# NEW OR IMPERFECTLY KNOWN 

## ISOIPDIA,

DESCRIBED BY

## CARL BOVALLIUS.

PART I.<br>WITH 5 PLATES.

[^0]$\mathbf{I}_{\mathrm{t}}$ is the very rich carcinological collections in the Zoological State Museum at Stockholm, most liberally placed at my disposal by Professor Sven Lovén, that have afforded the principal material for the present and following notes on new or imperfectly known Isopods. Valuable contributions have been received from Professor Tycho Tullberg, Director of the Zoological Museum of the University of Upsala, and furnished from my own collections made during many years of travels and voyages at home and abroad.

## Abbreviations.

Z. $M .=$ The Zoological State Museum of Sweden at Stockholm.
$U . M .=$ The Zoological Museum of the University of Upsala.
$C . B .=$ The author's collections.

## 1. Aega Schioedteana, n. sp.

Deriv. The name in honour of the celebrated Zoologist J. C. Schioedte, late Professor of the Copenhagen University.

Diagn. Corpus elongatum, ovatum, ter fere longius quam latius.
Caput plus duplo latius quam longius; acumen frontis declive, tertiam partem articulorum basalium antennarum primi paris discernens.

Oculi permagni, fere contingentes.
Antennce primi paris marginem posteriorem capitis non attingentes, flagello septem-articulato.

Antenne secundi paris marginem posteriorem segmenti primi pereii vix attingentes, flagello XIII-articulato instructæ.

Segmentum primum pereii longissimum, cetera longitudine decrescentia, segmentum septimum obtectum.

Epimera subæqualia introrsum versa, ita ut animal subter appareat quasi marginatum.

Metacarpi pedum pereii parium trium priorum lamina cultriformi præditi.

Pedes septimi paris longissimi, spinulosi. Urus grandis, triangularis, acuminatus, longitudine latitudinem fere æquante.

Ramus interior pedum uri latere exteriore profunde inciso.
The body is elongate-ovate, nearly thrice as long as broad (35 : 13).

The head is more than twice as long as broad (28:11); the middle of the front separates only a third of the basal joints of the upper antennæ.

The eyes are very large; the space between them is very narrow.

The first pair of antennce are shorter than the head, provided with a seven-jointed palp.

The second pair of antennce reach nearly to the hinder margin of the first pereional segment. The flagellum consists of 13 articuli.

The first segment of the pereion is the longest; the following decrease in length; the seventh is concealed by the sixth.

The epimerals are subequal in length; they are bent inwards, forming a kind of frame on the under-side of the body.

The metacarpi of the three first pairs of pereiopoda are provided with a chisel-formed process. The seventh pair is the longest, spinigerous.

The urus is large, triangular, pointed, nearly as long as broad (17:18).

The inner ramus of the uropoda is deeply incised on its outer margin.

In habitus our animal comes very near Aega Deshayesiana, but it is easily distinguished by the sixth pereional segment being concealed, by the shorter urus, and by the chisel-formed processes on the metacarpi of the three first pair of legs. From Aega Webbii it differs also by the form of the urus, and from Aega dentata by the shorter antennæ, by the armature of the three first pairs of pereiopoda, and by the form of and the urus of the uropoda.

## Adult male.

## Pl. I. fig. $1-10$.

The front margin of the head is rounded, the hind margin is straight.

The tip of the front separates only the uppermost third of the basal joints of the upper antennæ from each other. The head is a little broader than half of the fourth pereional segment $(7: 13)$ and more than thrice as broad as long. Its upper surface is smooth. The eyes are very large, oblong. The anterior margins are angulated. There is only a narrow strip of the front between them. The ocelli are arranged in nine rows, with twenty-two in the middle one.

The first pair of antennce (Pl. I fig. 4) do not reach to the hinder margin of the head. The basal joint of the peduncle is the longest and broadest, the third one the shortest. The flagellum consists of seven short articuli carrying very short hairs; the last article is very slender.

The second pair of antennce (Pl. I fig. 4) reach very nearly to the hinder margin of the first pereional segment; the two first joints of the peduncle are very short, the third is a little
longer, the fourth the longest, longer than all the preceding together. The fifth joint is a little shorter. The flagellum consists of 13 joints; the first is the longest, the last one very small; they all carry minute hairs.

The first segment of the pereion is a little longer than the second (11:10); the following decrease in length down to the seventh, which is almost totally hidden by the sixth. The fourth and fifth segments are the broadest, the first is the narrowest ( $13: 10$ ). The second and third segments have each a short triangular spot on the backside; the fourth and fifth segments have each a long, elongate-ovate spot. The lateral corners of the seventh segment are visible behind the sixth segment. The sixth segment is only half as long as the first.

The epimerals (Pl. I fig. 3) are all bent inwards nearly rectangularly to the sides of the segments, thereby forming as it were a frame on the under-side of the body. The epimerals of the second and third segments are equal in length, rounded at the corners. That of the fourth segment is a little longer and feebly pointed at the hinder corner. All the four first epimerals occupy the whole of the sides of the segments. The following two epimerals do not occupy more than three quarters of the length of each segment; they are directed a little more downwards and sharp-pointed. The last epimeral is shorter, sharp-pointed, and does not reach to the posterior corner of the first pleonal segment; it occupies the whole of the length of the segment.

The first pair of pereiopoda (gnathopoda Sp. Bate) (Pl. I fig. 5). The femur is robust, carrying five richly ciliated bristles, but no spines. The genu is long, longer than the tibia and the carpus together, and longer than the metacarpus. The tibia is armed with $1-8$ short stout spines. The metacarpus is longer than the two preceding joints, and from its inner margin extends a sharp chisel-formed process of the same structure, but not so broad, as in Aega magnifica, Dana. The dactylus is strong, not carinated. The second and third pairs resemble the first, but the femora carry only 3-4 ciliated bristles, and the dactyli are more robust. From the fourth to the seventh pair the legs increase in length. The femora carry long ciliated bristles, the following joints except the dactyli are richly beset with longer or shorter spines. All the joints are broad. (Pl. I fig. 7).

The pleon is only a little narrower at the base than the fourth segment $(23: 26)$, and much broader than long; the first segment is almost totally covered by the sixth and seventh pereional segments, its visible part being scarcely longer than a fifth of the fifth pleonal segment. The second, third, and fourth segments are nearly equal in length and breadth. The fifth is longer by a third and a little narrower. The pleon equals the fourth, fifth, and sixth pereional segments in length.

The second pair of pleopoda (Pl. I fig. 8) carry a styliform process, very long, fringed with short fine hairs.

The urus is triangular with nearly straight sides, smooth on its upper side; its margin fringed with very short, plumose hairs. At the pointed end of the urus there are some few short spines among the hairs (Pl. I, fig. 10). The urus is nearly as long as broad (17:18), longer than the pleon (17:15). The pleon and the urus together are shorter than the pereion with the head, but equal in length to the pereion.

The uropoda (Pl. I. fig. 9) do no reach to the end of the urus. The rami are longer than the peduncle. The inner ramus is not shorter than the outer, finely spotted with dark red, deeply incised at its exterior margin. The margins of both rami are serrated, provided with minute spines, and fringed with long simple hairs.

Colour. Yellowish-white with smaller and larger spots of dark red.
Length. 18,5 mm.
Hab. The Adriatic. (C. B.)
The only specimen I have seen I found in a Collection of Crustaceans from the naturalist-merchant Carl Wessel in Hamburg. It is an adult male.

## 2. Aega magnifica. Dana.

Syn. 1853 Pterelas magnificus, Dana. United States Expl. Exp. Crustacea vol. II, pag. 769 , pl. 51. fig. 4 a-f.
? 1879. Aega magnifica, Schioedte et Meinert. Symb. ad monogr. Cymothoarum. I, pag. 363, tab. VIII, fig. 14-19.

The specimen here described differs in many points from the description given by Schioedte and Meinert, and approaches more nearly to the type of Dana's description; but as it is
not fully identical with this type, it would perhaps be convenient to put it down as a variety of Aega magnifica Dana. In any case it seems fit to give here a short account of its characteristical points.

## Virgo.

## Pl. II. fig. $11-17$.

The form of the body is elongate-ovate, nearly thrice as long as broad (71:26). According to Dana's specimen the animal is quite thrice as long as broad ( $28: 9$ ), according to the specimens of Schioedte and Meinert it is only a little more than twice as long as broad ( $74: 33$ ).

The head is as long as the first segment of the pereion. The middle part of the front separates half of the basal joints of the upper antennæ.

The eyes are large, distant by a third of the breadth of the head. They are nearly rectangular, the hinder margin being feebly rounded, with the ocelli arranged in seven rows, 15 in each.

The third joint of the peduncle of the first pair of antennce is the longest. The flagellum, ten-jointed, reaches beyond the anterior margin of the first segment.

The flagellum of the second pair of antennce is 19-jointed; it reaches beyond half of the second pereional segment. (Pl. II fig. 13).

The fifth and sixth segments of the pereion are the longest, equal, much longer than the first ( $4: 3$ ) (in Dana's specimen the first sixth and seventh segments are equal, the fifth much shorter). The fifth, sixth, and seventh segments being deeper than the preceding, the row of epimerals is not even (Pl. II. fig. 12). On each of the epimerals of the second to fifth segments there is an oblique line. The two last epimerals have two such lines. The last epimeral does not reach half-way of the first pleonal segment. The femora of the three first pairs of pereiopoda (Pl. II. fig. 14) are smooth, without bristles or spines; the tibia are provided with five to six very short, obtuse, stout spines. The metacarpi throw out each a broad hatchet-like process, the edge of the process equalling the metacarpus in length.

The pleon equals in length the head and the first pereional segment. It is quite free, the first segment not at all covered
by the last pereional segment; it equals the fifth in length. The second segment is half the length of the first. The third and fourth a little longer, equal.

The urus is shorter than the pleon $(23: 24)$ and broader than long (28:23), subacute, feebly crenulated, fringed with long plumose hairs.

The uropoda (Pl. II. fig. 16) equal the urus in length; the process of the peduncle is very long, obtusely pointed The outer ramus is elongate-ovate, fringed with long plumose hairs. The inner ramus is longer and broader, the posterior margin rounded, crenulated, with short sharp spines; the whole ramus is fringed with long plumose hairs (Pl. II. fig. 17); the exterior margin is slightly incised.

The colour is red with oblong white spots; there is no larger darker spot on the dorsal side of the fifth segment as stated in the description of Schioedte and Meinert. The lower parts of the sides of the first, second, third, and fourth segments are bordered with dark violet; on the fifth segment there is no trace of such a dark colour, but on the sixth and seventh pereional segments, and on all the pleonal segments it reappears; at each corner of the anterior margin of the urus there is also to be seen a dark violet spot. The three first epimerals have the same colour, the three last ones are only partly spotted with violet.

Length. $26 \mathrm{~m} . \mathrm{m}$.
Hab. Magelhaen's Sound. (Z. M.)
From the circumnavigation of H. Swed. M. Frigate Eugenie.
3. Rocinela maculata. Schioedte et Meinert.

Syn. 1879. Rocinela maculata. Schioedte et Meinert. Symb. ad mongr. Cymothoarum. I. pag. 393, tab. XII. fig. 10-12.

Among the crustaceans in a collection which I bought 1877 of the naturalist-merchant Wessel in Hamburg there are also two Rocinela, a male and a female, that are identical, I think, with Schioedte and Meinert's new species Rocinela maculata. As only the male is hitherto known and described, it seems very fit to give here a short description of an ovige-
rous female, and this the more because there are some differences between it and the already described male.

## Ovigerous female. Pl. II. fig. 18-23.

The body is ovate, more than twice as long as broad ( $56: 25$ ), the characteristical dark spots on the sides of the fourth pereional segment and at the base of the urus are very distinct.

The head is more than twice as broad as long, longer than the first pereional segment.

The eyes are not very small, with eight rows of ocelli, 11 in the median row.

The first pair of antennce reach to half of the first pereional segment; the flagellum is five-jointed, the last joint furnished with a bundle of very short hairs. (Pl. II. fig. 20).

The second pair of antennce reach to a third of the third pereional segment. The flagellum is fifteen-jointed.

The fifth segment of the pereion is the longest, the first and second the shortest, the seventh segment is a little shorter than the fifth $(10: 13)$.

The three last epimerals are longer than the preceding, sharp-pointed, not occupying the whole length of the segments (Pl. II. fig. 19). The last epimeral quite reaches to two thirds of the second pleonal segment.

The tibix of the three first pairs of pereiopoda carry three very short, stout, obtuse spines each, the metacarpi three sharp ones (Pl. II. fig. 21).

The pleon is shorter than the two preceding segments together $(9: 11)$. The first segment is totally covered by the last segment of the pereion. The fifth is the longest. The dark spots extend from the urus over the corners of the two last pleonal segments.

The urus is longer than the pleon ( $10: 9$ ), broader by a third than long, rounded, not subacuminate; the margins are crenulated, provided with stout, sharp spines and long, plumose hairs (Pl. II. fig. 23).

The uropoda (P. II. fig. 22) are but a little shorter than the urus, the process from the peduncle very sharp and long.

The inner ramus is longer and broader than the outer; both are fringed with plumose hairs all around, and the exterior margins are crenulated and provided with stout spines.

Colour. Brown, the spots dark red.
Length $30 \mathrm{~m} . \mathrm{m}$. (The male $31 \mathrm{~m} . \mathrm{m}$.).
Hab. Greenland. (Z. M. C. B.).
The locality is very interesting, as the only hitherto known specimen is a native of north-eastern Asia, being taken by Koch at Wladiwostock.

## 4. Glossobius auritus, n. sp.

Deriv. The name given on account of the flattened ear-shaped extensions from the anterior corners of the first segment of the pereion.

Diagn. Caput magnum, non immersum, longitudine latitudinem fere æquans,
Oculi manifesti, triangulati.
Antenne primi paris crassæ, marginem anticum segmenti primi pereii non superantes, antennis secundi paris non breviores.

Segmentum primum pereii non excavatum, sed in angulos auriculiformes productum, latius dimidio segmenti quarti. Segmentum septimum multo angustius quam segmentum quintum. Femora paris sexti pedum pereii longiora quam latiora.

Pleon immersum, segmentum primum latius dimidio segmenti quinti.

Urus latior quam longior, lateribus rectis, margine postico leviter excavato.

Uropoda longa, paullo breviora quam urus.

The body is convex, more than twice as long as broad.
The head is large, not immersed in the following segment, nearly as long as broad ( $7: 8$ ).

The eyes are distinct, triangular.
The antennce of the first pair are robust and thick, not reaching beyond the hinder margin of the head. The second pair of the antennæ are not longer than the first.

The first segment of the pereion is not excavated for the reception of the head, and the anterior lateral corners do not form processes, but only flat ear-shaped extensions; the first segment is broader than half of the fourth segment. The seventh segment is much narrower than the fifth. The femur of the sixth pair is longer than broad.

The pleon is immersed, though not deeply; the first segment is broader than half of the fifth.

The urus is only a third broader than long; the sides are straight, the hinder margin but slightly excavated.

The uropoda are not much shorter than the urus.
The general habitus of the animal is more similar to the drawing of Ceratothoa crassa, given by Dana 1853 in his splendid work »Crustacea» from »The United States exploring expedition», than to the description and the figures of Glossobius laticauda in Schioedte and Meinert's new excellent treatise "Symbolæ ad monographiam Cymothoarum», and, for my part, I suppose, that the last-named authors are wrong in making Dana's Ceratothoa crassa synonymous to Milne-Edwards' Cymothoa laticauda. ${ }^{1}$ ) But the animal here described is proved to be distinct from both of them, Glossobius laticauda, H. Milne-Edwards, as well as Glossobius crassus, Dana, not only by the habitus of the ovigerous female, but also by many details. The males of most of these animals are so similar to one another, that it is very difficult to indicate quite good characteristics for the different species; but the male of the new Glossobius shows some differences from the hitherto known two species of males, G. linearis and G. laticauda. The male of G. crassus is not known.

## Ovigerous female.

Pl. III. fig. 24-28.
The form of the body is nearly elliptical, the anterior part being convex and somewhat compressed, the posterior more flattened. The fifth segment of the pereion is the broadest, the first is the narrowest.

[^1]The head is triangular, the front rounded at the tip with straight, not excavated sides. The head is only a little broader than long (8:7), the surface is smooth.

The eyes are small but very distinct, triangular, situated uncommonly near the middle line of the head (Pl. III. fig. 26).

The first pair of antennce are very stout añd thick, without any distinction between peduncle and flagellum, seven-jointed, the third joint being very broad and swollen, the fourth to the seventh tapering towards the end, but very robust. The whole antenna is somewhat compressed from the sides. When extended backwards, they do not reach over the anterior margin of the first segment of the pereion (Pl. III. fig. 26).

The second pair of antennce are a little more slender than the first, of the same length, nine-jointed; the fourth and fifth joints are the longest, equal; the three last ones are the smallest, slender, tapering towards the end. Both pairs of antennæ want hairs or bristles.

The mandibles are small, curved, with a short robust threejointed palp.

The maxillce are provided with broad, thin, laminar extensions.

The maxillipeds consist each of a strong thick peduncle provided with a broad convex lamina, fringed with short hairs at the anterior margin. These laminæ protect the mouth as a large lid. On the tip of the peduncle is a short three-jointed palp. (Pl. III. fig. 27).

The pereion. The first segment is quadrangular, a little broader than long ( $15: 13$ ), somewhat compressed, convex. The anterior margin is rounded, the posterior a little protruding in the middle. The sides are nearly straight with the anterior corners extended, flattened, ear-shaped. The posterior corners are rounded. The second, third, and fourth segments are equal in length, increasing in breadth. The hinder corners of the second and third are truncated, those of the fourth nearly angulated. The fourth segment is not twice as broad as the first (22:13). The fifth segment is the broadest, twice as broad as the first (26: 13), a little shorter than the preceding, and as long as the sixth and seventh together; its upper side is more flattened, the posterior corners are truncated and emarginated. The sixth segment is but a little narrower than the preceding, with the posterior corners
rounded. The seventh segment is not half the length of the sixth $(3: 8)$ and much narrower; it is a little broader than the first (17: 13).

The epimerals (Pl. III. fig. 25) of the second and third segments are large, ear-shaped, each occupying more than half the length of the segment. The epimeral of the fourth segment is smaller, narrower behind, scarcely occupying half the segment. The epimerals of the fifth and sixth segments are long and broad; they occupy two thirds of the length of the segment each. The last epimeral is high, perpendicular, concealing the whole side of the segment.

The first pair of pereiopoda (Pl. III. fig. 28) are the smallest; the tibia is very broad with a short process against which the dactylus impinges. The second, third, fifth, and sixth pairs are very stout and strong; the dactylus of the third pair is a little smaller than in the others (Pl. III. fig. 29). The femora of the fifth, sixth, and seventh pairs are very broad, but not as broad as long.

The incubatory pouch consists of four feebly striated laminæ on each side.

The pleon is immersed in the last segment of the pereion, but not so deeply as in G. laticauda. The lateral parts of the first segment are partly covered by the seventh segment of the pereion. Its visible part is broader than half of the fifth segment. The second to fifth segments are equal in breadth; the fifth is the longest. The pleon is shorter than the urus ( $7: 9$ ), but fully as broad. The pleon and urus together are only a third of the length of the pereion with the head, and a fourth of the length of the whole animal. (In G. laticauda pleon and urus together are about a third of the whole length, in G. crassus exactly the third.)

The pleopoda are largely developed, reaching over half the under-side of the urus.

The urus is broader by a third than long; its anterior margin is broader than the posterior (3:2), deeply emarginated in the middle, with two lateral and one median angular extensions. The lateral margins are straight, the hinder corners feebly rounded. The posterior margin shows a very slight emargination.

The uropoda (Pl. III fig. 30) quite reach to the hinder margin of the urus. They are robust with lanceolate subequal rami. The rami are longer than the peduncle.

The colour is yellowish-white, with small dark-green spots (the Atlantic specimen), or red-brown with dark spots (the Indian specimen).

Length. $25-30 \mathrm{~m} . \mathrm{m}$.

## Adult male.

Pl. III. fig. 31.
The body convex, the anterior part broader, tapering backwards, more than twice as long as broad (37: 14).

The head triangular, broader than half of the fourth pereional segment ( $16: 15$ ), broader than long ( $8: 5$ ), deeply immersed.

The first pair of antennce longer than the second, reaching beyond the anterior margin of the first segment.

The first segment of the pereion is the longest, being as long as the fifth and the sixth together; the anterior corners are produced into short processes on each side of the head. The second, third, and fourth segments are equal in length and breadth. The fifth, sixth, and seventh are decreasing in length and breadth. The seventh segment is narrower by a third than the fourth.

The pleon is deeper immersed than in the female. The visible part of the first segment is narrower than half of the fifth. The first segment is the shortest, the following are of the same breadth but increase in length. The pleon and urus together occupy about a fourth of the length of the whole animal (10:39) (In G. laticauda about a third (25:74).

The urus is broader than long (5:3); the anterior margin is straight, the lateral and posterior margins broadly rounded.

The uropoda reach as far as the hinder margin of the urus.
Colour: Yellowish-white, without spots.
Length. $11 \mathrm{~m} . \mathrm{m}$.

The larva of the first stage.
Pl. III. fig. 32, 33.
Resembles very much the larva of G. laticauda; the differences are only slight.

The head is very large, broader than long ( $8: 4$ ); it equals the three first pereional segments in length.

The fourth segment of the pereion is twice the length of the seventh, but not twice as broad ( $17: 12$; in G. laticauda, $19: 10$ ).

The pleon equals the four first pereional segments in length.

The urus is a little broader than long $(9: 7)$; it equals in length the four first segments of the pleon.

Colour. White, densely spotted with dark blue.
Length. $3 \mathrm{~m} . \mathrm{m}$.

Hab. The Atlantic, The Indian Sea.
A large specimen of an ovigerous female and a male were taken by Captain George von Schéele of the Swedish vessel »Monarch» from the mouth of an Exocoetus, Lat. $15^{\circ} 30^{\prime} \mathrm{N}$. Long. $45^{\circ} 0^{\prime} \mathrm{W}$. in the Atlantic (U. M.). Another specimen, an ovigerous female, was found by me in a collection of Crustaceans, bought of the late naturalist merchant Carl Wessel at Hamburg. It was labelled »Indian Seas» (C. B.).

## 5. Emetha adriatica, n. sp.

Diagn. Corpus ovato-ellipticum, ante non compressum, plus duplo longius quam latius.

Caput magnum valde immersum, latius quam longius.
Oculi parvi, rotundati.
Antenne crassæ, subæquales, secundi paris sex-articulatæ, marginem anteriorem segmenti primi pereii attingentes.

Segmentum primum pereii processus laterales, dimidium capitis æquantes, ferens. Segmenta quinque anteriora longitudine crescentia. Segmentum sextum quater fere longius segmento septimo.

Femora parium trium ultimorum pedum pereii multo latiora quam longiora.

Pleon uro paulo brevius.
Urus semicircularis, duplo latior quam longior.
Pedes uri uro breviores, ramus interior exteriore brevior.

## Ovigerous female. Pl. IV. fig. 34-40.

The body is ovate-elliptical, more than twice longer than broad, the anterior part not compressed.

The head is deeply immersed, broader than long (6:5).
The eyes small, rounded.
The antennce are thick, nearly equal in length; the second pair six-jointed; both pairs reach to the anterior margin of the first pereional segment.

The first segment of the pereion is excavated, with the anterior corners projecting into broad processes reaching to half the length of the head. The five first segments increasing in length. The sixth segment is nearly four times longer than the seventh $(15: 4)$. The femora of the three last pairs of pereiopoda are much broader than long ( $12: 7$ ).

The pleon is shorter than the urus ( $6: 7$ ).
The urus is semicircular, twice as broad as long.
The uropoda are shorter than the urus (5:7); the inner ramus is shorter than the outer.

Emetha adriatica differs form Emetha Audouinii, H. MilneEdwards, by the six-jointed antennæ, the broader and not compressed anterior part of the body, the very short seventh segment, the short uropoda and the longer urus.

The head is broadly triangular with rounded margin; the hinder part of its upper side is highly convex, forming a large tubercle, the anterior and lateral parts are flat, concealed by the basal joints of the antennæ. It is broader than long $(7: 5)$, equalling a third of the breadth of the fourth pereional segment.

The eyes are small and rounded, partly concealed by the processes from the first pereional segments; the ocelli are very minute.

The first pair of antennce (Pl. IV fig. 37) reach exactly to the anterior margin of the first pereional segment; they are seven-jointed; the first or basal joint is the longest, as long as the four following together; the second and third joint are large, swollen; the four last ones are small, tapering towards the tip.

The second pair of antennce (Pl. IV fig. 36) are very little longer than the first, six-jointed; the first joint is the longest, longer than the first joint of the first pair, as long as all the
following five joints together. They are like those of the first pair, scarcely more slender.

The five first segments of the pereion increase in length; the fifth is twice as long as the first, and the broadest of all; the first segment is as long as the head, the processes are very broad, embracing the posterior half of the head, the ends bent angularly downwards. The sixth segment equals three quarters of the fifth in length, but is narrower; it is nearly four times as long as the seventh, and much broader (23:14).

The epimerals (Pl. IV fig. 35) of the second pereional segment are small, ear-shaped, occupying only half of the rounded end of the segment. The epimeral of the third segment is large, ear-shaped, more than twice longer than the preceding; it occupies about half the segment. That of the fourth segment is as large as the preceding, deep at the anterior end, narrower behind, occupying about half the segment. The epimeral of the fifth segment is of the same form as the preceding, but smaller, occupying no more than a third of the end of the segment. That of the sixth segment is of the same size as the preceding, rhomboidal, occupying two thirds of the segment. The last epimeral is oblong, with rounded ends; it occupies the whole length of the seventh segment.

The femora of the four first pairs of pereiopoda are longer than broad (Pl. IV fig. 38). The tibix, carpi, and metacarpi are very short; the dactyli long, strongly curved. In the three last pairs the femora are much broader than long (23: 16), the tibir and carpi are short, the metacarpi longer, the dactyli shorter but stout. The femora have no distinct carina (Pl. IV fig. 39).

The pleon is immersed in the last segment of the pereion, but the lateral parts of the first pleonal segment are not quite concealed. The first segment is as long as the second, broader than half the fifth $(11: 14)$. The fifth segment is the longest, twice as long as the first. The four last segments are equal in breadth, as broad as the urus. The pleon is shorter than the sixth pereional segment.

The urus is semicircular, symmetrical, a little more than twice broader than long ( $15: 7$ ), smooth. The pleon and urus together are a little longer than a fourth of the pereion and the head together.

The uropoda (Pl. IV fig. 40, ) do not reach to the hinder margin of the urus; the rami are nearly falciform, the inner one shorter and narrower than the outer.

Colour. Light brown with minute dark spots.
Length. $15 \mathrm{~m} . \mathrm{m}$.
Hab. The Adria. (C. B.).
Only one specimen.

## 6. Ceratothoa deplanata, n. sp.

Deriv. The name from the flattened dorsal side of the animal.
Diagn. Corpus elongatum, dorso deplanato, ter longius quam latius.
Caput latum, triangulare, leviter immersum, duplo fere latius quam longius, fronte rotundata.

Oculi parsi rhomboidales.
Antennce primi paris iis secundi paris fere æquales, crassæ, sep-tem-articulatæ, marginem anteriorem segmenti primi pereii superantes.

Processus segmenti primi pereii dimidio capitis breviores. Segmentum quartum aliis longius.

Epimera media maxima, epimera secundi et septimi paris latera segmenti explentia.

Femora pedum pereii parium trium ultimorum latissima.
Pleon immersum, angulis posticis segmenti primi liberis. Segmentum primum angustius dimidio segmenti quinti. Pleon uro latius.

Urus quam pleon longior, late rotundatus, multo latior quam longior.

Pedes uri marginem posteriorem uri superantes.
The body is elongate, the dorsalside depressed and flattened.
The head is broad, triangular, immersed, nearly twice as broad as long ( $11: 6$ ); the tip of the front is rounded.

The eyes are small, rhomboidal.
The first pair of antennce are nearly as long as the second, thick, seven-jointed; they reach quite to the anterior margin of the first pereional segment.

The processes of the first segment of the pereion are shorter than half the head. The fourth segment is the longest.

The epimerals of the fourth and fifth segments are the longest; only the epimerals of the second and seventh segments occupy the whole length of the sides of the segments.

The femora of the three last pairs of pereiopoda are very large.

The pleon is immersed in the last segment of the pereion, but the lateral parts of the first segment are free, not hidden. The first segment is narrower than half of the fifth segment. The pleon is broader than the urus ( $10: 9$ ).

The urus is longer than the pleon (5: 4), broadly rounded, much broader than long (9:5).

The uropoda reach a little beyond the hinder margin of the urus.

The animal comes nearest to Ceratothoa parallela, Otto, but is to be distinguished by the broadly rounded front, the rhomboidal eyes, the form of the hinder corners of the pereional segments, the free, narrow, first pleonal segment, and the form of the urus.

## Ovigerous female.

$$
\text { Pl. IV. fig. } 41-46 .
$$

The form of the body is elongate, the anterior and posterior ends are only a little narrower than the middle, the anterior part is not very convex; from the fourth segment of the pereion to the end of the urus the body is quite flattened. The surface is smooth without spots.

The head is broad, triangular, with broadly rounded front, the sides rounded, not emarginate. The upper side is smooth, convex.

The eyes are mediocre, rhomboidal, surrounded by dark diffuse spots.

The first pair of antennce (Pl. IV fig. 43) are nearly as long as the second, thick, not compressed, seven-jointed; they reach quite to the anterior margin of the first pereional segment. The first joint is the longest; it is as long as the two following together. The three last ones are small, tapering.

The second pair of antennce are but a little more slender than the first pair, eight-jointed; the first joint the longest; the four last ones small, tapering; the last very minute (Pl. IV fig. 43).

The pereion is smooth, the sides feebly rounded. The processes of the first segment are very broad, short, bent downwards; the first segment is shorter than the fifth, but as long as the second. The sixth and seventh segments together are shorter than the second segment. The hinder corners of
the two first segments are nearly rectangular, those of the third and fourth truncated, those of the three last ones rounded.

The epimerals (Pl. IV fig. 42,) of the second and third segments are broader at the posterior end, bent downwards at the anterior. That of the second segment occupies the whole side of the segment; those of the third and fourth segments scarcely more than two thirds of it, those of the fifth and sixth segments fully three fourths of it, and the last one the whole of the segment. The epimerals of the fourth, fifth, and sixth segments are broader at the anterior margin, narrower behind. The last one is oblong with rounded ends.

The first pair of pereiopoda (Pl. IV fig. 44) have the tibia broadly extended, the dactylus short. The two following pairs are subequal, with the femora much longer than broad. The following four pairs have much broader femora and strongly developed carinæ. In the seventh pair (Pl. IV fig. 45) the femur is as broad as long, the hinder margin is straight.

The pleon is as broad at the base as long. The first segment longer than the second, but narrower than half of the fifth $(2: 5)$. The three last pleonal segments are broader than the urus $(10: 9)$ and a little narrower than the fifth (or fourth) segment of the pereion ( $10: 11$ ). The whole pleon equals the fifth pereional segment in length.

The urus is broad, nearly semicircular, not quite twice as broad as long ( $9: 5$ ); the upper side is perfectly plain and smooth.

The pleon and urus together are about a third of the length of the pereion with the head (18:51).

The uropoda (Pl. IV fig. 46) reach a little beyond the posterior margin of the urus. The peduncles are long and stout, nearly as long as the inner ramus (14:17). The inner ramus reaches a little beyond the outer. It is oblong-lanceolate. The exterior one is falciform.

Colour. Bright yellow.
Length. $18 \mathrm{~m} . \mathrm{m}$.
Hab. The coast of Hayti, West-Indies. (C. B).
From the harbour of Jacmal; captured April 1883.

## 7. Cymothoa elegans, n. sp.

Diagn. Corpus valde convexum, subparallelum, plus quam duplo longius quam latius.

Caput profunde immersum, deplanatum, ter fere latius quam longius.

Oculi minutissimi.
Antenne sub capite celatæ, antennæ primi paris iis secundi paris longitudine superantes, octo-articulatæ.

Processus segmenti primi pereii longissimi, caput fere longitudine æquantes. Segmentum quintum aliis latius. Anguli postici segmentorum quattuor priorum truncati, sequentium rotundati.

Epimera latera segmentorum non explentia. Epimera segmenti secundi tertiique recta, non auriculiformia.

Pedes pereii septimi paris longissimi, femoribus latissimis.
Pleon curtum, angustum, segmento primo non obtecto.
Urus quam pleon longior ac latior, fere rectangularis, angulis posticis rotundatis, plus quam duplo latior quam longior.

Pedes uri breves, ramus interior exteriore brevior.
The body is very convex with nearly parallel sides, more than twice longer than broad.

The head is deeply immersed, flattened, about thrice broader than long ( $20: 7$ ).

The eyes are very small.
The antennce are concealed beneath the head; the first pair is longer than the second, eight-jointed.

The processes of the first segment of the pereion are very long, nearly as long as the head. The fifth segment is the broadest. The hinder corners of the four first segments are truncated, those of the three last segments rounded.

None of the epimerals occupies the whole side of the corresponding segment. The epimerals of the second segment are straight, not auriculiform.

The pereiopoda of the seventh pair are the longest, with very broad femora.

The pleon is short and narrow. The first segment is not hidden.

The urus is longer and broader than the pleon, transversally oblong, with the hinder corners rounded; more than twice broader than long.

The uropoda are short, the inner ramus shorter than the outer.

Cymothoa elegans is most nearly allied to C. recta, Dana, C. eremita, Bruennich, and C. Limbata, Schioedte and Meinert, but it is well distinguished from all these, as will be seen from the following description.

> Ovigerous female.
> Plate V. fig. $47-56$.

The body is elongate, almost linear, with feebly rounded margins, very convex with transversally convex segments. The surface is hard, smooth, as if it were polished.

The head is flattened, transversally concavated on the upper side, with a broad margin on the under-side anteriorly. The front margin is slightly emarginated, the lateral and posterior margins straight (Pl. V fig. 49).

The eyes are very small, almost imperceptible, situated at the base of the lateral margins.

The first pair of antennce (Pl. V fig. 50) are thick, short, with a distinct three-jointed peduncle; the third joint is the longest; the flagellum is more slender, five-jointed; the last joint carries a short, tooth-shaped, subterminal spine and four minute hairs.

The second pair of antennce (Pl. V fig. 51) are sevenjointed, a little shorter than the preceding; the two first joints are short and thick, the following five more slender, the last one fringed with very minute hairs.

The maxillipeds ( $\mathrm{Pl} . \mathrm{V}$ fig. 52) are robust, the peduncle laminar, the last joint fringed with minute hairs at the anterior corners; the palp is two-jointed; the first joint large, laminar; the second small, cylindrical, with a feebly curved spine at the tip.

The first segment of the pereion is long, twice as long as the head, and longer than the sixth and seventh segments together (7:6); it is but little narrower than the fifth (5:6); the very long anterior processes are broad, obliquely truncated, and a little emarginated. The second to fourth segments successively increase in length; the hinder corners are truncated, but not emarginated. The fifth to seventh segments decrease in length; the hinder corners are rounded; the fifth segment is the broadest of all, the seventh the narrowest. The sixth segment is twice as long as the seventh. The
hinder margins of all the segments are bisinuated. The upper side of each segment is transversally convex at the hinder margin. The incubatory pouch (Pl. V fig. 48) consists of four large, deeply engraved laminæ, and one smaller one anteriorly on each side.

The epimerals (Pl. V. fig. 48) are subequal in length. Those of the second and third segments are oblong, straight, the first mentioned is rounded at both ends, the latter pointed at the anterior and emarginated at the posterior end. The epimerals of the following segments are concavated at the inferior margins. None of the epimerals occupy the whole length of the lower side of the corresponding segment; that of the second segment occupies three fourths, that of the fourth segment only half of the segment.

The first three pairs of pereiopoda have very long femora and short dactyli (Pl. V fig. 53). The fourth pair are the smallest of all the legs (Pl. V fig. 54). The fourth to seventh pairs have broad femora and long strong dactyli. The seventh pair (Pl. V fig. 55) are the longest and strongest of all, with the femora almost as broad as long (20:21).

The pleon is only feebly immersed, the lateral corners of the first segment are not covered but free; the pleon is broader at the base than long (3:5). The first segment is broader than half of the fifth segment $(2: 3)$. The first four segments are equal in length, the fifth a little longer (5:3). The corners of the segments are narrowly rounded, free from one another. The pleon is a little longer than the first pereional segment. (15: 14).

The urus is broader than the last pereional segment, slightly emarginated at the anterior margin, the posterior margin being straight with rounded corners. The urus is longer than the pleon $(17: 15)$ and much broader than the last pleonal segment $(4 ; 3)$, more than twice as broad as long ( $39: 17$ ). Its upper side is smooth without impressions. The pleon and urus together are a little longer than a third of the pereion with the head (16:45).

The uropoda (Pl. V fig. 56) do not by far reach to the posterior margin of the urus. The rami are ovate lanceolate, the inner one shorter than the outer. The peduncle is stout, longer than the inner ramus.

Colour. Yellow.

## The male.

Pl. V. fig. 57, 58.
The body is more linear than in the female, the pereional segments being subequal in breadth, the third a little broader than the others (37: 15). The body is not much more than twice as long as broad.

The head is a little longer than in the female the front margin rounded, not emarginated. The head is not twice as broad as long ( $13: 8$ ).

The processes from the first segment of the pereion are a little shorter and narrower than in the female, the first segment is the longest; the fifth, sixth and seventh the shortest, equal in length and breadth.

The first pleonal segment is quite free, narrower than the fifth (15 : 19). The second pair of pleopoda carry a long styliform process at the inner lamina.

The urus is not fully twice as broad as long (21: 11), sligthly rounded at the posterior margin, but scarcely emarginated at the anterior. The pleon and urus together are only a little shorter than half of the pereion with the head (11:25).

The uropoda reach almost to the posterior margin of the urus.

Colour. Yellow.

Length. The ovigerous female $23 \mathrm{~m} . \mathrm{m}$. The young female $19 \mathrm{~m} . \mathrm{m}$. The male $12,5 \mathrm{~m} . \mathrm{m}$.
Hab. The seas of Java (U. M.).
The three known specimens were captured by Captain Carl Gädda of the Swedish vessel »Albert Ehrensvärd», in the year 1884, and presented to the University museum of Upsala.

## 8. Cymothoa caraibica, n. sp.

Diagn. Corpus convexum, subparallelum, ter fere longius, quam latius. Caput immersum, leviter convexum, paullo latius quam longius. fronte rotundata in medio procumbente.

Oculi manifesti, triangulares.
Antenna sub capite non celatæ. Antennæ primi paris iis secundi paris longiores, marginem anteriorem segmenti primi pereii vix attingentes.

Processus segmenti primi pereii mediocres, caput dimidio pæne longitudinis æquantes. Segmentum quintum et sextum aliis latiora. Segmentum primum aliis longius.

Epimera segmenti secundi et tertii latera segmentorum explentia.
Pedes pereii parium quattuor ultimorum valde carinati, carinis angulate productis. Pedes septimi paris longissimi, femoribus longis.

Pleon breve, latum, segmento primo fere toto obtecto,
Urus pleon longitudine æquans, late rotundatus, duplo latior quam longior.

Pedes uri mediocres, ramus interior exteriore longior.

The body is convex, almost linear, nearly thrice longer than ebroad (41: 15).

The head is immersed, feebly convex, a little broader than long ( $4: 3$ ); the front is rounded bent downwards in the middle.

The eyes are distinct, triangular.
The antennce are not concealed beneath the head. The first pair of antennæ are longer than the second, scarcely reaching to the anterior margin of the first pereional segment.

The processes of the first pair of the pereion are scarcely as long as half of the head. The fifth and sixth segments are the broadest. The first segment is the longest.

The epimerals of the second and third segments occupy the whole length of the segments.

The four last pairs of pereiopoda are strongly carinated, the carinæ produced into strong angles. The seventh pair are a little longer than the preceding; its femora are much longer than broad.

The pleon is short and broad; the first segment is almost totally concealed.

The urus is as long as the pleon, broadly rounded, twice as broad as long.

The uropoda are tolerably long, the inner ramus is longer than the outer.

It is very difficult to tell anything about the affinities, of the species without knowing the ovigerous female. It seems to be most allied to Cymothoa recta, Dana; but theanimal is provided with sufficiently good characteristics to justify the establishing of a new species for it.

## The male.

$$
\text { Pl. V. fig. } 58-61
$$

The head is large and long, only a little shorter than broad, the front margin forms no border on the under-side, but is only bent downwards in the middle; the anterior margin is rounded, the upper side slightly convex.

The eyes are of medium size, placed a little behind the middle of the head, near the lateral margins.

The first pair of antennce are thick and robust, eightjointed, without distinction between the peduncle and the flagellum, the last joints without hairs or spines.

The second pair of untennce are considerably more slender, a little shorter, eight-jointed.

The processes of the first segment of the pereion are shorter and narrower than in Cymothoa elegans, rounded at the ends. The anterior margin of the first segment is slightly emarginate; it is longer than the fourth segment (5:4), and only a little narrower than the fifth (5: 6). From the fifth to the seventh, the segments decrease in length, but scarcely in breadth. The seventh segment is longer than half the sixth. The three first segments together are as long as the four last ones together.

The epimerals of the second and third segments are fixed along the whole length of the segments, the following ones only along half or two thirds of the length of the corresponding segments; all the epimerals are equal in length to their corresponding segments.

The first three pairs of pereiopoda have long strong dactyli, as long as the dactyli of the following pairs. The last
four pairs have strongly developed carinæ on the femora (Pl. V fig. 59). The femur of the seventh pair is longer than broad (24: 17) (Pl. V fig. 60).

The pleon is broad, much broader at the base than long (5:3). The first segment is almost totally hidden, the pleon being a little more immersed than in Cymothoa elegans. The last is broadest and longest, the three preceding being equal in length. The second pair of pleopoda carry very long styliform processes (Pl. V fig. 61).

The urus is as long as the pleon, and only a little broader than the last pleonal segment (12:11); it is smooth on its upper side, broadly rounded at its lateral and hinder margins, exactly twice as broad as long. The pleon and urus together are equal in length to half of the pereion without the head.

The uropoda do not reach to the hinder margin of the urus. The peduncle is shorter than the inner ramus. The inner ramus is longer than the outer.

Colour. Yellowish-white with smaller and larger brownred spots on the anterior part of each segment; the posterior part is almost white.
Length. The female virgo $17 \mathrm{~m} . \mathrm{m}$.
The males $12,15,16 \mathrm{~m} . \mathrm{m}$.
Hab. The south coast of Hayti, (Z. M. C. B.).
I got four specimens, a female virgo and three males, in the harbour of Jacmal, Hayti, in the month of April, 1883.

# Explanation of the plates: 

Plate I.<br>Aega Schioedteana, n. sp.

Fig. 1. The animal seen from above $(4 / 1)$.
2 2. " " " below ( $4 / 1$ ).
" 3 . " " " the side $(4 / 1)$.
》 4. The antennæ and the head from the under-side $\left({ }^{12} / 1\right)$.
" 5. The left one of the first pair of pereiopoda $\left({ }^{16} / 1\right)$.
» 6. The left one of the second pair of pereiopoda $(16 / 1)$.
" 7. The left one of the seventh pair of pereiopoda $\left({ }^{12} / 1\right)$.
" 8. The right one of the second pair of pleopoda $(9 / 1)$.
, 9. The left one of the uropoda $(10 / 1)$.
2. 0 . The end of the urus $\left({ }^{24} / 1\right)$,

Plate II.
Aega magnifica. Dana.
D 11. The animal seen from above $(27 / 10)$.
" 12. The animal seen from the side $\left({ }^{27} / 10\right)$.
, 13. The antennæ from the under-side ( $6 / 1$ ).
» 14. The left one of the second pair of pereiopoda $(7 / 1)$.
" 15. The left one of the seventh pair of pereiopoda $(6 / 1)$.
, 16. The left one of the uropoda $(7 / 1)$.
17. A hair from the inner ramus of the same $(37 / 1)$.

Rocinela maculata. Schioedte et Meinert.
18. The animal seen from above $(2 / 1)$.
19. $\quad>\quad \circ$ the side $(2 / 1)$.
20. The antennæ from the under-side $\left({ }^{5} / 1\right)$.
21. The left one of the second pair of pereiopoda $(5 / 1)$.
, 22. The left one of the uropoda $(4 / 1)$.
" 23. A piece of the margin of the urus $\left({ }^{60} / 1\right)$.

## Plate III.

Glossobius auritus, n. sp. Ovigerous female.
Fig. 24. The animal seen from above $(2 / 1)$.
25. " " " " the side $(2 / 1)$ ).
26. The head with the antennæ of the same $(8 / 1)$.
27. The left maxilliped ( ${ }^{18 / 1}$ ).
28. The left one of the first pair of pereiopoda $(8 / 1)$.
29. The left one of the third pair of pereiopoda $(8 / 1)$.
30. The left one of the uropoda $(10 / 1)$.

Glossobius auritus, n. sp. The male.
31. The animal seen from above $\left(\frac{4}{1}\right)$.
32. A young one of the first stage $\left({ }^{14} / 1\right)$.
33. The left one of the second pair of pereiopoda of the same $(56 / 1)$.

Plate IV. Emetha adriatica, n. sp.
34. The animal seen from above $(4 / 1)$.
35. D D , $\quad$ the side $(4 / 1)$.
36. The head with the antennæ from the side $\left({ }^{10} / 1\right)$.
37. The left one of the first pair of antennæ $\left({ }^{10} / 1\right)$.
38. The left one of the third pair of pereiopoda $(13 / 1)$.
39. The right one of the seventh pair of pereiopoda $\left({ }^{13} / 1\right)$.
40. The left one of the uropoda $(28 / 1)$.

## Ceratothoa deplanata, n. sp.

4]. The animal seen from above $(4 / 1)$.
42. $\quad$. $\quad>$ the side $\left(4 / i_{1}\right)$.
43. The head with the antennæ seen from the side $(10 / 1)$.
44. The left one of the first pair of pereiopoda $\left({ }^{12} / 1\right)$.
45. The left one of the seventh pair of pereiopoda $\left({ }^{12} / 1 /\right)$.
46. The right one of the uropoda $(16 / 1)$.

## Plate V.

Cymothoa elegans, n. sp. Ovigerous female.
47. The animal seen from above ( $27 / 10$ ).

48 . $\quad$, $\quad$ the side $(27 / 10)$.
49. The head from the under-side ( $9 / 1 / 1$ ).
50. One of the upper antennæ $(18 / 1)$.
" 51 . \gg o lower p $(18 / 1)$.
" 5 2. The left maxilliped $(20 / 1)$.
53. The left one of the first pair of pereiopoda $(9 / 1)$.

Fig. 54. The left one of the fourth pair of pereiopoda $(9 / 1)$.
$=55$. The left one of the seventh pair of pereiopoda $(9 / 1)$.
» 56. The left one of the uropoda $\left({ }^{14} / 1\right)$.
Cymothoa elegans, n. sp. The male.
, 57. The animal seen from above $(3 / 1)$.

Cymothoa caraibica, n. sp. The male.
》 58. The animal seen from above ( $5 / 2$ ).
" 59. The right one of the fourth pair of pereiopoda $\left({ }^{12} / 1\right)$.
» 60. The right one of the seventh pair of pereiopoda $(12 / 1)$.
, 61. One of the second pair of pleopoda $\left({ }^{12} /{ }^{1}\right)$.


Fis. 1-10 Aega Schioedteana.n. sp.

A. IM. Westergren dol.

Iith.W. Schlachter, Stockholm.
Fi§.11-17 Aeǵa maǵnifica.Dana. Fig. 18-23 Rocinela mnaculata. Sch. et MI.


A.M.Westergren del.

Iith W. Schlachter, Stockholm.
Fis. 34-40: Emetha adriatica.n.sp. Fig. 41-46. Ceratothoa deplanata.n.sp.

Bihang till K.Vet Akaad.Handl. Bd.10.ITo 11.

A.K.Westergren del.

Iith.W. Schlachter, Stocknolm.
Fig.47-56. Cymothoa elegans.n. sp. ‥ Fig.57. C. elegans. n.sp.on. Fig.58-61. C. caraibica.n.sp. ठ.


[^0]:    COMMUNICATED TO THE ROY. SWEDISH ACADEMY OF SCIENCE 1885 , JANUARY 14.

[^1]:    ${ }^{1}$ ) Glossobius, crassus Dana, as its name ought to be now-a-days, differs from Glossobius laticauda, Milne-Edwards, by a broader and stouter head, a more ovate form of the body, and a different form of the urus, the urus being more quadrangular with the hinder margin only feebly excavated. The first segment of the pereion is also longer and narrower in comparison with the fourth than in G. laticauda. The third pereional segment is the broadest of all, not the sixth as in G. laticauda. The seventh segment is very narrow, narrower than the first, with the corners covered by the sixth. The femora of the sixth and seventh pairs of perieopoda are quite as broad as long.

