A REVISION OF THE AUSTRALIAN ISOPODA.

By William A. Haswell, M.A., B.Sc.

[Plates L., LI., LII. and LIII.]

List of Species.

Fam. Idoteidæ.

1. *Idotea Peronii.* M. Edw.
2. *Idotea marina.* Linn.
3. *Idotea stricta.* Dana.
4. *Idotea longicaudata.* Spence Bate (= *Crabyzos longicaudata.*)
5. *Idotea margaritacea.* Dana.

Fam. Oniscidæ.

6. *Armadillidium subdentatum.* Haswell.
7. *Porcellio graniger.* White.
8. *Porcellio obtusifrons.* Haswell.
9. *Philougria (Philygria) marina.* Chilton.
10. *Ligia gaudichaudii, var australiensis?* Dana.

Fam. Cymothoidæ.

11. *Ceratothoa trigonocephala.* Leach.
12. *Ceratothoa imbricata.* Fabr.
13. *Codonophilus argus.* Haswell.
14. *Ourozeuktes owenii.* Milne-Edwards.
15. *Ourozeuktes pyriformis.* Haswell.

Fam. ÆGIDÆ.

16. *Æga cyclops.* Haswell.
17. *Cirolana multidigitata.* Miers.
18. *Cirolana Schiödtei.* Miers.
19. *Cirolana tenuistylis.* Miers.
20. *Cirolana lata.* Haswell.
21. *Rocinela orientalis.* Schiödte and Meinert.
22. *Rocinela vigilans.* Haswell.

Fam. SPHÆROMIDÆ.

23. *Sphaeroma gigas.* Leach.
24. *Sphaeroma quoyana.* Milne-Edw.
25. *Sphaeroma verrucauda* White.
26. *Sphaeroma (?) anomala.* Haswell.
27. *Sphaeroma lævis.* Haswell.
28. *Sphaeroma aspera.* Haswell.
29. *Cymodocea granulata.* Miers.
30. *Cymodocea (?) Gaimardii.* Milne-Edwards.
31. *Cymodocea longistylis.* Miers.
32. *Cymodocea aculeata.* Haswell.
33. *Cymodocea bidentata.* Haswell.
34. *Cymodocea coronata.* Haswell.
35. *Cymodocea tuberculata.* Haswell.
36. *Cerceis tridentata.* Milne-Edwards.
37. *Cerceis bidentata.* Milne-Edwards.
38. *Cerceis acuticaudata.* Haswell.
39. *Cerceis trispinosa.* Haswell.
40. *Cilicaea tenuicaudata.* Haswell.
41. *Cilicaea Latreillii.* Leach.
42. „ „ *var. crassicaudata.* Haswell.
43. „ „ *var. longispina.* Miers.
44. *Cilicaea antennalis.* White.
45. *Cilicaea hystrix.* Haswell.
46. *Cilicaea spinulosa.* Haswell.
47. *Cilicaea curtispina.* Haswell.

48. *Cilicaea crassa.* Haswell.
49. *Zuzara diadema.* Leach.
50. *Zuzara armata.* Milne-Edwards.
51. *Zuzara integra.* Haswell.
52. *Zuzara emarginata.* Haswell.
53. *Haswellia carnea* (*Calyptura carnea.*) Haswell.
54. *Amphoroidea australiensis.* Dana.

Fam. ARCTURIDÆ.

55. *Arcturus longicornis.* Haswell.
56. *Arcturus brevicornis.* Haswell.

Fam. ANTHURIDÆ.

57. *Paranthura australis.* Haswell.
58. *Paranthura crassicornis.* Haswell.
59. *Paranthura diemenensis.* N. Sp.
60. *Anthura Miersii.* N. Sp.
61. *Haliophasma purpureum.* Haswell.
62. *Haliophasma maculatum.* Haswell.
63. *Eisothistos vermiformis.* Haswell.

Fam. TANAIDÆ.

64. *Tanais tenuicornis.* Haswell.
65. *Paratanais linearis.* Haswell.
66. *Apseudes obtusifrons.* Haswell.
67. *Apseudes australis.* Haswell.

Fam. ANCEIDÆ.

68. *Anceus ferox.* Haswell.

Fam. ASELLIDÆ.

69. *Stenetrium armatum.* Haswell.
70. *Stenetrium inerme.* Haswell.

Fam. CYMOTHOIDÆ.

Miers Zoological Collections of H.M.S. "Alert," (p. 300) adds a species — *Ceratothoa imbricata*, Fabr., of which there are specimens in the British Museum from Port Essington, Sydney, Murray River, and Western Australia, as well as from New Zealand and from Calcutta.

Fam. Ægidæ.

Miers describes two new species of *Cirolana*—*C. multidigitata* from Albany Passage, Swan River and the Philippines; *C. schiodtei*, from Torres Straits; *C. tenuistylis*, also from Torres Straits, and a variety of *C. lata*, *mihi* from Albany Island.

Rocinela orientalis, Schiödte and Meinert is stated by Miers (l.c., p. 304) to have been obtained from Torres Straits and Moreton Bay, as well as from the Gulf of Suez, Ceylon, and the Philippines.

Fam. Sphæromidæ.

Miers (l.c., pp. 305-310) describes a new species—*Cymodocea longistylis*, from Torres Straits and from Singapore; a new variety of *Cerceis bidentata* of Milne-Edwards, which he calls *asperi-caudata*; he notices the occurrence in Torres Straits and in Western Australia of *Cilicœa Latreillii* (*Sphæroma pubescens*) of Milne-Edwards; and describes an additional variety of that species (*C. longispina*) from Bass's Straits. He points out that an additional species of *Cilicœa* (*C. antennalis* of White) had been obtained from Swan River.

He also points out that the generic name *Calyptura*, which I applied to a curious form of this family having the last segment of the thorax produced into a broad plate, was pre-occupied and proposes to call it *Haswellia*.

I have to add the following remarkable new genus.

Bregmocerella, N.G.

Oral region immediately in front of the epitsome (antennary sternum) produced forwards into a long horn-like process. Last segment produced, pointed. Uropoda with the outer (mobile) ramus rudimentary.

Bregmocerella tricornis N. Sp.

[Plate LIII., fig. 1.]

The oral process is considerably longer than the head, slender, cylindrical, curved upwards towards the distal end which is slightly

dilated. The head is armed, a little in front of and internal to each eye, with a much shorter process, about a fifth of the length of the mesial one, directed forwards. The head is about the same length as the first segment of the pereion, but considerably narrower: the first segment has the pleural regions expanded and produced behind into a short acute process. The following five segments are nearly equal, slightly produced laterally: the seventh is rather larger, with two obscure teeth on each side of its distal border. The terminal segment is large, about a third of the length of the body, nearly triangular in outline, the apex produced into a bluntly pointed process with a slight notch on either side near the extremity: on the dorsal surface are two oval elevations covered with minute granulations. The anterior antennæ are slender, but as long as the head and first two segments. The posterior antennæ are much longer and stouter, more than half the length of the body, the peduncle and flagellum nearly equal in length, the latter with about thirty segments. The uropoda are narrow, about half the length of the terminal segment, not extending to near the apex, with a notch about the middle of the outer border in which is articulated the rudiment of a mobile ramus, and with two obscure teeth in the distal half. The length is $\frac{7}{10}$ths of an inch. The colour of the dried specimen is mottled red and brown, the horns red at the extremities: in the middle of the first body segment is an oval white spot with a light red mark in the middle of it.

Dredged at the "Heads" of Port Jackson. [Macleay Museum.]

Fam. Oniscoidea.

Ligia Australiensis.

Miers (l.c., p. 299) describes fully the species common on the Queensland coast, doubtfully referring it to *Ligia Gaudichaudii*, var. *Australiensis*, Dana.

Fam. Anceidæ.

Anceus ferox. N. Sp.

[Plate LII. Figs. 1—5.]

The body is very broad, the greatest breadth being nearly $\frac{1}{20}$th of an inch, and the total length, exclusive of the mandibles, being

only about $\frac{1}{10}$th of an inch. The head is extremely large, more than half the length of the pereion; it presents in front a deep mesial excavation, at the bottom of which is a tooth; bounding the excavation on either side is a tooth-like projection. The pereion is as broad as the head in front, narrower behind; the hinder segments are slightly longer than the anterior. The pleon, with the telson, is about equal in length to the last four segments of the pereion; its length is rather more than thrice its breadth. The upper antennæ are shorter than the lower, considerably shorter than the head; the three joints of the peduncle progressively increase in length distally; the flagellum, which is nearly as long as the last joint of the peduncle, consists of a rudimentary proximal, a longer second, and a very small terminal articulation, the last ornamented with hairs. The inferior antennæ are longer than the superior, but shorter than the jaws; their flagellum is about the same length as the last segment of the peduncle, and consists of seven articuli. The jaws are very large, longer than the head; internally, near the base, each presents a bifid tubercle; at the apex each is divided into three teeth, of which one is rudimentary. The two anterior pairs of legs, which are a little larger than the following pairs, have the ventral borders of the merus and carpus each armed with two blunt spines; in the hinder pairs the place of these is taken by a series of very short spinules.

In the form of the jaws and their enormous size this species differs from any others, as well as in the great relative size of the head. Its nearest ally seems to be *Anceus maxillaris*, from which, however, it is very far removed.

I am indebted for the only specimen of this species I have seen to Mr. Thos. Hewitt. It was found in Port Jackson.

Fam. Tanaidæ.

Tanais tenuicornis.

[Plate L. Figs. 1—8.]

Paratanais tenuicornis, Haswell. Proc. Lin. Soc., N.S.W., Vol. VI., p. 194, pl. IV.

This species, of which only a short diagnosis has been published, presents two well-marked varieties—specimens from Port Western, Victoria, all presenting certain constant though unimportant peculiarities by which they differ from specimens from Port Jackson and Port Stephens. The following is a description of the Victorian form :—

The body is moderately stout. It is ornamented with a few scattered hairs on the dorsal surface, chiefly at the junctions of the segments. The head is nearly as long as the following four segments ; between the upper antennæ it forms a low triangular lobe. The first three free thoracic segments are shorter than the rest—the first being the shortest of all. The abdomen is about equal in length to the two last segments of the thorax. The superior antennæ are stout, the first joint half the length of the the head, the second about a third of the length of the first and a little narrower, the third about two-thirds of the length of the second, narrower, with a minute lobe at its apex which may be a rudimentary fourth joint : the extremities of all three joints are ornamented with a few long hairs. The inferior antennæ are equal in length to the superior pair and slightly more slender, and consist of six joints ; the first joint is short and stout ; the second more than twice the length of the first ; the third about a half to a third of the length of the second ; the fourth as long or very nearly as long as the second ; the fifth about two-thirds of the length of the fourth ; the sixth very small, not much more than a quarter of the length of the penultimate joint; the terminal joints are ornamented with long delicate hairs. The fingers of the first pair of thoracic appendages have brown corneous tips ; they are not denticulated ; but there is a row of short fine hairs near the inner edge of the immobile finger. The second pair of thoracic appendages are more slender than the following, are not ornamented with spines, and terminate in a long, slender, two-jointed finger. The third and fourth pairs are shorter than the second and a little stouter ; their dactyli are also slender and straight, but their meros and carpus are armed with short, stout spines, which are most numerous round the distal end of the latter segment. The

three last pairs have the meros and carpus like those of the preceding two pairs, but the dactylos is hook-like and armed internally with a double row of acute spinules. The uropoda have a well developed ramus with from five to seven subequal articuli.

The surface of the body is irregularly mottled with blackish spots. The length is about a quarter of an inch.

In the Port Jackson specimens the terminal joint of the superior antennæ is relatively longer and narrower, and the second joint of the inferior antennæ relatively shorter.

Paratanais linearis. N. Sp.

[Plate L. Figs. 9—16.]

The body of this species is extremely narrow—the length being about ten times the breadth. The head with the coalescent first segment is about twice as long as the second segment; it bears on either ends a strong tooth-like process directed backwards and downwards. The segments of the thorax are nearly equal, but increase a little in length and decrease slightly in height towards the posterior end. The abdominal segments are all equal, about a third of the length of the last segment of the thorax. The superior antennæ are stout and short, scarcely so long as the head and first segment; with only five joints, of which the second is the largest. The lower antennæ have four joints, of which the two proximal are the largest, with a strong tooth at the supero-distal angle of the second; the fourth joint is very small and scarcely half the length of the third. The first pair of thoracic appendages are very stout, as long as the head and following two segments; the meros, carpus and propus all stout, the carpus the largest; the immobile finger has a rounded tubercle ornamented with a few hairs. The following three pairs of appendages are slender, the propus considerably longer than the carpus, the dactylos slender, continued into a delicate hair-like point. The last three pairs of thoracic appendages are rather stouter than the preceding pairs; the meros, carpus and propus are each ornamented towards the distal end with a few conical or curved spines, of which two placed at the

extremity of the propus assume the form of accessory dactyli. The dactylos proper is longer and stronger than these, a little less than half the length of the propus. The uropoda are very short, the inner ramus composed of one compressed joint which is about twice the length of the peduncle; the outer shorter and narrower, apparently one-jointed on one side, but on the other showing an articulation (or fracture) about the middle. The total length of the animal is $\frac{3}{16}$ths of an inch.

The only specimen I have was obtained with the dredge in Port Jackson.

Stenetrium armatum.

[Plate LI. Figs. 1—12.]

Stenetrium armatum. Haswell, Proc. Linn. Soc. N.S.W. Vol. V., p. 478.

The males of this species differ from the females in the form of the first pair of thoracic appendages (see P.L.S., N.S.W. Vol. V., pl. XIX., figs. 1c and 1c[1]), and also in having the flagella of the superior antennæ usually, though not invariably, longer. The number of articuli of the inner antennæ varies from eight to twelve, and the length varies considerably in different individuals; the extremity never quite reaches the end of the fourth joint of the peduncle of the inferior pair, and usually does not reach much beyond the distal end of the third joint. Connected with the second joint of the inferior antennæ is a movable scale or scaphicerite. The flagellum of the superior antennæ is very long, consisting of 115 very short articuli. As in *Apseudes*, *Tanais*, and *Anthura* the mandible has a well-developed palp; its cutting apex is bi-lobed, each lobe being divided into several teeth; behind the teeth is a row of strong curved spines. The first pair of maxillæ have two rami, of which the outer is the longest, both armed apically with stout, simple spines and hairs. The second pair of maxillæ have three lobes, each armed with long simple spines. In the first pair of maxillipedes the basal joint has articulating with it a long, un-jointed, scale-like, pointed, external appendage; the second joint is

broad, and bears a plate-like appendage, which is armed internally with a row of four or five chitinous teeth, and distally with some short setæ; the following three joints are expanded, especially the fourth and fifth; the two terminal joints are narrower. The six posterior pairs of pereiopods each terminate in two claws, with a third claw or spine a little further back on the ventral border of the propodos; the third and fourth joints are each produced into a process tipped with one or two very long setæ. The ventral surface of the last segment of the abdomen frequently possesses an acute spine in the middle line behind, but this is sometimes rudimentary. The abdomen possesses three pairs of appendages besides the terminal uropoda. Of these the first pair are biramous, the exopodite being large and crustaceous, meeting with its fellow in the middle, and completely covering the posterior appendages; it is divided into two parts by an oblique articulation; its endopodite is much smaller and more delicate, tipped with a few setæ, and is placed behind the expodite. The second and third pairs of abdominal appendages are likewise delicate; the second is biramous, the third uniramous. The bases of the first pair of abdominal appendages are covered in both cases by a broad plate, with a bifid apex attached to the posterior border of the last thoracic segment. The eggs are borne in a brood pouch on the ventral surface of the first four segments of the pereion.

The specimens which I have at my command at present are not sufficiently well preserved to enable me to ascertain the position of the embryo in the egg, but I have little doubt on a careful re-examination of the subject that the present form (in spite of the direction of the four anterior pairs of thoracic appendages) finds its nearest allies among the *Asellidæ*, not among the "*Abnormalia*," as I was at first inclined to suppose. The grouping together in Dana's classification under the title of *Anispoda*, of a number of forms whose chief bond of connection is the direction of the thoracic appendages results an an extremely artificial arrangement.

Fam. ANTHURIDÆ

PARANTHURA DIMENENSIS. N. sp.

[Plate LII., figs. 6-13.]

The head is rather smaller than the first segment of the pereion, compressed from above downwards, nearly square in cutline, with the anterior border concave. The second and third segments are about equal, very little larger than the head; the following segments of the pereion are both longer and thicker than the first and second, except the last which is rather shorter. The pleon is nearly as long as the penultimite segment of the pereion; all its segments are quite distinct. Both pairs of antennæ are shorter than the head, the inferior pair rather longer than the superior, the latter has six segments, of which the last is very small and there seems to be the rudiment of a seventh: the former has five segments, the last small, ornamented with a fringe of hair. The first three pairs of thoracic appendages are all sub-cheliform, the first the largest with very stout carpus and propodos: the former triangular, produced so as to articulate with a considerable part of the ventral border of the carpus; the propodos with the palm oblique defined by a small spine: the following two pairs are of somewhat similar shape, but rather smaller, the palm undefined in the third, defined only by an obtuse angle in the second. The terminal appendages are rather pointed, ornamented with a small fasciculus of hairs: the telson has a minute notch in the middle behind. The length is half an inch.

Found at Hobart between tide marks.

PARANTHURA CRASSICORNIS.

[Plate LIII., figs. 8 and 9.]

Paranthura crassicornis, Haswell. Proc. Linn. Soc., N.S.W., Vol. V., p. 478, pl. XVIII., fig. 5 Cat. Aust. Crust., p. 305.

There is a considerable amount of variation in this species; particularly in the length of the antennæ. In the specimen originally described the inner pair were about half the length of

the head : the outer were twice as long as the inner pair. In a second specimen the inner pair are as long as the head, composed of five segments of nearly equal size—the fourth the longest, the fifth shorter, ornamented at the extremity with numerous fine hairs ; the outer are about half the same length as the inner ; their flagellum very stout, a little longer than the peduncle, of eight articuli. In a third specimen the outer antennæ are nearly as long as the head and first two segments, the flagellum having thirteen joints ; the inner pair are broken off.

I may add to the description originally given that the propodos of the first pair of peripods is ornamented on its palmar border with a few fine hairs : the dactyli likewise have a few very short hairs along their inner border. The "palm" of the second and third pereiopods is provided with short straight spines, and there are similar spines on the carpus and propus of the following pairs.

Haliophasma purpureum.

[Plate LIII., figs. 6 and 7.]

Haliophasma purpureum, Haswell. Proc. Linn. Soc., N.S.W., Vol. V., p. 476, pl. XVIII., fig. 3 ; Cat. Aust. Crust., p. 305.

I give here an outline of the antennæ of this species. In the flagellum of the outer pair there are seven distinct segments, the first large with indications of subdivision into two ; the last two very small.

Paranthura australis.

Paranthura australis, Haswell. Proc. Linn. Soc., N.S.W., Vol. V., p. 477, pl. XVIII., fig. 1 ; Cat. Aust. Crust., p. 304. Miers, Zooligical Collections of H.M.S. Alert, p. 311.

A very distinct variety of this species, or perhaps a distinct species, has been described by Miers (l.c.) as found at Dundas Straits by Dr. Coppinger.

Paranthura Miersi. N. sp.

[Plate LIII., figs. 2-5.]

The body is long and narrow ; the first segment is longer than the head and projects like a hump behind ; the segments of the

pereion are of nearly equal length—the last being a little smaller than the rest; the pleon is a little longer than the last segment of the pereion; the segmentation is obscurely indicated. The inner (superior) antennæ are shorter than the head very slender, with a rudimentary flagellum. The outer are as long as the head, with stout basal joints and a rudimentary flagellum of four articuli with a dense fringe of extremely fine short hairs. The first pair of legs have the carpus produced into an infero-distal process which is armed with a few spinules; the propus is dilated, the palm presents a deep excavation the border of which is minutely serrulate, the dactylos has a tuberculated elevation near its base. The following pairs are short and stout, the carpus of each is a little produced infero-distally, and is here ornamented with a row of very minute spinules with a single larger spine and three or four fine hairs. The propus is likewise ornamented along its inferior border towards the distal end with minute spinules and has a stronger spine at the infero-distal angle; the dactylos is large, two-thirds of the length of the propus and is biarticulate. The rami of the uropoda are ovate. The telson is ovate, narrowing a little towards the apex.

The length is half an inch. Each of the segments is marked with a large patch of blackish purple.

Port Jackson.

EXPLANATION OF PLATES.

[Plate L.]

Fig. 1.—*Tanais Tenuicornis*, lateral view.
Fig. 2.—Superior antennæ of the same species.
Fig. 3.—Inferior antennæ of the same.
Fig. 4.—Terminal joints of first pair of pereiopods of the same.
Fig. 5.—Second pair of periopods of the same.
Fig. 6.—One of the posterior pairs of pereiopods of the same.
Fig. 7.—Uropod of the same.
Fig. 8.—Lips of pincers of first pair of pereiopods.
Fig. 9.—*Paratanais linearis*.
Fig. 10.—Superior antennæ of the same.

Fig. 11.—Inferior antennæ of the same.
Fig. 12.—Terminal joints of first pair of pereiopoda of the same.
Fig. 13.—Second pair of pereiopoda of the same,
Fig. 14.—One of the posterior pairs of pereipoda of the same.
Fig. 15.—Terminal joints of one of the posterior pairs of pereiopods.
Fig. 16.—Uropod of the same.

[Plate LI.]

Fig. 1.—*Stenetrium armatum.*
Fig. 2.—Basal joints of inferior antennæ.
Fig. 3.—Apex of mandibles.
Fig. 4.—Base of the mandibular palpi.
Fig. 5.—Toothed edge of the mandibles.
Fig. 6.—Maxilla of the first pair.
Fig. 7.—Maxilla of the second pair.
Fig. 8.—Maxillipedes.
Fig. 9.—Abdominal spine.
Fig. 10.—Pereipods.
Fig. 11.—Anterior pair of pleopods.
Fig. 12.—

[Plate LII.]

Fig. 1.—*Anceus ferox*, magnified.
Fig. 2.—Superior antennæ of the same.
Fig. 3.—Inferior antennæ of the same.
Fig. 4.—Distal joints of one of the anterior pereiopods.
Fig. 5.—Fourth and fifth joints of one of the posterior pairs of pereipoda.
Fig. 6.—Head of *Paranthura diemenensis.*
Fig. 7.—Posterior extremity of *Paranthura diemenensis*, from above.
Fig. 8.—Superior antennæ of the same.
Fig. 9.—Inferior antennæ of the same.
Fig. 10.—Terminal joints of first pair of pereiopods of the same.
Fig. 11.—Terminal joints of second pair of pereipods of the same.
Fig 12.—Terminal joints of third pair of pereipods of the same.
Fig. 13.—Extremity of one of the posterior pairs of pereiopods of the same.

[Plate LIII.]

Fig. 1.—*Bregmocerella tricornis*, magnified.
Fig. 2.—Upper antennæ of *Paranthura Miersi.*
Fig. 3.—Lower antennæ of the same.
Fig. 4.—Extremity of periopod of first pair of the same.

Fig. 5.—Extremity of one of the posterior pereiopods of the same.
Fig. 6.—Upper antenna of *Haliophasma purpureum*.
Fig. 7.—Lower antenna of the same.
Fig. 8.—Upper antenna of *Paranthura crassicornis*.
Fig. 9.—Lower antennæ of the same.

E. P. Ramsay, F.R.S.E., &c., exhibited a Throwing Stone, used in warfare by the natives of Futuna, New Hebrides, which had been presented to the Australian Museum by Captain Geo. Braithwaite of the Dayspring. The stone was a cylindrical weapon, about two feet and a half long, and two inches in diameter, and had been cut out of a solid block of coral. Mr. Ramsay pointed out that the natives of Futuna were compelled to resort to coral for their weapons, as there were no stones or rocks on that island.

Mr. J. G. Griffin, C.E., exhibited some Oyster Shells, obtained from the cutting (adjacent to the Yarra River) now being made by the Melbourne Harbour Trust for improving the water approach to that city. These were taken at a depth of about 30 to 40ft. He also exhibited oyster and other shells, from the shaft of the Maryville Colliery, at Newcastle, about 40ft. from the surface. Mr. Brazier said the oyster-shells from the neighbourhood of Melbourne were identical with those of England, and are named *Ostrea edulis*, while those from Maryville, were *O. glomerata* var. *O. sub-trigona* of this colony.

Mr. Trebeck exhibited two samples of wool grown from the same ram in Victoria and in Mudgee. The longer sample, grown under high culture at Ercildoune, is nearly five inches long, and has every good quality for which the Victorian combing wool is celebrated; the shorter sample is of the same time of growth on the natural pastures of Mudgee, and is only about $1\frac{1}{2}$ inches long. Irrespective of the marked difference in length, the quality of that grown on the natural pastures of Mudgee appears to be very much inferior in many points. This is unaccountable, as the Mudgee district is well known to produce merino wools of the highest quality.

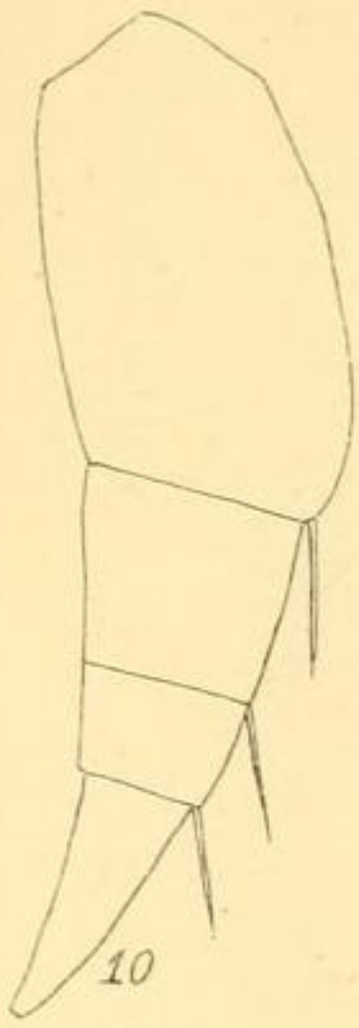
Professor Stephens exhibited the magnificent donation which the Society had lately received from the Rev. Dr. Woolls, consisting of a very large collection of New Zealand Lichens, all well preserved, mounted, and accurately named by Dr. Knight, of Wellington, New Zealand. For this donation a most cordial vote of thanks was accorded by the meeting.

Mr. Brazier exhibited a specimen of *Trigonia Lamarckii*, Gray, containing a beautiful flesh tinged Pearl, from Port Jackson.

Dr. von Lendenfeld exhibited specimens of the Ctenophora of Port Jackson, described by him as *Bolina Chuni*, in different stages of development, alive in an Aquarium. A live specimen of *Neis cordigera*, measuring a foot in length, was also exhibited by him.

Baron Maclay exhibited the shells,—identified in Mr. Brazier's Paper,—which he had collected on the Maclay-coast, many hundred feet above the sea level. He also exhibited a sample of dried clay, remarkable on account of its extreme hardness.

Mr. Layman M. Harrison exhibited a leg bone of a bullock, which had been fractured in such a way that the broken ends had been forced aside and completely apart. Notwithstanding this the bones had knit by very remarkable side growth.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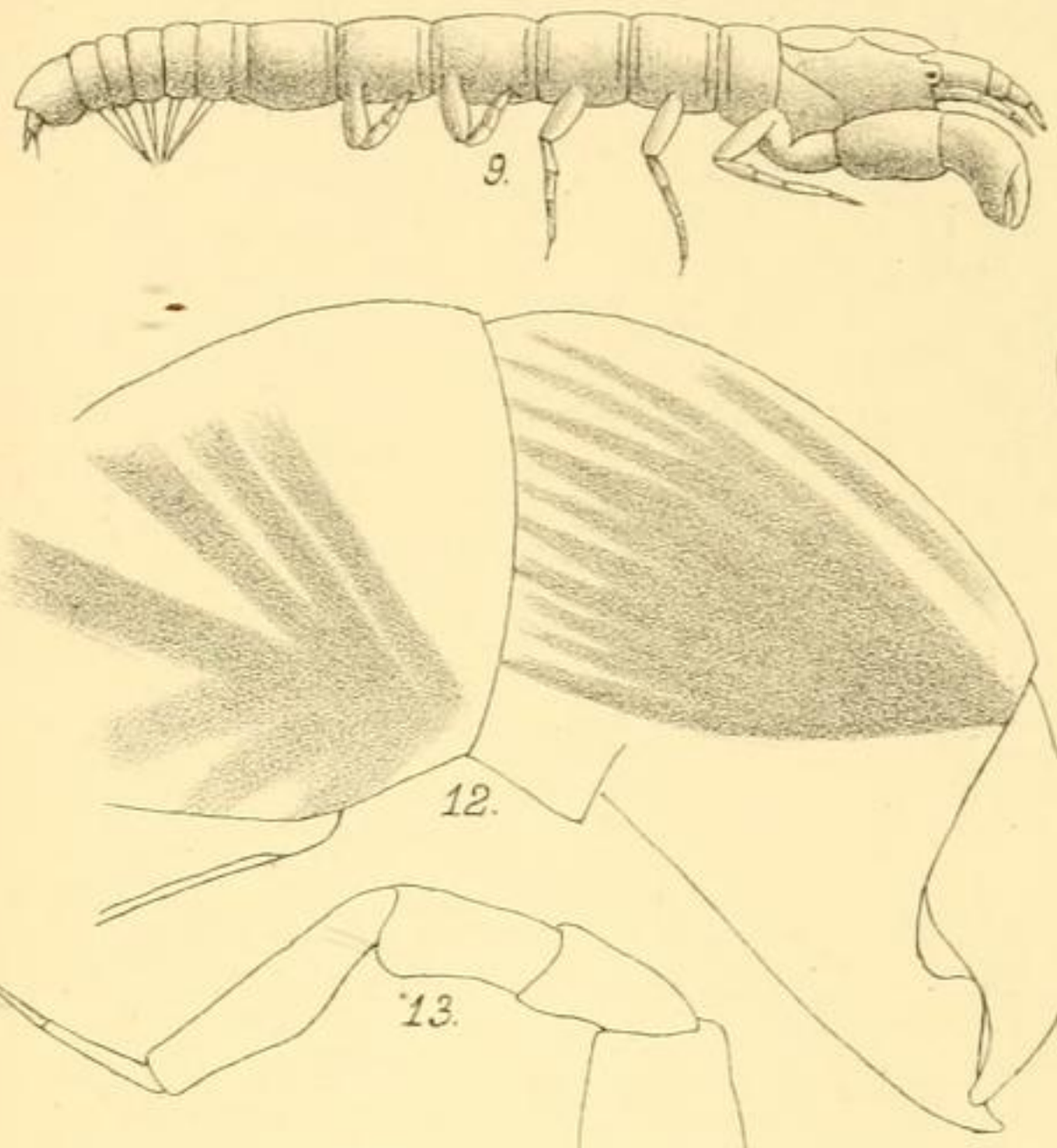
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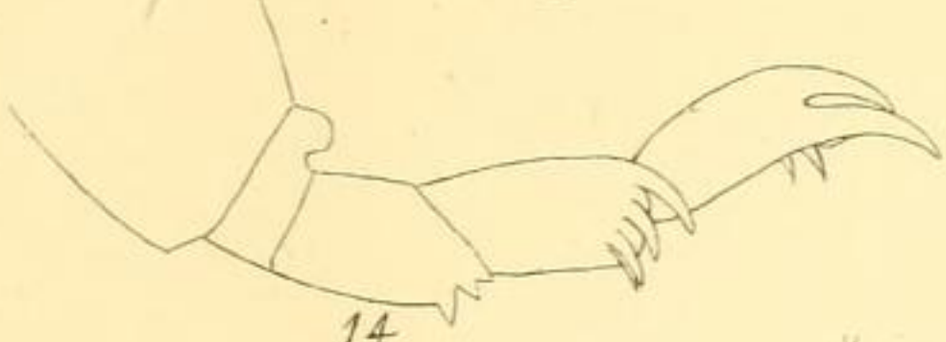
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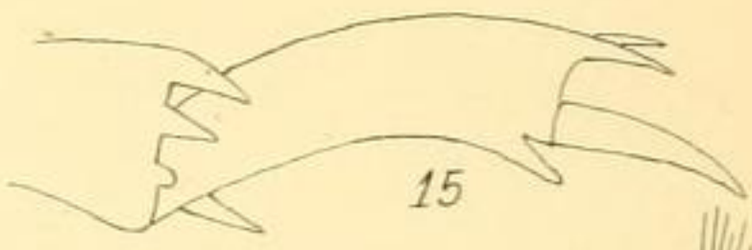
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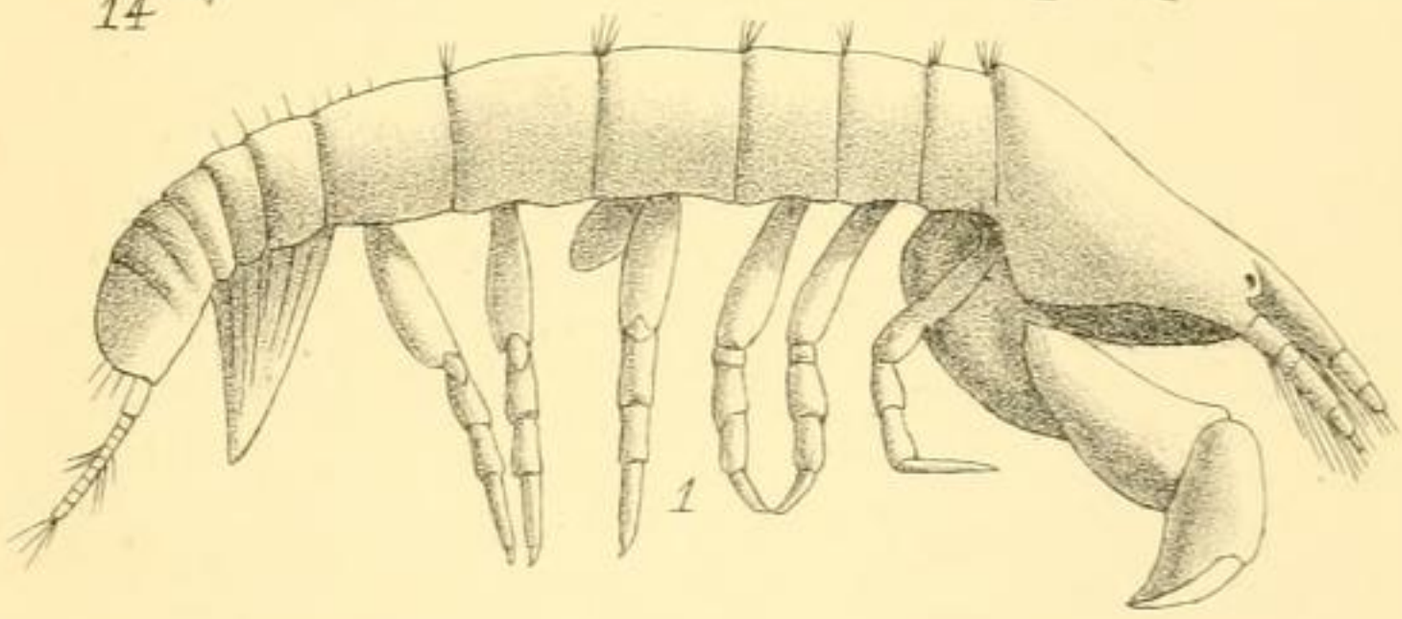
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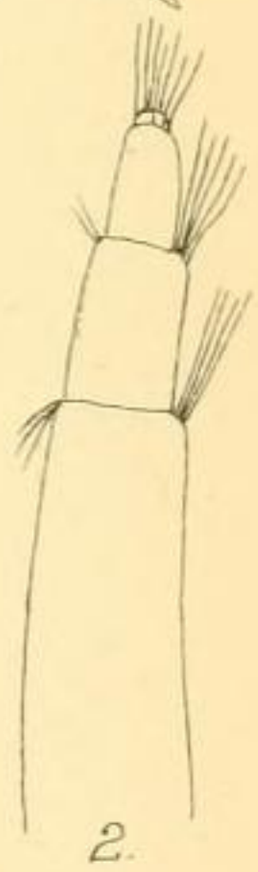
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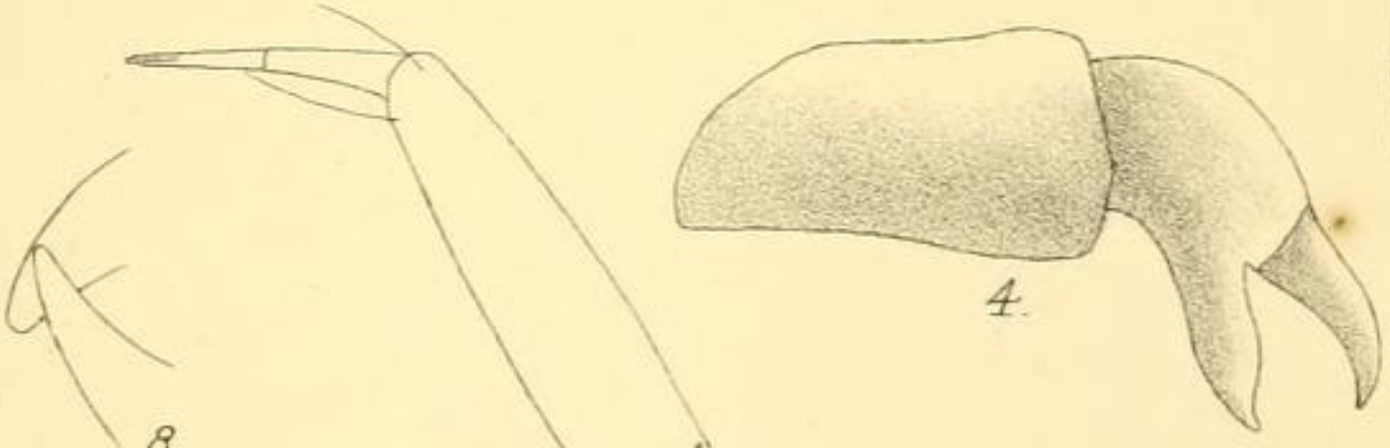
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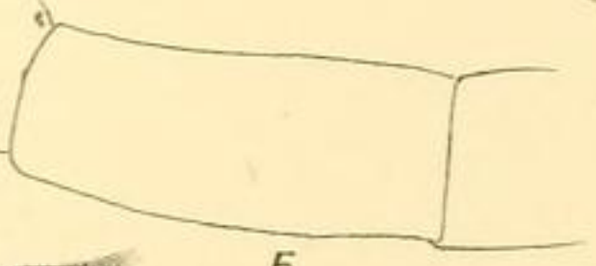
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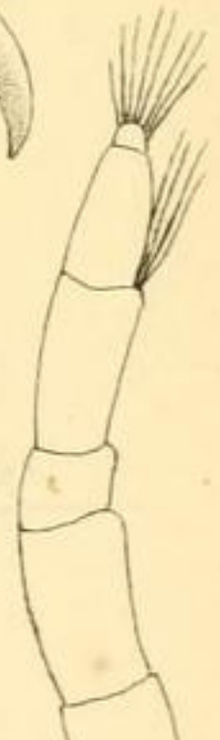
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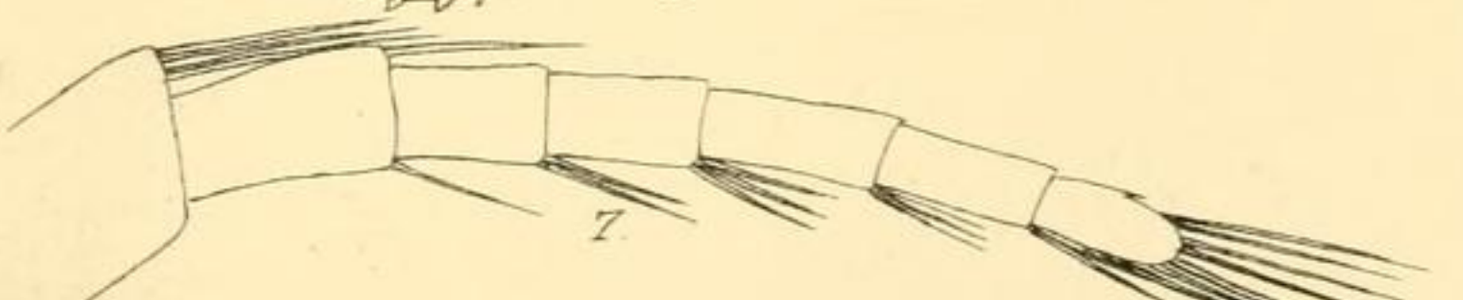
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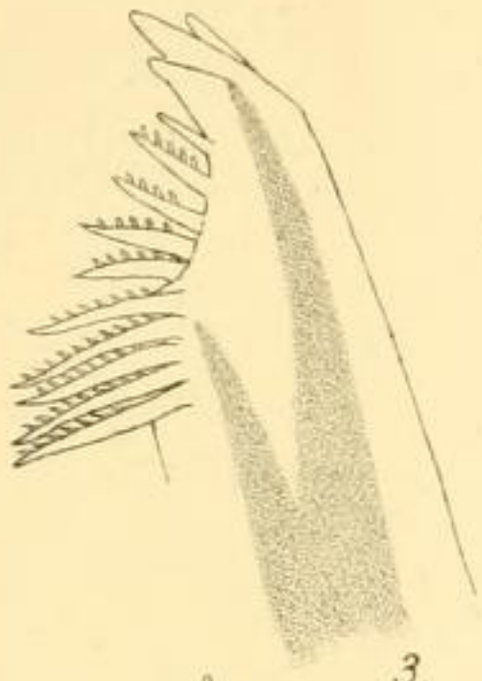

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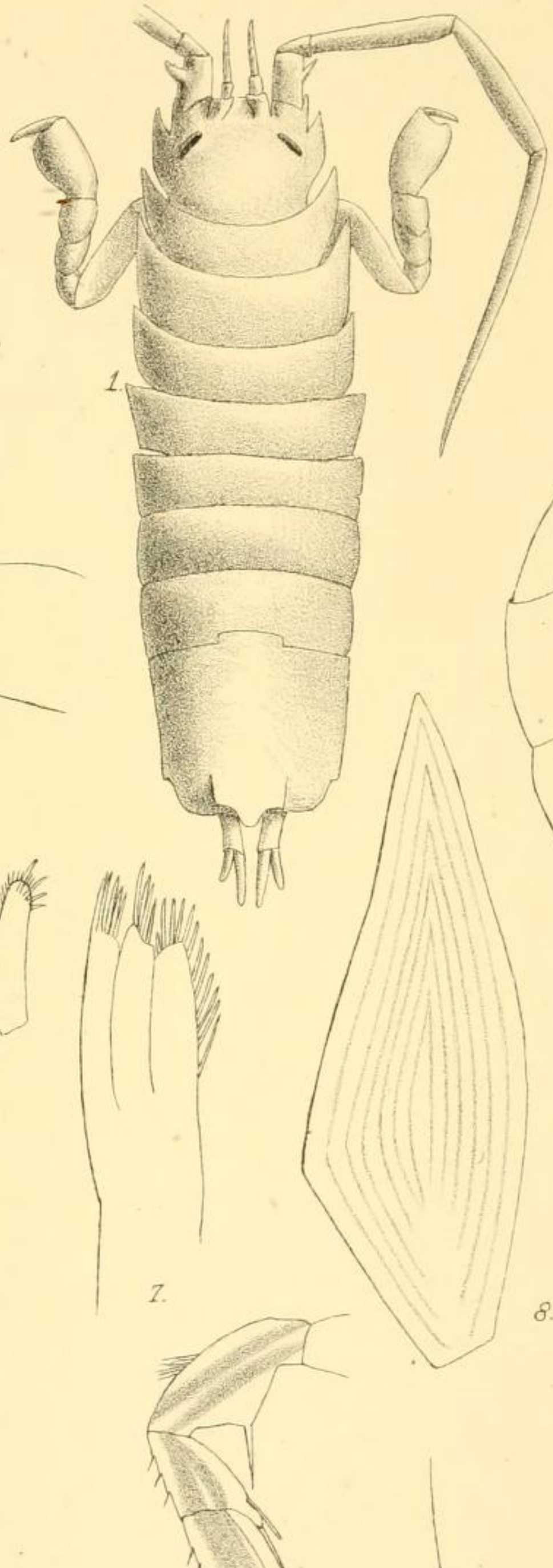

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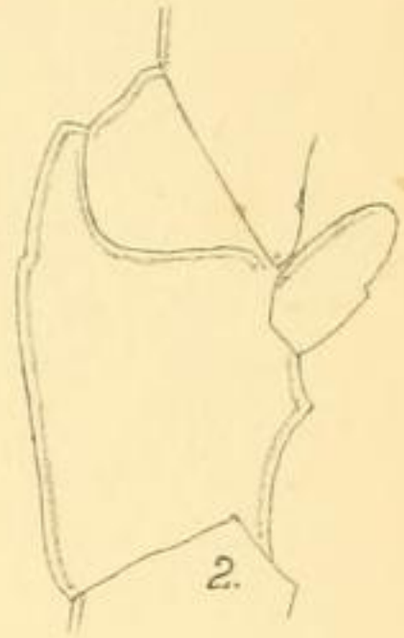

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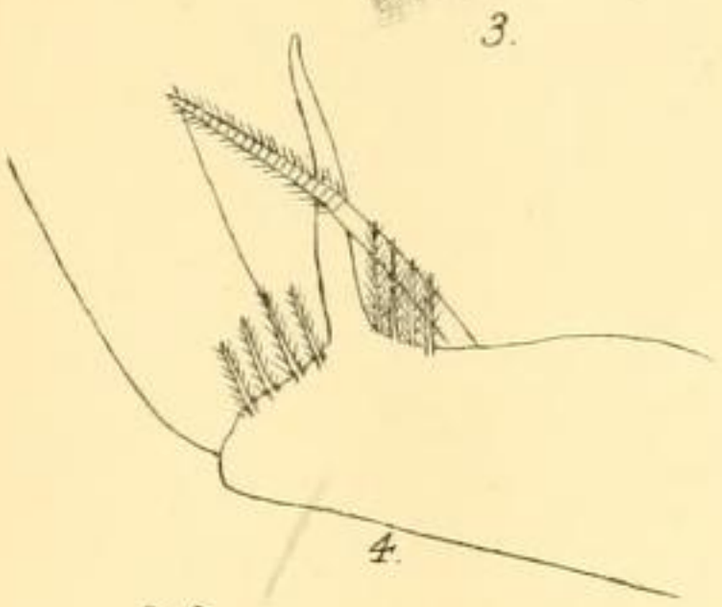

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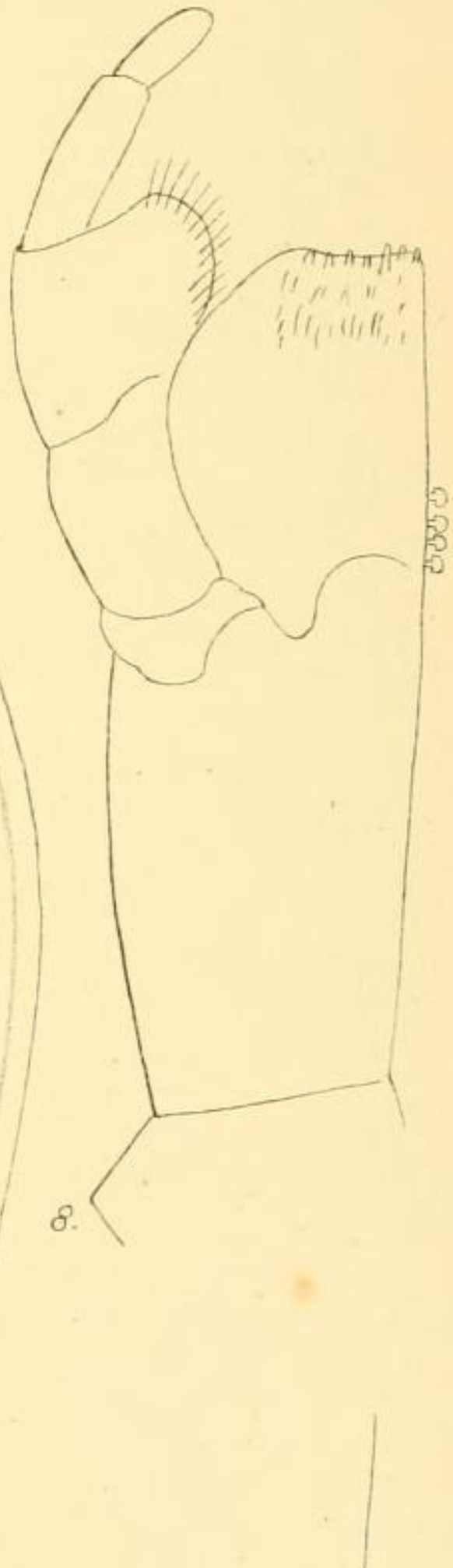

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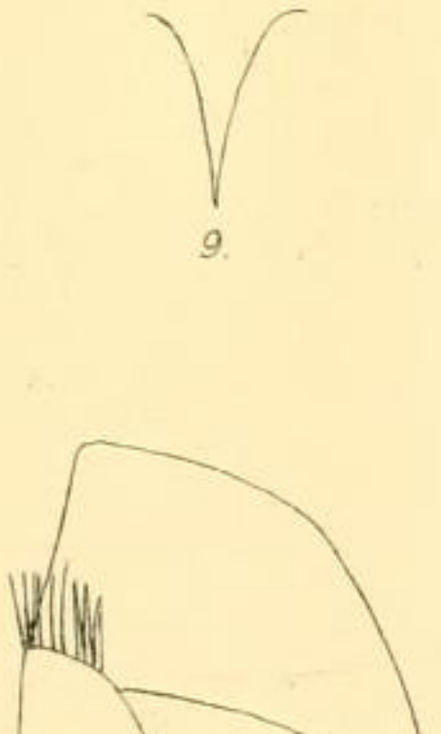

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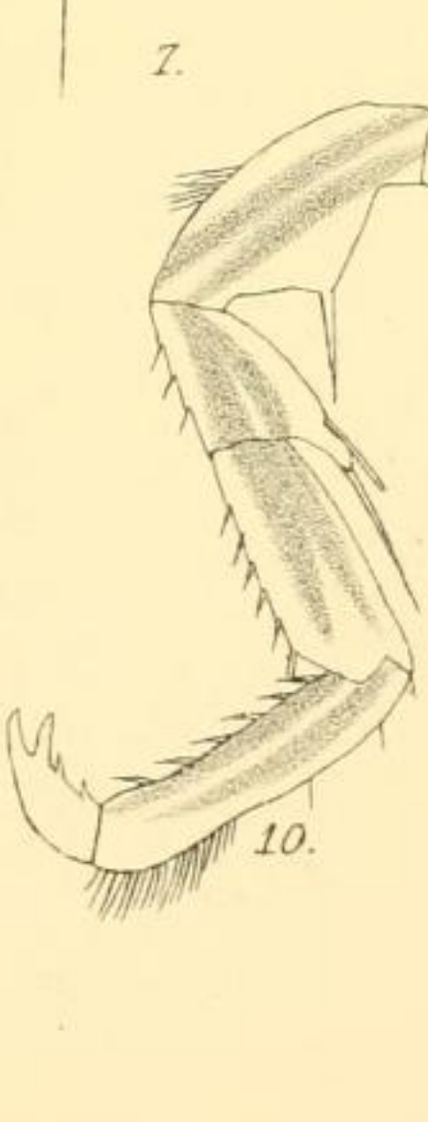

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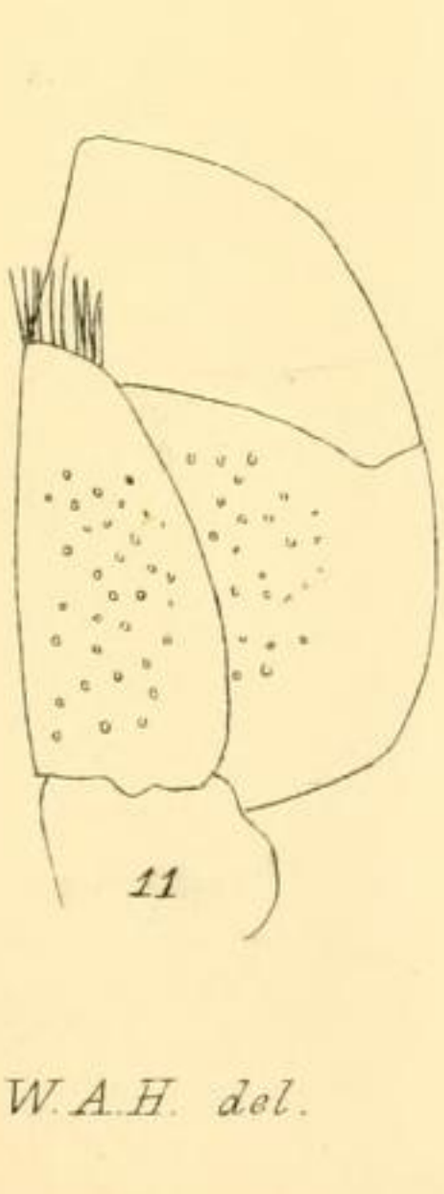

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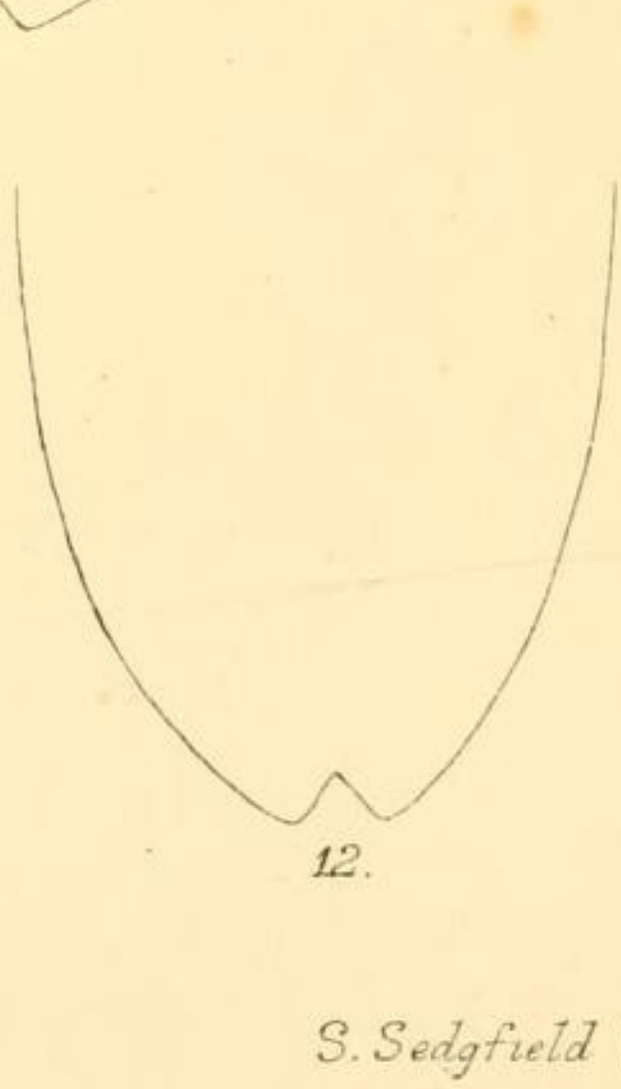

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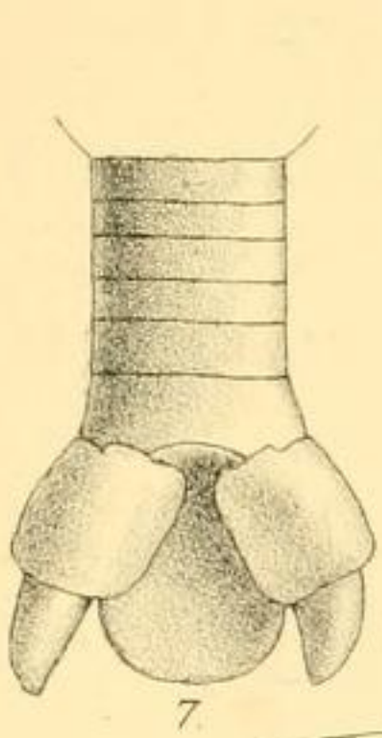

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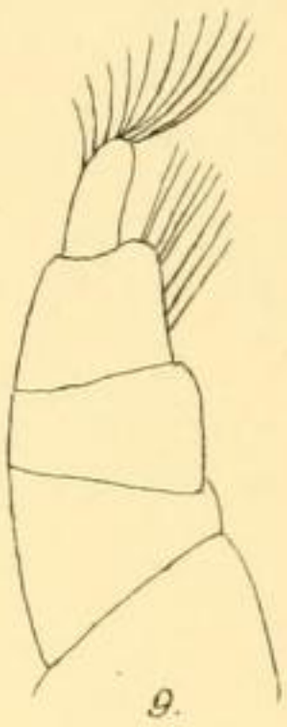

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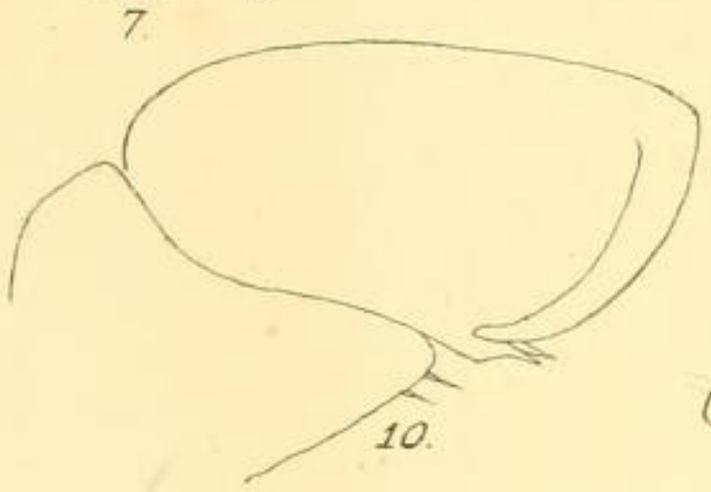

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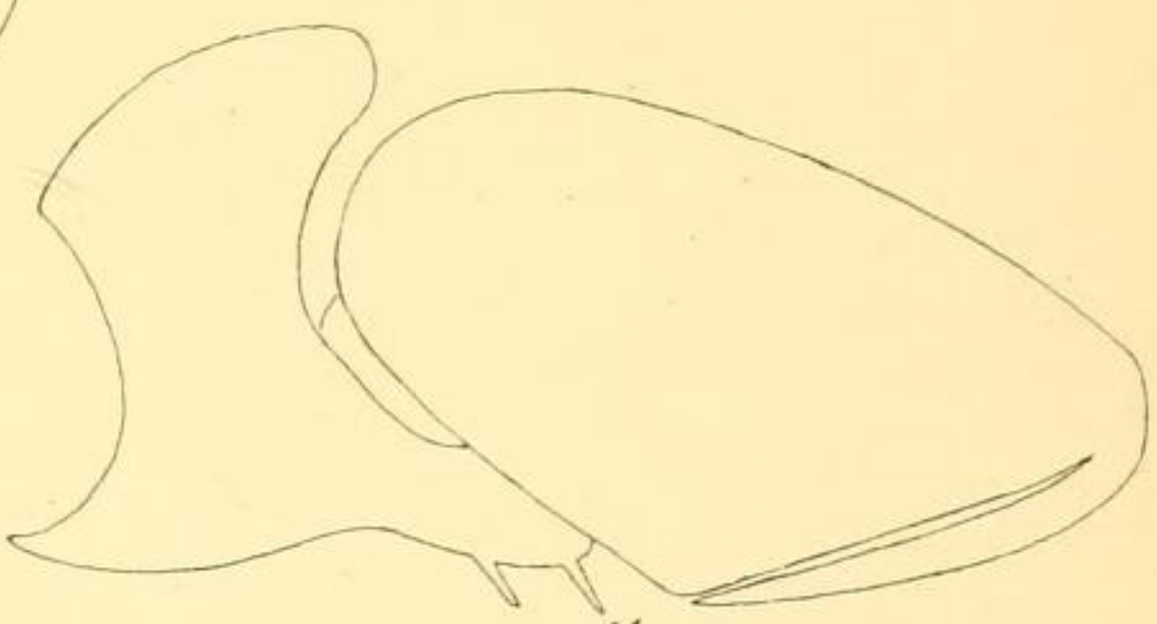

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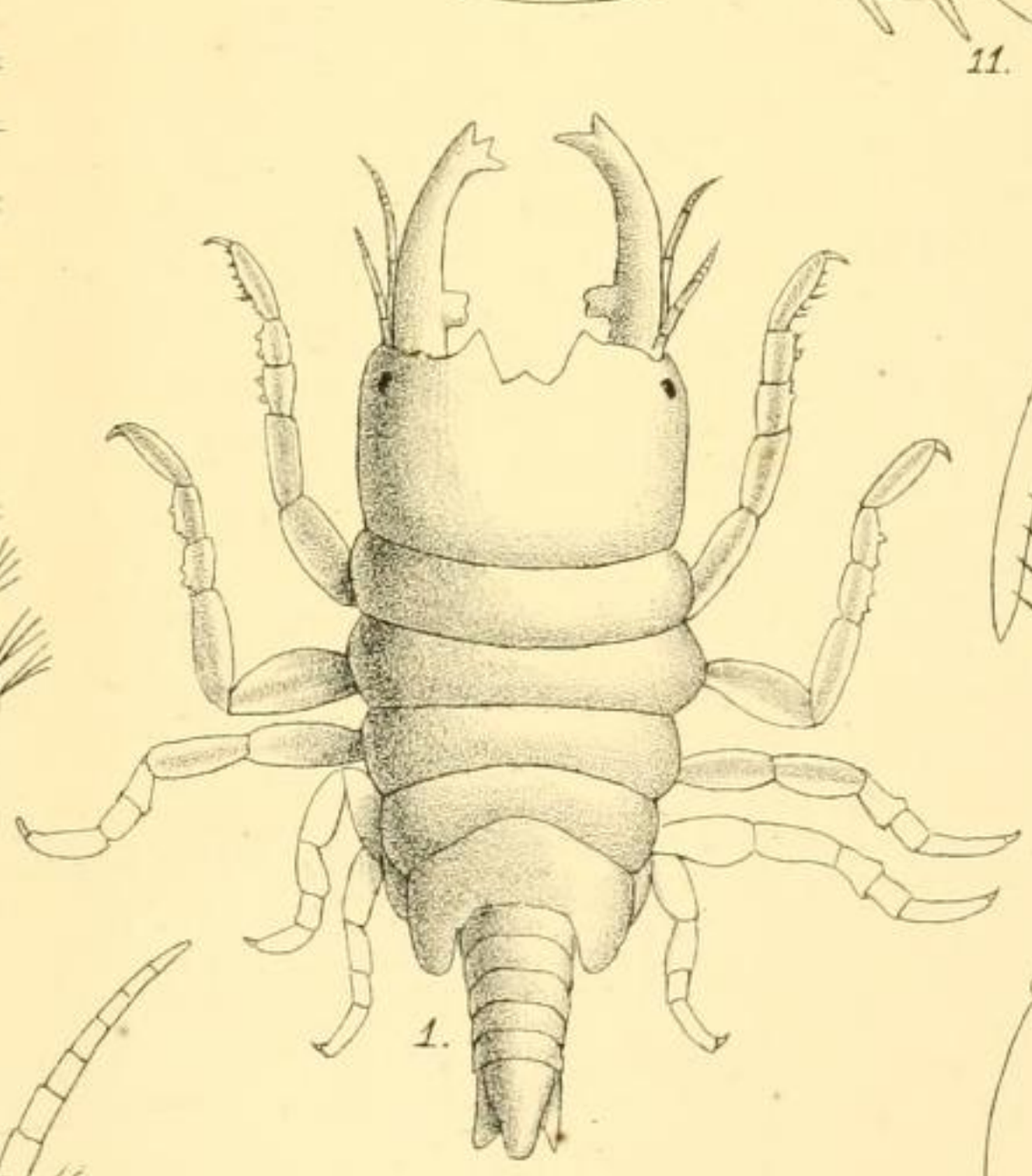

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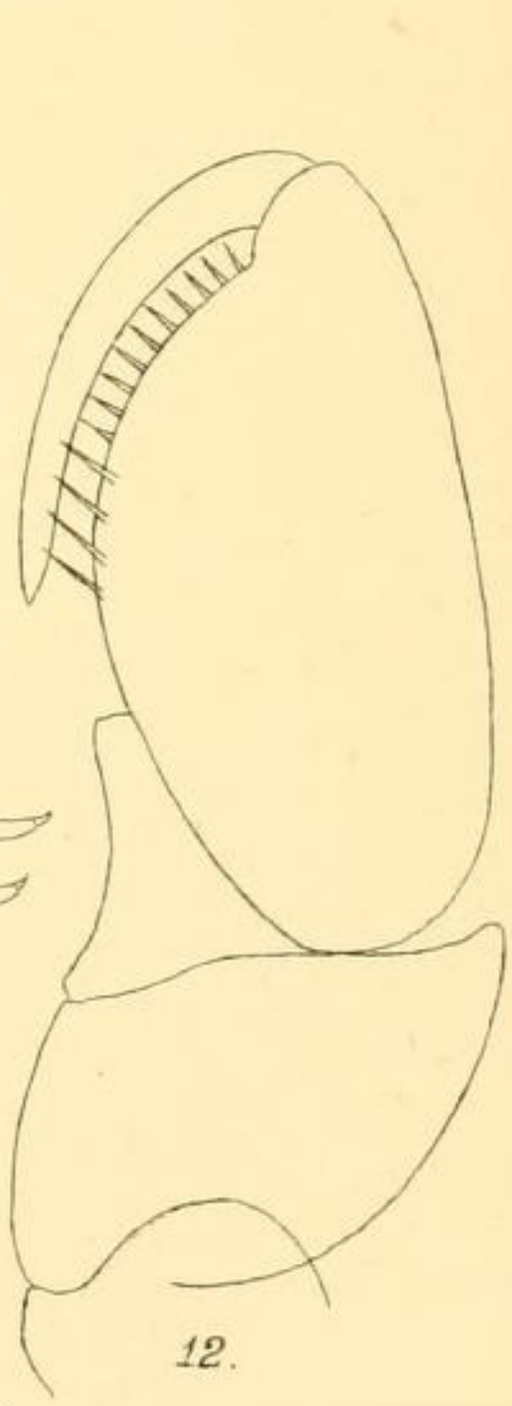

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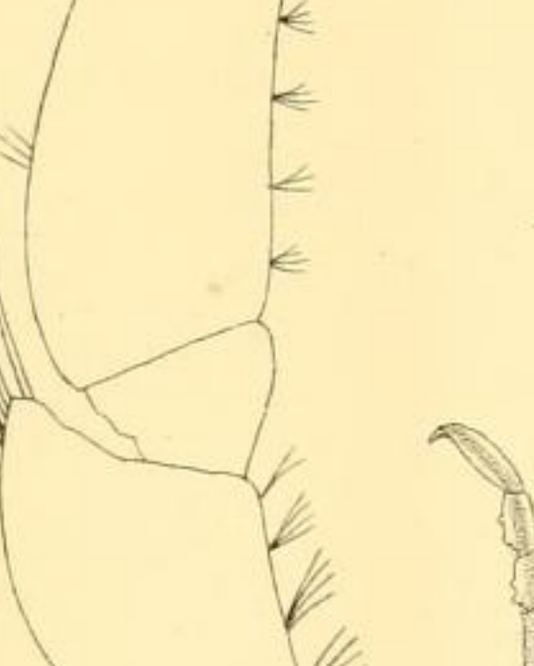

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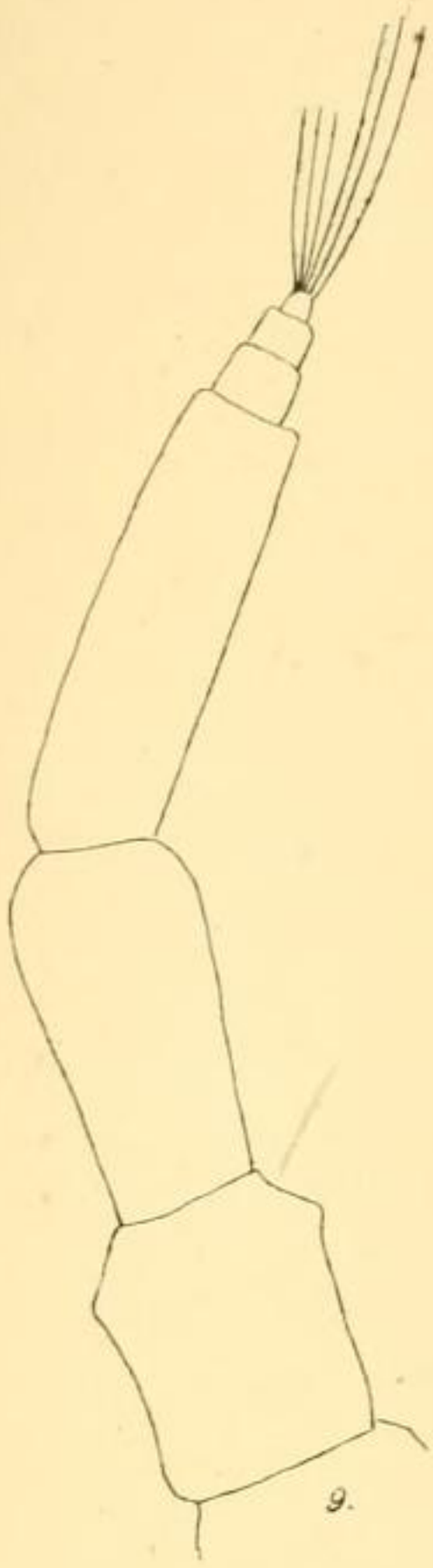

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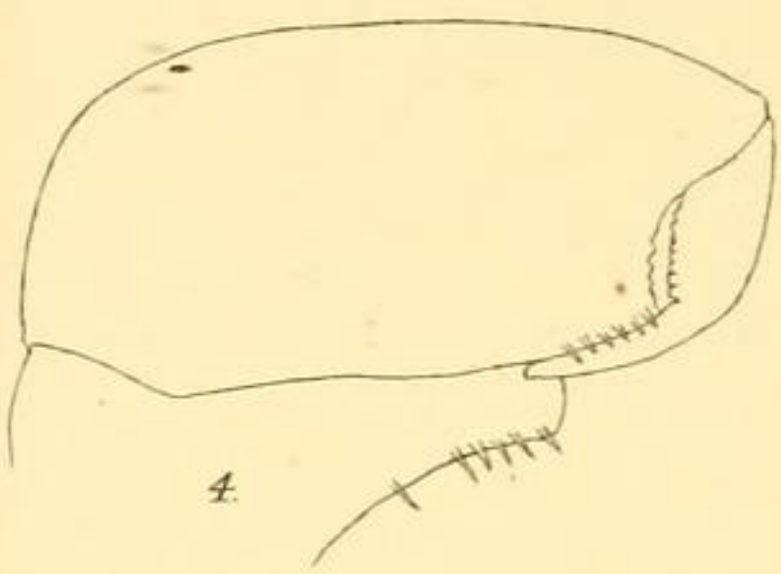

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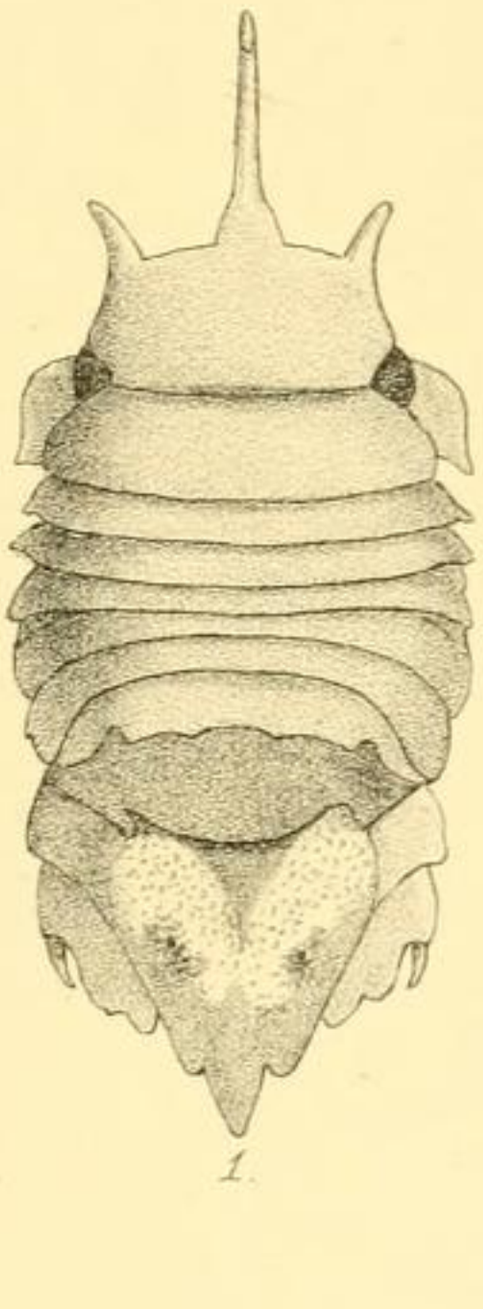

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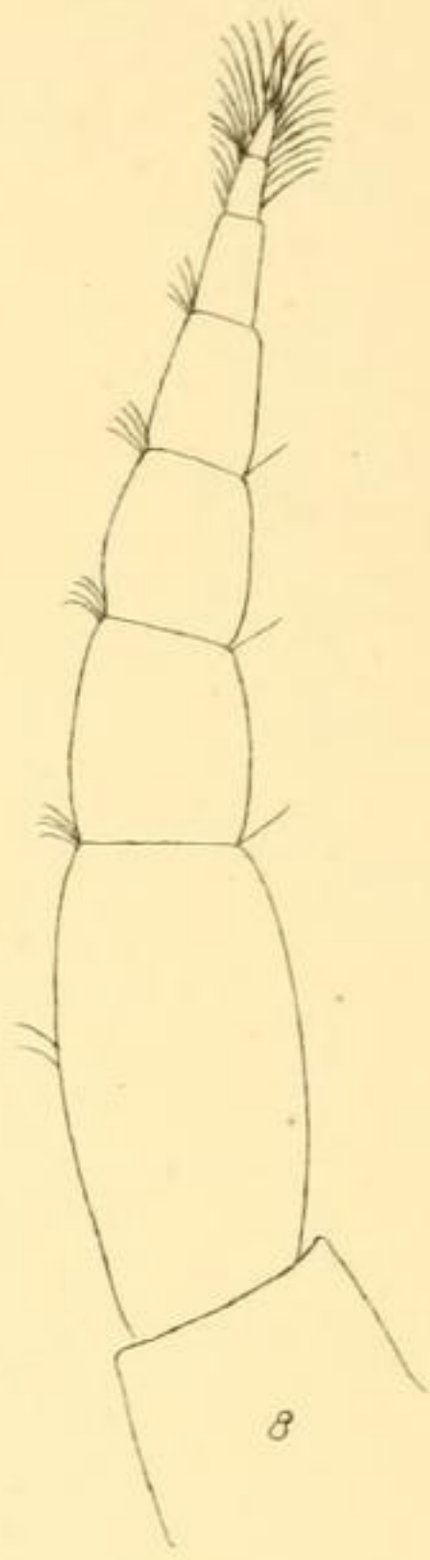

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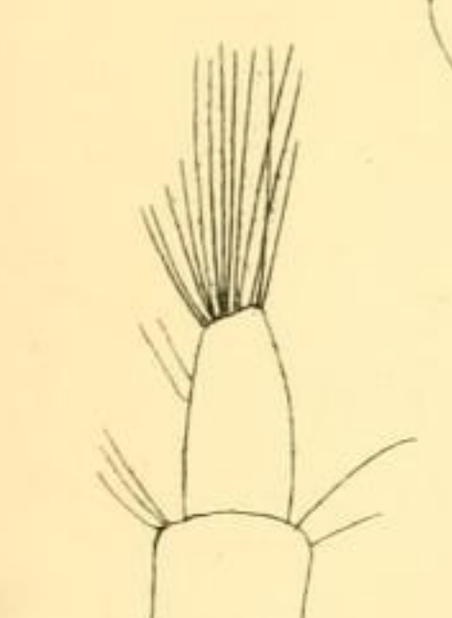

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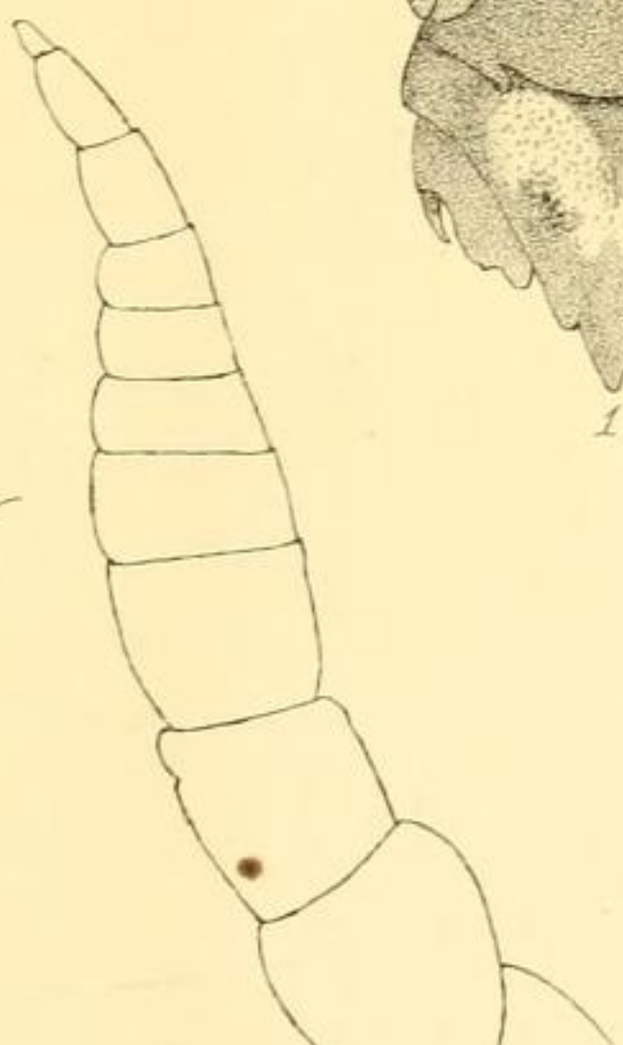

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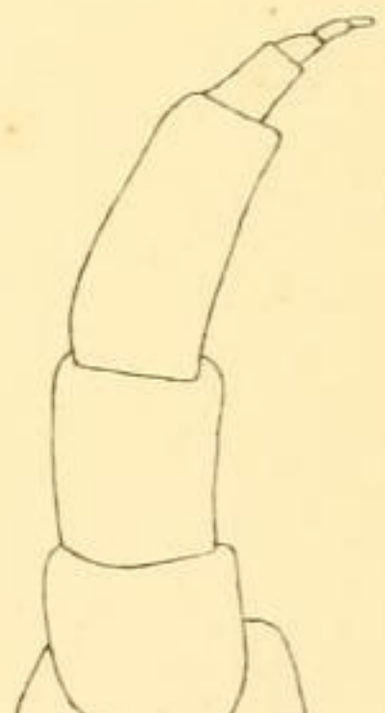

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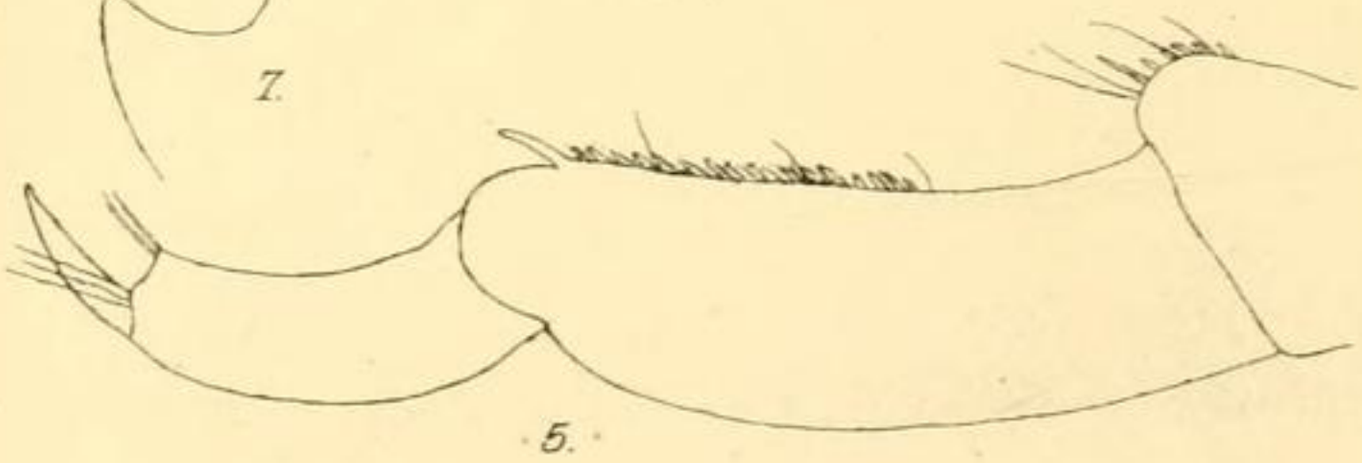

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S. Sedgfield lith.

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OF THE

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OF

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VOL. IX.

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