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NOTES ON THE AUSTRALIAN AMPHIPODA.

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(PLATES X.—XVIII.)

I. TALITRUS SYLVATICUS.

(PLATE X., FIG. I.)

Talitrus sylvaticus, Haswell, Proc. Linn. Soc., N.S.W., Vol. IV., p. 246, pl. VII., fig. 1.

Talitrus affinis, Haswell. L.c., Vol. V., p. 97, pl. V., fig. 1.

The specimen originally figured was a female. I give here a figure of the posterior gnathopod of the male.

II. ALLORCHESTES.

Of the species of *Allorchestes* common on the coast of New South Wales there are three which are very well marked and distinct. These are *A. longicornis*, *A. crassicornis*, and *A. rupicola*. The first two are entirely unlike any of the three species which have been described by Dana as occurring in Australia. The first, *A. longicornis* (pl. X., figs. 6-8), is characterised by the extreme length of the inferior antennæ, which are as long as the head and pereion, the flagellum being nearly three times as long as the peduncle, and composed of thirty articuli. *A. crassicornis*, again, (pl. X., figs. 2-5), has the inferior antennæ scarcely so long—a little longer than the head and first three segments—but extremely thick both as regards the peduncle and the flagellum; the latter somewhat longer than the former, composed of twelve

segments of which those near the base are very thick. Both peduncle and flagellum are densely fringed with hairs. (1)

A. rupicola (pl. X., figs. 9-12) has the antennæ of moderate length and thickness, the lower with only twelve joints in the flagellum, and has a prominent rounded process on the carpus of the anterior gnathopoda, such as occurs also in *A. crassicornis*. It is possible that Dana's *Allorchestes humilis* may be a young form of this species, but there is nothing in his description or figure to indicate that his species had the characteristic features which I have described.

A. niger (pl. XI., figs. 1-3) is distinguished from *A. rupicola* only by the form of the anterior gnathopoda, and by having the inferior antennæ relatively longer, with 21-23 joints in the flagellum.

A. Gaimardii, Dana, is characterized by the union of the proximal articuli of the inferior antennæ into one piece, which appears like an additional segment of the peduncle.

A. australis, which Dana describes as being found at Illawarra, I cannot identify with any of the species I have seen. The description and figure most nearly resemble *A. rupicola*, but with well-marked differences.

III. NEOBULE ALGICOLA.

(Plate XI., figs. 4-6.

Neobule algicola, Haswell, Proc. Linn. Soc., N.S.W., Vol. IV., p. 255, pl. VIII., fig. 4.

Rathke's genus *Hyale*, which is placed by Dana in the "Lysi-nassinæ," is seemingly nearly related to *Neobule*, having the last pair of pleopoda double-branched, but otherwise resembling *Nicea*. It may be, therefore, that, if *Hyale* should prove to possess the arrangement of the gnathites characteristic of the Orchestidæ, *Neobule* will require to be united with it.

(1) The species described and figured by Mr. Chas. Chilton as *Allorchestes crassicornis* is not this species but the female of *Talorchestia quadrimana*, Dana; (Proc. Lin. Soc., N.S.W., Vol. IX., p. 1035, pl. XLVI., fig. 1.)

IV. ASPIDOPHOREIA

This genus stands between *Allorchestes* and *Nicea*, differing from both in the large size of the anterior coxæ, from *Allorchestes* also in the character of the telson, and from *Nicea* in the large size of both upper and lower antennæ, and in having the lower pair much larger than the upper.

V. STEGOCEPHALUS LATUS.

(Plate XI., figs. 7-12.)

Stegocephalus latus, Haswell, Proc. Linn. Soc., N.S.W., Vol. IV., p. 252, pl. VIII., fig. 2. Cat. Aust. Crust., p. 227.

I give here an improved figure of this species from a second specimen from the same locality (Tasmania.)

The second and third joints of the peduncle of the superior antennæ are both very short. The appendage consists of two joints, a short basal and a long distal one, and is terminated by a long slender spine with a few minute hairs round the base; the flagellum contains only four articuli, the first being much larger than the others; the first and second have each a long slender spine connected with the distal end; at the end of the last joint is a small fasciculus of small, slightly hooked hairs. The inferior antennæ have six joints in the flagellum in the Tasmanian specimens, but only three in a specimen from New South Wales, which appears to be a variety of the same species. (1)

VI. AMPELISCA AUSTRALIS.

(Plate XII., figs. 7-16 and Plate XIII., figs. 1-4.)

Ampelisca australis, Haswell, Proc. Linn. Soc., N.S.W., Vol. IV., p. 257, pl. VIII., fig. 3. Cat. Aust. Crust., p. 235.

(1) By an error the word "sub-chelate" was substituted for "subpediform" in the original description of the gnathopods. (Proc. Linn. Soc., N.S.W., Vol. IV., p. 252, line 21.)

This species would seem to be subject to a considerable amount of variation. A specimen from Port Denison resembles the original specimen from Port Jackson in the proportions of the body and of the coxæ, in the pleopoda and the telson and the gnathopoda ; it is distinguished from the latter by the greater length of the superior antennæ, which are as long as the head and first three segments, and the flagellum of which consists of fifteen narrow articuli ; and also by the form of the basal joints of the fifth pair of pereopods (fig. 10.) The lower antennæ are broken.

Another specimen (figs. 11-16) from Port Jackson, resembles the first in all points, except that the basal joint of the third pair of pereopoda is of a slightly different shape.

In a specimen from Port Stephens, the superior antennæ are as long as the head and first four segments, and its flagellum consists of about twenty segments. The inferior antennæ are considerably longer, being longer than the head and pereion of the animal ; the peduncle is very long and slender, equalling in length the whole of the superior antennæ. The basal joint of the last pair of pereopods differs a little in from that of either of the other specimens.

In the Port Stephens and Port Denison specimens, the third pair of pereopoda terminate in a hair-like spine, which represents the terminal joint, while in the Port Jackson specimen there is a distinct, though small dactylus.

VII. LYSIANASSA AND ANONYX.

(Plate XII., figs. 1-6.)

The species named by me *Lysianassa nitens* is better placed in the nearly related genus *Anonyx*, the anterior gnathopoda having a feebly developed, almost transverse palm (pl. XII., figs. 1 and 2) which gives them a sub-cheliform character. The telson is deeply cleft.

The nearest relative of this species would seem to be *Anonyx Edwardsii* of Kröyer, the principal points of distinction apparently being the greater number of joints (ten) in the flagellum of the superior antennæ of the present species, the broader form of the propus of the posterior gnathopod, and its stronger dactylus.

Lysianassa australiensis, (Plate XII., figs. 3 and 4) on the other hand, has the anterior gnathopoda non-prehensile; while the telson is divided to the base. It is to be distinguished from *A. Kröyeri* chiefly by the form of the terminal joints of the posterior gnathopod, as well as by the non-prehensile anterior gnathopods. The following is a more detailed description of *L. australiensis* :—

The eyes are reniform, rather large, but not nearly meeting above. The fourth segment of the pleon has a depression on its dorsal aspect. The superior antennæ are about equal in length to the head and the first segment; the first joint thick, slightly convex on its dorsal border, scarcely projecting beyond the angular process of the head; the second and third segments are very short; the flagellum is scarcely longer than the peduncle, of ten articuli, the appendage with five or six. The inferior antennæ are of the same length as the superior, much slenderer: the flagellum and peduncle are of nearly equal length, the former with ten joints. The first pair of gnathopods are obscurely sub-cheliform, the propus having at its distal end an obscure lobe armed with a pair of stout spines against which the dactylus works. The posterior gnathopods are characterised by the extreme smallness of the dactylus, which is nearly terminal and is ornamented, together with the apposed palmar border, with some minute cilia: the ventral border of the propus is ornamented with a row of short setæ and the distal border with a fasciculus of more slender hairs. The telson is cleft to the base; each of the halves is ornamented with three short conical spines.

The above description would apply equally well to *L. nitens*, as far as the antennæ, anterior gnathopoda and telson are concerned, except that the flagellum of the superior pair is a little shorter in the latter species. The main difference between the two species lies in the posterior gnathopoda, which in *L. nitens* have a concave terminal palm with a well developed dactylus.

L. affinis (pl. XII., figs. 5 and 6) differs from both of these in the size of the eyes, which nearly meet above, and in the great length of the inferior antennæ. The segments of the flagellum of

the superior antennæ are also more numerous. The posterior gnathopoda are similar to those of *L. nitens*; the telson is likewise deeply cleft, with a conical spine on each half.

VIII. EUSIRUS.

EUSIRUS DUBIUS, Var.

(Plate XIV., fig. 1).

Eusirus dubius, Haswell, Proc. Lin. Soc. N.S.W., Vol. IV., p. 331, pl. XX., fig. 3; Cat. Aust. Crust., p. 247.

The first and second pleonal segments have each five spines on the posterior border. The fourth and fifth segments are dorsally carinated—the carinæ produced posteriorly into acute teeth. The superior antennæ are as long as the cephalon and first three segments of the pereion; the first joint of the peduncle is stout, longer than the head; the second is about a third of the length of the first; the third is very small; the flagellum is somewhat longer than the peduncle, of 21 articuli; the appendage is composed of 8 rather elongate articuli. The inferior antennæ are a good deal longer than the superior, nearly as long as the cephalon and pereion; the peduncle is stout, the fifth joint the largest, broad and laterally compressed; the flagellum is short, not so long as the last segment of the peduncle, of 15 joints. The anterior gnathopods are large; the carpus has the palmar process about a fourth of the length of the propus; the propus is ovate, twice as long as broad, the palm defined by a small tooth. The posterior gnathopods are similar to the anterior pair, but larger. The posterior pleopods have the rami ovate-lanceolate, acute, with a few serrations. The telson is deeply cleft, each half ending in two acute spines, the outer of which is more prominent than the inner.

Length, exclusive of antennæ, about $\frac{1}{4}$ of an inch.

Port Jackson.

This variety differs from that originally described, which was obtained in Tasmania, in the greater thickness of the inferior

antennæ, and the absence of a spine on the last segment of the pereion, besides other minor points.

EUSIRUS AFFINIS. N. sp.

(Plate XIV., figs. 2-4).

The second and third segments of the pleon are each armed with a few minute spines in the middle of the posterior border; the following three have each a very small mesial tooth. The superior antennæ are as long as the head and first four segments; the first joint of the peduncle is as long as the head, stout; the second joint is about half the length of the first and narrower; the third is very small; the flagellum is nearly twice as long as the peduncle, with 22 articuli; the appendage is well developed, nearly half the length of the flagellum, with fourteen articuli. The inferior antennæ are considerably longer than the superior pair, being as long as the head and the first six segments of the pereion; the peduncle is stout, the fifth joint rather longer than the fourth, but scarcely so thick; the flagellum is tolerably stout, a little longer than the last joint of the peduncle, of more than twenty-two articuli. The gnathopods and pereopods are similar to those of *Eusirus dubius*.

The length is $\frac{7}{20}$ ths of an inch.

Port Stephens.

IX. LEUCOTHOE SPINICARPA.

Miers (Crust. of "Alert," p. 313), following Bœck, identifies *L. articulosa* with *L. spinicarpa*, and regards *L. commensalis* as a variety of that species. *L. gracilis* and *L. diemenensis* are to be regarded as marked varieties of the same.

X. ATYLUS HOMOCHIR. N. s.

(Plate XIII., figs. 5-7)

The cephalon is produced into a well-developed rostrum. The whole of the body is dorsally carinated, but in none of the segments

does the carina become divided into teeth except on the fourth and fifth segments of the pleon; the fourth segment of the pleon presents two teeth—one anterior small, and a posterior very large; the tooth on the fifth segment is also large, but a little smaller than the larger of the two on the fourth segment. The telson is deeply cleft, each half armed with a short spine. The superior antennæ are as long as the head and first five segments of the pereion, very little longer than the peduncle of the inferior pair; the first two segments of the peduncle are nearly equal in length, but the first is stouter than the second; the third is small, scarcely distinct from the articuli of the flagellum; the flagellum is a little longer than the peduncle, of thirteen long narrow uniform articuli. The inferior antennæ have the flagellum composed of eleven long narrow articuli. The terminal joint of the mandibular palp is not curved; the toothed edge and accessory plate have each five or six teeth. The gnathopods are sub-equal, similar, the posterior pair with the propus a little longer; neither merus nor carpus develop processes; the propus is ovate, ornamented along the lower border with stout simple setæ; the palm is oblique. The dactyli of the pereopods are stout, with a slender spine on the ventral aspect near the apex. The last pair of pleopods are large, the rami rather more than twice the length of the protopodite, serrated and armed with short stout setæ.

Length, inclusive of antennæ, $\frac{3}{10}$ ths of an inch.

Port Stephens.

The nearest relative of this species seems to be *A. Swammerdamii* of Milne-Edwards (Bate and Westwood, Vol. I., p. 246.)

XI. DEXAMINE MIERSII. N. sp.

(Plate XIII., figs. 8-12.)

The head has a short, blunt rostrum. The eyes are large, reniform. The antennæ are very long and slender; the upper pair are a little shorter than the lower, the basal joint of the peduncle shorter than the head, stout, the second joint nearly twice as long as the first, narrowing towards its extremity, the third not distinguishable from

the articuli of the flagellum ; the flagellum much longer than the peduncle, of about 30 articuli. The lower antennæ are as long as the body. The fourth joint of the peduncle is very long, longer and rather stouter than the second joint of the superior pair, ornamented with numerous short fine cilia ; the fifth joint is small, about $\frac{1}{3}$ rd of the length of the fourth ; the flagellum is very long, with nearly 40 articuli. The coxæ are very small. The first pair of gnathopods are a little stouter than the second, the carpus of both is sub-triangular in lateral outline ; that of the second more elongated ; the propodes are similar, sub-triangular, with oblique, slightly concave palm. The pereopods are slender, with powerful falciform dactyli and stout setæ. The third segment of the perion has a short acute tooth on each side on the dorsal portion of its posterior border ; the fourth segment has a strong subacute tooth. The sixth pair of pleopods are large, with lanceolate acute rami, bordered with a few setæ. The telson is double, the halves long and narrow, slightly excavated at the extremity. The surface is ornamented with very minute crimson dots.

Thursday Island, Torres Straits.

XII. MEGAMCERA SUENSIS.

(Plate XV., figs. 1-4.)

Megamcera suensis, Haswell, Proc. Lin. Soc., N.S.W., Vol. IV., p. 335, pl. XXI., fig. 5 ; Cat. Aust. Crust., p. 260.

For a detailed description of the ordinary form of this species see Miers, Crustacea of H.M.S. "Alert," p. 317.

I give here (pl. XV., figs. 1-4,) figures of a species from Port Stephens which is very nearly related to *Megamcera suensis*, and yet differs from it in several particulars.

The body is slender, without spines, except on the third segment of the pleon, which has a few minute spines on the posterior border

of its pleural portion and a row of setules on the inferior border. The eyes are long and narrow. The superior antennæ are nearly as long as the body. The first joint of the peduncle is as long as the head and the first segment of the pereion: the second is longer than the first and very slender: the third is very small; the flagellum is as long as the peduncle, of 38 articuli; the appendage has 6 articuli. The inferior antennæ are a little longer than the peduncle of the superior pair, the fourth joint of the peduncle is the longest; the flagellum is about equal in length to the last joint of the peduncle, and is composed of 13 articuli. The anterior gnathopods have the carpus and propus ovate—the palm not defined. The posterior gnathopods of the male are unequal, the right the larger; the merus of both, as well as those of the anterior gnathopods are produced below into an acute tooth; the propus is rather oblong, rather narrower proximally than distally, twice as long as broad; the palm is nearly transverse, but a little oblique, defined by a strong acute tooth and armed with two blunter teeth towards the base of the dactylus, the upper tooth being the larger and bifid; the dactylus is not abruptly curved, about half the length of the propus. The left posterior gnathopod is a little smaller than the right, with the teeth of the propus much less strongly marked. The posterior gnathopods of the female (?) are also unequal—the right the larger and having the palm defined by a short acute tooth and armed with four or five denticles; the left without any teeth on the propus. The last two pairs of pereopods are very long, nearly as long as the head and pereion, with narrow basa. The last pair of pleopods are of immense size, as long as the head and the first four segments of the pereion, the protopodite as long as the last two segments of the pleon, the rami more than twice as long as the protopodite, ovate-lanceolate, with serrated edges. The halves of the telson are long and narrow, with a deep terminal notch. The total length, inclusive of the antennæ and the pleopoda, is $1\frac{1}{4}$ inch.

This species bears a considerable general resemblance also to *Mæra hamigera* but the modification of the left posterior gnathopods in this latter species is so special as to distinguish it very clearly.

XIII. MEGAMCERA MASTERSII.

Megamcera Mastersii, Haswell, Proc. Linn. Soc., N.S.W., Vol. IV., p. 265, pl. XI., fig. 1.

Megamcera Thomsoni, Miers, Zoology of H.M.S "Alert," Crustacea, p. 318, pl. XXXIV., fig. 1B.

These two forms are so closely related to one another that I think they are scarcely to be regarded as distinct species. My specimen of *M. Mastersii* agrees exactly with Miers's description and figure, except that the spinules on the pleon are absent, and the telson has on each division only a single notch placed near the extremity, with a short setule.

XIV. MCERA SPINOSA, MCERA RUBRO-MACULATA, and MCERA RAMSAYI.

(Plate XV., figs. 5-12.)

The differences on account of which the first and last of these forms were separated from the second were mainly in the form of the posterior gnathopoda. I find, however, on examining a series of specimens, a perfect series of gradations in this respect from the form figured by Stimpson to typical forms of *M. spinosa* and *M. Ramsayi*. Some of these varieties are figured in outline in the plate.

Mr. Chilton's *Mcera festiva* belongs also to this very variable species. (Proc. Linn. Soc., N.S.W., Vol. IX., p. 1037, pl. XLVI., fig. 2.)

XV. XENOCHIEIRA FASCIATA.

(Plate XVI., figs. 1-3.)

Xenochieira fasciata, Haswell, Proc. Linn. Soc., N.S.W., Vol. IV., p. 272, pl. XI., fig. 6.

I give here an enlarged figure of the posterior gnathopoda, the remarkable form of which distinguishes the genus.

In most of its characteristics this species shows evident relationships with *Microdeuteropus*. In fact it is only the form and proportions of the gnathopoda (figs. 1 and 2) that separate it from the normal members of that genus, with which it is connected through the European *M. versiculatus*, Spence Bate.

XVI. HAPLOCHEIRA TYPICA.

(Plate XVI., figs. 4-8.)

Haplocheira typica, Haswell, Proc. Linn. Soc., N.S.W., Vol. IV., p. 273, pl. XI., figs. 2.

This curious species, which is not uncommon on the Coasts of New South Wales and Victoria, was placed by me originally with the Gammaridæ; a further examination shows that its relations are rather with the Podocerides, the last pair of pleopods (fig. 7.) being short, with slightly hooked spines on the outer ramus, and a very short inner ramus with a simple pointed spine, and the telson (fig. 8), being a small undivided plate with a strong hook at each of its postero-lateral angles.

The superior antennæ have small two-jointed appendages—a feature which I overlooked in my first examination. The flagellum of the inferior antennæ has three distinct joints. The anterior gnathopods (fig. 4) might be described as very imperfectly subcheliform—the propus having a small lobe at the base of the dactylus.

The nearest ally of the genus seems to be *Corophium*, and *C. Lendenfeldi* of Chilton (Trans. N. Z. Inst., Vol. XVI., p. 260, pl. XXI., figs. 1, a. to e.) is probably this species.

XVII. HARMONIA CRASSIPES.

(Plate XVI., fig. 9.)

Harmonia crassipes, Haswell, Proc. Linn. Soc., N.S.W., Vol. IV., p. 330, pl. XIX., fig. 3.

The relations of this species were not correctly expressed by the position in which it was placed in the "Catalogue of Australian

Crustacea." It is a member of the family *Corophiidae*, distinguished from *Amphithoë*, *Sunamphithoë* and *Nænia*, among other points, by the presence of an appendage on the superior antennæ, from *Cerapus* by the biramous character of the posterior pleopoda, and from *Podocerus* by the multi-articulate flagella of both pairs of antennæ. The genus may be defined as follows:—Coxæ not so deep as the corresponding segments; antennæ both with multi-articulate flagella, the superior pair with an appendage. Mandibles palpigerous. Maxillipedes unguiculate, sub-pediform, with a squamiform process on the basos only. Gnathopods sub-chelate, unequal, posterior pair very large. Posterior pleopods biramous, the outer ramus with slightly hooked spines and straight hairs, the inner with straight hairs only. Telson single, long, pointed.

Harmonia crassipes has been found by Mr. Chilton in New Zealand.

XVIII. CYRTOPHIUM.

Of the Australian species which I have referred provisionally to this genus, only one—viz., *C. minutum*—really belongs to Dana's genus *Cyrtophium* as defined by Spence Bate (Cat. Amphip., p. 273); *C. dentatum*, together with two species to be described below, differs from it in the superior antennæ having a short, multi-articulate flagellum and a well-developed secondary appendage. *C. hystrix* differs from the type species of *Cyrtophium* in the presence of only five segments in the pleon. I gather from a remark made by Spence Bate, (British Sessile-eyed Crustacea, p. 483) that the genus *Læmatophilus* of Bruzelius is distinguished from *Cyrtophium* by the absence of the second last pair of pleopods, and have provisionally removed *C. hystrix* to that genus. For the species with multi-articulate flagella and appendages to the superior antennæ I propose the name of *Dexiocerella*. Connecting them with the typical species is *C. parasiticum*, which has the flagellum of the lower antennæ well developed and indistinctly multi-articulate, but has no appendage to the superior antennæ.

CYRTOPHIUM PARASITICUM.

(Plate XVII., figs. 1-7.)

Cyrtophium parasiticum, Haswell, Proc. Linn., Soc., N.S.W., Vol. IV., p. 274, pl. XII., fig. 1. Cat. Aust. Crust., p. 271.

The superior antennæ of this species are nearly as long as the head and pereion; the first joint of the peduncle is a little shorter than the head and stout, the second more than twice as long, narrower, the third a little shorter and narrower than the second; the flagellum is equal in length to the last joint of the peduncle, composed of four joints, the first more than half the length of the whole flagellum, the others small. The lower antennæ are very large, as long as the head and body, and are very stout; the fifth segment of the peduncle is a little longer than the fourth; the flagellum is a little more than half the length of the fifth segment of the peduncle, and exhibits very slight traces of division into nine joints; the extremity is ornamented with a fasciculus of short spines which are very slightly bent or hooked at the ends. The anterior gnathopods have the propus ovate, the palm even, slightly convex, separated off from the rest of the border by being more prominent. The posterior gnathopods are large; neither merus nor carpus have tooth-like processes; the propus is narrow, ovate, constricted proximally; the palm with a prominent acute tooth at its proximal end (the middle of the propus), separated by a deep excavation from the distal portion, which is minutely denticulated; the dactylus is about three-fourths of the length of the propus. The protopodite of the fourth pair of pleopoda projects beyond the extremity of the telson; the rami are long and narrow, the outer being much shorter than the inner, the inner is obscurely serrated, and both are tipped with straight spines. The fifth segment has no appendages.

The posterior gnathopoda of male specimens vary within certain limits, the palmar tooth being more or less prominent, and the propus being sometimes bordered with long hairs, sometimes not

The female differs from the male (1) in having the body broader (2) in the form of the posterior gnathopoda. (Figs. 6 and 7.)

DEXIOCERELLA DENTATA.

(Plate XVII, figs. 8-12.)

Cyrtophium dentatum, Haswell, Proc. Linn. Soc., N.S.W., Vol. IV., p. 342, pl. XXII., fig. 5. Cat. Aust. Crust., p. 272.

In this species the superior antennæ have a well-formed flagellum of six to eight articuli, and an appendage consisting of several coalescent joints; they are much smaller than the inferior pair, the flagellum of which has four segments—the last rudimentary. The propodes of the posterior gnathopods have near the base of the dactylos a conical tooth and a denticulated lobe; these are very small in specimens from Port Jackson, but much larger in specimens from Victoria; the merus, carpus and propus are densely clothed with pinnate hairs.

The females differ from the males in having the processes of the pleonal segment less prominent, the inferior antennæ shorter, and the posterior gnathopoda much smaller, with the palm of the propus unarmed. These characteristics are much more strongly marked in young females, in which the dorsal processes may be entirely absent and the inferior antennæ very little longer than the superior.

CYRTOPIUM MINUTUM.

(Plate XVIII., figs 1-5 and fig. 9.)

Cyrtophium minutum, Haswell, Proc. Linn. Soc., N.S.W., Vol. IV., p. 343, pl. XXII., fig. 6.

In this species the antennæ are subequal, the superior pair having no appendage; the flagellum of the superior pair contains seven joints—the first four of these being cemented into one piece and the next three into another.

LÆMATOPHILUS HYSTRIX.

Cyrtophium hystrix, Haswell, Proc. Linn. Soc., N.S.W., Vol. V., p. 104, pl. VII., fig. 3.

In this remarkable little species there are only five segments in the pleon and only five pairs of appendages. The antennæ are subequal and the superior pair have no appendage.

DEXIOCERELLA LOBATA. N. sp.

(Plate XVIII., figs. 6-8.)

The first four segments are produced in the middle dorsal line into elevations which have the appearance, when looked at laterally, of rounded lobes. The superior antennæ are as long as the head and pereion; the first joint of the peduncle is straight, nearly as long as the head, the second is the longest and slender, the third is rather shorter and narrower than the second; the flagellum is a little longer than the last segment of the peduncle, five-jointed; there is a short accessory appendage; both peduncle and flagellum are ornamented with delicate hairs. The inferior antennæ are as long as the body, stout, the third joint of the peduncle is short and thick, the fourth three times as long, narrow proximally, broader distally, slightly bent; the fifth is considerably longer than the fourth and a little narrower, also slightly curved; the flagellum is about half the length of the last segment of the peduncle, consisting of three joints, the first long, the second scarcely a third of the length of the first, the last rudimentary. The anterior gnathopoda are scarcely to be distinguished from those of *C. minutum*. The posterior gnathopoda are very large, the merus produced below into a tooth-like process; the propus is large, irregularly ovoid, the greatest length not twice the greatest breadth, the palm defined by a strong tooth, with, near the base of the dactylus, a low denticulated lobe and a conical tooth. The pereopoda are lost. The pleopoda and telson are as in *D. dentata*. The length, inclusive of antennæ, is three-tenths of an inch.

The single specimen was dredged off Broughton Islands near Port Stephens, on the coast of New South Wales.

DEXIOCERELLA LÆVIS. N. sp.

(Plate XVIII., figs. 10-12.)

None of the segments are dorsally produced. The superior antennæ are as long as the cephalon and pereion; the basal joint of the peduncle is the shortest, scarcely so long as the head; the second joint twice as long as the first; the third a little longer than the second; both the second and third joints with serrations below; the flagellum is about the length of the last segment of the peduncle, of five articuli, each ornamented below with a few slender setæ, the appendage very small, one-jointed. The inferior antennæ are longer than the superior, nearly as long as the whole body; the peduncle is very stout, the third joint shorter than the fourth and fifth; the fifth the longest, as long as the third and fourth together; the flagellum is half the length of the last joint of the peduncle, with three indistinct articulations. The second pair of gnathopods are large; the carpus is triangulate, produced below and distally into a short tooth; the propus is regularly ovate, the palm convex, minutely serrulate, with two low, minutely serrulate lobes near the base of the dactylus, defined by a pair of obscure denticles, each tipped with a strong spine, bordered laterally with two rows of setæ, each set in a minute denticle; the dactylus is three-fourths of the length of the propus. The pereopoda are stout, with very large falciform dactyli. The length (including the antennæ) is $\frac{5}{16}$ ths of an inch.

Port Molle, among sea-weed.

XIX. PROTO NOVÆ-HOLLANDIÆ.

(Plate XVIII., figs. 13-16.)

Proto Novæ Hollandiæ, Haswell, Proc. Linn. Soc., N.S.W., Vol. IV., p. 275., pl. XII., fig. 3, and "Revision of the Australian Læmodipoda," Proc. Linn. Soc., N.S.W., Vol. IX., p. 993.

The following may be added to the original description. There are only seven elongated narrow joints in the flagellum of the superior antennæ, and only three in that of the inferior pair. The propodes of the second pair of legs are greatly dilated transversely (figs. 13-15), the palm is an oval, slightly concave area along the axis of which the dactylus lies with three teeth, two lateral and one mesial, at its distal end.

EXPLANATION OF THE PLATES.

PLATE X.

- Fig. 1.—Posterior gnathopod of *Talitrus sylvaticus*.
 Fig. 2.—Head and antennæ of *Allorchestes crassicornis*.
 Fig. 3.—Anterior gnathopod of the same.
 Fig. 4.—Posterior gnathopod of the same.
 Fig. 5.—“Palm” of the same appendage, more highly magnified.
 Fig. 6.—Head and antennæ of *Allorchestes longicornis*.
 Fig. 7.—Anterior gnathopod of the same.
 Fig. 8.—Posterior gnathopod of the same.
 Fig. 9.—Head and antennæ of *Allorchestes rupicola*.
 Fig. 10.—Anterior gnathopod of the same.
 Fig. 12.—“Palm” of the same appendage.

PLATE XI.

- Fig. 1.—*Allorchestes niger*, antennæ and head.
 Fig. 2.—Anterior gnathopod of the same.
 Fig. 3.—Posterior gnathopod of the same.
 Fig. 4.—Antennæ of *Neobule algicola*.
 Fig. 5.—Anterior gnathopod of the same.
 Fig. 6.—Posterior gnathopod of the same.
 Fig. 7.—*Stegocephalus latus*.
 Fig. 8.—Superior antennæ of the same.
 Fig. 9.—Inferior antennæ of the same.
 Fig. 10.—Anterior gnathopod of the same.
 Fig. 11.—Posterior gnathopod of the same.
 Fig. 12.—Telson of the same.

PLATE XII.

- Fig. 1.—Distal end of anterior gnathopod of *Lysianassa (Anonyx) nitens*.
 Fig. 2.—Dactylus and “palm” of the same.
 Fig. 3.—Posterior gnathopod of *Lysianassa australiensis*.

- Fig. 4.—Telson of the same.
 Fig. 5.—Head of *Lysianassa affinis*.
 Fig. 6.—Telson of the same.
 Fig. 7.—Antennæ of *Ampelisca australis*. Variety from Port Denison.
 Fig. 8.—Pereiopod of the third pair of the same.
 Fig. 9.—Pereiopod of the fourth pair of the same.
 Fig. 10.—Pereiopod of the fifth pair of the same.
 Fig. 11.—Superior antennæ of *Ampelisca australis*. Variety from Port Jackson.
 Fig. 12.—Anterior gnathopod of the same.
 Fig. 13.—Posterior gnathopod of the same.
 Fig. 14.—Pereiopod of the third pair of the same.
 Fig. 15.—Pereiopod of the fourth pair of the same.
 Fig. 16.—Pereiopod of the fifth pair of the same.

PLATE XIII.

- Fig. 1.—Antennæ of *Ampelisca australis*. Specimen from Port Stephens.
 Fig. 2.—Extremity of pereiopod of the third pair of the same.
 Fig. 3.—Basal joints of pereiopod of the fifth pair of the same.
 Fig. 4.—Basal joints of third pereiopod of *Ampelisca australis*. Variety from Port Jackson.
 Fig. 5.—Anterior gnathopod of *Atylus homochir*.
 Fig. 6.—Posterior gnathopod of the same.
 Fig. 7.—Telson of the same.
 Fig. 8.—*Dactyline Miersii*.
 Fig. 9.—Anterior gnathopod of the same.
 Fig. 10.—Posterior gnathopod of the same.
 Fig. 11.—Extremity of pereiopod of the same.
 Fig. 12.—Sixth pleopod of the same.

PLATE XIV.

- Fig. 1.—*Eusirus dubius*. Var.
 Fig. 2.—*Eusirus affinis*.
 Fig. 3.—Anterior gnathopoda of the same.
 Fig. 4.—Posterior gnathopoda of the same.

PLATE XV.

- Fig. 1.—*Megamoera suensis*. Var?
 Fig. 2.—Anterior gnathopod of the same.
 Fig. 3.—Posterior gnathopod of male of the same.
 Fig. 4.—Posterior gnathopod of the female.
 Figs. 5-12.—Various forms of the posterior gnathopod of *Mæra rubromaculata*.

PLATE XVI.

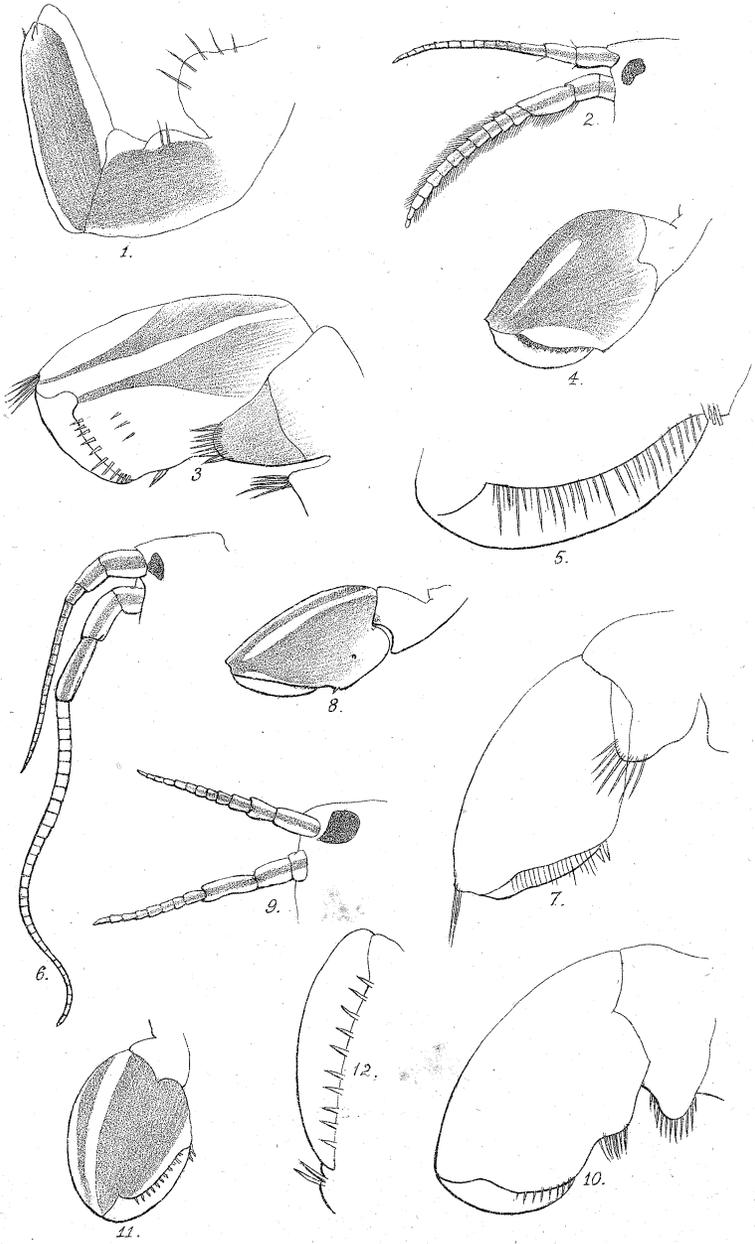
- Fig. 1.—Anterior gnathopod of *Xenocheira fasciata*.
 Fig. 2.—Posterior gnathopod of the same.
 Fig. 3.—Extremity of the pleon of the same.
 Fig. 4.—End of anterior gnathopod of the same.
 Fig. 5.—Posterior gnathopod of the same.
 Fig. 6.—Extremity of lower antennæ of the same.
 Fig. 7.—Extremity of pleon of *Haplocheira typica*.
 Fig. 8.—Telson of the same.
 Fig. 9.—Posterior extremity of the pleon of *Harmonia crassipes*.

PLATE XVII.

- Fig. 1.—Superior antennæ of *Cyrtophium parasiticum*.
 Fig. 2.—Inferior antennæ of the same.
 Fig. 3.—Anterior gnathopod of the same.
 Fig. 4.—Posterior gnathopod of the same.
 Fig. 5.—Another form of the same appendage.
 Fig. 6.—Anterior gnathopod of the female.
 Fig. 7.—Posterior gnathopod of the same.
 Fig. 8.—Superior antenna of *Deziocerella dentata*.
 Fig. 9.—Inferior antennæ of the same.
 Fig. 10.—Posterior gnathopod of male of the same.
 Fig. 11.—Posterior gnathopod of female of the same.
 Fig. 12.—Telson and posterior pleopods of the same.

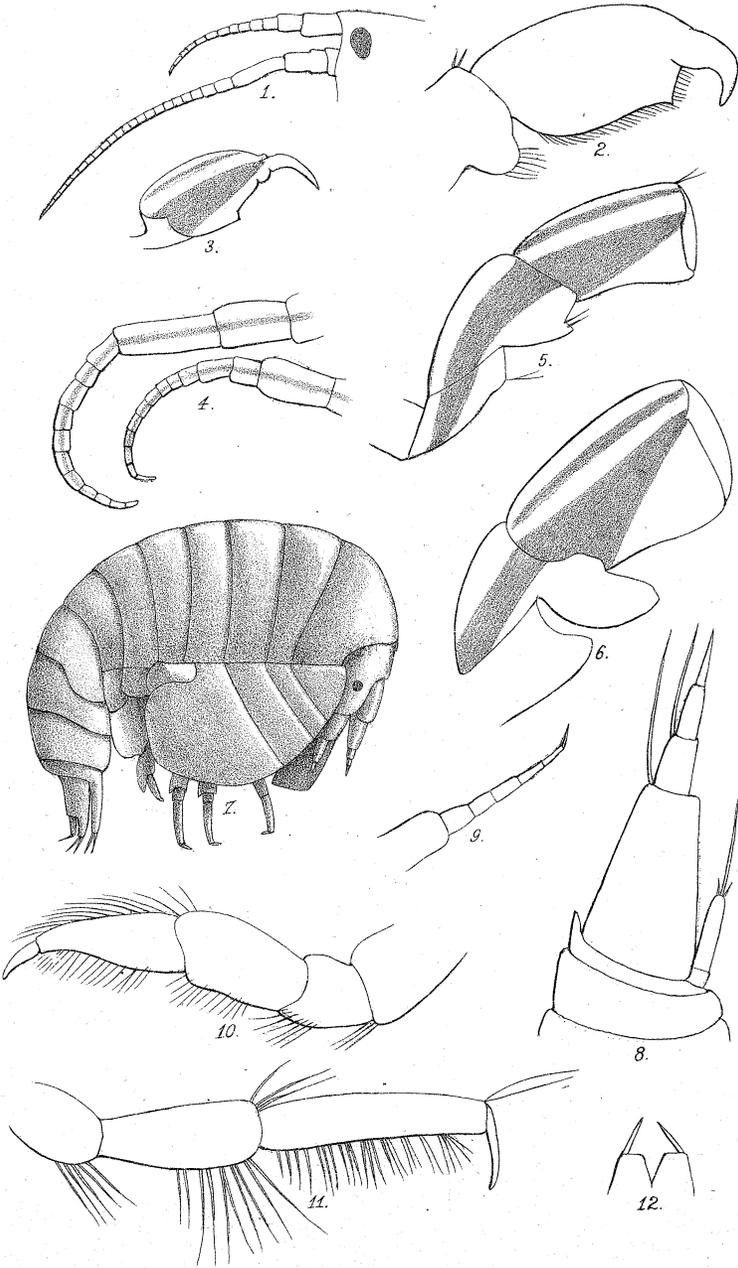
PLATE XVIII.

- Fig. 1.—Superior antennæ of *Cyrtophium minutum*.
 Fig. 2.—Inferior antenna of the same.
 Fig. 3.—Anterior gnathopod of the same.
 Fig. 4.—Posterior gnathopod of the same.
 Fig. 5.—Telson and posterior pleopods of the same.
 Fig. 6.—Superior antenna of *Deziocerella lobata*.
 Fig. 7.—Inferior antenna of the same.
 Fig. 8.—Posterior gnathopod of the same.
 Fig. 9.—Posterior gnathopod of female of *Cyrtophium minutum*. Var.
 Fig. 10.—Antennæ of *Deziocerella levis*.
 Fig. 11.—Anterior gnathopod of the same.
 Fig. 12.—Posterior gnathopod of the same.
 Fig. 13.—Posterior gnathopod of *Proto Nova-Hollandia*, seen from the side.
 Fig. 14.—Ventral view of the same.
 Fig. 15.—Dorsal view of the same.
 Fig. 16.—Posterior gnathopod of young specimen of the same species.



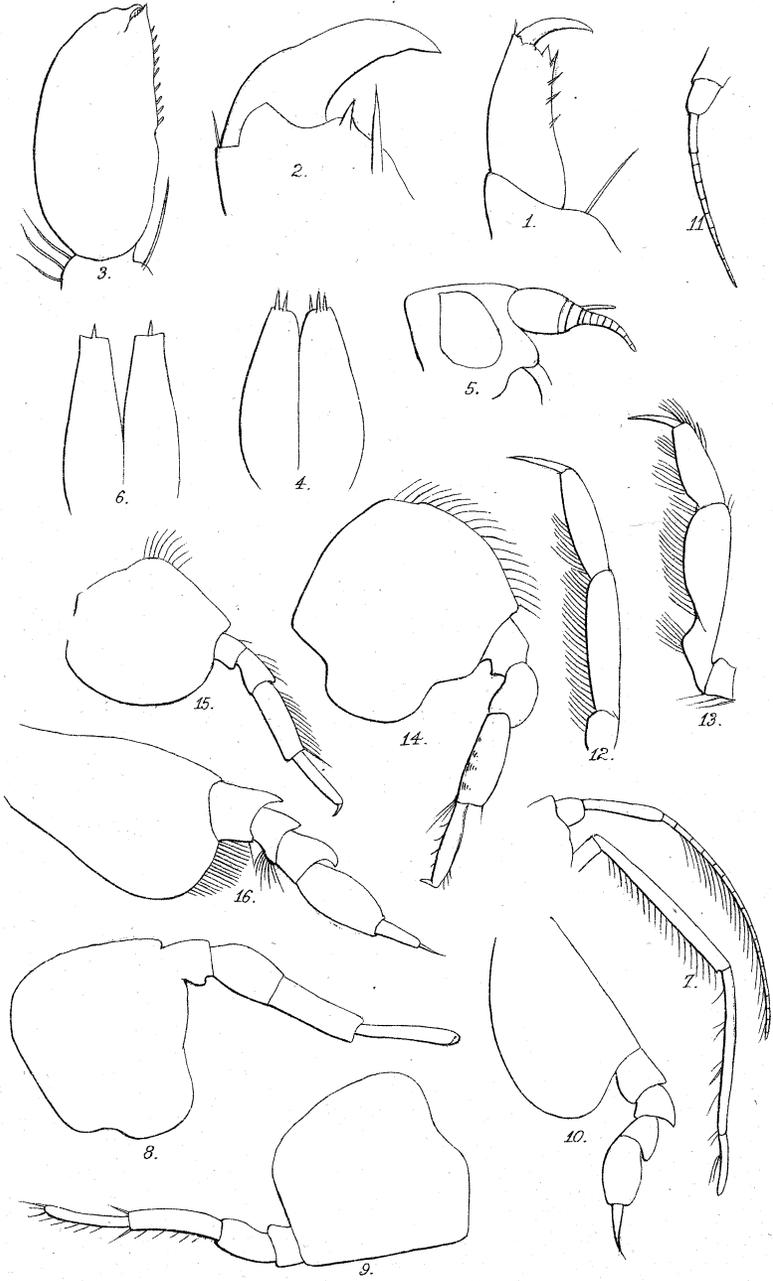
W. A. H. del.

S. Sedgwick lith.



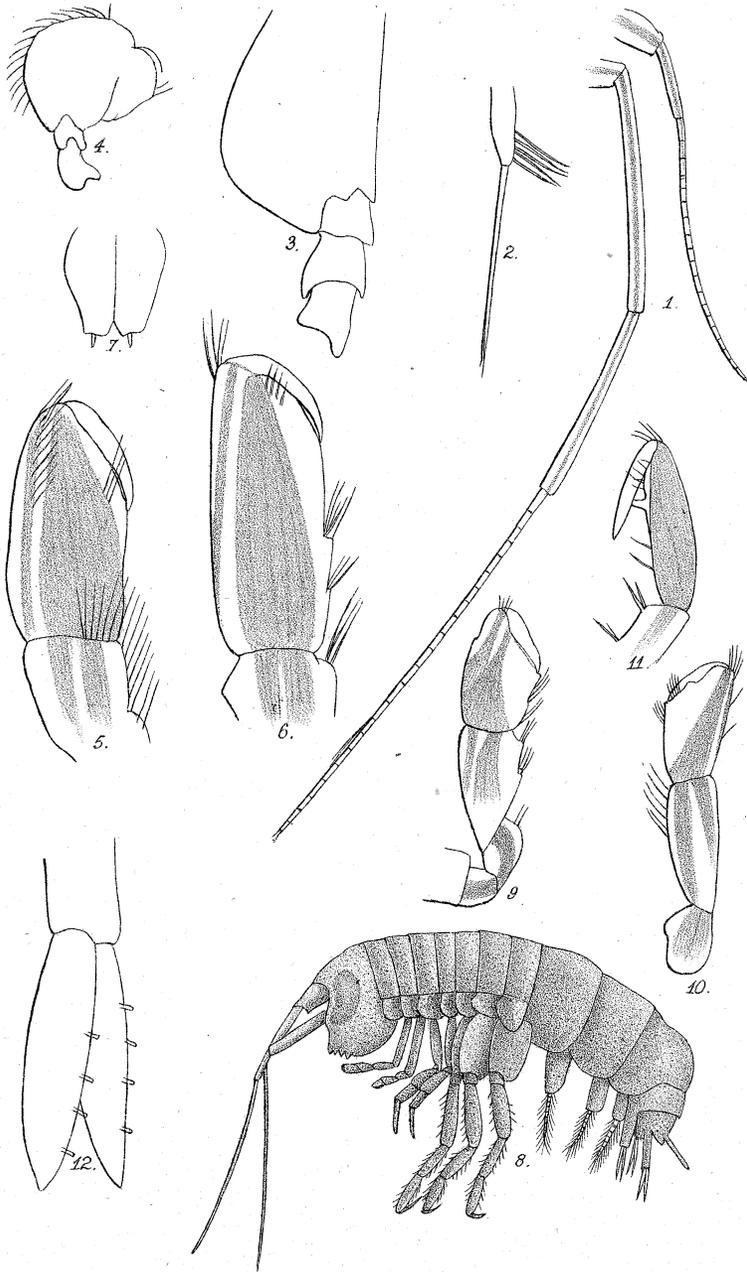
W. A. H. del.

S. Sedgfield lith.



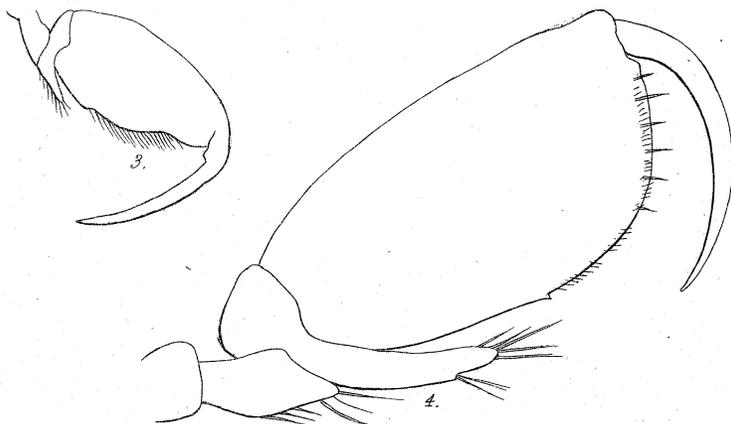
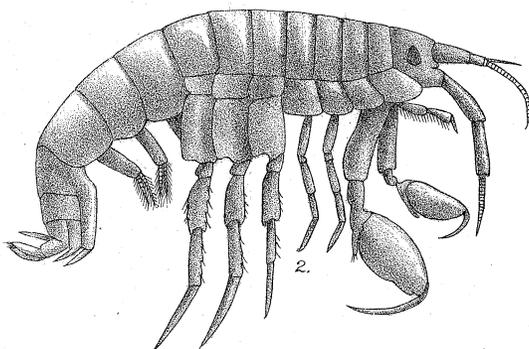
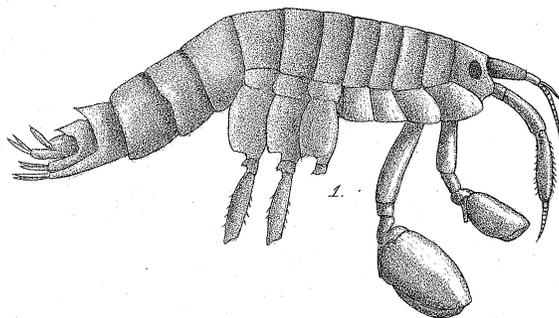
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S. Sedgfield lith.



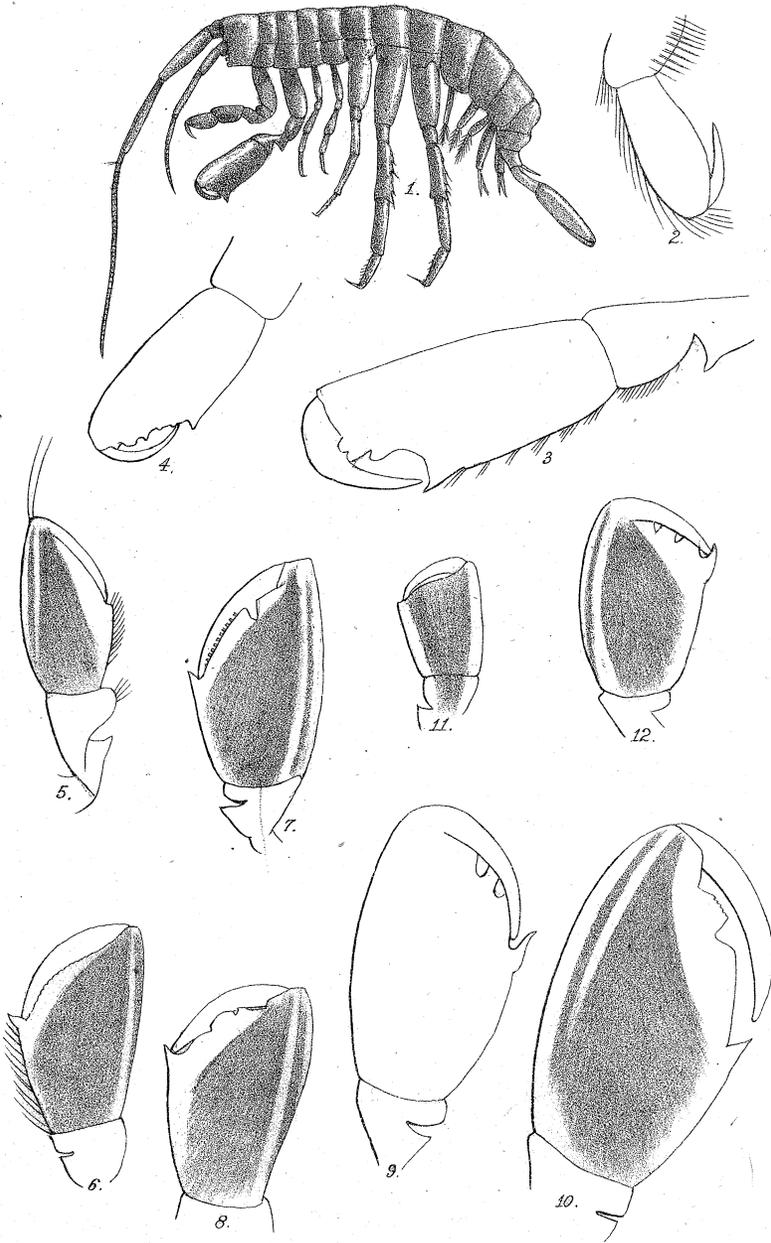
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S. Sedgfield lith.



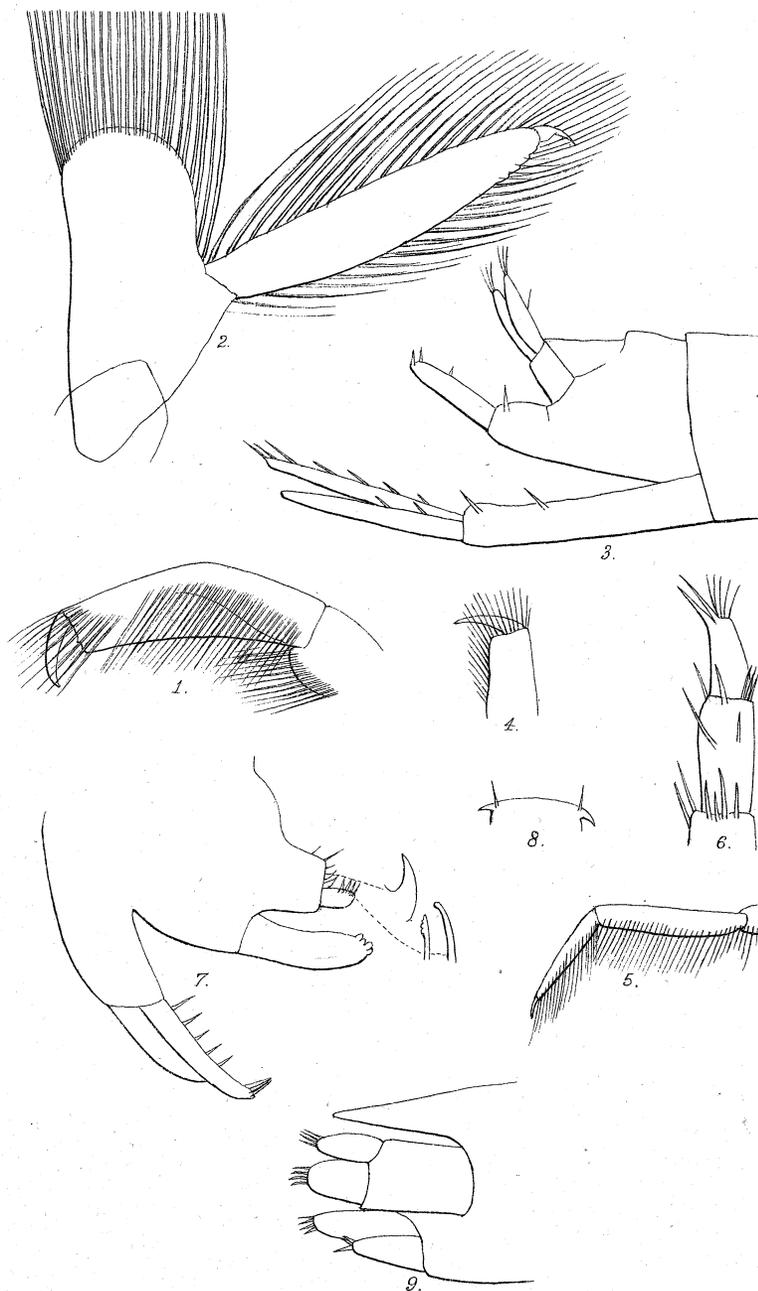
W.A.H. del.

S. Sedgfield lith.



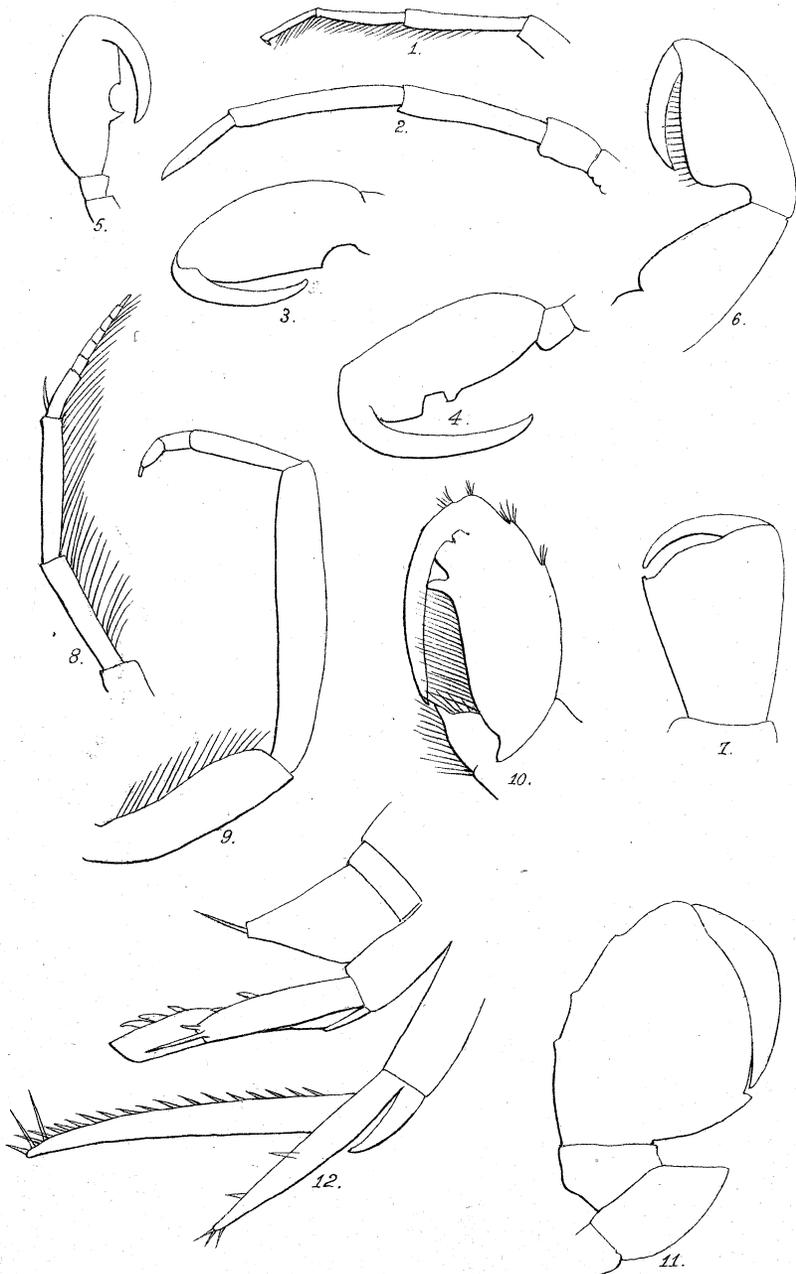
W. A. H. del.

S. Sedgfield lith.



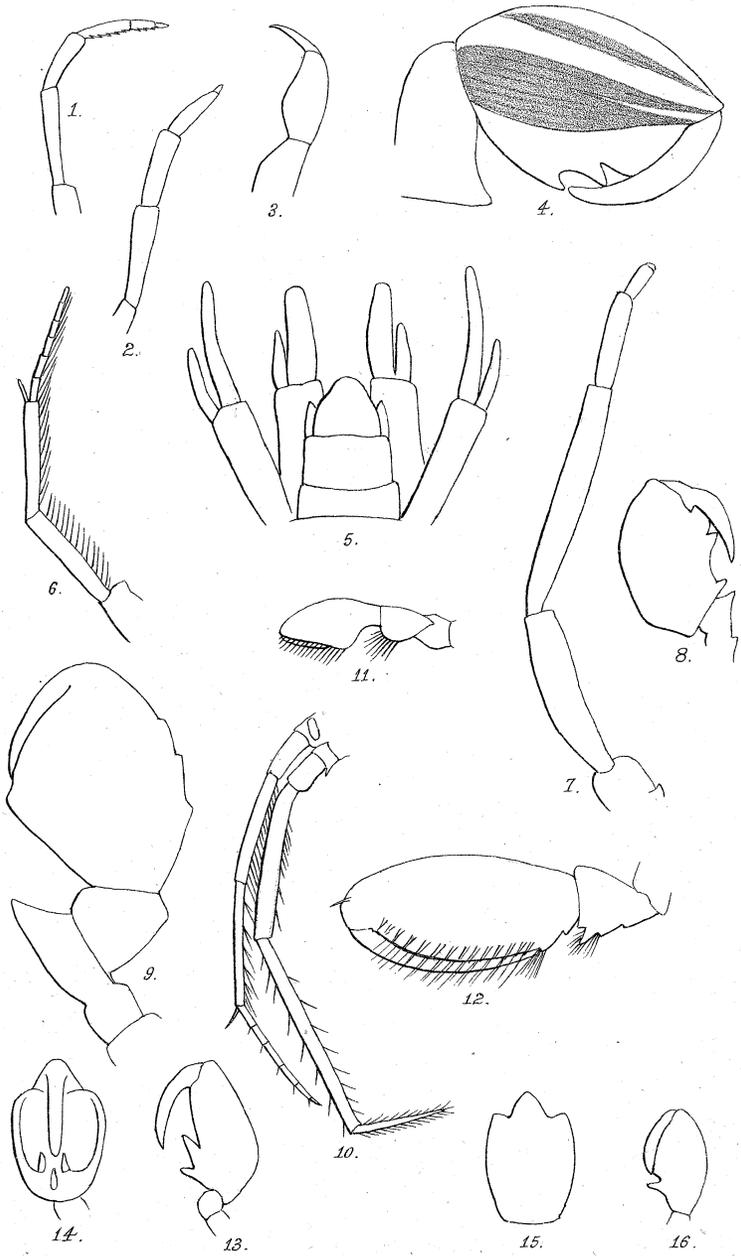
W.A.H. del.

S. Sedgfield lith.



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