other species of the

genus. It appears to resemble *B. pulchella* in the disposition of the ridges on the carapace, though these are very obscure.

*Occurrence*.—Gulf of Siam, "Koh Kam, 5 fathoms." Th. Mortensen Coll., Copenhagen Museum. Co-types in British Museum.

#### Genus CYCLASPIS.

The new species described below form, with those already referred to this genus, a somewhat varied assemblage, within which, however, I am unable to define any groups which appear worthy of generic rank. The species of *Cyclaspis* form a very important part of the Cumacean fauna of tropical and southern seas.

#### *Key to the Species of Cyclaspis*

(excluding *C. argus* and *C. bistriata* Zimmer, of which I have seen no specimens \*).

- A. No eye or ocular lobe . . . . . *C. longicaudata* G. O. Sars.
- B. Eye and ocular lobe present.
  - a. Carapace quite smooth.
    - a. Peduncle of uropods more than twice as long as the rami . . . *C. picta* Calman.
    - b. Peduncle of uropods not much longer than the rami.
      - A'. Basis of first legs with a spiniform tooth at its distal end.
        - a'. First legs long, propodus twice as long as carpus . . . *C. hornelli* Calman.
        - b'. First legs short, propodus equal to carpus . . . . . *C. herdmani* Calman.
      - B'. Basis of first legs without a spiniform tooth at its distal end.
        - a'. Carapace one-third of total length . . . . . *C. pusilla* G. O. Sars.
        - b'. Carapace less than one-third of total length.
          - 1. First legs very long, basis about half as long as distal segments together . . . . . *C. longipes*, sp. n.
          - 2. First legs short, basis nearly equal to distal segments together . . . . . *C. levis* G. M. Thomson.
  - b. Carapace more or less strongly ridged or sculptured, or armed with a tooth on the dorsal crest.
    - a. Ridges enclosing a quadrilateral depressed area on each side of the carapace.
      - A'. Two strong transverse ridges crossing dorsal surface of carapace.
        - a'. Transverse ridges thickened . . . . . *C. exsculpta* G. O. Sars.
        - b'. Transverse ridges not thickened, the posterior one with two hooked teeth . . . . . *C. persculpta* Calman.

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\* Two additional species of the genus have been described by Dr. Zimmer since this paper was read (Zool. Anz. xxxi. p. 367, 1907).

- B'. No transverse ridges on dorsal surface of carapace.
- a'. A prominent tooth at the posterior lower corner of the lateral enclosed area . . . . . *C. elegans*, sp. n.
- b'. No tooth at the posterior lower corner of the lateral enclosed area . . . . . *C. similis*, sp. n.
- b. Ridges not enclosing a quadrilateral area on the side of the carapace.
- A'. Dorsal crest of carapace with a sharp tooth near anterior end.
1. Carapace with an oblique lateral ridge . . . . . *C. uniplicata*, sp. n.
2. No ridge on carapace . . . . . *C. unicornis*, sp. n.
- B'. Dorsal crest of carapace unarmed.
1. Carapace longitudinally ribbed . . . . . *C. costata* Calman.
2. Carapace with a very prominent encircling ridge anteriorly . . . . . *C. cingulata*, sp. n.
3. Carapace with a single short oblique ridge laterally . . . . . *C. thomsoni*, sp. n.
4. Carapace with two subparallel oblique ridges laterally . . . . . *C. biplicata*, sp. n.
5. Carapace with two widely divergent oblique ridges . . . . . *C. australis* G. O. Sars.
6. Carapace with three transverse ridges crossing the dorsal surface and uniting below . . . . . *C. sibogæ* Calman.
7. Carapace with three ridges laterally, the two posterior uniting or dying out before reaching the mid-dorsal line . . . . . *C. triplicata*, sp. n.

CYCLASPIS LONGIPES, sp. n. (Plate V. figs. 1-5.)

*Description of adult Female.*—Total length 3.1 mm.

The carapace is about two-sevenths of the total length, slightly compressed, its vertical height less than two-thirds of its length. The dorsal edge is slightly keeled, most distinctly so in front, and is hardly at all arched as seen from the side. Pseudo-rostrum very short, the ocular lobe reaching quite to the tip. Antennal notch shallow, widely open. Antennal tooth very sharp, almost spiniform. The ocular lobe is very broad and prominent on the dorsal surface.

First leg-bearing somite well exposed. The second has a slight dorsal keel.

Abdomen a little longer than the cephalothoracic region; the somites subcylindrical, with lateral articular processes.

Antennules rather long, the last segment of the peduncle longer than the preceding.

The first legs are very long and slender, extending beyond the tip of the pseudo-rostrum by nearly two-thirds of the length of the carapace. The basis is not much more than half of the length of the distal segments together. The dactylus is shorter than the propodus and longer than the carpus.

The peduncle of the uropods is one and a half times as long as the last somite and is finely serrated on the inner edge. The endopod is about two-thirds as long as

the peduncle, with a slender apical spine and five small spines on the distal half of its inner edge. The exopod is one-fourth longer than the endopod, and has a slender apical spine with two spinules at its base and a single slender spine a little way down the inner edge.

*Adult Male*.—Total length 3·3 mm.

Resembling the female in general form. Carapace a little less deep. The ocular lobe is more swollen and the corneal facets are larger. The antennal tooth is not so sharp. The first leg-bearing somite just visible between the carapace and the second somite. The first legs are long and slender as in the female.

The peduncle of the uropods is of the same relative length as in the female and bears a series of plumose setæ on the inner edge. The rami are less unequal than in the female, the endopod being about five-sixths of the length of the peduncle and the exopod only a little longer. The endopod has ten spinules on its inner edge, and the exopod bears three plumose setæ internally.

*Remarks*.—The smoothness of the carapace and the presence of five free thoracic somites bring this species into the neighbourhood of *C. picta*, *C. herdmani*, and *C. hornelli* Calman. While resembling the last two in general shape, it differs from them in having the basal segment of the first legs not produced into a distal tooth. *C. picta* differs in the acute pseudorostrum, the more arched carapace, the shorter rami of the uropods, and in the much shorter first legs.

*Occurrence*.—"Cruz Bay, St. Jan [Danish West Indies]. Chr. Levinsen, 6.1.96." Two specimens. Copenhagen Museum.

CYCLASPIS LEVIS G. M. Thomson. (Plate V. figs. 6-8.)

*Cyclaspis levis* G. M. Thomson, Journ. Linn. Soc., Zool. xxiv. p. 264, pls. xvi. & xvii. figs. 1-26 (1892).

*Description of adult Female*.—Total length 7·16 mm.

The carapace is about two-sevenths of the total length, hardly compressed, its vertical height little more than half its length. The dorsal edge distinctly keeled; keel flattened or faintly doubled posteriorly, very little arched as seen from the side. Pseudorostrum very short, the ocular lobe reaching quite to the tip. Antennal notch not widely open and antennal tooth not acute. Ocular lobe slightly prominent on dorsal surface. The surface of the carapace is everywhere beset with shallow and inconspicuous pits. There is a faintly marked ridge running backwards for a short distance from the antennal tooth.

First leg-bearing somite exposed at the sides only. Second with a distinct dorsal keel.

Abdomen a little longer than the cephalothoracic region; the somites subcylindrical, with lateral articular processes, with a median dorsal and slight lateral keels.

Antennules short; the last two segments of the peduncle equal.

First legs of moderate length, extending beyond the tip of the pseudorostrum by less than one-third of the length of the carapace. The basis is hardly shorter than the distal segments together and is not produced into a tooth, but bears two densely plumose setæ at the distal end. The dactylus is a little shorter than the propodus and about equal to the carpus.

The peduncle of the uropods is equal to or very little longer than the last somite. The endopod is a little shorter than the peduncle, acutely pointed at the tip, without an apical spine, with four spinules on its inner edge. Exopod a little longer than endopod, with a small apical spine and plumose setæ on its inner edge.

*Adult Male.*—The single adult male in the collection is crushed and imperfect. So far as can be seen, however, it differs little from the female except in the usual secondary sexual characters. The corneal facets of the eye are larger, the antennal notch of the carapace is shallower, and the antennal tooth less prominent. The uropods have the peduncle and the endopod fringed with setæ on the inner edge, and the rami are subequal in length.

In immature specimens of both sexes, and apparently also in the adult male, the first leg-bearing somite is quite concealed.

*Remarks.*—This species resembles the last in having a smooth carapace, the ocular lobe reaching the tip of the pseudorostrum, and the basal segment of the first legs not produced into a distal tooth. It differs in having the first leg-bearing somite only partially exposed, the first legs much shorter, and the peduncle of the uropods hardly longer than the last somite.

The identification of the specimens described above with Mr. G. M. Thomson's species is only possible on the assumption that he was in error in describing the basis of the first legs as ending in a long spiniform process. The two long plumose setæ at the end of the basis in my specimens are often encrusted with mud and matted together so as to form what appears at first sight to be a solid process having very much the shape and proportions of the process figured by Mr. Thomson. Until some other species is discovered agreeing more closely in this respect with Mr. Thomson's figures, his name may be applied to the form here described.

*Occurrence.*—New Zealand, "Lyttleton Harbour, 1-5 fathoms, 8/97, H. Suter Coll. "; "Akaroa Harbour, H. Suter Coll." Copenhagen Museum. "Otago Harbour, surface-net, G. M. Thomson." British Museum.

CYCLASPIS ELEGANS, sp. n. (Plate II.)

*Description of adult Female.*—Total length 6.3 mm.

Resembling *C. exsculpta* Sars and *C. persculpta* Calman in having the carapace strongly sculptured. The carapace is about one-third of the total length, and its vertical height is two-thirds of its length. On each side is a quadrilateral area, answering to the "lateral depressed area" in Sars's description of *C. exsculpta*, bounded

by ridges which rise at the corners into four prominent tubercles. There are no transverse crests across the dorsal surface, but there is a well-marked, obscurely granulated, median dorsal keel which rises at its posterior end into a blunt tooth. The depressed area occupies the greater part of the lateral surface; its upper margin is sinuous and its posterior margin nearly parallel to the hinder margin of the carapace. The lower horizontal ridge is produced in front and behind to the edge of the carapace, and the upper is continued forwards on to the side of the pseudorostrum. The greatest width of the carapace is measured between the postero-inferior tubercles. The ocular lobe is little longer than broad and reaches nearly to the tip of the pseudorostrum. The eye is without pigment; there are about nine corneal facets.

The first leg-bearing somite is almost entirely concealed, only a small portion being visible laterally. The second is large, nearly equal in height to the carapace, with a dorsal crest produced backwards into a sharp tooth and with the lateral plates expanded. The posterior thoracic somites have a median dorsal keel, which is continued on all the abdominal somites except the last. There are less distinct dorso-lateral keels on the last two thoracic and the first two abdominal somites. The first five abdominal somites have lateral articular processes anteriorly.

The appendages are very similar to those of *C. australis* as figured by Sars. The antennules are a little more slender and appear to lack all trace of the inner flagellum. The antennæ have a long and slender external process which is not segmented off from the basal part. The mandibles have about eighteen spines on the inner edge. The lower lip has the tip of each lobe sharply bent inwards and armed with a group of peculiar spatulate spines. The palp of the maxillula is about one and a half times as long as the distance between its base and the tip of the distal lobe and bears two long setæ.

The first maxilliped differs from that of *C. australis* in the longer basis, which exceeds in length the other segments together. The terminal segment is very small. The branchial apparatus is well developed; the epipod is produced forwards nearly as far as the end of the basis, and carries about thirteen branchial lobules.

The second maxilliped is slender, its basis exceeding by two-thirds the length of the remaining segments together. There are about twelve long setæ on the basal lamina.

The third maxilliped has the basis sharply bent outwards about the middle of its length. Otherwise it resembles the corresponding limb of *C. australis*.

The first leg does not extend much beyond the tip of the pseudorostrum in the natural position, and its distal segments are not so slender as in *C. australis*.

The remaining legs are similar to those of *C. australis*, but carry longer setæ. The terminal segment of the second pair has three terminal but no lateral spines.

The uropods have the peduncle stout and but little shorter than the last somite. The rami are subequal and about equal in length to the peduncle. The endopod

is slightly curved upwards and outwards at the tip; the distal half of its inner edge is strongly serrated and bears a single small pectinate spine. The exopod has a short apical spine and a series of plumose setæ on the inner margin.

*Adult Male*.—Total length 6.2 mm.

The carapace is about two-sevenths of the total length, its vertical height not much more than one-half of its length. The dorsal outline is less strongly arched than in the female. The ridges defining the depressed area on the lateral surface are less prominent. The tubercles at the two lower corners and that at the anterior upper corner are well-marked, but there is no posterior upper tubercle, and the upper horizontal ridge does not meet the posterior vertical ridge. Seen from above, the carapace is not wider behind than in front. The ocular lobe and the corneal facets which it bears are considerably larger than in the female. The antennal notch is somewhat shallower, and the antennal tooth is slightly different in form.

The first leg-bearing segment is entirely concealed. The second is as high as the posterior part of the carapace. Its dorsal crest is rounded, not produced, and the lateral plates are not expanded. The dorso-lateral keels of the last two thoracic and the first two abdominal somites are more strongly developed than in the female. As usual, the abdominal somites are much stouter than in the female. The fifth somite is laterally constricted in its posterior half.

The antennules are similar to those of the female, with a single additional sensory filament springing from the end of the third segment. The antennæ resemble those of *C. longicaudata* as figured by Sars, except that the distal segment of the peduncle is shorter and stouter and the setæ clothing it are shorter. The branchial apparatus is more fully developed than in the female, the lobules being about seventeen in number.

The pleopods appear to differ from those of *C. longicaudata* in lacking the process from the outer margin of the endopod.

The uropods are longer than in the female. The peduncle is about as long as the last somite and is beset along the whole of its inner edge with plumose setæ. The rami are about equal in length to the peduncle, the inner slightly shorter, and resemble those of the female except that the endopod, as well as the exopod, has its inner edge beset with plumose setæ.

*Young Stages*.—In a specimen 1.75 mm. in length (Pl. II. fig. 5) there is no trace of the last pair of legs. The integument is well-calcified and brittle. No corneal facets are visible on the ocular lobe, and the lateral articular processes of the abdominal somites are not yet developed. The first leg-bearing somite is entirely concealed. On the side of the carapace the ridges bounding the depressed area are well-marked, but of the four tubercles only the anterior upper one is prominent.

Specimens about 5 mm. in length (Pl. II. fig. 6) have assumed nearly the form of the adult, but the first leg-bearing somite is still concealed. It is noteworthy that at this stage the male resembles the adult female more closely than it does when full-grown.

*Remarks.*—As already stated, this very beautiful species, which, from the abundance of the material, I have been able to describe with some detail, resembles *C. exsculpta* Sars and *C. persculpta* Calman, but it is at once distinguished from them by the different sculpture of the carapace, especially by the absence of transverse crests on the dorsal surface. In the structure of the appendages it shows great similarity to *C. australis* Sars, while at the same time it seems to present no differences of generic value from the type of the genus, *C. longicaudata* Sars.

*Occurrence.*—“Lyttleton Harbour, New Zealand, 1–5 fathoms, H. Suter Coll.” Many specimens. Copenhagen Museum. Co-types in British Museum.

CYCLASPIS SIMILIS, sp. n. (Plate III. figs. 1–3.)

*Description of adult Female.*—Total length 5.75 mm.

Resembling *C. elegans* in shape and general proportion of the body. The lateral depressed area on the carapace is less distinctly excavated, and the only prominent tubercle is that representing the anterior upper tubercle of the species named. The lower horizontal ridge is produced forwards to the edge of the carapace, but posteriorly it is continued with an even curve into the posterior vertical ridge, and does not extend to the posterior edge of the carapace. The posterior vertical ridge at its upper end forks into two branches diverging at an obtuse angle. The anterior one does not reach the ridge which runs backwards from the anterior upper tubercle, so that the upper margin of the depressed area is not completely enclosed. The sides of the carapace posteriorly are more or less rugose.

The first leg-bearing somite is exposed only at the side. The dorsal crest of the second is produced backwards into a large rounded lobe. The remaining somites are similar to those of *C. elegans*, but the dorso-lateral crests are stronger and are continued as far as the penultimate somite.

The thoracic appendages, so far as they can be seen in the undissected specimen, present no conspicuous differences from those of *C. elegans*.

The peduncle of the uropods is shorter than the last somite and is finely serrated internally. The rami are shorter than the peduncle. The endopod is not curved at the tip as in *C. elegans*, and is less strongly serrated internally. The exopod has an apical spine, and some plumose setæ on its inner edge.

An immature male specimen 5.25 mm. in length differs little in general characters from the female described above. The first leg-bearing somite is hidden, and the second is not produced above into a cristiform lobe.

*Remarks.*—This species resembles *C. elegans*, in company with which it was found. It is distinguished, however, by the different sculpture of the carapace.

*Occurrence.*—“Lyttleton Harbour, New Zealand, 1–5 fathoms, H. Suter Coll.” Copenhagen Museum. Co-type (young) in British Museum.

CYCLASPIS UNIPPLICATA, sp. n. (Plate IV. figs. 11–20.)

*Description of immature Female.*—Total length 4·9 mm.

The carapace is distinctly less than one-third of the total length, somewhat compressed, its vertical height not much more than one-half of its length. The dorsal edge is sharply keeled, only slightly curved as seen from the side, with a prominent forwardly directed tooth overhanging the base of the ocular lobe. On each side of the carapace is a low but sharply marked ridge meeting its fellow about the middle of the dorsal edge and running downwards and forwards in the direction of the antero-lateral corner, which, however, it does not reach. Pseudorostrum short and truncated, the ocular lobe reaching quite to the tip. Antennal notch shallow, widely open. Antennal tooth double, the true antero-lateral angle having external to and below it a sharp spiniform tooth. The ocular lobe not longer than broad; eye pigmented, with about nine corneal lenses.

The first leg-bearing somite is exposed dorsally. The second somite has a slight dorsal keel.

The abdomen is distinctly longer than the cephalothoracic region, subcylindrical, and rather slender.

The antennule has the third segment of the peduncle longer than the second, the first distinctly longer than the other two together. The inner flagellum is distinct.

The first maxilliped has the basis shorter than the distal segments together. The second maxilliped is rather stout, and has also the basis shorter than the distal segments. In the third maxilliped the basis is longer than the distal segments, and its distal process is very long, reaching to the end of the carpus.

The first legs are very long, extending beyond the tip of the pseudorostrum in the natural position by about two-thirds the length of the carapace. The basis is less than two-thirds of the length of the distal segments, and is produced on the lower side of the following segment into a sharp tooth.

The second legs are stout and have the basis shorter than the distal segments together.

In the remaining legs the basis successively diminishes in length, being longer than the distal segments in the third pair and about half their length in the fifth pair.

The peduncle of the uropods is longer by one-fourth than the last somite, equal to the endopod, and shorter than the exopod. The endopod tapers to a sharp point, and has about nine short spines on its inner edge. The exopod has a slender apical spine and three short spines on its inner edge.

*Remarks.*—In the general shape of the body and in having a tooth at the distal end of the basis of the first legs this species resembles *C. herdmani* and *C. hornelli* Calman, approaching the latter species especially in the length of the first legs and in the armature of the uropods. From both it is distinguished by the oblique ridge and the dorsal tooth of the carapace. F. Müller ('Für Darwin,' p. 54 (English ed.

p. 81), fig. 52) figures the male of a "*Bodotria*" having a single tooth on the dorsal crest. It may possibly have been a species allied to the present.

*Occurrence*.—Gulf of Siam, "Koh Kam, 5–10 fathoms. Th. Mortensen Coll." Several specimens. Copenhagen Museum. Co-types in British Museum. Two young and imperfect specimens of this species were obtained by Prof. Herdman in Ceylon, and were recorded as "*Cyclaspis* sp." in my Report on his collections (Rep. Ceylon Pearl Fisheries, Royal Society, pt. ii. 1904, p. 160).

CYCLASPIS UNICORNIS, sp. n. (Plate V. figs. 9–11.)

*Description of immature Female*.—Total length 3.2 mm.

The carapace is about one-third of the total length. The dorsal edge keeled, slightly arched as seen from the side, and armed about a third of its length from the anterior end with a sharp forwardly curved tooth. Pseudorostrum slightly prominent, the ocular lobe reaching quite to the tip. Antennal notch wide; antennal tooth acute, not reaching quite as far forward as the tip of the pseudorostrum. The side of the carapace is rough with small granules.

The first leg-bearing somite is hidden, the second has a slight dorsal crest.

The abdomen is a little longer than the cephalothoracic region. The somites are subcylindrical, with lateral articular processes.

The first legs extend beyond the tip of the pseudorostrum in the natural position for less than one-third of the length of the carapace. The basis is about three-fourths of the length of the distal segments together. The ischium and merus are very stout, the former with the inner edge serrated. The three distal segments are very slender; the carpus and propodus of equal length, and each about one-half longer than the dactylus.

The peduncle of the uropods is longer by about one-quarter than the last somite and has its inner edge finely serrated. The endopod is about two-thirds the length of the peduncle, serrated on the inner edge, with a slender apical spine and four spinules on the inner edge. The exopod is a very little longer than the endopod, has a slender apical spine with a small spinule at its base and another a little way down on the inner side.

*Remarks*.—In the possession of a single dorsal tooth on the carapace this species resembles the last, but it differs in the absence of the lateral ridge on the carapace and in many other characters. There is also a certain general resemblance to *Stephanomma goesii* Sars. It is stated, indeed, by Sars that in that species the lateral lobes of the pseudorostrum are absent and there is no "frontal fissure"; but I am inclined to suspect that Sars has been misled by the ocular lobe reaching quite to the tip of the pseudorostrum, and that *Stephanomma* will be found not to differ generically from some of the species at present referred to *Cyclaspis*.

*Occurrence*.—"Cruz Bay, St. Jan" (Danish West Indies). One specimen. Copenhagen Museum.

*CYCLASPIS CINGULATA*, sp. n. (Plate IV. figs. 1-10.)

*Description of immature Female.*—Total length 4.2 mm.

The carapace is about two-fifths of the total length, somewhat compressed, its dorsal surface as seen from the side strongly arched, and its posterior margin sloping backwards so as to conceal more or less the first two thoracic somites when viewed from above. It is encircled by a very prominent ridge or collar, which crosses the dorsal surface a little in front of the middle of its length and slopes a little forwards as it passes down each side. In the mid-dorsal line this collar is interrupted by a deep notch. On the dorsal surface of the carapace in the posterior third of its length is a pair of ridges, slightly diverging and becoming more strongly marked posteriorly and bearing a few scattered setæ. External to and below the frontal fissure on each side is a slight prominence. The pseudorostrum is short, horizontal, and the long, narrow, ocular lobe extends quite to the tip, projecting in front of the lateral lobes. The corneal lenses are 11 in number and are grouped on the distal end of the ocular lobe. The antennal notch is small, and the antennal tooth is well behind the tip of the pseudorostrum.

The first leg-bearing somite is well exposed, the fourth and fifth have well-marked dorso-lateral keels, and the fifth has also a slight median keel. The abdomen is about equal in length to the cephalothoracic region and rather stout. All the abdominal somites except the last have strong dorso-lateral keels. The first four have a well-marked dorsal keel which becomes faint on the fifth.

The antennule has the third segment of the peduncle longer than the second, the first about equal to the other two together. The vestigial inner flagellum is very distinct. The antenna appears to lack the external process.

The third maxilliped has the basis little longer than the distal segments together. Its distal process is very long, reaching nearly to the end of the carpus.

The first leg is long, extending beyond the end of the pseudorostrum in the natural position by nearly the length of the last two segments. The basis is about four-fifths of the length of the distal segments together, and is a little produced on the lower side of the following segment. The remaining legs are rather short and stout. In the second pair the basis is less than two-thirds the length of the distal segments together.

The peduncle of the uropods is distinctly shorter than the last somite and has a single small seta on its inner edge. The endopod is a little longer than the peduncle and distinctly longer than the exopod, tapering to a sharp point, and with three small spines about the middle of its inner edge. The exopod has an apical spine and a few very small setæ on its outer and inner margins.

*Male.*—A single adult male, which may possibly belong to this species, is unfortunately so much damaged that it cannot be described in detail. It agrees with the

female in the very long and narrow ocular lobe, but the carapace is smooth, with only a faint trace of the encircling ridge so conspicuous in the female and without the paired dorsal ridges posteriorly. On the lower part of the side of the carapace is a horizontal ridge, also very faint, meeting the encircling ridge anteriorly. The dorso-lateral keels are well-marked on the last two thoracic somites, but the abdominal somites, which are very stout, have no distinct keels. The terminal segments of the first pair of legs are longer and more slender than in the female.

*Remarks.*—In the sculpture of the carapace this species is quite distinct from any other, and it is not easy to see in what direction its immediate allies are to be sought. In the long and narrow ocular lobe it resembles *C. exsculpta* Sars and *C. persculpta* Calman. In the distinctness of the first leg-bearing somite it approaches especially *C. costata* and *C. picta* Calman.

*Occurrence.*—Several localities in the Gulf of Siam. “Koh Kam, 5–10 fathoms.” “Between Koh Mesan and Cape Liant, 5–8 fathoms.” “Tung Kaben, 6 fathoms.” Th. Mortensen Coll., Copenhagen Museum. Co-types in British Museum.

CYCLASPIS THOMSONI, sp. n. (Plate V. figs. 12–16.)

*Description of adult Female.*—Total length 6 mm.

The carapace is little more than one-fourth of the total length, slightly compressed, its vertical height little more than half its length. The dorsal edge with a distinct keel, which is flattened or faintly doubled posteriorly, slightly arched as seen from the side, with a slight concavity at the base of the pseudorostrum. Pseudorostrum short; the ocular lobe reaching to or a little beyond the tip of the lateral lobes. Antennal notch rather widely open; antennal tooth triangular. The surface of the carapace is everywhere beset with shallow pits, which in full-grown specimens give it a rugose appearance. On each side, a little behind the middle of its length, is a short groove, limited behind by a faintly marked ridge running obliquely downwards and backwards. A slight ridge runs backwards for a short distance from the antennal tooth.

First leg-bearing somite exposed at the sides only. Second with a distinct dorsal keel. Last three with lateral keels.

Abdomen a little longer than the cephalothoracic region; the somites subcylindrical, with distinct median dorsal and lateral keels and the usual lateral articular processes.

First legs of moderate length, extending beyond the tip of the pseudorostrum by little more than one-fourth of the length of the carapace. The basis is a little shorter than the distal segments together and is not produced into a tooth distally; it bears two densely plumose hairs at its distal end. The dactylus is about two-thirds as long as the propodus and three-fourths as long as the carpus.

The peduncle of the uropods is longer than the last somite by nearly one-third. The endopod is a little shorter than the peduncle, acutely pointed at the tip, without an apical spine, with four spinules on its inner edge. Exopod a little longer than

the endopod, with a slender apical spine and a series of plumose setæ on its inner edge.

*Adult Male*.—Total length 6·75 mm.

Proportions and shape of carapace much as in female, but with pseudorostrum rather less prominent and ocular lobe distinctly projecting beyond the lateral lobes. Surface of carapace smoother than in the female, the pitting less distinct and the oblique groove faintly marked.

First leg-bearing somite quite concealed, fourth with a slight lateral ridge, fifth with a double lateral ridge.

Abdominal somites with median dorsal but no lateral keels.

Proportions of uropods much as in female, but the rami rather less unequal. Endopod with about nine spinules and a series of plumose setæ on its inner edge. Peduncle with its inner edge beset with long plumose setæ.

*Remarks*.—This species is closely allied to *C. levis* G. M. Thomson, but it differs from the specimens which I refer to that species in the much rougher surface of the carapace and the presence of an oblique groove on each side; in a slightly different outline of the dorsal edge of the carapace, which is distinctly concave at the base of the pseudorostrum; and in certain trifling differences of proportion in the first legs and uropods. In the male, where the oblique grooves of the carapace are inconspicuous, there is a certain similarity of outline to Mr. Thomson's figure of the male *C. levis*, suggesting that his figure may have been drawn from a specimen of the present form. Since he expressly says, however, that the surface of the carapace in *C. levis* is "smooth, destitute of ridges or sculpturing," I have retained his name for the closely allied species to which this description more nearly applies.

*Occurrence*.—New Zealand, "Bay of Islands, 8 fathoms." A number of specimens, mostly immature, taken at the same time as the type specimens of *C. levis*, were sent to me by Mr. G. M. Thomson.

CYCLASPIS BIPPLICATA, sp. n. (Plate III. figs. 4–15.)

*Description of adult Female*.—Total length 4·2 mm.

The carapace is about two-sevenths of the total length, somewhat compressed, its vertical height less than two-thirds of its length. The dorsal edge, seen from the side, is only slightly arched. There is a sharp median dorsal keel which rises at the posterior end into a broad truncated tooth. On each side of the carapace are two parallel ridges, running obliquely forwards and downwards and dying out before reaching the lower edge of the carapace. At their upper ends they converge and meet each other close to the median keel a little behind the middle of the carapace. These ridges, though sharply defined, are not prominent, and hardly interrupt the lateral outlines of the carapace as seen from above. The ocular lobe is a little longer than

broad, and reaches nearly to the tip of the pseudorostrum. There are about nine corneal facets, but the eye is without pigment.

The first leg-bearing somite is only visible at the sides. The second has the dorsal crest produced upwards into an acute tooth curving slightly forwards at the tip. The posterior thoracic and the anterior abdominal somites have a median dorsal keel becoming fainter posteriorly.

The antennules have the third segment of the peduncle longer than the preceding, and the inner flagellum represented by a minute vestige. The antennæ have the outer process short and distinctly segmented off from the basal part. The mouth-parts resemble very closely those of *C. elegans*. The first legs extend well beyond the tip of the pseudorostrum in the natural position. The basis exceeds only by about one-fifth the combined length of the distal segments. The terminal segment is equal in length to the preceding. The remaining legs are similar to those of *C. elegans*.

The peduncle of the uropods is a little longer than the last somite and bears five plumose setæ on its inner edge. The rami are subequal and are about equal in length to the peduncle. The endopod has the inner edge serrated and carrying a single small seta near the tip. The exopod has a slender apical spine and several plumose setæ on its inner edge.

*Adult Male*.—Total length 4.16 mm.

The carapace is less deep than in the female and more compressed. The tooth at the posterior end of the dorsal crest is low and rounded. The oblique ridges on the sides of the carapace are similar in position to those of the female, but less strongly marked and do not meet above. The antennal notch is more widely open and the tooth defining it is more obtuse than in the female.

The first leg-bearing somite is hidden. The second is produced dorsally into an acute forwardly curved tooth, more slender than that of the female.

The first legs have the basis longer by one-half than the distal segments together.

The uropods do not differ in their proportions from those of the female, but the setæ on the inner edge of the peduncle are much more numerous and the inner edge of the endopod is also fringed with setæ.

*Remarks*.—This species resembles *C. bistrata* Zimmer (Zool. Jahrb., Abth. Syst. xvii. p. 447, 1902), but appears to differ in the outline of the carapace, which has the dorsal edge less curved, in the position of the lateral ridges, and in the longer peduncle of the uropods, which in the species named is shorter than the rami. Except for the absence of the lateral ridges of the carapace, Zimmer's figure of the male *C. argus* (*t. c.* p. 445, fig. A) resembles very closely the male of the present species. Without a re-examination of the type specimens it seems impossible to decide whether one or both of these species may not be identical with that here described.

*Occurrence*.—"Lyttleton Harbour, New Zealand, 1-5 fathoms, H. Suter Coll." Numerous specimens. Copenhagen Museum. Co-types in British Museum.

CYCLASPIS TRIPLICATA, sp. n. (Plate III. figs. 16-24.)

*Description of adult Female*.—Total length 4.0 mm.

Very similar in general form to *C. biplicata*. The carapace is more inflated posteriorly. The two oblique ridges on the side of the carapace have much the same course as in that species, but are much more prominent, while in front of these is a prominent tubercle occupying about the position of the anterior upper tubercle in *C. elegans*, from which a third nearly vertical ridge runs downwards and joins a prolongation of the anterior oblique ridge which turns horizontally forwards to the anterior lower edge of the carapace. The tooth at the posterior end of the dorsal keel is slightly different in shape from that of *C. biplicata* and has the hinder edge finely serrated.

The dorsal crest of the second leg-bearing somite differs from that of *C. biplicata* in having the upper angle blunt, the oblique dorsal edge sinuous, and the posterior angle prominent and overhanging the third somite. The median dorsal keel is very slightly marked on the posterior thoracic and anterior abdominal somites, but a pair of dorso-lateral keels, not seen in *C. biplicata*, are developed on the last two thoracic and the first three abdominal somites.

The antennules have the third segment of the peduncle a little shorter and stouter than in *C. biplicata*.

The first legs are shorter than in *C. biplicata*. The basis exceeds by one-half the combined length of the distal segments. The posterior legs have longer and more numerous setæ.

The uropods are similar to those of *C. biplicata*, but are a little stouter.

*Adult Male*.—Total length 4.0 mm.

The male closely resembles that of *C. biplicata*, from which, however, it is at once distinguished by the presence of the additional anterior ridge on the carapace. As in the female, this ridge rises above into a blunt tubercle, which is very conspicuous when the carapace is viewed from above. In this species, moreover, the last two thoracic and the first abdominal somites bear strongly marked dorso-lateral ridges, the dorsal tooth of the second leg-bearing somite is shorter and more curved, and the first legs are rather shorter than in *C. biplicata*.

*Remarks*.—Both in general aspect and in the details of its appendages this species resembles very closely that last described, in company with which it occurred.

*Occurrence*.—"Lyttleton Harbour, New Zealand, 1-5 fathoms, H. Suter Coll." Many specimens. Copenhagen Museum. Co-types in British Museum.

## Genus EOCUMA.

I have discussed the characters and the limits of this genus in a former paper (Herdman's Rep. Ceylon Pearl Fisheries, Royal Society, pt. ii. (1904), Suppl. Rep. xii. Cumacea, p. 160). The material now examined reveals the existence of a number of closely allied species. Unfortunately they are represented, for the most part, by immature and sometimes damaged specimens, and it is only after some hesitation that I describe the four new species which follow, leaving aside for the present solitary and more or less imperfect specimens of three species, which may be distinct, from Aden, Trincomalee, and Penang respectively.

The new species have the lateral margins of the carapace carinated and the pseudorostrum projecting in front of the lateral cornua, and they therefore come under the division A. 1 in the key to the genus which I gave in my previous paper (*t. c.* p. 161). This part of the key may be extended as follows to include them:—

- a.* Antero-lateral teeth of carapace low and rounded (female) or absent (male); no paired ridges on dorsal surface.
- a'.* (Male.) Cornua of carapace small, directed forwards; antero-lateral margin strongly convex; peduncle of antennule not elongated. *E. taprobanica* Calman.
- b'.* (Male.) Cornua of carapace prominent, directed obliquely outwards; antero-lateral margin only slightly convex; peduncle of antennule much elongated. . . . . *E. longicornis*, sp. n.
- b.* Antero-lateral teeth more or less prominent, acute.
- a'.* Carapace nearly as broad as long, with paired dorsal ridges; antero-lateral teeth reaching nearly or quite as far forward as the pseudorostrum.
- a''.* Frontal margin with a small tooth on each side between the pseudorostral lobe and the antero-lateral tooth . . . . . *E. stellifera*, sp. n.
- b''.* Frontal margin without a tooth between the pseudorostral lobe and the antero-lateral tooth.
- a'''.* Antero-lateral teeth acutely produced, directed obliquely outwards . . . . . *E. hilgendorfi* Marcusen.
- b'''.* Antero-lateral teeth obtusely triangular, with acute spiniform points directed forwards . . . . . *E. lata*, sp. n.
- b'.* Carapace hardly more than half as broad as long, without paired dorsal ridges; antero-lateral teeth not reaching nearly as far forward as pseudorostrum . . . . . *E. producta*, sp. n.

*EOCUMA LONGICORNIS*, sp. n. (Plate VI. figs. 1–6.)

*Description of adult Male.*—Total length 7.65 mm.

Carapace little more than one-quarter of the total length, its greatest width,

excluding the lateral cornua, a little over half its length. Lateral keels well marked. Cornua prominent, directed obliquely outwards, situated behind the anterior third of the length of the carapace. The postero-lateral margins are nearly straight. The width of the posterior margin is about half of that measured between the bases of the cornua. The pseudorostrum is prominent and formed of two rounded lobes. Antero-lateral margins between pseudorostrum and cornua very slightly convex. The transverse ridge on the lower surface on each side is faintly marked and does not reach the lateral margin. Dorsal surface with a faintly marked median ridge posteriorly. The ocular lobe is twice as broad as long, and the pseudorostral plates meet in front of it for a distance much greater than its length. The eye is not pigmented, but there are three large indistinctly defined corneal areas. The surface everywhere shows a regularly reticulated texture, which is not interrupted by a faint and inconspicuous pitting.

Abdomen less than one-third longer than cephalothoracic region, scarcely narrowed posteriorly.

Antennules with very long and slender peduncle; third segment one and a half times as long as the second and a little longer than the first, about six times as long as broad. External flagellum of three segments, about two-fifths as long as last segment of peduncle.

First legs long and slender. Basis little more than two-thirds of length of distal segments together. Carpus about equal to the propodus and nearly half as long again as the dactylus.

The basis of the second legs has two or three rather coarse serrations on its inner edge near the distal end.

The uropods are more than one and a half times the length of the last somite. The peduncle is about two-fifths of the length of the subequal rami. The inner edges of the peduncle and endopod and both edges of the exopod are fringed with plumose setæ and the endopod also bears three small spinules.

*Remarks.*—The only species of *Eocuma* of which the male has been described is *E. taprobatica*. From that species the present form is distinguished by the more prominent frontal lobes, the less convex antero-lateral margins, the laterally projecting cornua, the much longer and more slender antennular peduncle, and other characters. It is unlikely that it will prove to be the male of any of the other known species, since, even if the absence of antero-lateral teeth should prove to be only a sexual character, the very narrow carapace and projecting lateral cornua, together with the long first legs, seem sufficient to distinguish it.

*Occurrence.*—"Suez, 31/1/98, H. Mortensen." Two specimens. Copenhagen Museum.

*EOCUMA LATA*, sp. n. (Plate VI. figs. 7-12.)

*Description of immature Female.*—Total length 3.9 mm.

The carapace is less than two-sevenths of the total length, very broad and flattened, with well-marked lateral carinæ. The greatest width, across the lateral cornua a little behind the anterior third, is very little less than the length. The lateral cornua are short, with acute tips directed forwards. The postero-lateral edges are nearly straight. The width of the posterior margin is less than half that measured across the cornua. The pseudorostrum is prominent, and formed, as seen from above, of two rounded lobes. External to these on each side the antero-lateral margin forms an obtusely triangular tooth with an acute spiniform point, turned forwards, not reaching so far as the level of the pseudorostral lobes. Between this antero-lateral tooth and the lateral cornu the margin is nearly straight. The dorsal surface is slightly arched and has no distinct median keel, but a pair of well-marked dorso-lateral keels running from about the posterior ends of the frontal suture to the hind margin. On the underside a transverse ridge runs from a little behind the lateral cornu to the free margin of the carapace. The ocular lobe is not broader than long and the pseudorostral plates meet in front of it for a distance greater than its length. The eye is not pigmented and no corneal facets were observed.

The surface of the carapace is beset with shallow pits which interrupt as clear spots the minute reticulate texture of the exoskeleton. The centre of each pit is occupied by a minute granule (or perhaps a pore).

The slender abdomen is longer by more than one-fourth than the cephalothoracic region. The fifth somite is about three and a half times as long as broad. The last somite is depressed and expanded laterally, being, at its posterior end, one and a half times as broad as the preceding somite. The antennules have the first segment of the peduncle longer than the other two together, the third not quite half as long again as the second and less than three times as long as broad.

The distal segments of the first legs are together about one and three-quarters as long as the basis. The carpus is equal to the propodus and nearly one-third longer than the dactylus.

The uropods are about two-thirds longer than the last somite. The peduncle is a little more than one-third of the length of the subequal rami. There is a plumose seta on the inner edge of the peduncle and another, along with three spinules, on the inner edge of the endopod.

*Remarks.*—The specimens here described are very immature as compared with the sub-adult specimens of *E. taprobanica* formerly described. This is shown especially by the characters of the branchial apparatus, which has only about eleven lobules, becoming very small posteriorly, and probably also by the fact that there is no spine on the ischium of the second legs. Further, the outline of the carapace has a distinct resemblance to

that of the young specimens of *E. taprobatica* (*t. c.* pl. i. fig. 5). I believe, however, that the present species is sufficiently distinguished by the greater breadth of the carapace and by the presence of two dorso-lateral keels, since these characters are not likely to be greatly modified in the adult. *E. hilgendorfi*, which also possesses dorso-lateral keels, can hardly be the adult stage of the present form, since it has the antero-lateral teeth greatly produced, while, from the analogy of *E. taprobatica*, we should expect these teeth to become less prominent as development proceeds.

*Occurrence*.—Gulf of Siam, "Koh Kam, 5-10 fathoms," "Between Koh Mesan and Cape Liant, 5-8 fathoms." Th. Mortensen Coll., Copenhagen Museum. Co-types in British Museum.

*EOCUMA STELLIFERA*, sp. n. (Plate VI. figs. 13-17.)

*Description of immature Female*.—Total length 5.6 mm.

Carapace little more than one-quarter of the total length, very broad and flattened, with well-marked lateral carinæ. The greatest width, across the lateral cornua at about the anterior third of the carapace, is about eight-ninths of the length. The lateral cornua are rather stout and incurved at the tips. The postero-lateral edges are slightly concave. The width of the posterior margin is about two-fifths of that measured across the cornua. The pseudorostral lobes are not very prominent; each is rounded at its inner end, then concave, and what may be regarded as its outer end forms a low rounded tooth over the base of the antennule. External to this, and separated from it by a concavity of the margin, is the antero-lateral tooth, which is acute and produced forwards as far as the level of the frontal lobes. Between the antero-lateral tooth and the lateral cornu the margin is nearly straight. The dorsal surface is slightly arched and has a slight median keel posteriorly. Paired dorso-lateral keels are also present, but are not so marked as in *E. lata*. On the underside the transverse ridge is much as in *E. lata*. The ocular lobe is broader than long and the pseudorostral plates meet in front of it for a distance greater than its length. The eye is not pigmented and no corneal facets were observed. The surface of the carapace is closely beset with shallow pits, and the meshes of the primary reticulated texture of the exoskeleton are arranged in a more or less regular radial manner around each pit. Under a moderate magnification the carapace appears covered with stellate clear spots.

The proportions of the abdomen are much as in *E. lata*.

The antennules have the first segment of the peduncle longer than the other two together and the third longer than the second.

The first legs are very long and slender. The distal segments are about two and a half times as long as the basis. The latter has its distal process very long and acute and directed obliquely inwards. The carpus is one-quarter longer than the propodus and more than twice as long as the dactylus.

The uropods are little more than one-third longer than the last somite. The peduncle

is a little more than one-third of the length of the subequal rami. There are three plumose setæ and three spinules on the inner edge of the endopod and a minute seta on the inner edge of the peduncle.

A younger specimen, 3.7 mm. in length, agrees with that described above in the form of the carapace.

*Remarks.*—The specimens described above, though immature, differ so much from the species hitherto described in the shape of the frontal region of the carapace, in the great length of the first pair of legs, and in the stellate texture of the integument, that there can be no doubt of their specific distinctness.

*Occurrence.*—Gulf of Siam, "Between Koh Mesan and Koh Chuen, 15 fathoms," and "Between Koh Mesan and Cape Liant, 8 fathoms." Th. Mortensen Coll., Copenhagen Museum.

*EOCUMA PRODUCTA*, sp. n. (Plate VI. figs. 18–20.)

*Description of immature Female.*—Total length 4.6 mm.

Carapace a little over one-quarter of the total length, flattened and with well-marked lateral carinæ. The greatest width, across the lateral cornua at a little behind the anterior third of the carapace, is a little more than half the length. The lateral cornua are not very prominent, with the tips directed forwards. The postero-lateral edges are slightly convex. The width of the posterior margin is nearly two-thirds of that measured across the cornua. The pseudorostral lobes are rounded and very prominent, projecting far in front of the antero-lateral teeth, which are small and blunt. Between the antero-lateral tooth and the lateral cornu the margin is straight. The dorsal surface is slightly arched and is without distinct median or dorso-lateral keels. The transverse ridge on the underside is faintly marked. The ocular lobe is longer than broad and the pseudorostral plates meet in front of it for a distance greater than its length. The eye is not pigmented. The integument is thin and transparent and minutely reticulated.

The antennules were not dissected out, but they have the peduncle rather elongate, the last segment being about four times as long as broad.

The first legs are rather short, extending but little beyond the pseudorostrum. The basis is four-fifths of the length of the distal segments together. The carpus is a little shorter than the propodus and a little longer than the dactylus.

The basis and ischium of the second legs have several teeth on the inner edge.

The uropods are longer by nearly two-thirds than the last somite. The peduncle is less than one-third of the length of the subequal rami. The inner edges of the peduncle and of the proximal half of the endopod are beset with plumose setæ and the distal half of the endopod carries two spinules.

*Remarks.*—The specimen described above is distinguished from all the species of which the females are known by the narrow carapace and the very prominent pseudorostrum. In general shape it shows some resemblance to the much larger male

specimen described above as *E. longicornis*, and it also approaches that species in the elongate peduncle of the antennule. It is distinguished, however, not only by the marked antero-lateral teeth, but by the shorter first legs.

*Occurrence*.—"Penang, Didrichsen." Copenhagen Museum.

Genus ZYGOSIPHON, gen. nov.

Carapace with double pseudorostral projection and two widely separated and very long branchial siphons. Five leg-bearing somites distinct. Basis of third maxillipeds produced distally. Only the first pair of peræopods with exopods. Endopod of uropods of two segments, distal segment short.

Type species *Z. mortenseni*, sp. n.

This new genus is distinguished chiefly by the remarkable development of the branchial siphons and their separation from one another, and by the correlated peculiarities in the shape of the anterior part of the carapace. In other respects it does not differ very strikingly from some of the existing genera of Bodotriidæ.

ZYGOSIPHON MORTENSENI, sp. n. (Plate VII. figs. 1-19.)

*Description of adult Female*.—Total length 2.67 mm.

The carapace is about two-sevenths of the total length, somewhat compressed, its vertical height two-thirds of its length. The dorsal edge is slightly arched and rises in a rounded transverse ridge posteriorly. Viewed from above, the carapace is rather broader in front than behind, with nearly straight or, in ovigerous specimens, concave sides. In front it is squarely truncate, having at the corners, which are somewhat produced, the two widely separated branchial orifices from which are protruded the very long branchial siphons directed obliquely upwards and outwards. There are thus two short pseudorostral processes instead of one. Seen from the side they are obliquely truncated, with the lower corner projecting in front of the upper. The lateral pseudorostral plates meet for a short distance in front of the ocular lobe. The antennal notch is rounded and widely open, and the antennal tooth is triangular and rather prominent. The ocular lobe is very broad, with its anterior margin notched so as to indicate a division into two parts. It contains two separate masses of ocular pigment, but there are no distinct corneal lenses. On each side of the carapace is a lozenge-shaped depression bounded by indistinctly marked ridges. From its anterior corner a ridge runs forward on to the side of the pseudorostrum, and above this the surface is slightly excavated on each side of the middle line.

The first leg-bearing somite is completely exposed, and, like the second, is nearly equal in height to the posterior part of the carapace. The three posterior somites are much lower and diminish rapidly in width posteriorly. In ovigerous specimens the greatest width of the body is reached at the second free somite.

The abdomen is longer than the cephalothoracic region, the somites subcylindrical and having well-developed lateral articular processes.

Antennule having the first segment of the peduncle longer than the other two together, the third twice as long as the second. The accessory flagellum is represented by a minute nodule; the outer flagellum has two segments. Antennæ simple, unsegmented and without a terminal process, bearing two plumose setæ.

Mandible of the usual form, bearing about twelve spines. Lower lip not seen.

Maxillular palp longer than the distance from its base to tip of distal lobe, with two terminal setæ.

The first maxilliped has the basis much shorter than the remaining segments together. The posterior portion of the branchial apparatus proved very difficult to isolate, but its lobules are very slightly developed, only two small papillæ being observed. The anterior portion, however, is remarkably developed, its distal part forming a long siphon capable of extension and retraction. The proximal part or stalk is, as usual, strengthened by a chitinous rod, with which is connected distally a spoon-shaped plate acting as a valve to close the branchial aperture. Beyond this the tubular portion is formed by a broad and very long strip of transparent membrane rolled up into a spiral with numerous coils "telescoped" into each other. This membrane is marked along its length by parallel striæ or plications, which form a complex spiral pattern when it is rolled up. When fully extended the siphon projects beyond the branchial aperture for a distance equal to at least twice the width of the anterior part of the carapace; when the coils are closed together it forms a short cone protruding from the opening. Very often in the preserved specimens the siphons are unequally extended on the two sides.

The second maxillipeds have the basis shorter than the remaining segments together. The basal plate bears four long setæ on its distal edge and one short seta externally.

The third maxilliped has the basis rather sharply bent, the proximal part being about half as long again as the distal measured along the inner edge. It is produced externally beyond the articulation of the ischium into a pointed lobe, which is nearly two-thirds as long as the segment itself and which bears a row of plumose setæ on its inner edge and another on its lower surface. The merus is about half as long as the ischium along its inner edge and is expanded externally into a very large curved lobe, bearing a long feathered seta at its tip. The terminal segment is very small, little more than half the length of the preceding.

The first legs have the penultimate segment extending a little beyond the pseudo-rostrum. The basis is about two-thirds as long as the remaining segments together, with a small tooth at the distal end of its outer edge and a long plumose seta internal to it. The terminal segment is about half the length of the preceding.

The second legs are stout and not shorter than the succeeding pair. They have all seven segments distinct. The basis is a little shorter than the remaining segments together. The carpus and propodus are short and subequal, and together equal the ischium in length. The terminal segment is longer than the ischium, about three times as long as broad, and armed distally with three long and some shorter spines.

The remaining pairs of legs diminish in length posteriorly, the basis of the last pair being not much more than half as long as that of the third pair.

The uropods are slender, the peduncle slightly curved and longer by one-third than the last somite. The exopod is nearly three-fifths of the length of the peduncle and terminates in two unequal spines; its inner edge bears one or two long feathered setæ. The endopod is three-fourths as long as the exopod, composed of two segments, the distal little more than one-third of the length of the proximal; it terminates in a long spine and has three short spines on its inner edge.

*Adult Male.*—Total length 2.7 mm.

The carapace is about one-fourth of the total length, its vertical height less than two-thirds of its length. Seen from the side it differs from that of the female in having the dorsal outline less strongly arched and not elevated at the posterior end. The ridges on the side of the carapace are only faintly indicated and the surface is smoother than in the female. The ocular lobe is much larger and more prominent. The eye is deeply pigmented and not completely separated into two portions; nine large corneal lenses are visible from above.

The first and second leg-bearing somites are subequal in height and much lower than the posterior part of the carapace.

The abdominal somites are much stouter than in the female, with well-marked pleural plates fringed with rather long hairs posteriorly.

The antenna is of the usual structure and its flagellum is equal in length to the body.

The branchial apparatus differs greatly from that of the female, having about nine very broad lamellar lobules, increasing in size posteriorly and each truncate at the tip. The branchial siphon is similar to that of the female.

The first leg has the basis longer than in the female, about equal in length to the remaining segments together.

The pleopods are of the usual structure.

The peduncle of the uropods is a little shorter than in the female and the exopod is a little more than three-fifths of its length. The inner edge of the peduncle has a fringe of feathered setæ. The endopod has six spines on the inner edge.

*Remarks.*—The two long branchial siphons projecting from the anterior corners of the head give this species a very remarkable appearance and distinguish it at once from any Cumacean hitherto described. Apart from the branchial system, however, its structure does not seem to be in any way unusual.

The separation of the two branchial siphons, though nowhere else so marked, will, I

believe, be found to be not uncommon among the Cumacea. Sars describes (Crust. Norway, iii. p. 6) the anterior part (exopod) of the branchial apparatus as uniting with its fellow of the opposite side to form "a funnel-shaped tube," and in his description of *Nannastacus longirostris* (Arch. Math. Naturvid. iv. p. 122) he states that this species differs from all other Cumacea in having two distinct siphons. This is a point which is very difficult to determine in preserved specimens, especially if the dissection has to be directed to the examination of other characters as well, but I have observed it in Cumacea belonging to widely distinct families and am inclined to suspect that it may even prove to be the rule. I hope to return to this point on a future occasion.

*Occurrence*.—Gulf of Siam, "Between Koh Mesan and Cape Liant, 5–9 fathoms," "Koh Kam, 5–10 fathoms." Th. Mortensen Coll., Copenhagen Museum. Co-types in British Museum. A solitary young specimen was obtained by Prof. Herdman in the Gulf of Manaar and is referred to in my Report on his collection (Rep. Ceylon Pearl Fisheries, Royal Society, pt. ii. (1904), Suppl. Rep. xii. Cumacea, p. 160) as "Bodotriidæ n. g. and sp."

IPHINOË sp.

Two immature specimens of a species of this genus, the larger only 4.4 mm. in length, are in the collection from the Gulf of Siam. In having the carapace more than twice as long as deep they differ from all the species hitherto described except *I. serrata* Norman (non Sars) and *I. brevipes* Hansen. The latter has the carapace three times as long as deep, and differs widely in many other characters. With *I. serrata* the present specimens agree in having a series of teeth on the outer edge of the basis of the first pair of legs. In co-typical specimens of Norman's species the carapace is two and a half times as long as deep, but in a specimen from the Mediterranean which I refer to this species the proportion approaches that of the Siamese specimens, where it is about two and a fifth. Other characters, such as the longer last segment of the antennular peduncle and the shorter and stouter uropods, may perhaps be due to the immaturity of these very small specimens, to which, for the present, I prefer not to assign a specific name.

*Occurrence*.—Gulf of Siam, "Koh Kam, 10 fathoms, 4/2/00," "Between Koh Mesan and Cape Liant, 5–8 fathoms, 7/2/00." Th. Mortensen Coll., Copenhagen Museum.

#### Family VAUNTOMPSONIIDÆ.

Dr. H. J. Hansen has suggested (Isopoden, Cumaceen, &c. der Plankton-Expedition, p. 57) that this family ought probably to be united with the preceding. I have also discussed some facts pointing in the same direction (Cumacea of Siboga Exp. p. 8). For convenience, however, the name is here retained pending a general reconsideration of the classification of the Cumacea.

## VAUNTOMPSONIA CRISTATA Spence Bate.

*Vauntomponia cristata* G. O. Sars, Arch. Math. Naturvid. iv. p. 13, pls. xxiii.-xxvi. (1879);  
Calman, Fisheries, Ireland, Sci. Invest. 1904, i. (1905), p. 17, pl. i. fig. 1.

To this species I refer, not without some hesitation, a number of male specimens from the West Indies. They differ from British and Mediterranean specimens in their much smaller size (not exceeding 3, as against 5 mm.), but no differences of structure can be detected by a careful examination except that the peduncle of the uropods is relatively shorter and thicker, being shorter than the exopod and less than four times as long as thick.

*Occurrence*.—"Cruz Bay, St. Jan" (Danish West Indies), "Chr. Levinsen, 6/1/96." About twenty specimens, all males. Copenhagen Museum.

## VAUNTOMPSONIA ARABICA, sp. n. (Plate VII. figs. 20-24.)

*Description of adult Male*.—Total length 3.1 mm.

The carapace is distinctly more than one-fourth of the total length, its vertical height about two-thirds of its length. Seen from the side the dorsal edge is distinctly arched. Pseudorostrum very short and truncated. Anterior edge without teeth. Antero-lateral angle obtuse, with a single inconspicuous denticle.

The anterior lobe of the fifth leg-bearing somite is broader, and the notch defining it above is less distinct than in *V. cristata*.

The abdomen is about equal in length to the cephalothoracic region and is stouter than in *V. cristata*.

The antennules have the peduncle shorter and stouter than in *V. cristata*, the second segment is without the stout setæ present in the male of that species, and the third segment is longer than the second.

The third maxilliped has the basis without serrations on its inner edge.

The first legs are considerably shorter than in *V. cristata*, extending beyond the pseudorostrum by little more than the length of the terminal segment. The basis is two-thirds of the length of the distal segments together. The dactylus is two-thirds as long as the carpus and little more than half the length of the propodus.

The second legs have the basis about equal to the distal segments; the last segment is less than four times as long as broad and not longer than the two preceding segments. The posterior legs, and especially their basal segments, are relatively shorter than in *V. cristata*.

The uropods have the peduncle equal in length to the terminal somite and rather less than four times as long as thick, with eight subequal spinules and a longer distal one on its inner edge. The exopod is equal to the peduncle, with three minute spines on its outer edge, one long and two short spines terminally and one small spine on the inner edge. The endopod extends beyond the exopod by half the length of its distal

segment. The proximal segment has about ten subequal spines and a stronger distal one on its inner edge, and a minute distal spinule externally. The distal segment has one long and two short terminal spines and a small spinule on the inner edge.

The pigmentation is variable; patches are generally present on the back and sides of the carapace, and some specimens have dendritic spots on the sides of the abdominal somites.

*Remarks.*—This species is very closely allied to *V. cristata*, but it appears to differ in a number of small characters, of which the convex dorsal edge of the carapace and the shorter first legs are the most conspicuous.

*Occurrence.*—“Suez Canal, 31/1/98, H. Mortensen”; “Aden, 2/98, H. Mortensen.” Copenhagen Museum. Co-types in British Museum.

#### LEPTOCUMA KINBERGII G. O. Sars.

*Leptocuma kinbergii* G. O. Sars, Kongl. Svenska Vet.-Akad. Handl. ii. no. 5, p. 24, pl. vi. (1873).

The specimen which I refer to this species is a female with developing but empty brood-pouch. It measures 22.5 mm. in length of body, and is thus more than half as long again as Sars's immature specimen. It differs from the latter in the following particulars:—

The carapace is less deep, its vertical depth being less than two-thirds of its length, its lower edge is less convex, and the antero-lateral margin as seen from the side is proportionately deeper. The ocular lobe reaches quite to the tip of the pseudorostrum, and the dorsal edge of each lateral plate, where it lies against the ocular lobe, is convex instead of concave. The antennal notch is much shallower than in Sars's figure. The pleural plates of the third free thoracic somite are produced backwards on each side as large rounded lobes, and those of the fourth somite are similarly but less strongly produced, while the last thoracic and the first four abdominal somites have the lower hinder corner slightly produced. The appendages, so far as they are preserved and can be seen without dissection, agree in general with those of Sars's specimen. The second leg, however, appears to be longer, reaching as far as the anterior margin of the carapace in the natural position. The posterior legs are somewhat shorter and more robust. The uropods differ from the figure given by Sars in having setæ on the outer edge of both segments of the endopod, and in having the distal segment little shorter than the proximal, while in Sars's figure it is about two-thirds of that length.

In view of the much smaller size and the immaturity of the type-specimen, the characters in which it differs from the present specimen cannot be regarded as of specific value.

*Occurrence.*—“Magelhaës Strædet, Schythe.” Copenhagen Museum. 1 specimen.

## Family LEUCONIDÆ.

The new genera which are described below render necessary some important modifications in the definition of this family. While all the forms hitherto described agree in having exopods on the first three pairs of legs in the female and on the first four in the male, and in having two pairs of pleopods in the latter sex, the species now described from New Zealand show that the thoracic exopods may be reduced to two pairs in both sexes, and the male pleopods may be present as a single pair or altogether absent. Further, the division of the endopod of the uropods into two segments may be indistinct or suppressed.

The fact that, in some of the species, the ischium of the second pair of legs is distinctly developed (as in Zimmer's *Pseudoleucon*) cannot be made use of as a generic character, since *Heteroleucon akaroënsis* and *Leucon* (?) *heterostylis* present an intermediate condition in which the segment in question is developed only as a very narrow and incomplete ring of chitin between the basis and merus. I find the same structure in *Leucon nasica* Kröyer, *L. assimilis* Sars, and *L. longirostris* Sars, and possibly this vestigial segment has been overlooked in other members of the genus. I cannot identify it, however, in the species of *Eudorella* and *Eudorellopsis* which I have examined. It is noteworthy that the disappearance of the segment is thus shown to be due to "excalation," not, as Sars says (Crust. Norway, iii. p. 29), to fusion with the merus.

In other respects, especially in the structure of the mouth-parts, the new forms agree with the Leuconidæ already known. The inconvenience of genera distinguished only by the characters of one sex is sufficiently obvious, and indeed, in the case of one of the species described below, I have been unable to decide as to its proper generic position owing to the fact that no male specimens were found. Apart, however, from the frequent use of such distinctions in other groups of animals, a precedent is afforded among the Cumacea by Sars's genus *Hemilamprops*, which is distinguished from *Lamprops* only by the characters of the male.

The following key will serve to indicate the position which the new genera occupy relatively to the other genera of the family:—

- A. First three pairs of legs in female and first four in male carry exopods.
- a. Two pairs of pleopods in male.
- a. Antennules not geniculate . . . . . *Leucon* Kröyer.
- b. Antennules geniculate between second and third segments of peduncle . . . . . *Eudorella* Norman.
- c. Antennules geniculate between first and second segments of peduncle.
- a'. Pseudorostrum obsolete or short, vertical, and truncated . . . *Eudorellopsis* Sars.
- b'. Pseudorostrum long, oblique, and acute. . . . . *Pseudoleucon* Zimmer.

- b. One pair of pleopods in male . . . . . *Paraleucon*, g. n.  
 c. No pleopods in male . . . . . *Hemileucon*, g. n.  
 B. First two pairs of legs only carry exopods in both sexes. No pleopods  
 in male . . . . . *Heteroleucon*, g. n.

LEUCON (?) HETEROSTYLIS, sp. n. (Plate VIII. figs. 1-5.)

*Description of adult Female.*—Total length 3.42 mm.

Carapace a little over one-fifth of total length, its vertical height less than two-thirds of its length. The dorsal edge is nearly straight, coarsely and somewhat irregularly serrated in the anterior half, with a small denticle near the posterior end and in front of it a shallow depression. Pseudorostrum straight, horizontal, acute, measuring along its upper edge about one-fourth of the total length of the carapace. The antennal notch forms a deep rounded sinus in the antero-lateral margin, which, above the notch, is cut into about four coarse teeth. On the antero-lateral corner begins a series of strong acute teeth, diminishing to faint serrations on the lower margin. The side of the carapace is smooth. The abdomen is longer than the cephalothoracic region and stout, the first two somites being not longer than broad.

The antennules have the first segment of the peduncle longer than the second, which is again a little longer and stouter than the third. The outer flagellum is a little longer than the last segment of the peduncle and is composed of three segments, the first and second subequal and the third minute. The inner flagellum is unsegmented and is nearly equal to the first two segments of the outer flagellum together. The antennæ are composed of three segments, the basal one bearing three plumose setæ.

The branchial apparatus has two small papilliform lobules on its posterior part.

The first legs are imperfect in all the specimens examined.

The second legs have the ischium represented by two very narrow semiannular sclerites interposed between the basis and merus, forming a ring which is interrupted on the inner and outer sides.

The uropods have the peduncle longer than the last somite and about three times as long as broad. The rami are very unequal, the exopod being shorter than the peduncle and little more than half the length of the endopod. The latter is composed of two segments, the proximal two and a half times as long as the distal. There are about ten slender spines on the inner edge and two unequal spines at the tip, while the outer edge bears a series of stout setæ. The exopod bears a series of long setæ on the inner edge and at the tip and some short setæ on the outer edge.

*Remarks.*—In the absence of the male it is impossible to decide whether this species ought to be referred to some of the new genera defined below. Its resemblance, however, in such characters as the shape of the antero-lateral edge of the carapace, to *L. longirostris* Sars leads me to believe that it will be found to belong to the genus

*Leucon*. In that case it will fall into the group of species which have a large inner flagellum on the antennule. From all the species of this group it is distinguished by having the outer rami of the uropods shorter than the first segment of the inner.

*Occurrence*.—"Akaroa Harbour, 8/97, 6 fathoms, H. Suter." Copenhagen Museum.

*EUDORELLA TRUNCATULA* (Spence Bate).

*Eudorella truncatula* G. O. Sars, Crust. Norway, iii. p. 37, pl. xxix. (1900).

I am unable to find any differences of importance by which to distinguish three New Zealand specimens from North Atlantic specimens of this species. They are of small size, an ovigerous female measuring only 2.75 mm. in total length. The armature of the antero-lateral margin of the carapace resembles that found in *E. truncatula* and in *E. pusilla* (the distinctness of these two species appears to me doubtful), but the tooth of the antero-lateral angle is a little more prominent, though much less so than in *E. nana* or *E. hispida*. The second legs have the basis not much shorter than the remaining segments together, and the merus and carpus relatively shorter than in northern specimens of *E. truncatula*. The terminal spine of the endopod of the uropods is also somewhat stronger.

*Occurrence*.—"Akaroa Harbour, H. Suter Coll., 8/97." 3 specimens. Copenhagen Museum.

*EUDORELLOPSIS RESIMUS*, sp. n. (Plate VIII. figs. 6-10.)

*Description of adult Female*.—Total length 1.75 mm.

General form much as in *E. deformis* (Kröyer). Pseudorostrum well-marked, directed upwards with a slight inclination forwards, distal end truncated, posterior corner not produced, length along posterior edge about one-fourth of total length of carapace. Posterior part of dorsal edge of carapace carrying a prominent tooth directed obliquely forwards. Antero-lateral edge coarsely serrated, the teeth becoming lower and more irregular on the upper part, lower part curving backwards and ending in a small tooth defining the antennal notch. The side of the carapace bears, above the middle of its height, a longitudinal ridge which curves upwards to the anterior edge of the pseudorostrum.

The antennules are more slender than in *E. deformis* and bear less numerous spines. The outer flagellum, composed of three segments, is shorter than the last segment of the peduncle. The unjointed inner flagellum is equal in length to the first segment of the outer.

First legs short, reaching beyond the anterior end of the carapace by not more than the length of the last segment, less richly setose than in *E. deformis*. Second legs also short, with carpus half as long as merus and equal to propodus.

Uropods short and stout, peduncle about two-thirds as long as the last somite.

Exopod nearly twice as long as the peduncle, roughened on its outer surface with irregular tubercles or blunt teeth, with two unequal spines at the tip and a single seta on the inner edge. Endopod only a little shorter than the exopod; first segment twice as long as the second, the latter with a long stout terminal spine and a smaller one internal to it, inner edge unarmed.

*Remarks.*—This species differs from the two species of the genus already known in having the pseudorostrum produced vertically and in possessing a lateral longitudinal ridge on the carapace. In the large size of the pseudorostrum it approaches the genus *Pseudoleucon* of Zimmer, and suggests that that genus should not be separated from *Eudorellopsis*.

*Occurrence.*—“Lyttleton Harbour.” 1 specimen. Copenhagen Museum.

#### Genus HETEROLEUCON, gen. nov.

Only the first and second pairs of legs have exopods in either sex. The endopod of the uropods is unsegmented. The male has no pleopods.

Type species *H. akaroënsis*, sp. n.

The general form of the body is that of the genus *Leucon*, the carapace having a prominent pseudorostrum and a serrated dorsal crest (in the female). The very oblique pseudorostrum recalls the genus *Pseudoleucon* of Zimmer, from which, however, the present form is distinguished by the fact that the peduncle of the antennules is not sharply geniculate between the first and second segments.

HETEROLEUCON AKAROËNSIS, sp. n. (Plate VIII, figs. 11–23.)

*Description of adult Female.*—Total length 2.75 mm.

Carapace a little less than one-fourth of total length, compressed, its vertical height about two-thirds of its length. The dorsal edge is slightly arched as seen from the side, keeled, serrated in its anterior half with eight to ten teeth, and with a single larger tooth just in front of the posterior margin. In front of the posterior tooth there is generally a shallow rounded excavation of the dorsal edge, but in some cases this is less marked than in the specimen figured. The pseudorostrum is straight, directed obliquely upwards, and sharply pointed. The length of its upper edge is a little less than one-third of the length of the carapace. The antennal notch forms a, rather shallow rounded sinus in the antero-lateral margin, which has one or two teeth above the notch and below it is coarsely serrated and curves backwards into the lower margin without any distinct antero-lateral angle.

The abdomen is rather stout and is a little shorter than the cephalothoracic region.

The antennules have the first two segments of the peduncle very stout and subequal; the third only half the diameter of the second and two-thirds of its length. The

outer flagellum is about equal to the second segment of the peduncle and consists of two segments. The unjointed inner flagellum is equal in length to the first segment of the outer.

The antennæ are composed of three segments. The proximal segment bears two plumose setæ.

The mouth-parts are of the usual Leuconid type.

The posterior division of the branchial apparatus bears only two small papilliform lobules.

The first legs extend beyond the pseudorostrum by nearly the length of their two distal segments. The basis is about two-thirds as long as the distal segments together.

The second legs have the basis shorter than the remaining segments together; the ischium is represented by a narrow chitinous ring between the basis and merus.

The uropods have the peduncle longer than the terminal somite and about three times as long as thick. The rami are subequal and a little longer than the peduncle. The exopod is obliquely truncated at the tip, which bears about five unequal setæ. The endopod has a strong, dorsally curved, apical spine and about ten spines on its inner edge.

*Description of adult (?) Male.*—Total length 1.65 mm.

Carapace one-fourth of total length, its vertical height about four-fifths of its length. Dorsal edge slightly arched, smooth, or with one or two small serrations anteriorly. Pseudorostrum very short, horizontal, broadly rounded at the tip. No antennal notch. Antero-lateral angle broadly rounded and serrated.

Antennules with three segments in outer flagellum.

Antennæ with flagellum very short, not longer than the peduncle, composed of nine segments. It is thickened at the base, where the segments are indistinctly separated, but distally they are slender and well-formed and provided with sensory setæ.

The remaining appendages do not differ greatly from those of the female.

The peduncle of the uropods is little more than half the length of the rami.

*Remarks.*—Though there can be little doubt that the males described above belong to the same species as the females, their much smaller size is very suggestive of immaturity, and to this cause may be due the remarkable shortness of the antennæ. The antennæ, however, do not show the usual characters of immaturity, for the peduncle is beset with sensory filaments, and the flagellum, though short, is distinctly segmented and carries setæ.

*Occurrence.*—“Akaroa Harbour, 6 fathoms, H. Suter Coll., 8/97”: many females and three males. “Lyttleton Harbour, 1–5 fathoms, H. Suter Coll., 8/97”: many females. Copenhagen Museum. Co-types in British Museum.

## Genus PARALEUCON, gen. nov.

Differing from *Leucon* in having only one pair of pleopods in the male sex.

Type species *P. suteri*, sp. n.

The species described below resembles *Heteroleucon akaroënsis* in the arrangement of the teeth on the dorsal crest of the carapace. The segmentation of the endopod of the uropods is much less distinct than in most other Leuconidæ, and may be regarded as forming a transition to the unsegmented condition found in *Heteroleucon*. The number of thoracic exopods, however, and the presence of a pair of pleopods in the male seem to require that this species should be distinguished generically from the last.

PARALEUCON SUTERI, sp. n. (Plate IX. figs. 1-20.)

*Description of adult Female*.—Total length 2.9 mm.

Carapace more than one-fifth of total length, compressed; its vertical height a little more than two-thirds of its length. The dorsal edge is nearly straight as seen from the side, keeled, with a large tooth near the hind margin overhanging a rounded excavation, in front of which the dorsal keel bears a varying number of irregular serrations. The pseudorostrum is straight, directed obliquely upwards, and sharply pointed. The length of the upper edge is less than one-fourth of the total length of the carapace. The antennal notch is well-marked and angular, defined below by a triangular tooth, below which the anterior part of the lower margin is obscurely serrated. On the side of the carapace are three subparallel ridges curving obliquely downwards and forwards.

The abdomen is longer than the cephalothoracic region.

The antennules have the first segment of the peduncle little stouter than the second and shorter than the second and third together. The outer flagellum is composed of three segments and is shorter than the third segment of the peduncle. The inner flagellum is unsegmented and about equal to the first segment of the outer.

The antennæ are composed of three segments. The proximal segment bears two plumose setæ.

The mouth-parts are of the usual Leuconid type. The maxillæ have two or three small setæ on the distal part of the inner edge.

The branchial system is reduced, the lobules being represented only by two small papillæ.

The first legs extend beyond the pseudorostrum by little more than the length of their last segment. The basis is little shorter than the remaining segments together, and the dactylus is nearly as long as the propodus. The exopod is shorter than the basis.

The second legs have the ischium distinct and the dactylus longer than the carpus.

The uropods have the peduncle a little longer than the last somite and about  $3\frac{1}{2}$  times as long as thick, with one or two minute setæ on its inner edge. The endopod is about  $1\frac{1}{4}$  times as long as the peduncle, somewhat indistinctly divided into two subequal segments, with about 12 spines on its inner edge and two unequal terminal spines. The exopod is longer than the endopod, with a slender terminal spine and a series of setæ on its inner edge.

*Description of adult Male.*—Total length 2.4 mm.

Teeth of dorsal crest of carapace in some specimens only a little less marked than in the female, in others almost obsolete. Pseudorostrum horizontal, truncated, about one-sixth of total length of carapace. No antennal notch or tooth, the antero-lateral corner rounded off, with a few obscure serrations. Only two oblique ridges on the side of the carapace, corresponding to the two posterior ridges of the female.

The antennules have the second and third segments of the peduncle shorter than in the female, and together shorter than the first segment. The flagella are similar to those of the female.

The antennæ have the penultimate segment of the peduncle more than one-half as long as the succeeding segment. The flagellum is very short, not more than twice as long as the peduncle, and not extending back beyond the first free thoracic somite in the natural position.

Exopods are present on all except the last pair of legs.

Only the first abdominal segment has appendages and these are of very small size. The peduncle is twice as long as broad and bears two minute unjointed rami. Each ramus has a single long plumose seta, and the outer bears in addition one or two short simple setæ.

The uropods hardly differ from those of the female, having only a few additional small setæ on the inner edge of the peduncle.

*Occurrence.*—"Lyttleton Harbour, 5/97, 1-5 fathoms, H. Suter"; "Akaroa Harbour, 8/97, 6 fathoms, H. Suter." Copenhagen Museum. Co-types in British Museum.

#### HEMILEUCON, gen. nov.

Differing from *Leucon* and *Paraleucon* in having no pleopods in the male sex.

Type species *H. uniplicatus*, sp. n.

HEMILEUCON UNIPLICATUS, sp. n. (Plate IX. figs. 21-25.)

*Description of adult Female.*—Total length 2.6 mm.

Carapace about one-fourth of total length, its vertical height a little more than two-thirds of the length. The dorsal crest is slightly arched, its anterior half serrate. Pseudorostrum straight, slightly upturned, obliquely truncate; the length of its

upper edge is less than one-fourth of the total length of the carapace. The antennal notch is well marked, defined below by a triangular tooth. The antero-lateral margin above the notch bears three or four serrations, and the front part of the lower margin is serrated. The side of the carapace is marked by a single horizontal ridge above the middle of its height, curving upwards posteriorly to join the hind margin, and terminating anteriorly below the end of the frontal fissure.

Antennules with the outer flagellum of three segments, the inner of one, equalling the first segment of the outer.

The legs, so far as they are visible without dissection, present no marked differences from those of *Paraleucon*.

The uropods have the peduncle a little longer than the terminal somite and three times as long as thick. The rami are subequal and  $1\frac{1}{2}$  times as long as the peduncle. The endopod is distinctly segmented, the proximal  $1\frac{1}{2}$  times as long as the distal segment. The terminal spine is not much longer than the distal spine of the inner edge. The exopod has several unequal setæ at and near the tip.

*Description of adult Male.*—Total length 2.35 mm.

Dorsal edge of carapace slightly arched, with only some faint traces of serration anteriorly. Pseudorostrum horizontal, truncated, less than one-fifth of total length of carapace. No antennal notch or tooth, the antero-lateral corner rounded off, the antero-lateral edge serrated from the base of the pseudorostrum to the lower edge. The side of the carapace bears a horizontal ridge similar to that of the female.

The antennæ have a very short flagellum and hardly reach back to the hind margin of the carapace in the natural position.

Exopods are present on all except the last pair of legs.

The uropods resemble those of the female.

*Occurrence.*—"Lyttleton Harbour, 5/97, 1-5 fathoms, H. Suter"; "Akaroa Harbour, 8/97, 6 fathoms, H. Suter." Copenhagen Museum.

*HEMILEUCON COMES*, sp. n. (Plate IX. figs. 26-32.)

*Description of adult Female.*—Total length 2.8 mm.

Carapace less than one-fourth of total length, its vertical height less than two-thirds of its length. Dorsal crest very slightly arched, irregularly serrate anteriorly, with a depression near the posterior end. Pseudorostrum straight, directed obliquely upwards, sharply pointed. The length of its upper edge is about one-third of the total length of the carapace. Antennal notch rather widely open, defined by a triangular tooth, the lower edge of which is obscurely serrated. The side of the carapace bears two oblique ridges similar in position to, though less strongly marked than the two anterior ridges of *Paraleucon*.

Abdomen hardly longer than the cephalothoracic region.

Antennules as in *H. uniplicatus*.

The first legs are imperfect in the specimens examined. The second legs have the ischium distinct. The dactylus is equal to the merus and carpus together.

The uropods have the peduncle longer than the last somite and about  $3\frac{1}{2}$  times as long as thick. The endopod is longer than the peduncle and shorter than the exopod, and is distinctly divided into two segments, the proximal less than  $1\frac{1}{2}$  times as long as the distal. There are about nine spines on the inner edge, increasing in length towards the slender terminal spine. The exopod has two unequal terminal setæ and series of setæ on the inner and outer edges.

*Description of adult Male.*—Total length 2.7 mm.

Dorsal edge of carapace slightly arched, smooth. Pseudorostrum horizontal, truncated, about one-sixth of total length of carapace. No antennal tooth or notch, antero-lateral corner rounded, no serrations on antero-lateral or lower edges. The side of the carapace bears two oblique ridges similar to, but fainter than, those on the carapace of the female.

The antennæ have the flagellum short, reaching to about the second free thoracic somite in the natural position.

Exopods are present on all except the last pair of legs.

The uropods resemble those of the female.

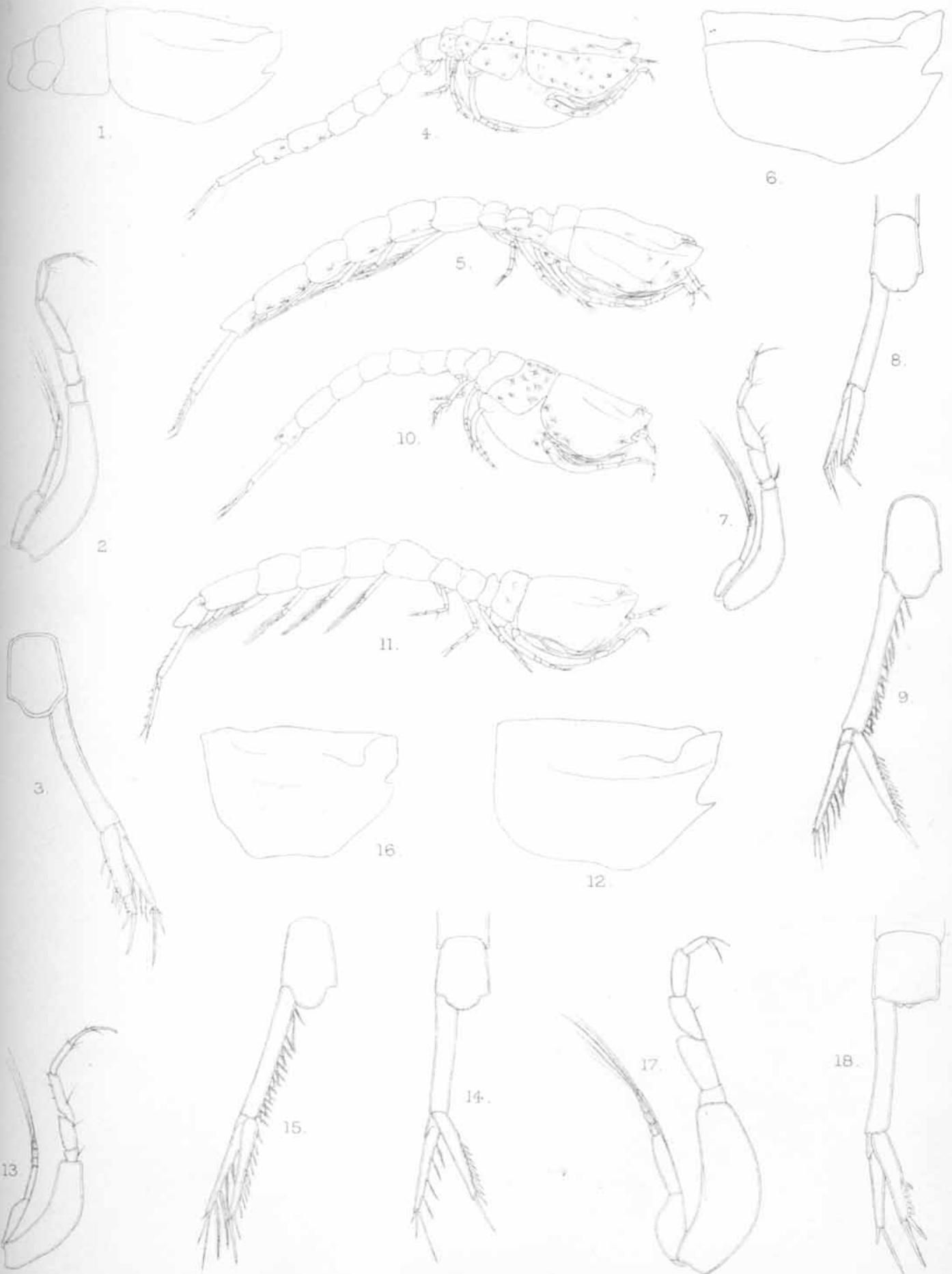
*Occurrence.*—“Lyttleton Harbour, 5/97, 1–5 fathoms, H. Suter.” Copenhagen Museum.



PLATE I.

## PLATE I.

- Fig. 1. *Bodotria sublevis* (p. 3). Female. Anterior part of body.  
 2. " " " First leg.  
 3. " " " Last somite and uropod.  
 4. " *similis* (p. 4). Female.  
 5. " " Male.  
 6. " " Female. Carapace.  
 7. " " " First leg.  
 8. " " " Last somite and uropod.  
 9. " " Male. Last somite and uropod.  
 10. " *siamensis* (p. 5). Female.  
 11. " " Male.  
 12. " " Female. Carapace.  
 13. " " " First leg.  
 14. " " " Last somite and uropod.  
 15. " " Male. Last somite and uropod.  
 16. " *parva* (p. 5). Female. Carapace.  
 17. " " " First leg.  
 18. " " " Last somite and uropod.



W. T. Calman, del.

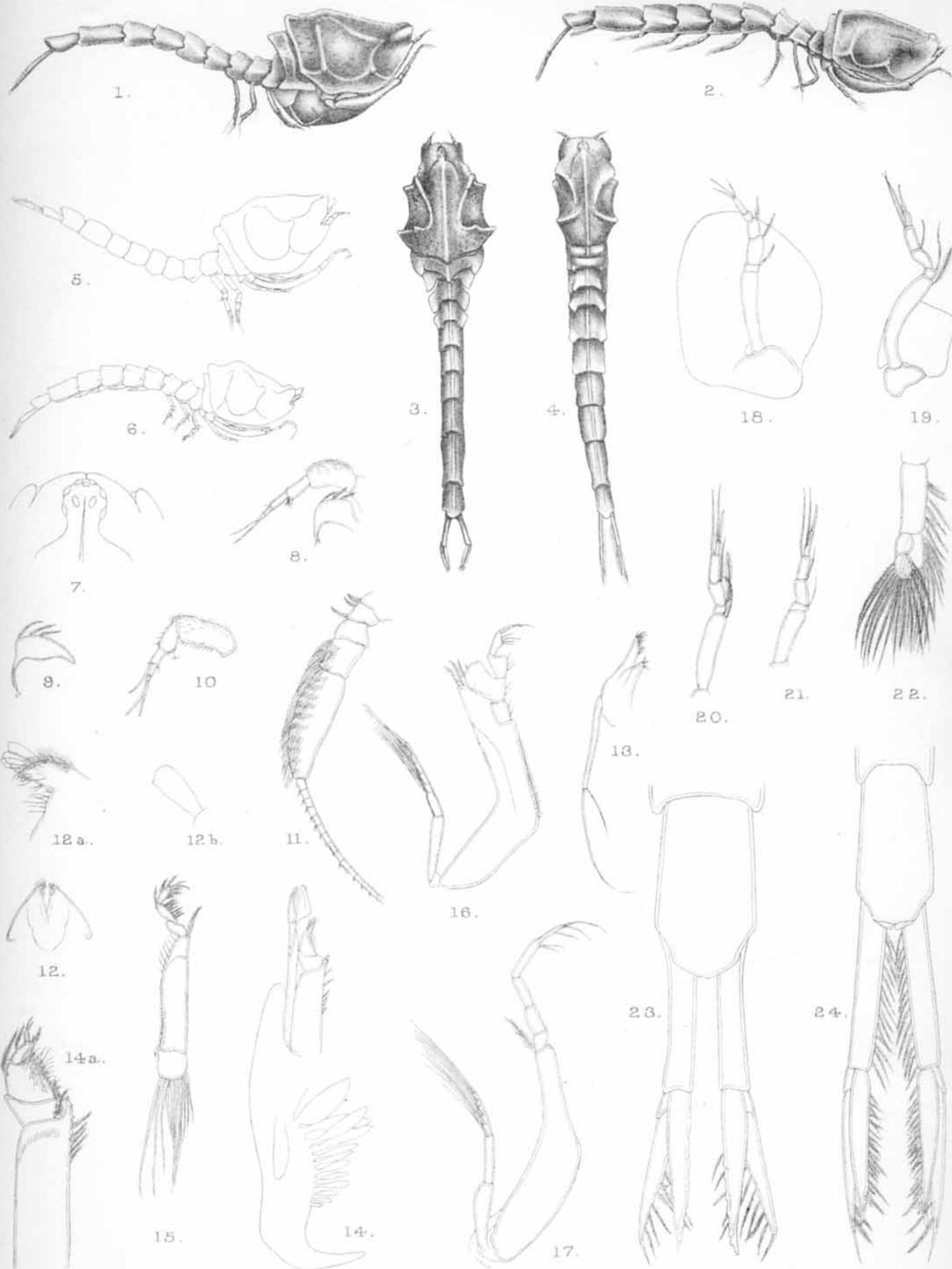
Hubb. sc. et imp.

1-3, BODOTRIA SUBLEVIS, 4-9, B. SIMILIS, 10-15, B. SIAMENSIS, 16-18, B. PARVA.

PLATE II.

## PLATE II.

Fig. 1.	<i>Cyclaspis elegans</i> (p. 9).	Female.	From the side.
2.	„ „	Male.	From the side.
3.	„ „	Female.	From above.
4.	„ „	Male.	From above.
5.	„ „	Young,	before development of last pair of legs.
6.	„ „	Young male	with developing pleopods.
7.	„ „	Female.	Anterior part of head, from above.
8.	„ „	„	Antennule and antenna.
9.	„ „	„	Antenna, another view.
10.	„ „	Male.	Antennule.
11.	„ „	„	Antenna.
12.	„ „	Female.	Lower lip.—12 <i>a</i> . Tip of one of the lobes, further enlarged. 12 <i>b</i> . One of the spathulate spines.
13.	„ „	„	Maxillula.
14.	„ „	„	First maxilliped with branchial apparatus.—14 <i>a</i> . Endopod of same, further enlarged.
15.	„ „	„	Second maxilliped.
16.	„ „	„	Third maxilliped.
17.	„ „	„	First leg.
18.	„ „	„	Second leg.
19.	„ „	„	Third leg.
20.	„ „	„	Fourth leg.
21.	„ „	„	Fifth leg.
22.	„ „	Male.	Pleopod.
23.	„ „	Female.	Last somite and uropods.
24.	„ „	Male.	Last somite and uropods.



W.T. Calman del.

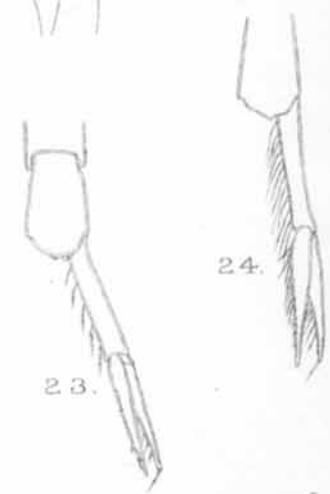
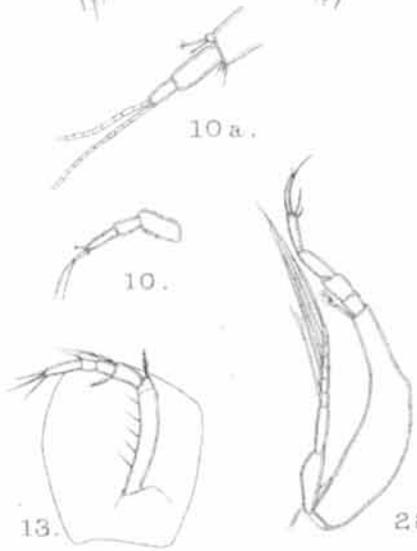
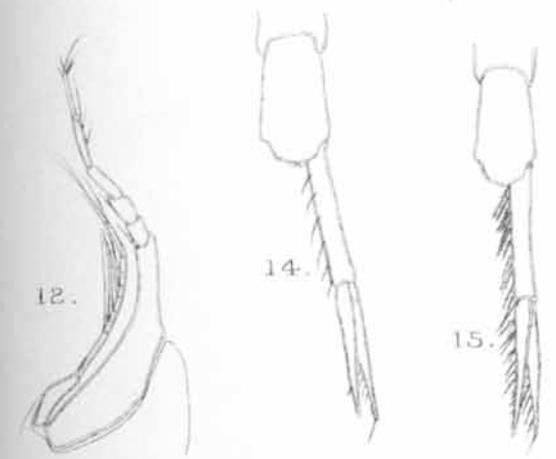
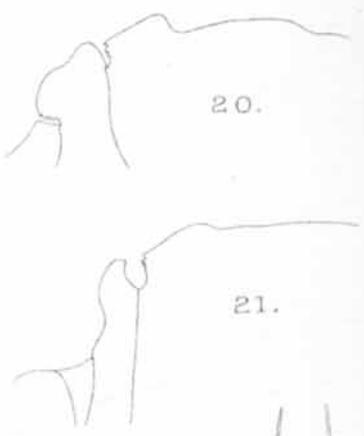
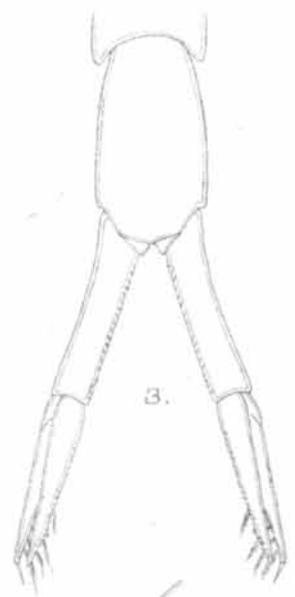
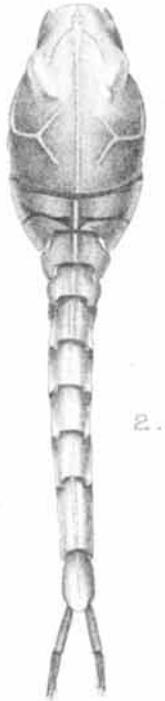
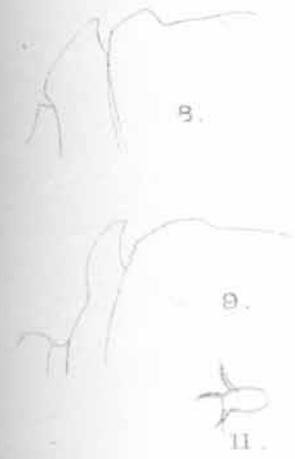
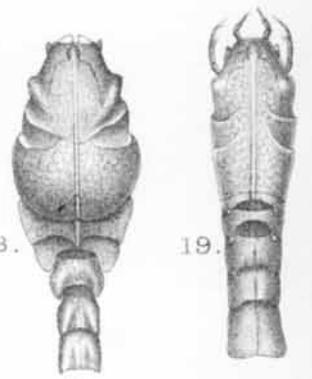
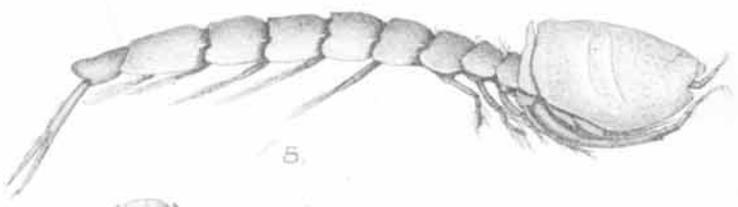
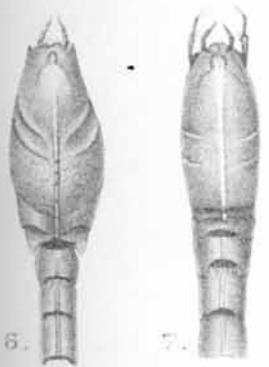
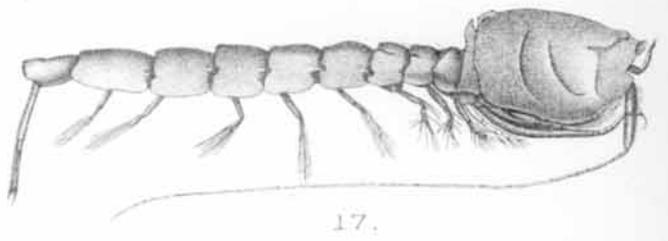
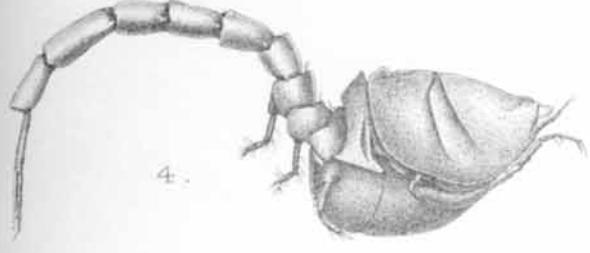
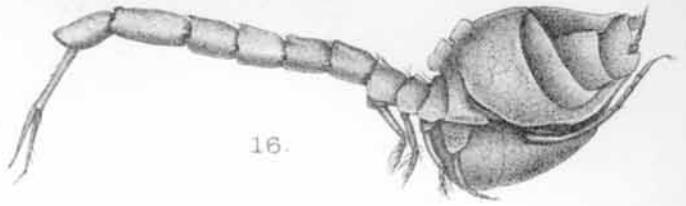
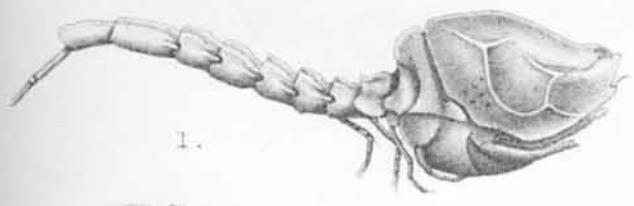
Huth, sc. et imp.

1-24. CYCLASPIS ELEGANS.

PLATE III.

## PLATE III.

- Fig. 1. *Cyclaspis similis* (p. 12). Female. From the side.  
 2. " " " From above.  
 3. " " " Last somite and uropods.  
 4. " *biplicata* (p. 17). Female. From the side.  
 5. " " " Male. From the side.  
 6. " " " Female. Anterior part of body, from above.  
 7. " " " Male. Anterior part of body, from above.  
 8. " " " Female. Dorsal outline of first free somite.  
 9. " " " Male. Dorsal outline of first free somite.  
 10. " " " Female. Antennule.—10 $\alpha$ . Distal portion further enlarged.  
 11. " " " " Antenna.  
 12. " " " " First leg.  
 13. " " " " Second leg.  
 14. " " " " Last somite and uropod.  
 15. " " " Male. Last somite and uropod.  
 16. " *triplicata* (p. 19). Female. From the side.  
 17. " " " Male. From the side.  
 18. " " " Female. Anterior part of body, from above.  
 19. " " " Male. Anterior part of body, from above.  
 20. " " " Female. Dorsal outline of first free somite.  
 21. " " " Male. Dorsal outline of first free somite.  
 22. " " " Female. First leg.  
 23. " " " " Last somite and uropod.  
 24. " " " Male. Last somite and uropod.



W. T. Calman, del.

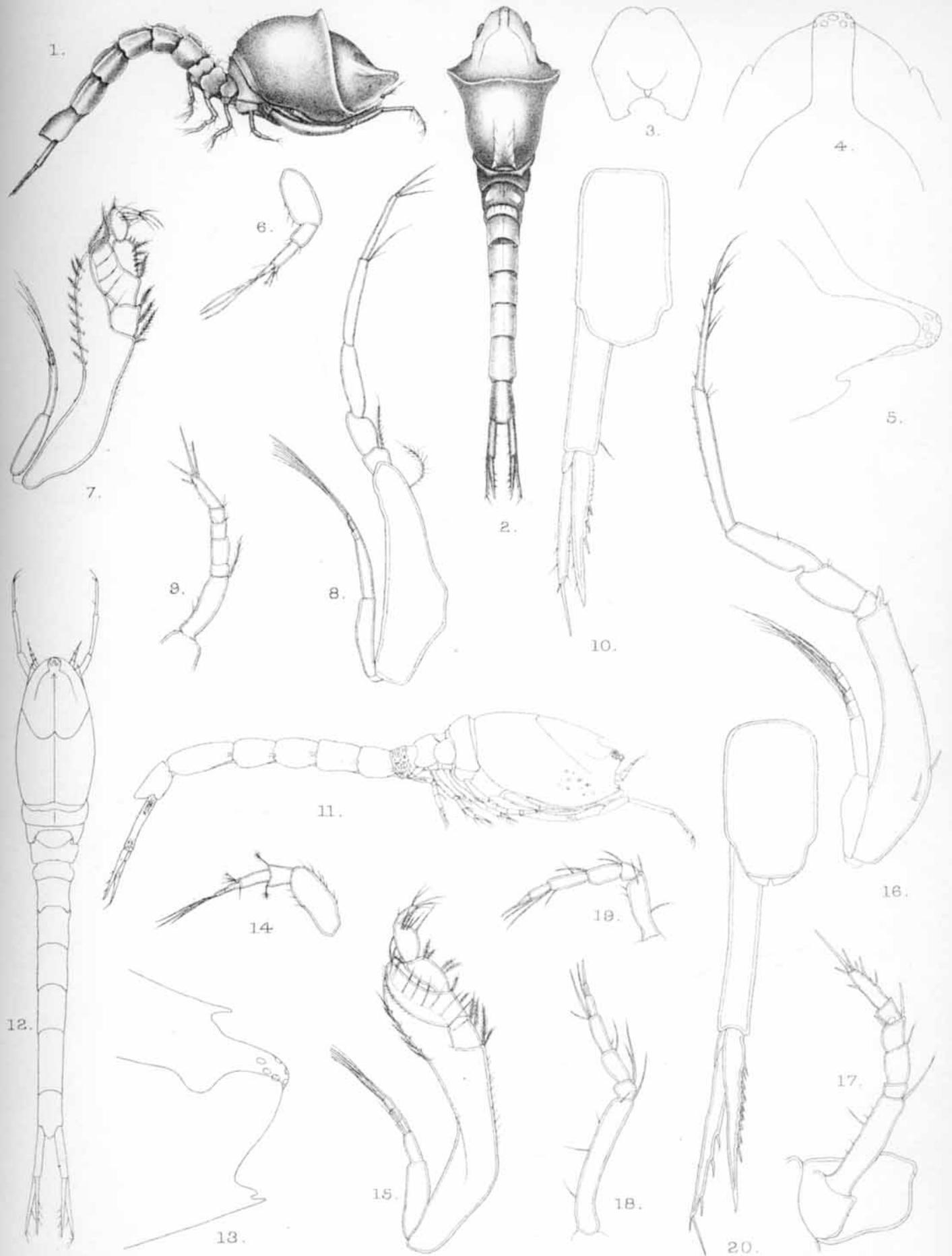
Huth, sc. et insp.

1-3, CYCLASPIS SIMILIS, 4-15, C. BIPLICATA, 16-24, C. TRIPPLICATA.

PLATE IV.

## PLATE IV.

- |         |                            |                   |          |  |
|---------|----------------------------|-------------------|----------|--|
| Fig. 1. | <i>Cyclaspis cingulata</i> | (p. 15).          | Female.  | From the side.                           |
| 2.      | „                          | „                 | „        | From above.                              |
| 3.      | „                          | „                 | „        | Outline of carapace, seen from in front. |
| 4.      | „                          | „                 | „        | Anterior part of head, from above.       |
| 5.      | „                          | „                 | „        | Anterior part of head, from the side.    |
| 6.      | „                          | „                 | „        | Antennule.                               |
| 7.      | „                          | „                 | „        | Third maxilliped.                        |
| 8.      | „                          | „                 | „        | First leg.                               |
| 9.      | „                          | „                 | „        | Second leg.                              |
| 10.     | „                          | „                 | „        | Last somite and uropod.                  |
| 11.     | „                          | <i>uniplicata</i> | (p. 13). | Female.                                  |
| 12.     | „                          | „                 | „        | From the side.                           |
| 13.     | „                          | „                 | „        | From above.                              |
| 14.     | „                          | „                 | „        | Anterior part of head, from the side.    |
| 15.     | „                          | „                 | „        | Antennule.                               |
| 16.     | „                          | „                 | „        | Third maxilliped.                        |
| 17.     | „                          | „                 | „        | First leg.                               |
| 18.     | „                          | „                 | „        | Second leg.                              |
| 19.     | „                          | „                 | „        | Third leg.                               |
| 20.     | „                          | „                 | „        | Fifth leg.                               |
|         | „                          | „                 | „        | Last somite and uropod.                  |



W.I. Galman, del.

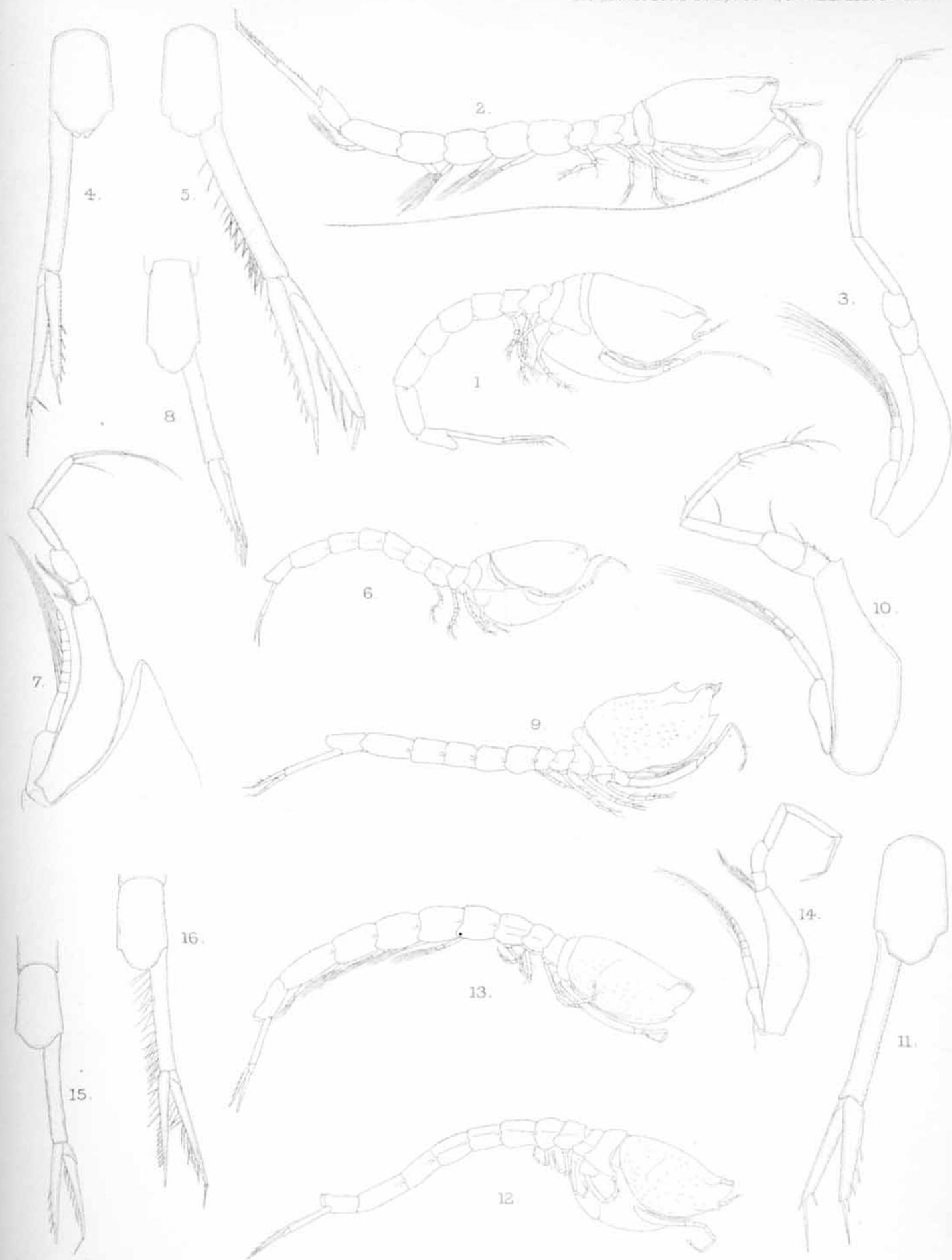
1-10, CYCLASPIS CINGULATA. 11-20, C. UNIPLICATA.

Huth, sc. et imp.

PLATE V.

## PLATE V.

- Fig. 1. *Cyclaspis longipes* (p. 7). Female. From the side.  
 2. " " Male. From the side.  
 3. " " Female. First leg.  
 4. " " " Last somite and uropod.  
 5. " " Male. Last somite and uropod.  
 6. " *levis* (p. 8). Female. From the side.  
 7. " " " First leg.  
 8. " " " Last somite and uropod.  
 9. " *unicornis* (p. 14). Female. From the side.  
 10. " " " First leg.  
 11. " " " Last somite and uropod.  
 12. " *thomsoni* (p. 16). Female. From the side.  
 13. " " Male. From the side.  
 14. " " Female. First leg.  
 15. " " " Last somite and uropod.  
 16. " " Male. Last somite and uropod.



W. T. Calman, del.

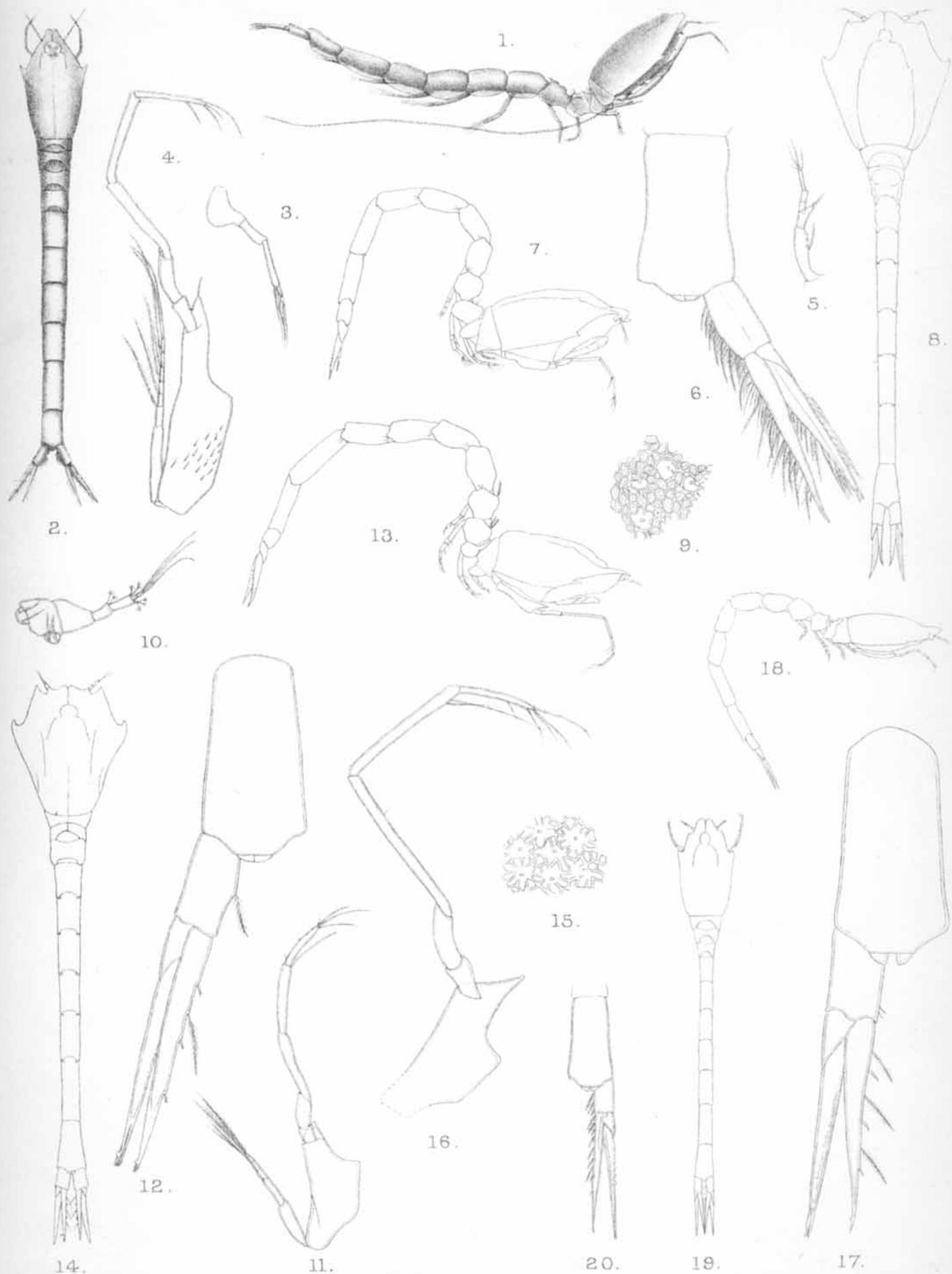
Huth, sc et imp.

1-5, CYCLASPIS LONGIPES. 6-8, C. LEVIS. 9-11, C. UNICORNIS.  
12-16, C. THOMSONI.

PLATE VI.

## PLATE VI.

- Fig. 1. *Eocuma longicornis* (p. 20). Male. From the side.  
 2. " " " " From above.  
 3. " " " " Antennule.  
 4. " " " " First leg.  
 5. " " " " Second leg.  
 6. " " " " Last somite and uropod.  
 7. " *lata* (p. 22). Female. From the side.  
 8. " " " " From above.  
 9. " " " " Minute texture of carapace, much enlarged.  
 10. " " " " Antennule and antennæ.  
 11. " " " " First leg.  
 12. " " " " Last somite and uropod.  
 13. " *stellifera* (p. 23). Female. From the side.  
 14. " " " " From above.  
 15. " " " " Minute texture of carapace, much enlarged.  
 16. " " " " First leg.  
 17. " " " " Last somite and uropod.  
 18. " *producta* (p. 24). Female. From the side.  
 19. " " " " From above.  
 20. " " " " Last somite and uropod



W.T. Calman, del.

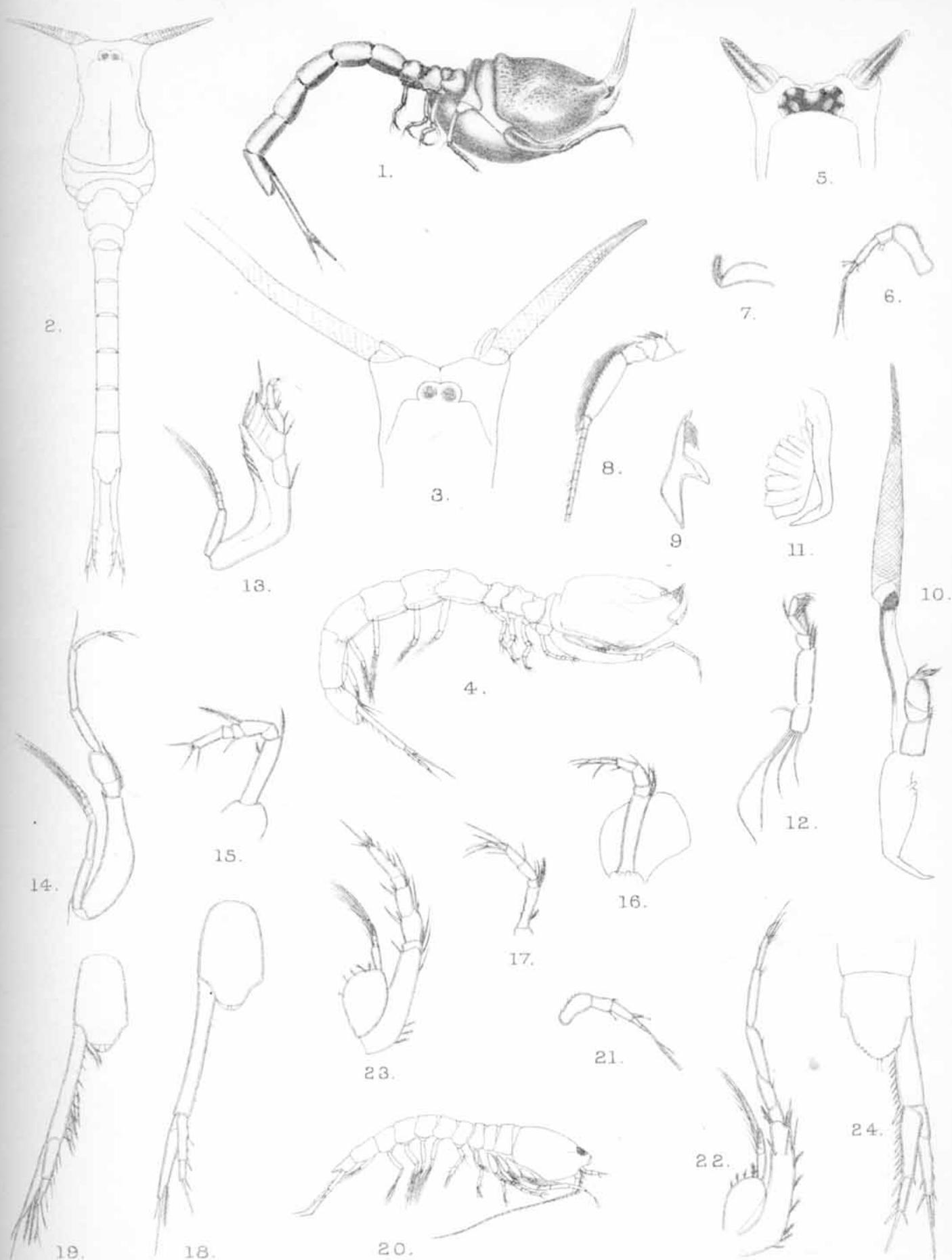
Hutch, sc et imp.

1-6, *EOCUMA LONGICORNIS*. 7-12, *E. LATA*. 13-17, *E. STELLIFERA*. 18-20, *E. PRODUCTA*.

PLATE VII.

## PLATE VII.

- Fig. 1. *Zygosiphon mortenseni* (p. 25). Female. From the side.  
 2. " " " " From above.  
 3. " " " " Anterior part of head, from above.  
 4. " " " " Male. From the side.  
 5. " " " " " Anterior part of head, from above.  
 6. " " " " Female. Antennule.  
 7. " " " " " Antenna.  
 8. " " " " Male. Antenna.  
 9. " " " " Female. Mandible.  
 10. " " " " " First maxilliped, with branchial apparatus.  
 11. " " " " Male. Posterior part of branchial apparatus.  
 12. " " " " Female. Second maxilliped.  
 13. " " " " " Third maxilliped.  
 14. " " " " " First leg.  
 15. " " " " " Second leg.  
 17. " " " " " Third leg.  
 16. " " " " " Fifth leg.  
 18. " " " " " Last somite and uropod.  
 19. " " " " Male. Last somite and uropod.  
 20. *Vauntomponia arabica* (p. 29). Male. From the side.  
 21. " " " " " Antennule.  
 22. " " " " " First leg.  
 23. " " " " " Second leg.  
 24. " " " " " Last somite and uropod.



W. T. Calman del.

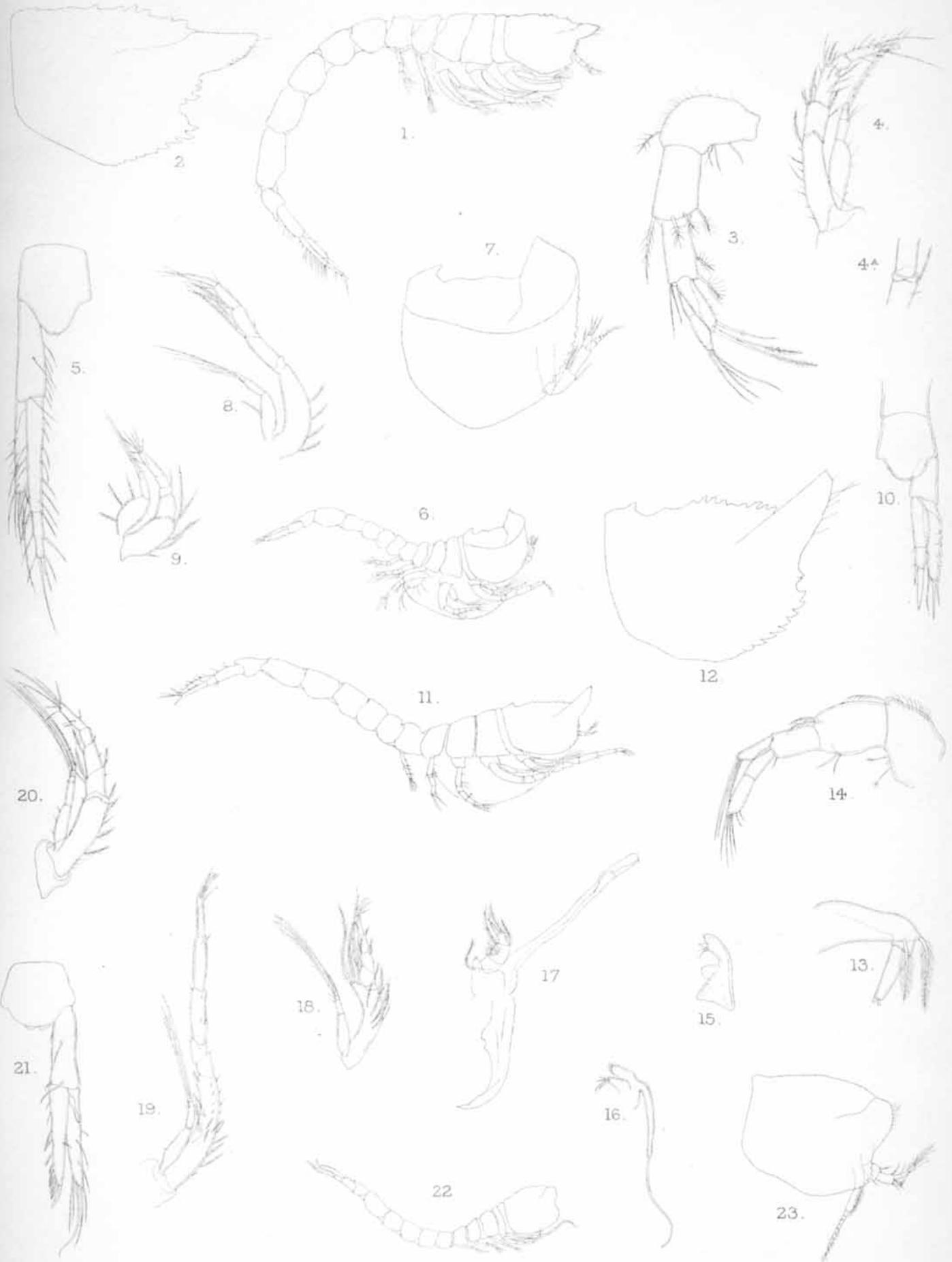
Bush, sc et imp.

1 - 19, ZYGOSIPHON MORTENSENI. 20 - 24, VAUNTOMPSONIA ARABICA.

PLATE VIII.

## PLATE VIII.

Fig. 1.	<i>Leucon (?) heterostylis</i> (p. 32).	Female.	From the side.
2.	„	„	Carapace, further enlarged.
3.	„	„	Antennule.
4.	„	„	Second leg.—4 <i>a</i> . Middle part of same from inner side to show reduced ischium.
5.	„	„	Last somite and uropod.
6.	<i>Endorellopsis resinus</i> (p. 33).	Female.	From the side.
7.	„	„	Carapace and antennule, further enlarged.
8.	„	„	First leg.
9.	„	„	Second leg.
10.	„	„	Last somite.
11.	<i>Heteroleucon akaroënsis</i> (p. 34).	Female.	From the side.
12.	„	„	Carapace.
13.	„	„	Antennule.
14.	„	„	Antenna.
15.	„	„	Mandible.
16.	„	„	Maxillula.
17.	„	„	First maxilliped with branchial apparatus.
18.	„	„	Third maxilliped.
19.	„	„	First leg.
20.	„	„	Second leg.
21.	„	„	Last somite and uropod.
22.	„	Male.	From the side.
23.	„	„	Carapace, antennule, and antenna.



W.T. Calman, del.

Hubb, sc. et imp.

1 - 5, LEUCON (?) HETEROSTYLIS. 6 - 10, EUDORELLOPSIS RESIMUS.  
11 - 23, HETEROLEUCON AKAROENSIS.

PLATE IX.

## PLATE IX.

- Fig. 1. *Paraleucon suteri* (p. 36). Female. From the side.  
 2. „ „ „ „ Carapace, further enlarged.  
 3. „ „ „ „ Antennule.  
 4. „ „ „ „ Antenna.  
 5. „ „ „ „ Mandible of right side and part of that  
 of left side.  
 6. „ „ „ „ Maxillula.  
 7. „ „ „ „ Maxilla.  
 8. „ „ „ „ First maxilliped with branchial  
 apparatus.  
 9. „ „ „ „ First maxilliped, further enlarged.  
 10. „ „ „ „ Third maxilliped.  
 11. „ „ „ „ First leg.  
 12. „ „ „ „ Second leg.  
 13. „ „ „ „ Fourth leg.  
 14. „ „ „ „ Last somite and uropod.  
 15. „ „ „ Male. From the side.  
 16. „ „ „ „ Carapace, further enlarged.  
 17. „ „ „ „ Antennule.  
 18. „ „ „ „ Antenna.  
 19. „ „ „ „ Pleopod.  
 20. „ „ „ „ Last somite and uropod.  
 21. *Hemileucon uniplicatus* (p. 37). Female. From the side.  
 22. „ „ „ „ Carapace with antennule,  
 further enlarged, showing  
 outline of mandible.  
 23. „ „ „ „ Last somite and uropod.  
 24. „ „ „ Male. From the side.  
 25. „ „ „ „ Carapace with antennule and  
 antenna, further enlarged.  
 26. „ „ *comes* (p. 38). Female. From the side.  
 27. „ „ „ „ Carapace, further enlarged.  
 28. „ „ „ „ Antennule.  
 29. „ „ „ „ Second leg.  
 30. „ „ „ „ Last somite and uropod.  
 31. „ „ „ Male. From the side.  
 32. „ „ „ „ Carapace, further enlarged.



WTCabman, del.

Huth, sc. et imp.

1-20. PARALEUCON SUTERI. 21-25. HEMILEUCON UNIPLICATUS. 26-32. H. COMES.