Art. XVI.—Ceina, *an Aberrant Genus of the Amphipodan Family Talitridae.*

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The genus *Ceina* was established in 1893 by Della Valle for the single species *C. egregia* (Chilton), which had been described in 1883 under the genus *Nicea* Nicolet, a genus now considered to be identical with *Hyale* H. Rathke. The species was placed under *Nicea* because it appeared in many respects to come near to *Nicea rubra* G. M. Thomson, *N. fimbriata* G. M. Thomson, and other species then referred to *Nicea;* but it was pointed out at the time that it differed in several important characters, and some points in the original description were left more or less doubtful. Stebbing in 1888 (p. 1712) mentioned the species, stating that its generic position was not quite free from doubt. In establishing the new

genus *Ceina*, Della Valle gave a brief description which may be translated as follows : " Upper antennae a little longer than the peduncle of the lower. Second gnathopods of male chelate. Third uropods represented by peduncle without rami. Telson divided." He pointed out that the species was deserving of further investigation, particularly with regard to both pairs of maxillae and to the terminal uropods. In this paper I endeavour to supply the information that Della Valle considered was necessary, and I regret that various circumstances have prevented its being supplied earlier.

In 1906 (p. 554), in his revision of the Amphipoda for *Das Tierreich*, Stebbing described the genus as follows : " Antenna 1 longer than peduncle of antenna 2. Maxillipeds, finger of palp broad, subtriangular. Gnathopod 1 in male and female and gnathopod 2 in female subchelate, small. Gnathopod 2 in male much larger, subchelate or (in maturity) chelate. Uropod 3 tubercular, without rami. Telson partially cleft."

There are also one or two points not mentioned in this description owing to their having been previously undescribed which are worthy of being included in the generic description. Thus, in the mandibles the usual molar tubercle is quite absent, and appears to be represented or replaced by a peculiar lappet on the inner surface directed backwards towards the base of the appendage. In the first maxilla the palp is absent or very minute, as in most of the species of *Orchestia ;* the outer lobe is of normal structure, but the inner lobe is very small, barely half as long as the outer, and without the usual two plumose setae. It thus differs from the character of this maxilla as laid down by Stebbing for the family Talitridae, where he says " maxilla 1, inner plate slender, tipped with 2 plumose setae " ; Sars (1895, p. 21) also gives this as one of the characters of the family, and the diagnosis of the family will therefore need to be slightly modified to include the genus *Ceina*. The second maxilla and the maxillipeds are fairly normal ; but the large chelate second gnathopod of the male is a distinctive feature, and the terminal uropods are peculiar, being represented only by a short tubercle, which probably is the modified peduncle without rami. In this last character *Ceina* differs markedly from *Hyale* and approaches the allied genus *Chiltonia*, where the terminal uropods are represented by a single joint.

The generic diagnosis and the synonymy of the species may be given as follows :—

CEINA Della Valle.

Ceina Della Valle, 1893, p. 530 ; Stebbing, 1899, p. 397, and 1906, p. 554.

The genus may perhaps be defined as follows : Mandible without definite molar tubercle. First maxilla with palp absent or vestigial, inner lobe small and without plumose setae. First gnathopoda small and subchelate in both sexes ; second gnathopoda large and chelate in the male, subchelate in the female. Third uropoda represented by a small rounded lobe. Telson formed of a thick plate, partially cleft.

It is not easy to assign a definite position to this genus among the allied genera of the family. In many of the characters it more or less resembles *Hyale*, but it distinctly differs from this genus in the mandibles, first maxillae, the vestigial third uropoda, and the telson. In the last points it shows some approach to the genus *Chiltonia*, but the special character of the mandibles and of the inner lobe of the first maxillae are different from anything known to me among other Talitridae ; the vestigial nature

of the palp of the first maxilla is, of course, a character possessed by many of the species of *Orchestia*, *Talorchestia*, &c. The large chelate second gnathopod in the male is strikingly different from that of any of the species of *Hyale* or allied genera, but is found only in the male, the second gnathopod of the female being of the usual subchelate character.

Ceina egregia (Chilton). (Figs 1 to 25.)

Nicea egregia Chilton, 1883, p. 77, pl. 2, fig. 2 *a–l*. *Ceina egregia* Della Valle, 1893, p. 530, pl. 58, figs. 14–21. *Ceina egregia* Stebbing, 1906, p. 554.

As there is only one species of the genus at present known, it is impossible to give a separate specific diagnosis. A detailed description of the animal and of the different appendages is given below.

Colour usually dark red, sometimes greenish or bluish ; appendages and extremity of body often white, or partly white and partly red.

Length of either sex about 6 mm. or 7 mm.

Localities : Cape Maria van Diemen (T. B. Smith) ; Tauranga (W. R. B. Oliver) ; Lyttelton (C. Chilton) ; Shag Point, Otago (W. R. B. Oliver).

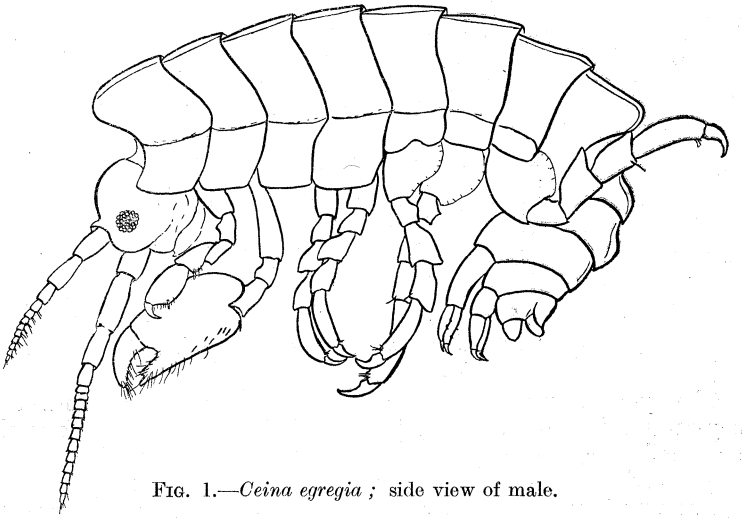


FIG. 1.—*Ceina egregia ;* side view of male.

Remarks.—The animal is found at the roots of kelp and on various seaweeds, generally about low-tide mark, and when disturbed remains still or moves only slightly. By its shape and colour it is often difficult to detect as it lies partially coiled up on the seaweed. The dark colour does not usually cover the whole body, and its outline being different from that of the body itself the concealment of the animal is thus made more perfect.

The colour of different specimens varies considerably, and shows many irregularities, all tending, however, to conceal the animal. Of one female specimen from Lyttelton, collected 16th January, 1906, I have the following note as to its colour : " Colour greenish, shading into pink, patchy, with darker dots on legs, &c. ; antennae with bases white, and then with

alternate bands of purplish pink and white."* This specimen was found among corallines, and the general appearance of the animal caused by its dorsal crest, the way in which it coiled itself up, and by its colour, was very suggestive of a piece of coralline.

The peraeon and pleon are strongly compressed dorsally and carinate, the first segment of the peraeon forming a rounded crest projecting forwards over the posterior part of the head. Comparison of a number of specimens shows that the amount of carination is approximately the same in both sexes, though in the original description it was stated that the female was more strongly carinated than the male. The carination is naturally less marked in immature specimens.

The upper surface of the head is turned slightly upwards at the base of the upper antenna.

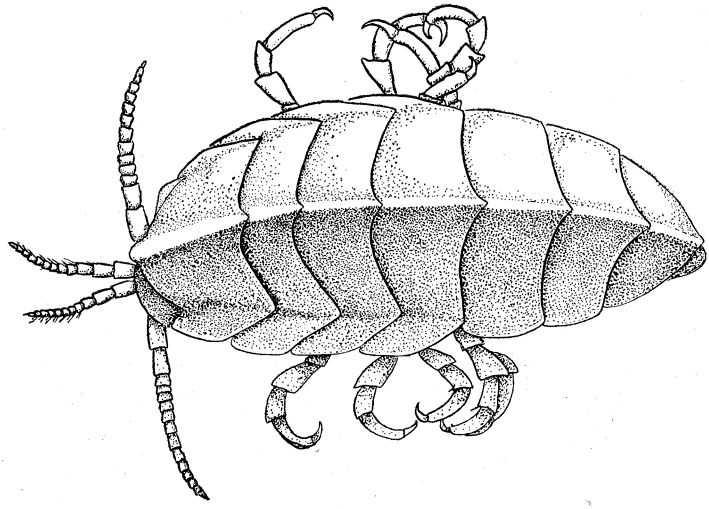


FIG. 2.—*Ceina egregia ;* dorsal view of female.

The eyes are round and of moderate size, containing numerous ocelli ; they are red in colour, and project a little beyond the surface of the head as a small convex lobe on each side.

The various appendages may be described as follows :—

The upper antenna (fig. 3) is rather longer than the peduncle of the lower ; the first joint of the peduncle is longer than the second, and is produced at the lower distal angle into a subacute tooth ; the third joint is slightly shorter than the second. The flagellum is as long as the peduncle, and consists of about 9 joints, all of which bear numerous simple ' olfactory " setae in addition to a few ordinary acute setules. In one ovigerous female examined the flagellum contained only 7 joints.

The second antenna (fig. 4) has the last joint of the peduncle rather longer than the penultimate ; the flagellum is rather stout, longer than the peduncle, and containing about 13 segments, each with tufts of short

* This banding of the antennae with different colours is very common in the Amphipoda, and its effect is to disguise the length of the antennae as the animal lies against seaweed, rock, &c., and thus render it less conspicuous.

setules at the distal end. The relative lengths of the joints of the peduncle are not constant; the last two joints are sometimes more nearly equal, especially in the male, than is shown in fig. 4, which is taken from a female specimen.

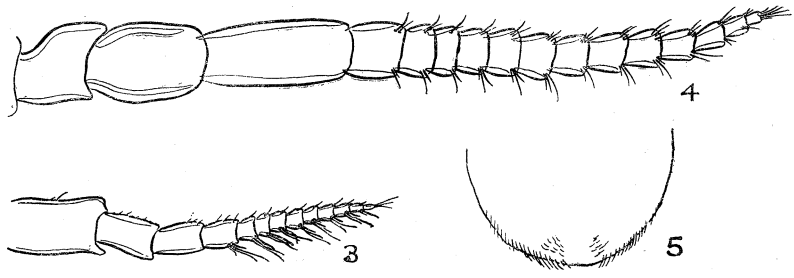


FIG. 3.—*Ceina egregia;* first antenna.
FIG. 4.—*Ceina egregia;* second antenna, from a female specimen.
FIG. 5.—*Ceina egregia;* upper lip.

The upper lip (fig. 5) is broader than long, its margin evenly rounded and fringed with the usual short setae.

The mandibles present several characters of importance. They are somewhat slender, curved in the usual way so as to be strongly convex on the outer side, and on this surface they bear a small rounded tubercle about half-way between the base and the apex (see figs. 7 and 9). At the base a strong process projects inwards on the inner or concave surface.

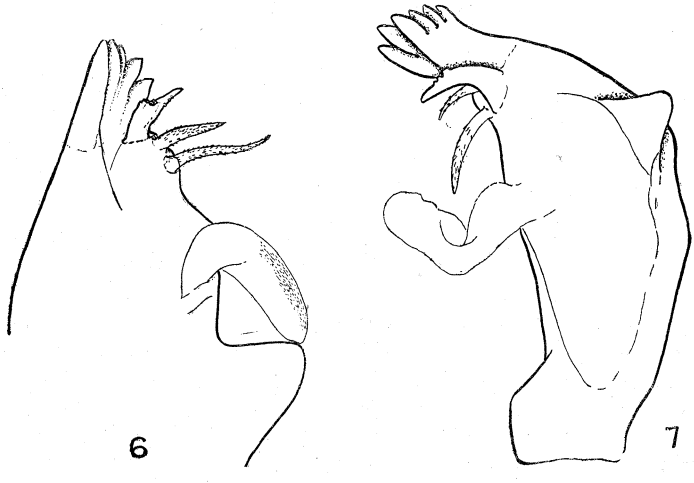


FIG. 6.—*Ceina egregia;* right mandible, seen from inner side.
FIG. 7.—*Ceina egregia;* right mandible, seen partly from outer side; molar lappet shrivelled.

There is no trace of a molar tubercle of the usual type, the animal thus differing from the description laid down by Sars for the Orchestidae (1895, p. 21), in which he says "molar expansion large and thick." In place of the molar tubercle there is a slender lobe or lappet which arises about the middle of the inner concave surface of the mandible, and is bent

back towards the base, reaching to the basal process already referred to; the surface of the lappet is finely striated, as if covered with very minute setae, but these are extremely small and delicate, and the whole surface of the lappets seems to be only thinly chitinous and delicate; in one specimen it has shrivelled into an irregular shape in the process of mounting. The remainder of the mandible is strongly chitinous and firm. The cutting-edge of the mandible, as usual, differs on the two sides. On the left side (figs. 8 and 9) the outer cutting-edge is convex on the outer side, concave within, and formed of about 6 or 7 strong sharp teeth. The accessory masticatory lobe is somewhat similar in general appearance, and bears 4 or 5 sharp teeth. From the base of this arises a very stout spine or process with 4 teeth on its concave side. The spine row consists of 3 stout spines with their distal portions scabrous. In the right mandible (figs. 6 and 7) the outer cutting-edge is similar to that on the

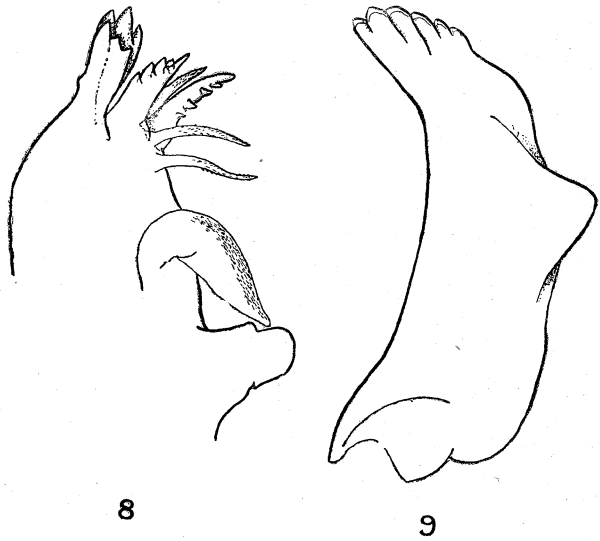


Fig. 8.—*Ceina egregia;* left mandible, from inner side.
Fig. 9.—*Ceina egregia;* left mandible, from outer side.

left, and is composed of 5 or 6 teeth, but the accessory masticatory lobe appears to be absent or represented only by a stout bent spine or process which has a tooth on its outer margin about half-way between the base and apex. The spine row in this mandible contains only 2 scabrous spines.

The lower lip (fig. 10) agrees in shape with that of species of *Hyale* and allied genera, the two lobes bearing numerous setae on the central part of their convex extremity, and a few minute setae on the surface.

The first maxilla (fig. 11) has the outer lobe extremely strong and highly chitinized, especially on the outer side and towards the distal end. At its extremity it bears a number of stout spines of the usual character, the inner ones of which are more denticulated on their inner margins than the outer spines are. These all lie closely crowded together, so that it is difficult to count them accurately, but there appear to be 8 or 9; Stebbing gives the possession of 9 apical spines as one of the characters of the family Talitridae. The inner lobe differs markedly from the normal character

found in this family. It is small, slender, and delicate, reaching only about half-way along the inner margin of the outer lobe, and there is no sign of the usual two plumose setae, the rounded extremity bearing only a few very fine minute setae. The palp is either absent altogether or is represented only by a small mark on the outer convex margin; but though this corresponds in position and shape with the minute palp found in many species of *Orchestia*, it does not project beyond the margin of the outer lobe, and is apparently fused with it.

The second maxilla (fig. 12) is of normal shape, being formed of 2 subequal delicate lobes, each with the usual terminal fringe of long setae; a few finer setae are found on the inner margin of the inner lobe and the outer margin of the outer lobe; there is no sign of the special plumose seta bounding the apical fringe of spines of the inner margin which is mentioned by Stebbing in his definition of the family Talitridae.

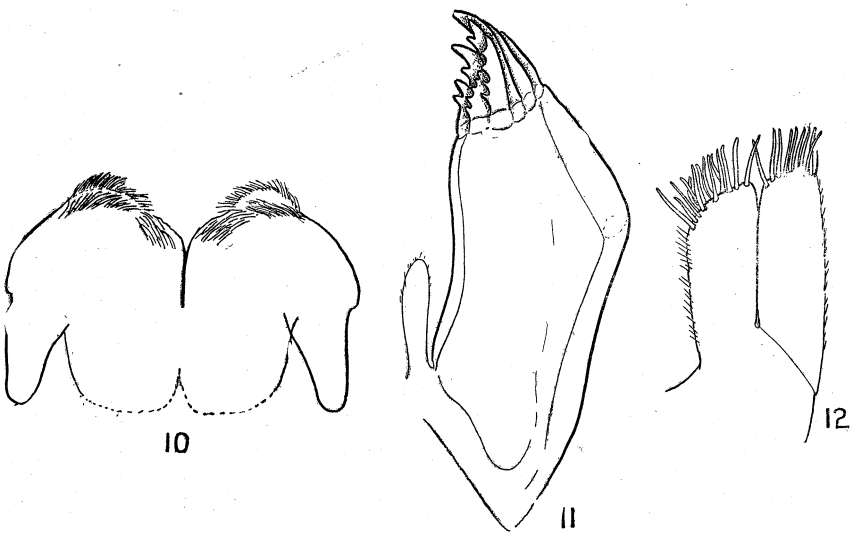


FIG. 10.—*Ceina egregia*; lower lip.
FIG. 11.—*Ceina egregia*; first maxilla.
FIG. 12.—*Ceina egregia*; second maxilla.

The maxillipeds (fig. 13) present one or two special characters, but on the whole are similar to those of species of *Hyale*. The outer and inner lobes are of nearly the same length, the inner lobe bearing at its truncate extremity 2 or 3 short blunt teeth with 1 or 2 longer dentate spines; the inner margin of the lobe is free from setae except near the distal end. The outer lobe is slightly broader than the inner, the outer margin being convex, and its inner margin supplied with numerous spinules. The merus, or first joint of the palp, has its outer angle much produced so as to reach fully as far as the end of the carpus; its inner distal margin is much hollowed for the reception of the carpus, which extends farther towards its base on the inner than on the outer side. The carpus and propod are subequal and somewhat oval in shape, with the inner margins strongly convex and bearing a fringe of long spines; the propod in addition has a distinct transverse row of long spines near its distal end. The dactyl

is large and well developed, somewhat triangular in shape, strongly curved, and slightly twisted so that its outer or lower surface is convex. It is comparatively free from setae, but its surface shows numerous rows of very minute striations, possibly caused by rows of very minute setules.

I have not noticed any differences between the mouth-parts of male and female specimens such as occur in *Hyale camptonyx* (Heller), *H. grenfelli* Chilton, and possibly in some other species. The differences between the male and the female appear to be confined to the second gnathopoda.

The first gnathopod of the male (fig. 14) is of normal shape, its side plate rectangular with the longer angles rounded, the carpus slightly shorter than the propod, triangular, its hind-margin fringed with stout

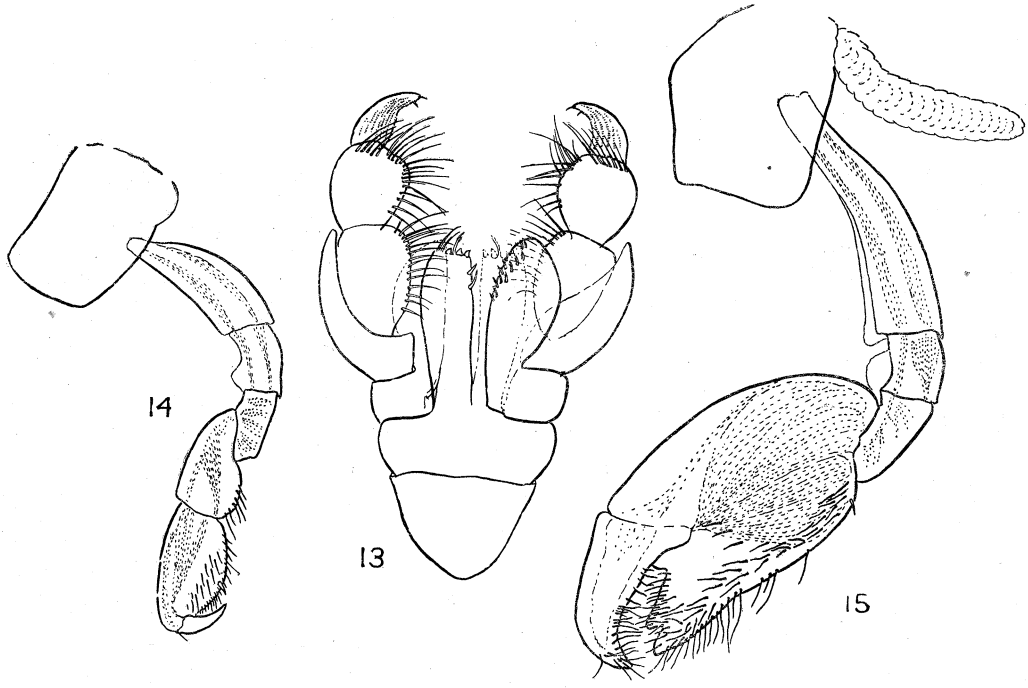


FIG. 13.—*Ceina egregia ;* maxillipeds.
FIG. 14.—*Ceina egregia ;* first gnathopod of male.
FIG. 15.—*Ceina egregia ;* second gnathopod of male.

setae ; the propod oval, palm rather oblique, straight or slightly curved, defined by a stout spinule with subapical cilium. The palm is fringed with a row of simple setae, and the hind-margin and surface of the joint near the hind-margin bear numerous fairly stout setae, all serrate or pectinate.

The second gnathopod in the male (fig. 15) is very large and very different from that of any of the species of *Hyale* known to me. The side plate is rectangular, rather deeper than broad, with margins entire and free from setae ; the branchia is long and narrow. The basis is long and slender, broadening only slightly distally ; its anterior margin is grooved and produced into a small lobe at the distal end ; the ischium is short, with the anterior outer margin produced into a rounded lobe ; the merus

about as long as the ischium, and, like the two preceding joints, free from setae; the propod, with which the carpus is coalesced, is very large, fully as long as the rest of the limb, and has the posterior distal angle produced so as to form with the very strong finger a powerful chelate appendage; the anterior margin is strongly convex, the posterior is straight or slightly sinuous and bears a number of setae, especially towards the distal end, these setae being less numerous in older specimens; the palm projects strongly and has a blunt tooth towards the end; the finger bears along its inner margin a regular row of long setae, and near the extremity a tuft containing a considerable number of setae. The shape of the propod and finger will be best seen from the figure, which is taken from a fairly well developed male. In one specimen examined, apparently older, the palm is deeply concave, the fixed finger is longer and more produced, the tooth on the inner margin is blunter and nearer the apex, the setae both on the fixed finger and the dactyl are less conspicuous.

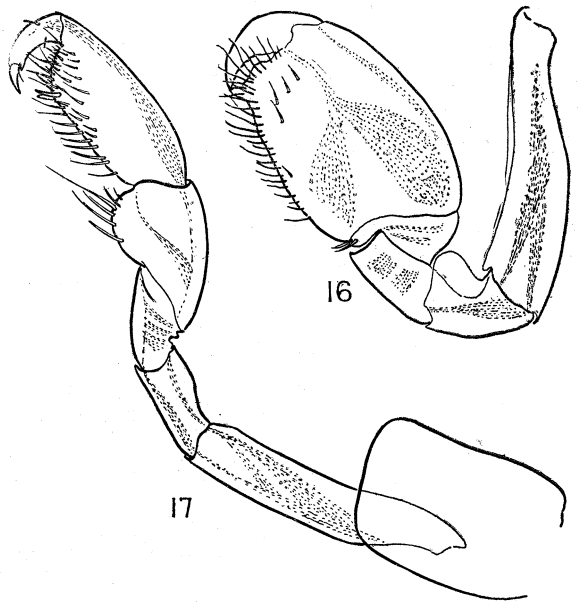


FIG. 16.—*Ceina egregia;* second gnathopod of immature male.
FIG. 17.—*Ceina egregia;* first gnathopod of female.

In the immature males the second gnathopod (fig. 16) is of much more normal shape, and in quite young forms is probably the same as in the female. The figure shows one in which the carpus can still be distinguished as a separate joint; it is short and triangular, fairly well marked off from the propod on the anterior side, and produced posteriorly into a small lobe lying between the merus and propod, and appears to be more or less fused with the latter; its presence, however, is indicated even on the posterior margin by a small number of setae on the posterior margin. The propod is broader than in the fully developed specimens, and is subchelate, having the palm transverse, slightly convex, defined by a fairly stout acute tooth or spinule. The hind-margin and the palm bear numerous long setae,

and there are a few scattered on the surface of the joint; the concave margin of the dactyl bears a row of small setae, but the tuft near the apex has not yet been developed.

The first gnathopod of the female (fig. 17) shows the same general shape as that of the male, but appears to be somewhat longer and more slender; the basal joint is long, slender, somewhat curved; ischium and merus of about equal length, these three joints practically free from setae; carpus is shorter than the propod, triangular, and with 5 or 6 spines on its posterior margin; the propod oblong rather than oval, palm slightly oblique, fringed with fine spinules and bounded by a stout spine; numerous other spinules fringe the hind-margin, and others are situated on the surface near the margin; the finger is strong and much curved.

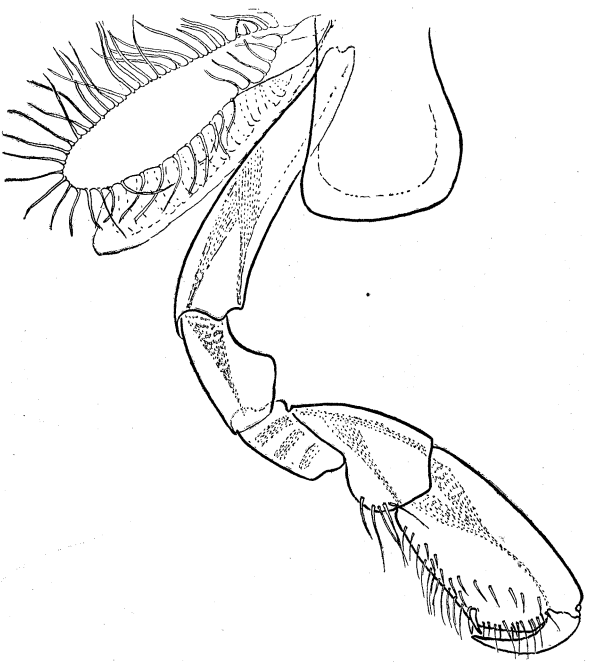
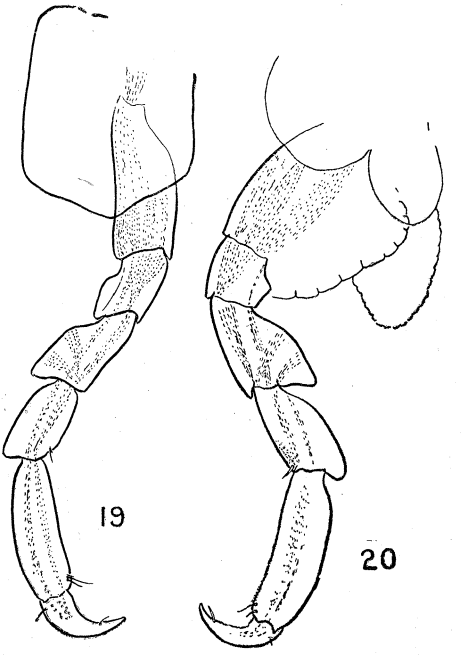


FIG. 18.—*Ceina egregia;* second gnathopod of female.

The second gnathopod of the female (fig. 18) is similar in general appearance to the first, but is somewhat larger and has the carpus slightly shorter in proportion to the propod; the branchia is oval in shape, somewhat narrow and nearly as long as the basal joint; the brood plate is oval, as long as the basal joint, and has its margin fringed in the usual way with long slender setae.

The peraeopoda are very nearly subequal in length, the first (fig. 19) and second being only slightly shorter than the following; all are strongly chitinous and comparatively free from setae. They are all fairly normal in shape, and only one or two points require special notice. The basal joint of the third (fig. 20) is moderately produced posteriorly but narrows a little below; its margin is free from setae or serrations, but shows short transverse lines, giving it a crinkled appearance. In the fourth peraeopod (fig. 21) the expansion of the basal joint is rather greater proximally,



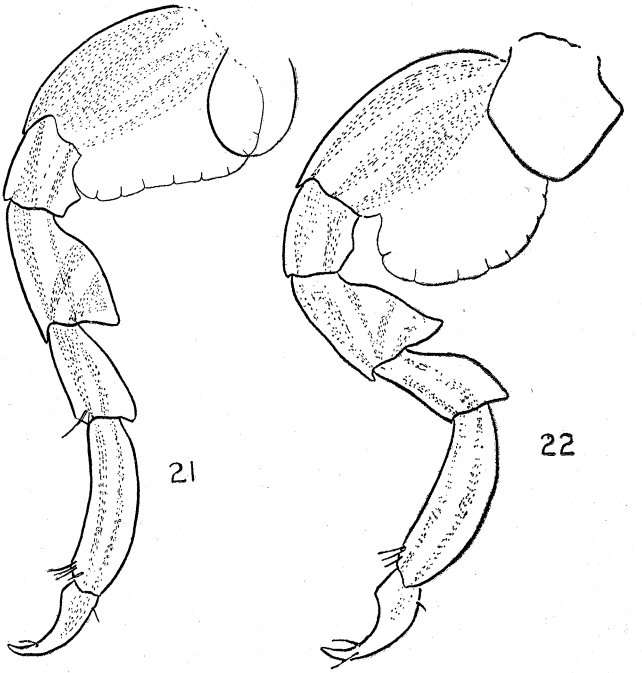


FIG. 19.—*Ceina egregia ;* first peraeopod.
FIG. 20.—*Ceina egregia ;* third peraeopod.
FIG 21.—*Ceina egregia ;* fourth peraeopod.
FIG. 22.—*Ceina egregia ;* fifth peraeopod.

but distally it narrows a little more than in the third ; in the fifth (fig. 22) the expansion is considerably broader than in the fourth, and the posterior margin is regularly and strongly convex. In all the peraeopoda the propod is considerably longer than the carpus, and bears a few small setae on the inner margin at the base of the finger. The finger is stout, strongly curved, and the spinule on its inner margin is of moderate thickness.

The segments of the pleon (fig. 23) have the downward expansions rather narrow, the anterior angle much rounded off, the posterior nearly rectangular but rounded ; the posterior margin with a few shallow crenations and a very minute setule in each depression.

The uropoda are all short and somewhat stout (fig. 24). In the first the peduncle is longer than the rami and bears a spinule on its upper margin at the end ; the rami are subequal, and both bear lateral as well as apical setules. The second uropod is similar in shape but has the peduncle only as long as the rami ; these reach as far back as those of the first uropod.

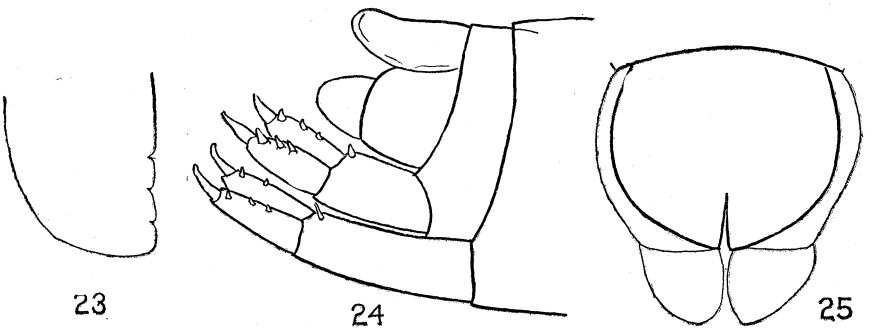


Fig. 23.—*Ceina egregia ;* pleon segment 3, lower portion.
Fig. 24.—*Ceina egregia ;* urus and uropoda, side view.
Fig. 25.—*Ceina egregia ;* telson from above, with terminal segment and third uropoda.

The third uropod (figs. 24 and 25) is represented only by a small semicircular lobe with entire margins attached to the sixth segment of the pleon and representing either the peduncle or the peduncle and rami fused.

The telson (fig. 25) is convex dorsally, and when viewed from above shows as a semicircular plate with entire margins without setae and cleft for about one-third of its length. Viewed laterally the plate appears to be fairly thick and strongly curved so as to be concave below.

The figures, which add so much to the value of this paper, have been prepared by Miss E. M. Herriott, M.A., Assistant in the Biological Laboratory of Canterbury College. They all refer to *Ceina egregia*, and unless otherwise stated are drawn from a male specimen.

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