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LINNEAN SOCIETY
OF
NEW SOUTH WALES
FOR THE YEAR
1906.

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WITH SEVENTEEN PLATES.

(Plates i.-v., v. bis.-xvi.)

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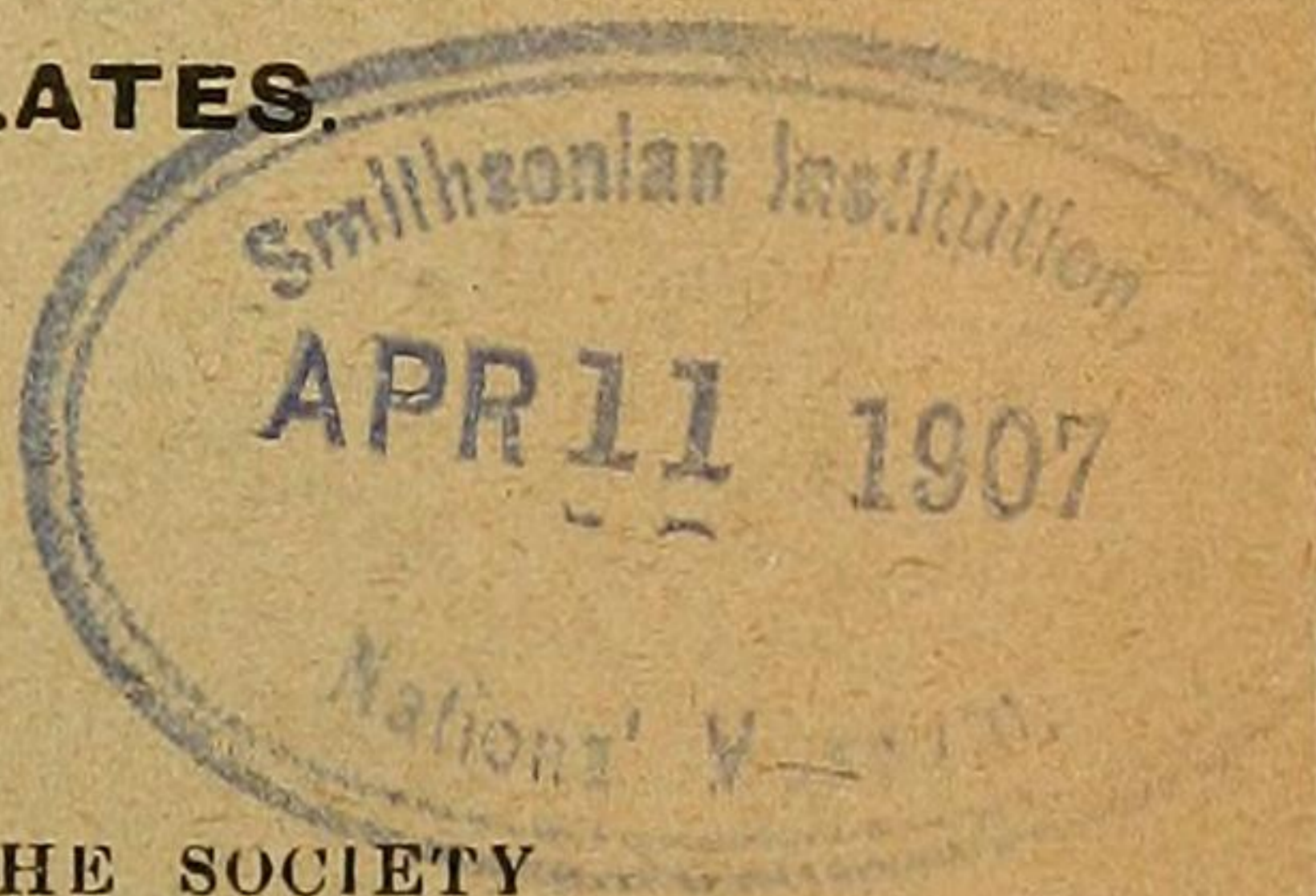
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PROCEEDINGS
OF THE
LINNEAN SOCIETY
OF
NEW SOUTH WALES,

WEDNESDAY, MARCH 28TH, 1906.

ORDINARY MONTHLY MEETING.

The Ordinary Monthly Meeting of the Society was held in the Linnean Hall, Ithaca Road, Elizabeth Bay, on Wednesday evening, March 28th, 1906.

Mr. T. Steel, F.C.S., F.L.S., President, in the Chair.

Mr. JOHN DEAVEY LORD, Public School, Numba, viâ Nowra, N.S.W., and Mr. P. LOCKWOOD, State School, Patersonia, Tasmania, were elected Ordinary Members of the Society.

The Donations and Exchanges received since the previous Monthly Meeting (November 29th, 1905), amounting to 40 Vols., 244 Parts or Nos., 79 Bulletins, 11 Reports, 54 Pamphlets, 4 Catalogues, and 2 Miscellanea, received from 114 Societies, &c., and 4 Individuals, were laid upon the table.

ON A COLLECTION OF CRUSTACEA FROM THE
PORT CURTIS DISTRICT, QUEENSLAND.

BY F. E. GRANT, F.L.S., AND ALLAN R. McCULLOCH, AUSTRALIAN
MUSEUM.

(Plates i.-iv.).

The collection of Decapod Crustacea forming the subject of this paper was made in 1904, in Port Curtis, Queensland, and on and in the vicinity of Mast Head Island, situate some 30 miles from the entrance to that Harbour, by a party of naturalists which included the authors, under the leadership of Mr. C. Hedley, F.L.S.

From the widely different nature of the two localities the specimens fall naturally into two groups—those from the coral reefs of Mast Head Island offering a striking contrast to the estuarine forms from Port Curtis.

The waters of that Harbour are considerably affected by the amount of sediment washed down by the Boyne River, Calliope Creek, and other streams from the neighbouring ranges. It is in many parts on the landward side fringed by extensive flats clothed in part with mangroves. These were found to be rich collecting grounds—the mud being riddled with the burrows of *Uca*, *Metopograpsus*, *Sesarma*, *Axius*, and other estuarine species. Of these the first mentioned were in the greatest numbers and were the most striking—each with its brightly coloured carapace standing in the mouth of its burrow at low tide and incessantly waving its large and unwieldy hand as though beckoning. The amount of life supported by these unpromising mud flats is most surprising, and they would well repay more attention and much more careful search than has yet been given them.

On the seaward side of the Harbour there is a series of large rocky islands. Here, although the water is still affected by the mud, there is a slightly different fauna, which, however, bears a coastal stamp.

Some dredging was done in Port Curtis in depths of 4 to 10 fathoms. The bottom was found to be more or less sandy, with an admixture of mud on the landward side and everywhere with a great quantity of shingle. Here, amongst others, a number of the species collected by H.M.S. "Alert" which visited this coast in April, 1881, and which were described by Miers in the 'Zoology' of that voyage, were retaken.

Immediately to the east of the islands forming the seaward face of Port Curtis there lies a small island called Rat Island. This being situate in the clearer waters unaffected by the land drainage, carries a growth of coral. This was visited by Dr. Pülleine, of Gympie, to whom our thanks are due for placing the collection made at this point in our hands. The specimens have distinctly the facies of the coral fauna, and are in the accompanying comparative list included with those taken from Mast Head Island.

Mast Head Island is situate some 30 miles to the east of Gatcombe Head at the entrance of Port Curtis, and about four miles to the south of the Tropic of Capricorn. It forms one of the Capricorn Group, and is almost at the south end of the Great Barrier Reef. Here a camp was made and eight days were spent in collecting, the conditions being found quite dissimilar from those in Port Curtis.

The island forms part of a typical coral atoll. It is 90 acres in extent, surrounded by the lagoon and fringing reef which it touches at its north-west point, but which on the other side is some six miles distant. The shallow lagoon contains a great amount of living coral, and the surrounding reef, which is uncovered for some hours as the tide goes out, exhibits a large field of strewed coral blocks, many of them loose and others firmly fixed by secondary deposit of lime, requiring a crow-bar to move them, but all presenting an ideal field for the collector.

Beyond the reef the water sinks rapidly to a plateau, having a depth varying from 10 to 25 fathoms, from which the islands of the group rise. By dredging much interesting material was taken, including a new species of *Cryptocnemus*, which is here described.

On the reef the most conspicuous and numerous crabs were *Atergatis floridus* Linn., with its brilliant green and gold carapace, *Eriphia laevimana* Latr., with bright red sealing-wax-like eyes and purple carapace, several species of *Actæa*, *Thalamita*, *Metopograpsus*, &c.; while of the hermit crabs, *Pagurus punctulatus* Olivier, *Clibanarius virescens* Krauss, *Calcinus latens* Randall, &c., were common. Of the Macrura, *Petrolisthes lamarckii* Leach, was to be found under almost every stone, and species of *Alpheidæ* were abundant.

From the coral blocks in the lagoon *Trapezia cymodoce* Herbst, *Xanthodes atromanus* Hasw., *Chlorodopsis melanodactylus* A. M. Edw., and others were taken; and under stones at the extreme high limit of the tide, *Ozius truncatus* M. Edw., *Epixanthus frontalis* M. Edw., and *Chlorodius niger* Forsk. The swift running *Ocypoda ceratophthalma* Pallas, was dug from its burrows on the lagoon beach.

The following lists show comparatively the species taken at the two collecting grounds. They must, however, be regarded in no sense as complete, the time at our disposal being confined to the limits of a summer vacation. Several species which appear to be new records for the Australian coast were, however, taken, and these are marked with an asterisk; a larger number are new records for Queensland, and a few which are new to science are hereafter described. Much more requires to be done on the Queensland coast before our knowledge of its exceedingly rich carcinological fauna can be regarded as even approximately complete.

A paper was recently published by Dr. Calman* dealing with a collection of Brachyura made by Prof. C. Haddon in Torres

* Trans. Linn. Soc. London, (2) Zool. Vol. viii. p.1, 1900.

Straits in 1888. In this paper 88 species are dealt with, and it is interesting to note that of this number we recognise from our collection 37 as occurring in the latitude of Port Curtis, giving them a range of 1000 miles along the Queensland coast.

Mast Head Island & Rat Island.

CORAL REEF FAUNA.

Port Curtis.

ESTUARINE AND COASTAL FAUNA.

BRACHYURA.

Tribe CYCLOMETOPA.

Family XANTHIDÆ.

<i>Liomera cinctimana</i> (White)	<i>Xantho macgillivrayi</i> Miers
<i>Atergatis floridus</i> (Linn.)	<i>Leptodius exaratus</i> (M. Edw.)
* <i>Lophactœa anaglypta</i> (Heller)	<i>Actœa calculosa</i> (M. Edw.)
„ <i>granulosa</i> (Rüp.)	<i>Pilumnus lanatus</i> Latr.
<i>Lophozozymus octodentatus</i> (M. Edw.)	„ <i>terræ-reginæ</i> Hasw.
<i>Leptodius sanguineus</i> (M. Edw.)	„ <i>semilanatus</i> Miers
„ <i>exaratus</i> (M. Edw.)	* <i>Actumnus nudus</i> A. M. Edw.
<i>Etisodes electra</i> (Herbst)	<i>Cryptocœloma fimbriata</i> (M. Edw.)
„ <i>frontalis</i> Dana	
<i>Actœa affinis</i> (Dana)	
„ <i>rüppellii</i> (Krauss)	
„ <i>tomentosa</i> (M. Edw.)	
<i>Xanthodes atromanus</i> Hasw.	
„ <i>lamarckii</i> (M. Edw.)	
„ <i>notatus</i> Dana	
<i>Chlorodius niger</i> (Forsk.)	
* „ <i>lævissimus</i> Dana	
<i>Phymodius sculptus</i> (A. M. Edw.)	
„ <i>ungulatus</i> (M. Edw.)	
<i>Chlorodopsis melanodactylus</i> A. M. Edw.	
<i>Cymo andreossyi</i> (Audouin)	
<i>Ozius truncatus</i> M. Edw.	
* <i>Epixanthus frontalis</i> (M. Edw.)	

Mast Head Island & Rat Island.

CORAL REEF FAUNA.

Eriphia laevimana Latr.*Pilumnus labyrinthicus* Miers,, *terræ-reginæ* Hasw.* ,, *spinicarpus* n.sp.*Actumnus tomentosus* Dana,, *setifer* (De Haan)

Family TRAPEZIIDÆ.

Trapezia cymodoce (Herbst)*Trapezia cymodoce* (Herbst)

Family PORTUNIDÆ.

**Caphyra laevis* A.M.Edw.*Charybdis spiniferus* Miers*Thalamita stimpsoni* A.M.Edw.*Lupa sanguineolenta* (Herbst),, *admete* (Herbst),, *granulata* var. *unispinosa*
(Miers),, *whitei* (A.M.Edw.),, *sima* M.Edw.

Family PODOPHTHALMIDÆ.

**Gomezia bicornis* Gray

Tribe CATOMETOPA.

Family OCYPODIDÆ.

Ocypoda ceratophthalma (Pallas) *Uca dussumieri* (M.Edw.),, *arcuata* (De Haan)*Macrophthalmus depressus*
(Rüp.)**Metaplex hirsutimana* n.sp.*Ceratoplex ciliata* Stimp.

Family GRAPSIDÆ.

Metopograpsus messor (Forsk.)*Metopograpsus messor* (Forsk.)**Sesarma bidens* (De Haan)

Family PINNOTHERIDÆ.

Pinnixa faba (Dana)*Xanthasia murigera* White

Mast Head Island & Rat Island.

CORAL REEF FAUNA.

Port Curtis.

ESTUARINE AND COASTAL FAUNA.

Family MICTYRIDÆ.

Mictyris longicarpus Latr.

Tribe OXYSTOMA.

Family CALAPPIDÆ.

Calappa hepatica (Linn.)

Family LEUCOSIIDÆ.

Nursia sinuata Miers*Oreophorus frontalis* Miers**Cryptocnemus crenulatus* n.sp.

Family DORIPPIDÆ.

Dorippe australiensis Miers

Tribe OXYRHYNCHA.

Family MAIIDÆ

Achæus lacertosus Stimp.*Paratymolus sexspinosus* Miers**Picrocerus armatus* A.M.Edw.*Egeria longipes* (Linn.)*Paramithrax peronii* M.Edw.*Paramithrax coppingeri* Hasw.,, *sternocostulatus**Hyastenus diacanthus*(De Haan)

A.M.Edw.

Paramithrax longispinisHyastenus convexus* Miers

De Haan

Menæthius monoceros (Latr.)*Hyastenus convexus* Miers

Family PARTHENOPIDÆ.

Lambrus confragosus Calman

Tribe DROMIIDEA.

Family DROMIIDÆ.

Cryptodromia lateralis Gray

Incertæ sedis.

Hapalocarcinus marsupialis

Stimp.

**Cryptochirus coralliodytes*

Heller

Mast Head Island & Rat Island.

CORAL REEF FAUNA.

Port Curtis.

ESTUARINE AND COASTAL FAUNA.

MACRURA.

Tribe ANOMOLA.

Family HIPPIDÆ.

Remipes adactylus (Fabr.)

Family PAGURIDÆ.

- | | |
|--|---|
| * <i>Paguristes hians</i> Henderson | <i>Clibanarius virescens</i> Krauss |
| * <i>Clibanarius cruentatus</i>
(M. Edw.) | * <i>Diogenes avarus</i> Heller |
| * <i>Clibanarius virescens</i> (Krauss) | * <i>Troglopagurus jousseaumii</i>
Bouv. |
| ,, <i>tæinatus</i> (M. Edw.) | <i>Eupagurus hedleyi</i> nom. nov. |
| <i>Calcinus latens</i> Randall | |
| * ,, <i>gaimardii</i> (M. Edw.) | |
| * <i>Diogenes capricorneus</i> n.sp. | |
| * <i>Troglopagurus jousseaumii</i>
Bouv. | |
| <i>Pagurus punctulatus</i> Olivier | |
| * ,, <i>euopsis</i> Dana | |
| ,, <i>deformis</i> M. Edw. | |

Family PORCELLANIDÆ.

- | | |
|---------------------------------------|---|
| <i>Petrolisthes lamarckii</i> (Leach) | <i>Petrolisthes lamarckii</i> (Leach) |
| * ,, <i>tomentosus</i> Dana | ,, <i>japonicus</i> var. <i>inermis</i> |
| <i>Porcellana serratifrons</i> Stimp. | Haswell |
| <i>Pachycheles sculptus</i> (M. Edw.) | <i>Porcellana dispar</i> Stimp. |
| | <i>Polyonyx obesulus</i> Miers |
| | * <i>Rhaphidopus ciliatus</i> Stimp. |

Family GALATHEIDÆ.

- | | |
|--------------------------------------|---------------------------------|
| <i>Galathea australiensis</i> Stimp. | <i>Galathea magnifica</i> Hasw. |
| ,, <i>magnifica</i> Hasw. | ,, <i>elegans</i> Adams & White |
| ,, <i>pusilla</i> Henderson | |

A number of Queensland crustaceans were described by Professor Haswell in these Proceedings in 1879-1882, but were unfigured. Some of these we have retaken, and in such cases we

have availed ourselves of the opportunity kindly granted us by the Trustees of the Australian Museum of figuring the type specimens in the Museum collection, and we desire to return to them our thanks for the privilege so readily accorded. In all cases the types of species herein described as new will be lodged with that Institution, as also such other of our specimens as are desiderata for their collection.

In conclusion we desire to thank Mr. T. Whitelegge of the Australian Museum for the valuable assistance and suggestions he has rendered us.

BRACHYURA.

Tribe CYCLOMETOPA.

Family XANTHIDÆ.

LIOMERA CINCTIMANA (White).

1847. *Carpilius cinctimanus* White, in Jukes, Voy. "Fly,"
ii. Appendix, p.336, pl.ii. fig.3.
Mast Head Island; under rocks.

ATERGATIS FLORIDUS (Linn.).

1898. Alcock, Journ. Asiatic Soc. Bengal, lxxvii. (2) p.98.
Mast Head Island; very common under loose coral blocks on the outer reef, but not found in the smoother waters of the lagoon.

LOPHACTÆA ANAGLYPTA (Heller).

1861. *Atergatis anaglyptus* Heller, Abhandl. Zool.-Bot. Gesell.
Wien, p.6, and SB. Ak. Wien, xliii. p.312, pl.ii. figs.
11, 12.
1898. Alcock, Journ. Asiatic Soc. Bengal, lxxvii. (2) p.102.
Mast Head Island; one specimen (♀).

LOPHACTÆA GRANULOSA (Rüppell).

1830. *Xantho granulatus* Rüppell, Krab. Roth. Meer. p.24, pl.v.
fig.3.
1898. Alcock, Journ. Asiatic Soc. Bengal, lxxvii. (2) p.101.
Mast Head Island; fairly common on the reef.

LOPHOZOZYMUS OCTODENTATUS (M.Edw.).

1837. *Xantho octodentatus* H. Milne Edwards, Hist. Nat. Crust. i. p.398.
1898. Alcock, Journ. Asiatic Soc. Bengal, lxxvii. (2) p.106.
Rat Island; a good series taken by Dr. Pulleine.

XANTHO MACGILLIVRAYI Miers.

1884. Miers, Zool. H.M.S. "Alert," p.211, pl.xx. fig.c.
Port Curtis; a good series dredged from 7 fathoms.

LEPTODIUS SANGUINEUS (M.Edw.).

1837. *Chlorodius sanguineus* H. Milne Edwards, Hist. Nat. Crust. i. p.402.
1898. Alcock, Journ. Asiatic Soc. Bengal, lxxvii. (2) p.120.
Mast Head Island; under rocks; also on Rat Island (Dr. Pulleine).

We rely on the minute points of difference given by Alcock for separating this species from the next. As, however, both were associated under the same rocks, it appears to us very doubtful whether a true specific difference exists between them.

LEPTODIUS EXARATUS (M.Edw.).

1837. *Chlorodius exaratus* H. Milne Edwards, Hist. Nat. Crust. i. p.402.
1898. Alcock, Journ. Asiatic Soc. Bengal, lxxvii. (2) p.118.
Mast Head Island, and on the rocky portion of the shores of Port Curtis; common under stones.

The colour markings of this crab are most varied and are of no specific importance.

ETISODES ELECTRA (Herbst).

1804. *Cancer electra* Herbst, Krabben und Hrebse, pl. li. fig.6.
1873. *Etisodes sculptilis* A.M.Edw., Nouv. Arch. Mus. Paris, ix. p.236, pl. ix. fig.2.
Mast Head Island; dredged in 17 fathoms.

ETISODES FRONTALIS Dana.

1852. Dana, U.S. Explor. Exped. Crust. i. p.187, pl. ix. fig.3.
Mast Head Island; on the reef.

ACTÆA AFFINIS (Dana).

1852. *Actæodes affinis* Dana, U.S. Explor. Exped. Crust. i. p.197,
pl. xi. fig.3.
1882. Haswell, Cat. Aust. Crust. p.45.
Mast Head Island; on the reef.

ACTÆA RUPPELLII (Krauss).

1843. *Aegle rüppellii* Krauss, Südafr. Crust. p.28, pl. i. fig.1.
1897. Alcock, Journ. Asiatic Soc. Bengal, lxxvii. (2) p.144.
1900. Calman, Trans. Linn. Soc. London, (2) Zool. Vol. viii. p.7.
Port Curtis.

We rely on Alcock's full description for the recognition of this species. Our specimen carries one bright orange-red marking on the gastric region.

ACTÆA TOMENTOSA (M.Edw.).

1837. *Zozymus tomentosus* H. Milne Edwards, Hist. Nat. Crust. i.
p.385.
1882. Haswell, Cat. Aust. Crust. p.44.
Mast Head Island; a good series under rocks on the outer reef.

ACTÆA CALCULOSA (M.Edw.).

1837. *Cancer calculosus* H. Milne Edwards, Hist. Nat. Crust. i.
p.378.
1898. Alcock, Journ. Asiatic Soc. Bengal, lxxvii. (2) p.152.
1900. Calman, Trans. Linn. Soc. London, (2) Zool. Vol. viii. p.8.
Port Curtis; a good series obtained by Dr. Pulleine.

We rely on the very complete notes of Alcock and Calman (*loc. cit.*) for determining the specific differences of this species from *A. granulata*.

XANTHODES ATROMANUS Haswell.

1882. Haswell, Proc. Linn. Soc. N.S. Wales, Vol. vi. p.542.

1882. Haswell, Cat. Aust. Crust. p.49, pl. i. fig. 1.

Mast Head Island; a good series taken on the outer reef, and dredged in 17 fathoms.

The colour of this species is most variable, ranging from a carapace of deep chocolate, through mottled varieties, to almost white. The colour of the chelipeds is also variable, but all have the characteristic black fingers, the black colour extending far down the palm.

Specimens from 17 fathoms are as a whole much lighter than those taken on the reef.

XANTHODES LAMARCKII (M. Edw.).

1837. *Xantho lamarckii* H. Milne Edwards, Hist. Nat. Crust. i. p.391.

1898. Alcock, Journ. Asiatic Soc. Bengal, lxxvii. (2) p.157.

Mast Head Island; two specimens from outer reef.

XANTHODES NOTATUS Dana.

1852. Dana, U.S. Explor. Exped. Crust. i. p.178, pl. viii. figs. 12a-b.

Mast Head Island; under rocks.

CHLORODIUS NIGER (Forskäl).

1852. Dana, U.S. Explor. Exped. Crust. i. p.216, pl. xii. fig. 5.

Mast Head Island; common.

CHLORODIUS LÆVISSIMUS Dana.

1852. Dana, U.S. Explor. Exped. Crust. i. p.215, pl. xii. figs. 4a-g.

1898. Alcock, Journ. Asiatic Soc. Bengal, lxxvii. (2) p.161.

Mast Head Island; three specimens, of which one is a male, and two are females.

Our specimens, which are readily separable from the young of *C. niger*, agree fairly well with Dana's figure and with Alcock's remarks. In our examples, however, the carapace is sparingly

areolate, and there is a noticeable tuft of felted hairs at the base of the fingers on each of the larger chelipeds, a feature which is not referred to by either of the above authors.

PHYMODIUS SCULPTUS (A. M. Edw.).

1873. *Chlorodius sculptus* A. Milne Edwards, *Nouv. Arch. Mus.* Paris, ix. p.217, pl. viii. fig.4.

1898. Alcock, *Journ. Asiatic Soc. Bengal*, lxxvii (2) p 164.
Mast Head Island; under stones.

PHYMODIUS UNGULATUS (M. Edw.).

1837. *Chlorodius unguatus* H. Milne Edwards, *Hist. Nat. Crust. i.* p.400, pl. xvi. figs.6,8.

1898. Alcock, *Journ. Asiatic Soc. Bengal*, lxxvii. (2) p.162.
Mast Head Island; under stones, and dredged in 17-20 fathoms.

CHLORODOPSIS MELANODACTYLUS A. M. Edw.

1873. A. Milne Edwards, *Nouv Arch. Mus. Paris*, ix. p.229, pl.viii. fig.7.

Mast Head Island; under rocks.

CYMO ANDREOSSYI (Audouin).

1852. Dana, *U.S. Explor. Exped. Crust. i.* p 225, pl.xiii. figs.2a-b.
Two specimens dredged in 17 fathoms off Mast Head Island.

OZIUS TRUNCATUS M. Edw.

1837. H. Milne Edwards, *Hist. Nat. Crust. i.* p.406, pl.xvi. fig.11.
Mast Head Island; under rocks on the beach.

EPIXANTHUS FRONTALIS (M. Edw.).

1837. *Ozius frontalis* H. M. Edw., *Hist. Nat. Crust. i.* p.406.

1891. „ de Man, *Notes Leyden Museum*, xiii. p.17,
Tab.2, fig.4.

A large series of specimens was taken under loose coral blocks high up on the beach on Mast Head Island.

Whitelegge identified examples from Funafuti with *Pseudozizus caystrus* Ad. & White,* and added to its known distribution Tasmania, Solomon Islands and Holborn Island. On re-examination of his specimens, they prove to be identical with the present species, a decision in which that author concurs. Here also, as has already been pointed out by Ortmann,† must be referred the forms listed by Haswell as *Ozizus* sp.‡

The examples recorded by Whitelegge from Woodlark Island prove to be *Expixanthus subcorrosus* de Man.§

ERIPHIA LÆVIMANA Latr.

1852. Dana, U. S. Explor. Exped. Crust. i. p.249, pl.xiv. figs.7a-c.

Mast Head Island; very common under rocks on the outer reef.

PILUMNUS LANATUS Latr.

1884. Miers, Zool. H.M.S. "Alert," p.220, pl.xxi.fig.B.

1900. Calman, Trans. Linn. Soc. London, (2) Zool. Vol.viii. p.16.

Two males and a female dredged in Port Curtis are referred here in consequence of their close agreement with the figure and description given by Miers (*loc. cit.*). That author, however, expresses some doubt as to the correctness of his identification, and, should it prove to be a new species, has suggested *P. humilis*.

Our specimens have distinct though small teeth on the finger of the larger cheliped. Like Calman, we are unable to trace the carpal spines on the ambulatory legs.

PILUMNUS LABYRINTHICUS Miers.

1884. Miers, Zool. H.M.S. "Alert," p.224, pl.xxii. fig.c.

One specimen dredged in 20 fathoms off Mast Head Island.

* Mem. Aust. Mus. iii. 1897, p.136.

† Zool. Jahrb. Bd. vii. 1890, p.477.

‡ Cat. Aust. Crust. p.64, 1882.

§ *Loc. cit.* p.14, pl.2, fig.3.

PILUMNUS TERRÆ-REGINÆ Haswell. (Plate i. figs.1-1a).

1882. Haswell, Proc. Linn. Soc. N. S. Wales, Vol.vi. p.752.

1882. „ Cat. Aust. Crust. p.68, pl.i. fig.5.

Mast Head Island and Port Curtis.

As the figure of this species which has already appeared is in our opinion scarcely adequate for its reidentification, we now submit further drawings taken from the type in the Australian Museum.

The largest specimen in our collection (which is very much larger than the type) has the following measurements:—

Breadth of carapace.....	15 mm.
Length of carapace.....	12 mm.

PILUMNUS SPINICARPUS, sp.nov. (Plate i. figs.2-2a).

P. cursor Haswell, Cat. Aust. Crust., 1882, p.67; Calman, Trans. Linn. Soc. Lond. (2) Zool. viii. 1900, p.15, in part (nec. *P. cursor* A. M. Edw.).

Anterior portion of carapace carrying scattered stiff hairs which are replaced posteriorly by a scant pubescence. Beneath this the surface is quite smooth.

The front part of the carapace anterior to the lateral angles is strongly convex in an antero-posterior direction, while the posterior part is flat. From side to side the surface is much less convex.

The frontal region is divided into two lobes by a shallow median incision, each lobe carrying a longish tuft of hairs. The inner orbital angles are ill-defined. The orbits are somewhat long for the genus and have a sinuate upper margin which is sparingly granulose, and has no well defined fissures.

The antero-lateral margin, which is regularly arched, is shorter than the postero-lateral, and bears three equal and equidistant spiniform teeth, the first situated at some distance from the nonspinulose outer orbital angle, and the posterior forming the lateral angle.

The postero-lateral margins are only slightly inclined, giving to the posterior margin a width equivalent to that between the outer orbital angles.

In both chelipeds the carpus has on its upper margin a strong forwardly directed spine, and its outer surface bears numerous small tubercles and scattered stiff hairs. The larger cheliped (which is sometimes the right and sometimes the left) has the upper part of the outer surface of the palm sparingly tuberculate and tomentose, and is smooth below, while in the smaller cheliped the outer surface is entirely covered with small tubercles and scattered hairs. In neither have the tubercles any definite linear arrangement. The fingers of both hands carry a few strong teeth, but these are more numerous on the smaller of the two.

The ambulatory legs are long and sparingly clothed with stiff hairs. On the distal half of the upper margin of the merus of the first three pairs there are three sharp forwardly directed spinules. The fourth pair are unarmed.

In colour our species has in adult specimens the anterior part of the carapace mottled with red on a cream ground, the latter extending to the posterior margin. The chelipeds are red and the ambulatory legs banded with red and cream.

The abdomen of both sexes has all the seven joints free.

Length of carapace.....	9 mm.
Breadth of carapace.....	11 ,,
Length of second ambulatory leg.....	19 ,,

It has been suggested by Whitelegge* that it might be useful, for the purpose of splitting up this much overloaded genus, to observe whether the terminal segment of the abdomen extends beyond the articular nodules of the first joint of the chelipeds. In our specimens it does so.

We have a good series of specimens taken amongst coral blocks on the outer reef at Mast Head Island.

This species is most nearly allied to *P. cursor* A. M. Edw., from which it is distinguished by the presence of a strong spine on the carpus of the chelipeds, by the three spinules on the merus of the

* Mem. Aust. Mus. iii. 1897, p.135.

three succeeding legs, and by the surface of the carapace being perfectly smooth below the scant pubescence. It has been recorded by Haswell as *P. cursor*, but a reference to his specimens does not, in our opinion, substantiate this identification. One of the specimens mentioned by Calman is no doubt properly referable to our species, but his other specimens and those of the "Alert"* perhaps represent the true *P. cursor* A. M. Edw.

PILUMNUS SEMILANATUS Miers.

1884. Miers, Zool. H.M.S. "Alert," p.222, pl.xxii. fig.B.

Port Curtis; a good series dredged in seven fathoms.

The colour of this species in life is a bright red, with long brown hairs. The lower part of the external surface of the hands is white.

ACTUMNUS TOMENTOSUS Dana.

1852. Dana, U. S. Explor. Exped. Crust. i. p.243, pl.xiv. figs 2a-c.

1898. Alcock, Journ. Asiatic Soc. Bengal, lxxvii. (2) p.202.

Off Mast Head Island; dredged in 17 fathoms.

Miers† has united this species with *A. setifer* De Haan, but Alcock (*loc. cit.*) is not in agreement with this. The specimens collected by us clearly display the specific differences pointed out by the latter author.

ACTUMNUS SETIFER (De Haan).

1851. *Pilumnus setifer* De Haan, Faun. Japon. Crust. p.50, pl.iii. fig.3.

1898. Alcock, Journ. Asiatic Soc. Bengal, lxxvii. (2) p.202.

Three specimens dredged off Mast Head Island in 17-20 fathoms.

ACTUMNUS NUDUS A.M.Edw.

1867. A. Milne Edwards, Ann. Soc. Entom. France, (4)vii. p.265.

1888. de Man, Journ. Linn. Soc. Lond. Zool. xxii. p.49, pl.ii. figs.2-3.

Two specimens (males) dredged in Port Curtis are referred here from their general agreement with the figure and descrip-

* Miers, Zool. H.M.S. "Alert," p.223, 1884.

† Zool. H.M.S. "Alert," p.225.

tion given by de Man. They differ, however, from that author's description in a few minute characters. There are no hairs on the upper surface of the cephalothorax and no distinct granules on the outer surface of the larger cheliped, although the outer surface of the palm of the smaller hand is minutely granular. The number of granulations also on the anterior part of the carapace is larger and their size more minute than is suggested by that author's description. In all macroscopic characters, however, it agrees with his figure.

Alcock has already expressed doubt as to whether this species is correctly included in the genus *Actumnus*, and with this we are in cordial agreement.

CRYPTOCŒLOMA FIMBRIATA (M. Edw.).

1822. *Pilumnus fimbriatus* Haswell, Cat. Aust. Crust. p.66, pl. i. fig.4.

1884. Miers, Zool. H.M.S. "Alert," p.227, pl. xxiii. fig.A.
Port Curtis; one female specimen (Dr. Pulleine).

Family TRAPEZIIDÆ.

TRAPEZIA CYMODOCE (Herbst).

1898. Alcock, Journ Asiatic Soc. Bengal, lxxvii. (2) p.219.

Very common amongst the branches of coral in the lagoon, Mast Head Island; also dredged in Port Curtis (7 faths.), and off Mast Head Island (17 faths.)

Family PORTUNIDÆ.

CAPHYRA LÆVIS A.M. Edw.

1873. A. M. Edwards, Nouv. Arch. Mus. Paris, ix. p.173, pl. iv. fig.2.

Mast Head Island; one specimen (♀).

CHARYBDIS SPINIFERUS Miers.

1884. *Goniosoma spiniferum* Miers, Zool. H.M.S. "Alert," p.233, pl. xxiii. fig.c.

Port Curtis; fairly common in the mangrove swamps, and dredged in 7 fathoms.

LUPA SANGUINEOLENTA (Herbst).

1899. *Neptunus sanguineolentus* Alcock, Journ. Asiatic Soc. Bengal, lxxviii. (2) p.32.
Port Curtis (Dr. Pulleine).

LUPA GRANULATA var. UNISPINOSA (Miers).

1884. *Achelous granulatus* Miers, Zool. H.M.S. "Alert," p.230, pl. xxiii. fig.B.
Port Curtis; dredged in 7 fathoms.
Miers states (*loc. cit.*) that the species recorded by Haswell from Palm Island as *Amphitrite gladiator* is identical with the above.

LUPA WHITEI (A.M.Edw.).

1861. *Achelous whitei* A. Milne Edwards, Arch. Mus. Paris, x. p.343, pl. xxxi. fig.6.
Dredged in Port Curtis (Dr. Pulleine).

THALAMITA STIMPSONI A.M.Edw.

1861. A. Milne Edwards, Arch. Mus. Paris, x. pp.362, 367, pl. xxxv. fig.4.
Mast Head Island, and Rat Island, Port Curtis.

THALAMITA SIMA M.Edw.

1899. Alcock, Journ. Asiatic Soc. Bengal, lxxviii. (2) p.81.
Port Curtis; dredged in 7 fathoms.

THALAMITA ADMETE (Herbst).

1899. Alcock, Journ. Asiatic Soc. Bengal, lxxviii. (2) p.82.
Mast Head Island; under rocks.

Family PODOPHTHALMIDÆ.

GOMEZA BICORNIS Gray.

1831. Gray, Zool. Miscell. p.39.
1833. Crust. in Griffith's Anim. Kingdom of Cuvier, Vol. xiii. p.296, pl. xxiv. fig.1.
One specimen 7mm. long, a male, was dredged in 20 fathoms off Mast Head Island. There are specimens in the British Museum from Adelaide and King George's Sound.

Miers in the "Challenger" Reports states that this species is "rather common in . . . Australian Seas"—we cannot, however, trace in literature any definite record of its occurrence on our coast.

Tribe CATOMETOPA.

Family OCYPODIDÆ.

OCYPODA CERATOPHTHALMA (Pallas).

1882. Haswell, Cat. Aust. Crust. p.94.

Mast Head Island; common on the beach, boring deep holes in the sand above high-water mark. This species is nocturnal in its habits, and a good series was taken running swiftly on the sands in the moonlight. None were observed moving in the daylight.

UCA DUSSUMIERI (M.Edw.).

1852. *Gelasimus dussumieri*, H. Milne Edwards, Ann. Sci. Nat. Zool. (3) xviii. p.148, pl. iv. fig.12.

1887. *Gelasimus dussumieri*, de Man, Journ. Linn. Soc. Zool. xxii. p.108, pl. vii. figs.2-7.

Port Curtis; very common on mud banks amongst mangroves between tide marks.

A large series was taken exhibiting all stages of the growth of the large cheliped in the male. In the smallest specimen, which has the hand 6 mm. in length, the fingers meet along the whole of their trenchant borders. As the specimens become more adult a gape is developed commencing at the base of the fingers and extending proximally with age; for a long time, however, they meet on their trenchant borders for at least a third of their length. The largest specimen taken has the large hand 40 mm. long and the gape at its greatest width 5 mm.

UCA ARCUATA (De Haan).

1835. *Ocypode (Gelasimus) arcuatus* De Haan, Faun. Japon. Crust. p.53, pl. vii. fig.2.

1905. Stebbing, Marine Investg. South Africa, p.40.

Port Curtis; on mud banks.

MACROPTHALMUS DEPRESSUS (Rüppell).

1900. Alcock, Journ. Asiatic Soc. Bengal, lxxix (2) p.380.

Port Curtis; on mud flats at the mouth of Auckland Creek.

For the identification of this species we are indebted to Alcock's detailed description, with which our specimen is in accord, except that we cannot trace the "two nearly parallel obliquely longitudinal finely granular lines" behind the branchial groove, to which he refers.

Our specimen (a female) agrees with that in the Australian Museum from Holborn Island identified by Haswell as *M. affinis* Guérin, a synonym of *M. depressus* (*vide* Alcock).

METAPLAX HIRSUTIMANA, sp.nov. (Plate i. figs.3, 3a, 3b).

Carapace moderately convex in both an antero-posterior direction and from side to side. Proportion of its length to breadth as 7:9. Front little produced, only slightly deflexed, its width between the eyestalks being $\frac{1}{3}$ that of the greatest breadth of the carapace. Lateral margins parallel, armed with three shallow flat teeth, of which the first formed by the antero-lateral angles is the shortest. The last, which is the most obscure, is situated slightly in advance of the middle of the lateral margin, and is more distant from the second than the second is from the first.

Regions only faintly delimited, surface smooth.

The eyestalks do not quite reach the lateral angles of the carapace. The upper margin of the orbits is quite smooth, and the inferior margin minutely crenulate, the crenulations ceasing laterally on a level with the pigmented portion of the eyestalks. Below this there is another sinuous crenulate ridge which does not continue to the lateral margins. The pterygostomian regions are minutely tuberculate.

Epistome narrow, well defined, prominent, but not visible when viewed directly from above.

The outer maxillipeds have the ischium longer than the merus. The former is crossed near its base by an oblique piliferous ridge. There is also on the merus near its inner margin a further oblique piliferous ridge which crosses the line of junction between the

two joints and terminates near the outer proximal margin of the ischium. The palp is articulated almost in the centre of the upper margin of the merus.

The abdomen in both sexes is seven-jointed. The last joint in the male is distinctly truncate.

In the male the right cheliped is somewhat larger than the left. The merus is sharply trigonous, each of the angles being minutely crenulate. The outer surface carries a number of scattered tubercles and the upper distal margin is subspinulose. The carpus is strongly carinate above.

The palm also carries a strong carina both above and below. This is continued to the ends of both the mobile and immobile fingers, and is minutely crenulate along its whole length. The fingers, which are spoon-excavate, leave a wide gape between them when closed, but this is entirely hidden by a tuft of strong felted hairs on both sides. On removal of the hair the upper finger is seen to be finely toothed along its distal two-thirds, while the lower is similarly toothed to its base. On the outer surface of the mobile finger there is also a distinct row of tubercles.

In the female the hands are subequal, long and slender, and without the tufts of hair characteristic of the male.

The ambulatory legs are long and much flattened. They carry on the upper edge of the merus a row of granules from which a dense but scattered pubescence arises, and on the outer surface of the merus of the first three pairs there are a number of scattered round tubercles.

A large series was taken on the mud flats at the mouth of Auckland Creek, Port Curtis.

The nearest ally of our species appears to be *M. intermedius** de Man, from the Mergui Archipelago, from which it differs in the presence of the dense matted hairs on the hands, from the nature of the piliferous ridges on the outer maxilliped, and in other features.

* de Man, Journ. Linn. Soc. London, Zool. 1888, p.166, pl.ix. figs.7-9.

CERATOPLAX CILIATA Stimpson.

1858. Stimpson, Proc. Acad. Nat. Sci. Philadelphia, 1858, p.96.

1886. Miers, "Challenger" Brachyura, p.234, pl. xix. fig.3.

Port Curtis; two specimens dredged in 7 fathoms.

Family GRAPSIDÆ.

METOPOGRAPSUS MESSOR (Forsk.)

1900. Alcock, Journ. Asiatic Soc. Bengal, Vol. lxxix. (2) p.397
(= *Goniograpsus thukujar* Haswell, Cat. Aust. Crust.
p.99).

Mast Head Island and Port Curtis.

SESARMA BIDENS (De Haan).

1835. *Grapsus (Pachysoma) bidens* De Haan, Faun. Japon. Crust.
p.60, pl.xvi. fig.4 and pl.xi. fig.4.

Port Curtis; on mangrove flats.

Family PINNOTHERIDÆ.

PINNIXA FABA (Dana).

1852. *Pinnothera faba* Dana, U.S. Explor. Exped. Crust. i. p.381,
pl. xxiv. fig.4.

1882. Haswell, Cat. Aust. Crust. p.113.

Mast Head Island; common on the outer reef in the mantle of
Haliotis asinina. Haswell (*loc. cit.*) records its occurrence at
Port Denison, associated with *H. coco-radiata*.

XANTHASIA MURIGERA White.

1846. White, Ann. Mag. Nat. Hist. Vol. xviii. p.177, pl. ii. fig.3.

Mast Head Island; in shells of *Tridacna elongata*.

Family MICTYRIDÆ.

MICTYRIS LONGICARPUS Latr.

1806. Latreille, Gen. Crust. et Ins. p.41.

Port Curtis; on mangrove flats.

Tribe OXYSTOMA.

Family CALAPPIDÆ.

CALAPPA HEPATICA (Linn.).

1767. Linn., Syst. Nat., ed. xii. Vol.i. pt.ii. 1048.

1896. Alcock, Journ. Asiatic Soc. Bengal, lxxv. (2) p.142.

Mast Head Island; on sandy flats within the lagoon.

Family LEUCOSIIDÆ.

NURSIA SINUATA Miers.

1877 Miers, Trans. Linn. Soc. London, (2) Zool. i. p. 239,
(figured by Bell, *op. cit.* Zool. xxi. 18, pl. xxxiv. fig.4,
as *N. plicatus*).

We have a good series taken by Dr. Pulleine at Rat Island.

The note given by Miers under the species *N. plicatus* (*loc. cit.* p.240) is by no means clear, but it appears to us to be intended to convey that Bell, in figuring that species, had inadvertently taken a specimen to which his description did not apply; that this figure in consequence represents a new species, to which on page 239 he (Miers) has given the name of *N. sinuata*.

The references given by Haswell in the 'Catalogue of Australian Crustacea,' spp.244 and 245, appear to be reversed.

OREOPHORUS FRONTALIS Miers.

1884. Miers, Zool. H.M.S. "Alert," p.254, pl. xxvi. fig.B.

Several specimens were dredged off Mast Head Island in 17-20 fathoms.

CRYPTOCNEMUS CRENULATUS n.sp. (Plate ii. figs.2, 2a).

Surface everywhere both dorsally and ventrally quite smooth and carrying a high polish. Colour ivory white.

Carapace subpentagonal, broader than long. The margins are turned upwards, giving their dorsal surface a concave appearance. An ill-defined ridge runs backwards from the frontal region, but becomes lost before it reaches the posterior margin. The frontal region is prominent, pointed upwards, and terminates in an obtuse point—its margin is minutely crenulated.

The orbits, which are small, are situated at the apices of obtuse angles formed by the margins of the frontal process and by straight lines leading to the prominent hepatic angles; behind which the anterior and posterior lateral margins are finely crenulate, the crenulations being the termini of a series of fine radial ridges which fade away before reaching the centre of the carapace. The lateral margin is not continued on the dorsal surface of the carapace behind the hepatic region as described in *C. haddoni* Calman.

The margin from the hepatic angle to the anterior lateral angle, and the posterior lateral margin, are subequal in length, and meet almost at right angles. The posterior margin is long, almost straight, and without crenulations.

The antennulary fossæ are transverse.

The third maxillipeds have the bases visible, the ischium is of about the same length as the merus, which is acutely triangular, and projects beyond the bucal cavern, reaching the antennulary fossæ. The exopod is not so broad as the ischium, and only reaches about half its length.

The chelipeds have all the joints, from the merus outwards, carrying a prominent knife-like crest with a crenulate edge. The fingers are grooved, finely serrate, and somewhat overlapping at the tips when closed.

The ambulatory legs have the merus, carpus and propodus with a similar sharp crenulate crest; the dactyli are spinulose.

The abdomen of the male is regularly triangular, elongated and acute. The first segment is exceedingly small and not visible from a dorsal view; the second, third, fourth, fifth and sixth segments are coalescent; and the last segment, which is free, is long and pointed.

Dimensions of type :—

Length from anterior point of frontal process to posterior margin	4½ mm.
Breadth of carapace between lateral angles	6 mm.

Three specimens of this very elegant little crab were dredged in 17-20 fathoms near Mast Head Island, only one, however,

being in a sufficiently perfect state for description. Its habitat appears to be the coarse white coral sand in the moderate depths surrounding the reefs—an environment in which its small size, rugose exterior, and brilliant ivory white colour must be of great service to it for purposes of concealment.

The nearest ally of our species appears to be *C. pentagonus* Stimpson, which is figured by Miers,* and from which it differs in the proportions of the carapace and the crenulations of the margins. The hands of that species do not appear to have been figured. From *C. haddoni* Calman, from Torres Straits, it differs in the possession of the very marked crests on the chelipeds, in the crenulation of the margins, in the shape of the front and in other details. From the other described species of the genus, viz., *C. holdsworthi* Miers, *C. grandidieri* A.M.Edw., and *C. obolus* Ortmann, the differences are too marked to be worthy of repetition here.

Family DORIPPIDÆ.

DORIPPE AUSTRALIENSIS Miers.

1884. Miers, Zool. H.M.S. "Alert," p.258, pl. xxvi. fig.D.

Port Curtis; a good series dredged in 7 fathoms.

The specimens in the Australian Museum referred to *D. astuta* Fabr., and so included by Haswell in his "Catalogue of Australian Crustacea" (p. 136) belong to the above species, the description of which was published subsequent to the Catalogue. *D. astuta* must consequently be excluded from our fauna.

Tribe OXYRHYNCHA.

Family MAIIDÆ.

ACHÆUS LACERTOSUS Stimpson. (Plate iii. fig.1).

1857. Stimpson, Proc. Acad. Nat. Sci. Philad. p.218.

1895. Alcock, Journ. Asiatic Soc. Bengal, lxiv. (2) p.172.

Mast Head Island; one female specimen.

This species does not appear to have been previously figured. We submit a drawing of a male specimen from Port Jackson, 11mm. long.

* Proc. Zool. Soc. 1879, p.43, pl. ii. fig.5.

PARATYMOLUS SEX-SPINOSUS Miers.

1884. Miers, Zool. H.M.S. "Alert," p.261, pl. xxvii. fig.B.

Port Curtis, dredged in 7 fathoms; and off Mast Head Island, in 17 fathoms.

EGERIA LONGIPES (Linn.).

1767. *Cancer longipes* Linn. Syst. Nat. ed.xii. Vol. i. pt. ii.

1837. *Egeria arachnoides* H. Milne Edwards, Hist. Nat. Crust. i. p.291.

1895. *Egeria arachnoides* Alcock, Journ. Asiatic Soc. Bengal, lxiv. (ii.) p.223.

Port Curtis; a good series dredged by Dr. Pulleine.

This species has been referred to by Milne Edwards, Haswell, Miers, Alcock, and other leading carcinologists, under the name *E. arachnoides* Rumph.* That author was, however, pre-Linnean, and his nomenclature is consequently inadmissible. Linnæus subsequently (*loc. cit.*) redefined the species, referring to Rumphius' figure as his type, and giving to it the name *Cancer longipes*.

It has been suggested by Miers† that the species *E. longipes*, *E. arachnoides*, *E. indica*, and *E. herbstii* are synonymous, and this view is fully confirmed by Alcock (*loc. cit.*) who states that "all the hitherto described species of *Egeria* may be regarded as identical with the species rather poorly figured in Rumphius' *Amboinische Rariteitkamer*."

It consequently appears to us that the only tenable specific name is that used by Linnæus as quoted above.

We may here note that Lamarck‡ refers to the species under the name *Leptopus longipes*, giving references to Linn., Fabricius, and Rumphius; and it appears strange that this should not have been followed by subsequent authors.

* Rumphius, *Amboinische Rariteitkamer*, pl.viii. fig.4.

† Miers, Zool. H.M.S. "Alert," p.182, 1884.

‡ Lamarck, *An. sans Vert.* v. p.235, 1818.

PICROCERUS ARMATUS A.M.Edw.

1865. A. M. Edwards, Ann. Soc. Ent. France, (4) v. p.136.

1872. A. M. Edwards, Nouv. Arch. Mus. Paris, Vol. viii. p.244,
pl.xii. fig.2, and xiii.

A small specimen was dredged off Mast Head Island in 20 fathoms. It measures 38mm. with the rostral cornua and 25mm. without. It differs from the description and figure only in having the rostral cornua proportionately shorter and by having all the spines knobbed instead of pointed ; these are undoubtedly characters varying with age.

The species was originally described from New Caledonia, and the author states that there are specimens in the British Museum from the New Hebrides. A fine specimen (♀) measuring 117mm. in total length is in the Australian Museum from Lord Howe Island, where it was found dead on the beach.

PARAMITHRAX PERONII M.Edw.

1837. H. Milne Edwards, Hist. Nat. Crust. i. p.324.

1853. Jacquinot & Lucas, Voy. au Pôle Sud, Zool. iii. Crust. p.10,
pl. i. fig.3.

Mast Head Island.

PARAMITHRAX STERNOCOSTULATUS A.M.Edw. (?)

(Plate iii. figs.2, 2a).

1882. Haswell, Cat. Aust. Crust. p.13.

Mast Head Island; one specimen (♂).

This species is quoted by Haswell as of A. Milne Edwards, and he gives *P. gaimardii* of Miers,* as a synonym. We have been quite unable to trace the original description under the name of *sternocostulatus*, and a reference to the Cat. N.Z. Crust. shows *gaimardii* to be of H. Milne Edwards†. It must consequently, if it can be properly applied to our species, antedate the name which we here quote. As, however, a diligent search has failed to discover the missing reference, we are compelled to leave the question of its correct nomenclature undecided.

* 1876. Miers, Cat. Crust. N. Zealand, p.6.

† 1836. H. Milne Edwards, Hist. Nat. Crust. i. p.325.

We cannot ascertain that it has yet been figured under either name, and take this opportunity of doing so.

The species appears to have a wide range on our coast. It is fairly common in Port Jackson, and there are specimens in the British Museum dredged by the late Mr. J. Bracebridge Wilson in Port Phillip, Vic.

PARAMITHRAX LONGISPINIS (De Haan).

1839. *Maja* (*Chorinus*) *longispinis* De Haan, Faun Japon. Crust. p.94, pl.xxiii. fig.2.

One specimen (♂) dredged off the reef at Mast Head Island agrees with the quoted figure of this species in all but the following particulars:—There are no knobs on the tips of the spines; there are usually two meral spines instead of only one; and the ridge on the propodus of the chelipeds is not so pronounced nor so sinuous as in the Japanese form. Direct comparison with Japanese examples, however, proves it to be inseparable specifically, though Australian examples may present a varietal form.

PARAMITHRAX COPPINGERI Haswell. (Plate ii. fig.3).

1881. Haswell, Proc. Linn. Soc. N.S. Wales, Vol.vi. p.750.

An examination of the type of this species (a male) and that of *P. spatulifer* Haswell, in the Australian Museum, enables us to clear up some misconception which has arisen in their identification by recent authors.

P. coppingeri was described by Haswell from Port Molle, and *P. spatulifer* from Port Stephens, the former appearing to take the place of the latter in the more northerly and tropical waters. A specimen of *P. spatulifer*, however, taken by the "Challenger" off East Moncœur Island in Victoria, was unfortunately wrongly identified by Miers, and is figured by him under the name of *P. coppingeri**, and this has led subsequent authors to recognise the last mentioned as belonging to the southern fauna.

Our specimen which agrees with the type was taken in Port Curtis in seven fathoms.

* 1886. Miers, "Challenger" Brachyura, p.53, pl.vii. fig.3.

The accompanying revised description and figures are taken from the type, a male, in the Australian Museum.

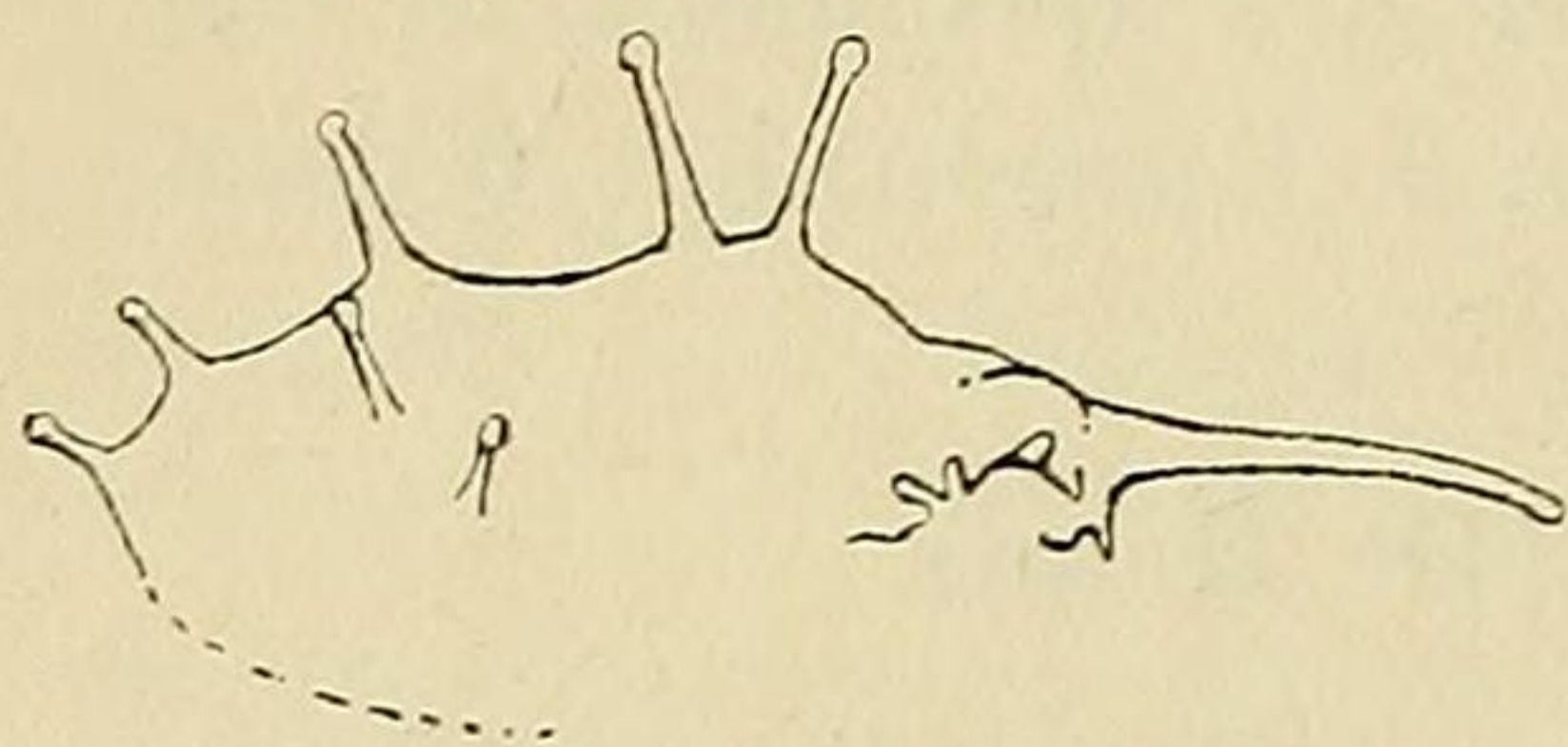


Fig. 1.—Profile.

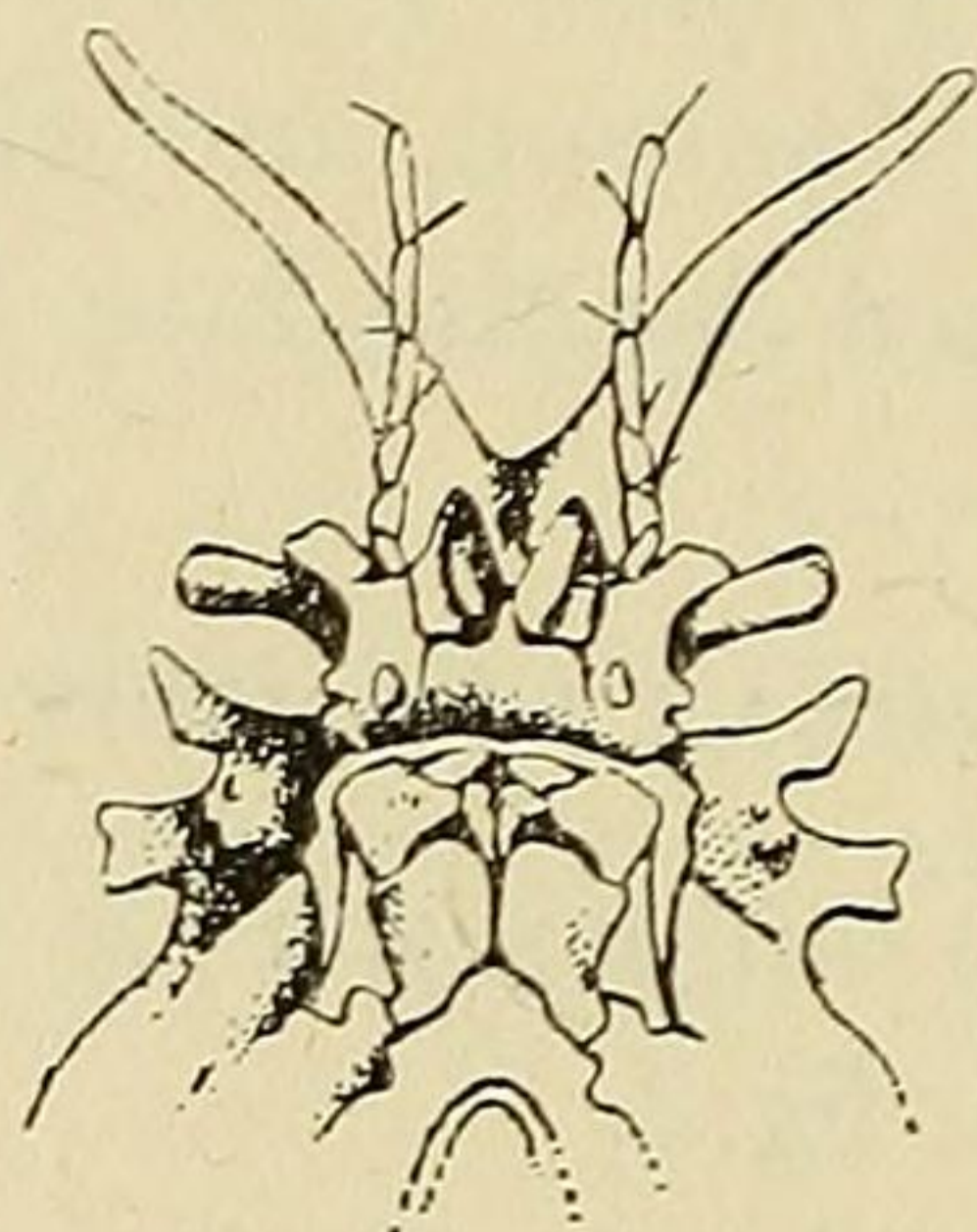


Fig. 2.—Buccal frame.

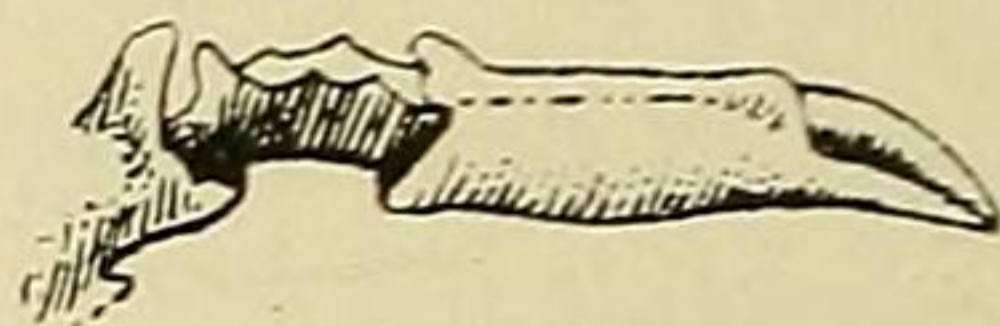


Fig. 3.—Cheliped.

Carapace armed with long spines, the width slightly more than $\frac{2}{3}$ the length. Regions well defined, very convex, and limited by broad shallow depressions. Hooked setæ arise from minute prominences on the body and ambulatory limbs. Rostral cornua long and slender, tapering, somewhat incurved towards their extremities, which are blunt and rounded; their upper edges are carinate, and extend backwards to the gastric region, forming a deep hollow on the frontal region.

Carapace with ten knobbed spines, two on the mid-line of the gastric region, inclining towards their bases; two on the cardiac region, placed transversely with their bases almost united; two on the intestinal region, the last being on the posterior border; two others are placed obliquely on each branchial region, the hinder almost on the same level as the cardiac pair, and directed upwards and backwards, while the anterior is almost at right angles to the length.

Orbital region prominent, terminating in three slender spines directed outwards and forwards, the middle one a little nearer the first than to the third and curved slightly upwards. Following these are two depressed postorbital spines, the first acute and the second larger and obliquely truncate. Hepatic region with a sub-bifid lobe. Inferior surface with several small tubercles.

Basal joint of external antennæ with a short tooth at the proximal end of its outer border, with a very prominent

compressed tooth directed outwards at the distal end of the same border, and a third, somewhat smaller, directed downwards and forwards at the inner distal angle; flagellum longer than the cornua of the rostrum. A median downward process of the front forms a recurved hook.

Chelipeds slender, equal, a trifle longer than the carapace. Merus longer than the palm, though less than twice the length of the carpus, armed below with three flattened spines and four above, that at the distal end being very large and obliquely truncated. Carpus with two denticulated crests, the inner with two and the outer with three teeth, the posterior of the latter being enlarged. A third ridge on the inner surface is more pronounced anteriorly and without spines. Palm smooth, the upper edge almost straight, carinate posteriorly and terminating in an enlarged tubercle, an indistinct groove on the outer face. Fingers about half as long as the palm, almost closing along their entire edges, and with about five teeth on each.

Ambulatory legs slender, the first pair the longest; the meri each with a long slender knobbed spine, which is more strongly developed in the first two pairs; indications of similar processes are on the carpus of the two anterior pairs.

Length to the base of rostral cornua	13mm.
Length of rostral cornua.....	8mm.

Haswell states that this species differs from *C. longispinis* De Haan, in having "none of the supra-orbital spines recurved." This is not correct of the type specimen, which, however, is distinguished from the Japanese species by the much more slender hand.

Acanthophrys aculeatus A.M.Edw.,* judging from the figure given by that author, is apparently identical with *P. spatulifer* Haswell. It has, however, been pointed out by Calman† that the specific name *aculeatus* is preoccupied, and Haswell's name consequently stands.

* 1865. A. Milne Edwards, Ann. Soc. Ent. France (4) v. p.140, pl.iv. fig.4
 † Trans. Linn. Soc. Lond. (2) Zool. Vol. viii. p.38, 1900.

MENÆTHIUS MONOCEROS (Latr.).

1882. Haswell, Cat. Aust. Crust. p.9.

Mast Head Island; on the reef.

HYASTENUS DIACANTHUS (De Haan).

1839. *Pisa* (*Naxia*) *diacantha* De Haan, Faun. Japon. Crust. p.86,
pl. xxiv. fig.1.

Port Curtis; very common at 7 fathoms.

HYASTENUS CONVEXUS Miers.

1884. Miers, Zool. H.M.S. "Alert," p.196, pl.xviii. fig.B.

Two males, measuring 11 and 8mm. respectively, dredged off Mast Head Island in 20 fathoms; and a further series from 7 fathoms in Port Curtis, are referred here. Those from the shallower water are in close agreement with Miers' figure, but the specimens from 20 fathoms differ in the slightly longer proportionate length of the palm; the preocular hood is also slightly shorter.

Family PARTHENOPIDÆ.

LAMBRUS CONFRAGOSUS Calman.

1900. Calman, Trans. Linn. Soc. Lond. Zool. Vol. viii. (2) p.42,
pl.iii. figs.27-28.

Off Mast Head Island; dredged in 17 fathoms.

Tribe DROMIIDEA.

Family DROMIIDÆ.

CRYPTODROMIA LATERALIS Gray.

1831. Gray, Zool. Miscell. p.40.

1898. Thomson, Trans. N.Z. Institute, Vol. xxxi. p.170, pl. xx.
figs. 1, 2.

Mast Head Island; on the reef.

Incertæ sedis.

HAPALOCARCINUS MARSUPIALIS Stimp.

1856-59. Stimpson, Proc. Boston Soc. Nat. Hist. Vol.vi. p.412.

1899. Calman, Trans. Linn. Soc. Lond. (2) Zool. Vol. viii. p.43,
pl.iii. figs.29-40.

Mast Head Island; forming galls on species of *Pocillopora* and *Seriatopora*.

CRYPTOCHIRUS CORALLIODYTES Heller.

1861. Heller, SB. Akad. Wien, xliii. (1) p.366, pl.ii. figs.33-39.

1881. Semper, 'Animal Life,' pp.217, 221-3, figs.64, 68.

Mast Head Island; forming funicular depressions on a species of *Goniastræa*, similar to that figured by Semper.

There are also specimens in the Australian Museum collected by Mr. Hedley at Palm Island.

MACRURA.

Tribe ANOMOLA.

Family HIPPIDÆ.

REMIPES ADACTYLUS (Fabr.).

1837. *Remipes testudinarius* H. Milne Edwards, Hist. Nat. Crust. ii. p.206, pl.xxi. figs.14-20.

Port Curtis; three specimens dredged in 7 fathoms.

Family PAGURIDÆ.

PAGURISTES HIANUS Henderson.

1888. Henderson, "Challenger" Anomura, p.79, pl. viii. fig.4.

1905. Alcock, Cat. Indian Decapod Crust. Pt.ii. p.40, pl. iii. fig.2.

Fairly common in depths of 17-20 fathoms off Mast Head Island. Recorded by the "Challenger" from the Philippine Islands.

CLIBANARIUS CRUENTATUS (M.Edwards).

1848. *Pagurus cruentatus* H. Milne Edwards, Ann. Sci. Nat. Zool. (3) x. p.62.

1886. *Clibanarius cruentatus* Filhol, Miss. de l'Ile Campbell, iii. Pt.ii. p.424, pl.iii. fig.4.

1897. Whitelegge, Mem. Aust. Mus. iii. Pt.2, p.143.

Mast Head Island; fairly common on the reef.

Our specimens agree closely in the contour of the carapace and limbs with that figured by Filhol. The nature of the blister-like

yellow spots where these are present is also in accordance with Whitelegge's description; they are, however, not so numerous as in the specimens from Campbell Island, and the light-coloured patches on the surface of the carapace figured by Filhol are absent. The pigmentation generally appears to be much darker in the northern form.

CLIBANARIUS VIRESCENS Krauss.

1843. *Pagurus virescens* Krauss, Südafr. Crust. p.56, pl. iv. fig.3.

1852. *Clibanarius virescens* Dana, Crust. U.S. Explor. Exped. i. p.466, pl. xxix. figs.6a-b.

Mast Head Island and Port Curtis.

This was the commonest crustacean on the island. It varies much in size, and was found under almost every rock left exposed by the tide on the outer reef.

CLIBANARIUS TÆNIATUS M.Edw.

1848. *Pagurus tæniatus* H. Milne Edwards, Ann. Sci. Nat. Zool. (3) x. p.63.

Mast Head Island.

CALCINUS LATENS Randall.

1839. *C. latens* Randall, Journ. Acad. Nat. Sci. Philad. p.135(*fide* Dana).

1852. *C. latens* Dana, U.S. Explor. Exped. Crust. Pt. i. p.459, pl.xxviii. fig.11.

1905. *C. latens* Alcock, Cat. Ind. Decapod Crust. Pt. ii. p.58, pl.v. fig.5(cheliped).

1882. *C. terræ-reginæ* Haswell, Proc. Linn. Soc. N.S. Wales, vi. p.57.

1905. *C. terræ-reginæ* Alcock, *loc. cit.* p.57, pl. v. fig.7.

Mast Head Island; a good series.

It has already been suggested by Alcock (*loc. cit.*) that *C. terræ-reginæ* Hasw., may prove to be merely a varietal form of *C. latens*. From a study of a good series of specimens before us, which includes three specimens labelled as types of the former species, this is rendered quite clear. Some of our specimens

have the left cheliped with its lower border carinate and serrate, as is typical of *C. latens*; but these shade off by imperceptible gradations to a form having the lower border simple and the outer surface smooth, which characterise the form *C. terræ-reginæ*.

CALCINUS GAIMARDII (M. Edw.).

1848. *Pagurus gaimardii* H. M. Edwards, Ann. Sci. Nat. Zool. (3) x. p.63.

1905. Alcock, Cat. Ind. Decapod Crust. Pt. ii. p.56, pl. v. fig.3.
Mast Head Island; on the reef; two specimens.

DIOGENES AVARUS Heller.

1865. Heller, "Novara" Crust. p.83, pl. vii. fig.2.

1905. Alcock, Cat. Indian Decapod Crust. Pt.ii. p.68, pl.vi. fig.6.
Port Curtis; two specimens dredged in 7 fathoms.

DIOGENES CAPRICORNEUS, sp.nov. (Plate iii. figs.3-3a).

Carapace moderately elongated. Cephalothorax somewhat flattened rugose, carrying numerous low tubercles beset with stiff hairs, and two well defined spinules near the cervical groove. Behind this the carapace is naked.

Front not so prominent as the antennal angles of the carapace.

Rostriform process narrow, simple, without spinules on its margin, reaching slightly beyond the ophthalmic scales, somewhat expanded posteriorly.

Eyestalks narrow, elongated, reaching considerably beyond the peduncles of the outer antennæ. Ophthalmic scales with three short spines near the distal end of their upper border. The eyes do not quite reach to the end of the inner antennæ.

Antennal acicle with a well defined spine on its distal outer angle. Flagellum not quite reaching the tips of the chelipeds, sparingly setose.

Left cheliped much more robust than the right, which reaches to the middle of its palm. The merus has a series of minute spines on its upper margin, and is minutely serrulate below. The carpus has three strong forwardly directed spines on its

upper margin, a row of three smaller spines on its outer surface near the lower margin, and a strong spine between these two rows at its distal margin. The palm is half as long again as broad; it carries four strong spines on its upper margin, and on its outer surface two rows of spinulæ terminating respectively in the strong spine at the distal margin and in the lower row of spines on the preceding joint. Its lower surface is granulous. The immobile finger is somewhat deflexed, and the mobile finger strongly arched; there is a wide opening between them when closed.

The right cheliped has three strong teeth on the upper margin of the carpus, four somewhat smaller teeth on the upper margin of the palm, and a row of small tubercles on its outer surface. The mobile finger is serrulate on its upper margin and leaves a strong gape when closed against the immobile finger.

Both hands are clothed with stiff scattered hairs.

The second and third legs are sparingly setose. They are sub-cylindrical, and in length exceed the larger cheliped by the dactylus and half the propodus.

The fourth legs are subchelate, and the fifth pair distinctly didactylous.

Colour white, very faintly banded with red on the second and third legs.

Length of carapace 5mm.

Two specimens were dredged off Mast Head Island, on a bottom of coral sand.

TROGLOPAGURUS JOUSSEAUMII Bouvier.

1897. Bouvier, Bull. Mus. d'Hist. Nat. Paris, pp.231-232, fig.6.

1905. Alcock, Cat. Indian Decapod Crust. Pt.ii. p.75, pl.v. fig.6.

Port Curtis; four specimens dredged in 7 fathoms; three of these inhabited shells of *Natica conica* and one that of *Purpura pseudamygdala*. In all cases the shells appeared to be too large for their occupants, a peculiarity which, as Alcock has pointed out, appears to be characteristic of the species.

One specimen also was taken on Mast Head Island, differing only in the more marked spinulation of the outer surface of the carpus of the left cheliped, and in having the inner surface of the merus not clothed with hairs.

The genus does not appear to have been previously recorded from Australia, but Alcock's excellent description and figure leave no doubt as to the correctness of the identification.

PAGURUS PUNCTULATUS Olivier.

1811. Olivier, Encycl. Méth. viii. p.641.

1905. Alcock, Cat. Indian Decapod Crust. Pt. ii. p.81, pl. viii. fig. 1.

Mast Head Island; common in shells of *Strombus luhuanus*, *S. gibberulus*, *Turbo speciosus*, &c.

PAGURUS EUOPSIS Dana.

1852. Dana, Proc. Acad. Nat. Sci. Philad. p.7, and U S. Explor. Exped. Crust. i. p.452, pl. xxviii. figs. 6 a-c.

1905. Alcock, Cat. Ind. Decapod Crust. Pt. ii. p.86, pl. ix. fig. 2.

Mast Head Island; on the reef.

Our specimens differ only from Alcock's description and figure in *not* having the antennal acicle "extremely short, not reaching to the base of the last joint of the peduncle"; and in the propodus of the third left leg *not* being "more than half as broad as long and with the outer surface flattened." These are, however, minor characters, and as they agree in all other points with the figures quoted, there appears to us no justification for raising them to specific or even varietal rank.

PAGURUS DEFORMIS Milne Edwards.

1836. H. Milne Edwards, Ann. Sci. Nat. Zool. (2) vi. p.272, pl. xiv. fig. 2.

1905. Alcock, Cat. Indian Decapod Crust. Pt. ii. p.88, pl. ix. fig. 4.

Mast Head Island; two specimens in shells of *Turbo speciosus*.

EUPAGURUS HEDLEYI, nom. nov.

1884. *Eupagurus kirkii* Miers, Zool. H.M.S. "Alert," p.267, pl. xxviii. fig. c (nec Filhol).

A large series dredged in Port Curtis in 4-7 fathoms.

It has already been pointed out by Alcock* that the specific name given by Miers had already been conferred by Filhol on a New Zealand form. We have consequently pleasure in taking this opportunity to dedicate it as above.

It was originally described by Miers from a single specimen taken in the Arafura Sea. From the material before us we are able to supplement that author's description as follows:—

The ophthalmic scale bears a distinct slender apical spine. The larger cheliped has in addition to the "inner and upper" marginal series of spinules, a granular series on the corresponding outer margin commencing at the base of the wrist and continued on the palm to the tip of the immobile finger.

Family PORCELLANIDÆ.

PETROLISTHES LAMARCKI (Leach).

1898. Borradaile, Proc. Zool. Soc. London, p.464, pl.xxxvi. figs.1 *a-b*, 2(with full synonymy).

In view of the very thorough manner in which Borradaile has dealt with this species, and of the large series of names which he has put into synonymy, we have no hesitation in referring as above to a large series of specimens dredged in 7 fathoms in Port Curtis and taken on the reef on Mast Head Island.

As a varietal feature it is noteworthy that the Port Curtis specimens have the whole dorsal surface of a darkish purple colour with deep red spots, and carry a scant tomentum, while the specimens from the reef are much lighter and quite smooth.

PETROLISTHES JAPONICUS De Haan, *var. inermis* Hasw.

1851. *Porcellana japonica* De Haan, Faun. Japon. Crust. 1850, p.199, pl. 1, fig.5.

1882. *Petrolisthes inermis* Haswell, Proc. Linn. Soc. N. S. Wales, vi. p.757(nec *Porcellana inermis* Heller).

1884. *Petrolisthes japonicus var. inermis* Miers, Zool. H.M.S. "Alert" p.268.

* Cat. Ind. Decapod Crust. Pt. ii. p.175, 1905.

Port Curtis. The species has already been recorded from this locality by Miers (*loc. cit.*).

De Man* has pointed out that Heller described, under the name *Porcellana inermis*, a species which should properly be included in the genus *Petrolisthes*, but with which Haswell's species is not identical. As, however, the latter author's name sinks to varietal rank only, it can still be used in connection with this species.

De Man has also suggested that this species may prove to be synonymous with *P. elongatus* M. Edw., common in New Zealand. A reference to the type, however, shows it to be readily distinguished from that species by its much broader front.

We agree with Miers that *P. inermis* Hasw., is at most but a variety of *P. japonicus* De Haan; the points of difference, however, noted by that author do not prove to be constant in the five specimens (including Haswell's types) which are before us.

PETROLISTHES TOMENTOSUS Dana.

1852. *Porcellana tomentosa* Dana, U. S. Explor. Exped. Crust. i. p.420, pl. xxvi. fig.10.

Two fine specimens, one of either sex, and the larger being 9mm. in length, were taken on the reef at Mast Head Island under stones. They differ from the original description only in being densely rather than "sparingly tomentose."

PORCELLANA SERRATIFRONS Stimp.

1858. Stimpson, Proc. Acad. Nat. Sci. Philad. p.80.

1888. Henderson, Zool. H.M.S. "Challenger," Anomura, p.110, pl. xi. fig.5.

Mast Head Island; under rocks.

The rugosity of the dorsum of the carapace varies within wide limits, the transverse striæ being in some cases faintly marked and in others prominently so, but in no specimen which we have examined are they absent. The spinulation of the margins also

* Journ. Linn. Soc. London, Zool. xxii. p.212, 1888.

varies greatly, as does that of the sides of the carapace. The specimens taken by the "Alert"* at Thursday Island are, doubtless, this species.

It is significant that *P. quadrilobata* Miers, † a species described from a unique specimen and one which has not since been retaken, was collected at the same time and place as specimens in the Australian Museum from Port Denison, which indisputably belong to *P. serratifrons*. The differences in the two species occur only in the elongation of the body and in the prominence and armature of the front, circumstances which render it possible that Miers' species represents only an abnormal specimen of that under consideration.

PORCELLANA DISPAR Stimp.

1858. Stimpson, Proc. Acad. Nat. Sci. Philad. Vol.x. p.297.

1884. Miers, Zool. H.M.S "Alert," p.275, pl.xxx. fig.c.

A fair series of specimens was dredged in Port Curtis, but all were much smaller than those usually found in the cooler waters of Port Jackson, where the species is very common.

PACHYCHELES SCULPTUS (M.Edw.). (Plate ii. fig.1).

1837. *Porcellana sculpta* H.M.Edwards, Hist. Nat. Crust. ii. p.253.

1852. ,, ,, Dana, U. S. Explor. Exped. Crust. i. p.412. pl.xxvi. fig.2.

1897. *Pachycheles sculptus* Ortmann, Zool. Jahrb. Syst. x. p.294 (ubi syn.).

Common under stones on the reef at Mast Head Island. There are specimens in the Australian Museum from Cabbage Tree Bay near Sydney.

De Man ‡ has expressed the opinion that the species *P. pulchella* || Hasw., was incorrectly separated from the above. A reference to the type of that species in the Australian Museum and

* Miers, Zool. H.M.S. "Alert," p.277, 1884.

† Miers, *loc. cit.* p.276, pl.xxx. fig.D.

‡ De Man, Journ. Linn. Soc. Lond. Zool. xxii. p. 219, 1888.

|| Haswell, Proc. Linn. Soc. N.S. Wales, vi. p.758, 1882.

a comparison of it with the large series before us and with Dana's figure, convince us that he is in error in this conclusion. *P. pulchella*, which has been well figured by Miers,* differs markedly from that under consideration in the sculpture of the chelipeds, in the rugosity of the dorsum of the carapace, and in other features.

Ortmann (*loc. cit.*) has shown that *P. pulchella* is a synonym of *P. pisum* M.Edw., as is also *P. sculpta* De Man (nec. M.Edw.); and has thrown much light on the synonymy of that species and the one now under consideration.

We are unable to refer to the figure of this species given by Krauss,† and that of Dana being scarcely adequate for recognition, we submit a further drawing of one of our specimens with the following notes.

The frontal and hepatic regions are very rugose, and there are irregular transverse raised ridges on the frontal region and two large ornate bosses on each hepatic region.

The wrists are ornamented with about five rows of tubercles, each of which is margined anteriorly with a fringe of setæ. The palm is similarly ornamented on its outer surface. The fingers are somewhat variable and are ornamented with rows of elongate-imbricate tubercles fringed with setæ, which are more pronounced on the mobile finger.

The front is reflexed and truncate, and has a deep transverse sulcus, which is sometimes only faintly indicated. The carapace varies considerably in width.

Length of carapace	5 mm.
Breadth ,,	4 ,,
Length of cheliped	10·5 ,,

POLYONYX OBESULUS Miers (?).

1884. Miers, Zool. H.M.S. "Alert," p.272, pl.xxix. fig.7.

1893. Henderson, Trans. Linn. Soc. Lond. (2) Zool. v. p.430.

To this species we refer a single imperfect specimen from Port Curtis, dredged in 7 fathoms.

* Miers, Zool. H.M.S. "Alert," p.273, pl.xxx. fig.A., 1884.

† Krauss, Südafr. Crust. p.58, Tab. iv. fig.1, 1843.

From the description given by Henderson it differs in having the ambulatory dactyli biunguiculate only, and in having a very prominent lobe on the distal inner margin of the merus of the cheliped, characters which he assigns to *P. biunguiculatus*. The median frontal lobe, however, is subacute, and is not much produced beyond the laterals, and the carpus is very short and broad. The larger cheliped is lost, but the smaller agrees perfectly, excepting the above-mentioned character, with those of Henderson.

Under the name *P. biunguiculatus* Dana,* a specimen has been recorded by Haswell † from Holborn Island, which, in general appearance, agrees well with Dana's figure, although the median frontal lobe is obtuse and a little more prominent than the laterals, and the dactyli are triunguiculate.

Henderson has expressed his divergence from the view of De Man ‡ that *P. obesulus* and *P. unguiculatus* are synonymous, but the above facts certainly favour the views of the latter author.

RHAPHIDOPUS CILIATUS Stimpson.

1858. Stimpson, Proc. Acad. Nat. Sci. Philad. p.241.

1892. Ortmann, Zool. Jahrb. Syst. Bd.vi. p.226, pl. ii. fig.16.

Port Curtis; two specimens dredged in seven fathoms.

Our specimens are in fairly close agreement with Ortmann's figure (*loc. cit.*), differing only in being rather more rugose. The antero-lateral angles are more prominent than figured, and are somewhat tuberculose; the postero-lateral angles are also somewhat more pronounced, giving to the carapace a squarer aspect.

The chelipeds are scarcely so elongate, and the merus is armed with two tuberculate ridges above. The inner margin of the carpus is strongly tuberculate, and there are tubercles on the lower half of the palm and on the dactylus; the digit also is ridged with tubercles.

* Dana, U.S. Explor. Exped. Crust. i. p.411, pl.xxvi. fig.1, 1852.

† Haswell, Cat. Aust. Crust. p.147, 1882.

‡ De Man, Archiv f. Naturg. p.442, 1887.

Direct comparison, however, with Japanese examples in the Australian Museum, removes any doubt as to specific identity. Ours are small specimens, and the rugosities noticed become less distinct in larger individuals.

Family GALATHEIDÆ.

Genus GALATHEA Fabricius.

The collection having provided us with material from the Queensland coast near to the localities in which some of Haswell's types were taken, and that author's specimens being available to us for comparison, we have taken this opportunity of revising the whole of the recorded Australian species of the genus.

It appears to us that, after elimination of the synonyms discussed below, the authenticated species recorded from the East Coast of Australia may be set down as six, as shown in the following key:—

- A. Rostrum with three lateral teeth.
 - B. Striations of carapace continuous on both anterior and posterior half.
 - C. Rostrum broad, two spines on inner border of merus of maxillipeds; fingers moderate..... *G. australiensis.*
 - CC. Rostrum slender, three spines on inner border of merus of maxillipeds; fingers long.. *G. whiteleggii.*
 - BB. Striations on anterior half of carapace not continuous.
 - D. Chelipeds robust, carpus short, fingers half length of hand..... .. *G. magnifica.*
 - DD. Chelipeds slender, carpus long, fingers more than half length of hand..... *G. aculeata.*
- AA. Rostrum with other than three lateral teeth.
 - F. Rostrum with one lateral tooth..... *G. pusilla.*
 - FF. Rostrum with seven small lateral teeth..... *G. elegans.*

The species of this genus are characteristically variable, the variations no doubt being determined by age, environment and other circumstances; and the brief diagnosis of each which we here give must be taken only as characterising *in toto* those specimens which are actually before us and of which figures are given.

GALATHEA AUSTRALIENSIS Stimps. (Plate iv. figs.1, 1a).

1858. *G. australiensis* Stimpson, Proc. Acad. Nat. Sci. Philad. p.89.
 1884. Miers, Zool. H.M.S. "Alert," p.277, pl.xxxi. fig.A(nec B).
 1888. Henderson, "Challenger" Anomura, xxvii. p.118, pl. xii. fig.5.
 1900. Whitelegge, Mem. Aust. Mus. iv. Pt.2, p.189.
 1882. *G. corallicola* Haswell, Proc. Linn. Soc. N. S. Wales, vi. p.761, and Cat. Aust. Crust. p.162.
 1884. Miers, Zool. H.M.S. "Alert," p.278.
 1900. Whitelegge, Mem. Aust. Mus. iv. Pt.2, pp.190 and 192.

Mast Head Island; a good series.

Carapace broad, with 7-8 lateral spines. Striations complete, arranged in eight pairs, each with a thick fringe of setæ of moderate length.

Rostrum broad, shorter than the gastric region and armed with three pairs of lateral spines. It is medially grooved and covered with obscure setiferous scales. There are two gastric spines placed just posterior to the line of the inner orbital spines.

Chelipeds robust, spiny and clothed with long hairs and obscure setiform scales. They are $2\frac{4}{10}$ as long as the carapace, including the rostrum. The hand is rather longer than the carapace, and the fingers are much shorter than the palm.

In old males the right hand is much swollen and the fingers are curved, meeting only at the tips, leaving a wide gap when closed. There are two obtuse tubercles near the base of the dactylus and one between them on the digit, on which there is also another near the end. The whole inner margin is finely serrate.

In young males and females the teeth are scarcely discernible, and the fingers meet along their entire edges.

The ambulatory legs are armed normally. They are scaly and clothed with long hairs.

The ischium of the external maxillipeds bears a distinct spine on its outer distal margin and a minute spinule on its inner margin. The ridge on its anterior face has about 21 minute

denticles. The inner margin of the merus has two prominent spines, and the outer is triserrate, as is that of the carpus. The merus has setose scales on its upper surface, and from the joints there spring long hairs.

After careful comparison of a good series from Queensland and from Port Jackson, N.S.W., with the four type specimens of *G. corallicola* in the Australian Museum, we are left without doubt that the suggestion of Miers that the above two species are identical is correct. It has already been pointed out by Whitelegge (*loc. cit.*) that Haswell's statement that the spinules are absent on the gastric region is mistaken, while a large series like that before us amply shows that the other characters relied on for differentiating the two species, viz., "having the frontal region rather narrow, the eyes longer and the hands both longer and broader and with very few spines" are highly variable and consequently unimportant for systematic use.

We cannot, however, fall in with the view put forward by Miers (*loc. cit.*), and subsequently adopted by Henderson,* that our species is identical with *G. spinosirostris* Dana, from which it differs in the conformation of the chelipeds and in the armature of the outer maxilliped, the latter a character of recognised specific value.

The species occurs on the Victorian coast, and has been taken by one of us off Port Phillip Heads.†

The specimen figured is a male from Port Jackson.

GALATHEA WHITELEGGII, nom.nov. (Plate iv. figs.2, 2a).

1900. *Galathea* sp. Whitelegge, Mem. Aust. Mus. iv. Pt.2, p.191.

Type (imperfect) taken by the S.S. "Thetis" in 54-59 fathoms off Wata Mooli, N.S.W. Another specimen (perfect) is in the Australian Museum from Port Jackson. The species does not occur in our Queensland collection.

* Henderson, Trans. Linn. Soc. Lond. (2) Zool. Vol.v. p.431, 1893.

† Sayce, Vict. Nat. Vol.xviii. p.155, 1902.

This species was fully diagnosed by Whitelegge as far as possible from material taken by the "Thetis," in which unfortunately the chelipeds were missing. The second specimen fortunately enables us to complete the description.

Carapace elongate. The striations are complete and are clothed with long stiff close-set setæ; there are about eight principal ones and an equal number of finer lines. Lateral margins armed with six spines, the first of which is the largest, reaching to the outer angle of the front. There are a pair of gastric spines and one on each hepatic region.

The rostrum is long and narrow. It is as long as the gastric region, covered with setose scales, mesially grooved and armed with three lateral spines, of which the central one is long and acute.

The chelipeds are slender, $2\frac{4}{10}$ as long as the carapace, including the rostrum, covered with pronounced spiniform setose scales and scantily clothed with long hairs, which are thickest between the fingers. The fingers are incurved at the tips, overlapping when closed, and have their inner margins serrate. The dactylus has two large teeth at the base, and the opposing digit has one large basal tubercle followed by a marked excavation. The carpus is shorter than the dactylus, which is scarcely equal to the palm.

The ambulatory legs are scaly, clothed with long hairs and normally armed.

The ischium of the external maxillipeds terminates in small spines at its inner and outer borders. The ridge on its anterior surface is armed with 16 denticles. Merus with setose scales, its inner border armed with three spines. The following joints are scaly.

The nearest ally of this species appears to us to be *G. inconspicua* Henderson,* from which it differs in the more powerful armature of the rostrum and in the more slender carapace.

* Henderson, Ann. Mag. Nat. Hist. (5) xvi. p.408, 1885, and "Challenger" Anomura, p.122, pl.xii. fig.2, 1888.

Measurements of the specimen figured, which is from Port Jackson, are as follows :—

Length of carapace.....	5 mm.
Length of chelipeds.....	11·5 mm.
Length of hand.	5 ,,
Length of dactylus.....	2·2 ,,

GALATHEA MAGNIFICA Haswell. (Plate iv. figs.3, 3a).

1882. *Galathea magnifica* Haswell, Proc. Linn. Soc. N. S. Wales, vi. p.761, and Cat. Aust. Crust. p.162.

1900. Whitelegge, Mem. Aust. Mus. iv. Pt.2, p.189.

1905. *Galathea setosa* Baker, Trans. Roy. Soc. South Aust. xxix. p.267, pl xxxv. figs.2, 2a, 2b.

Dredged in Port Curtis in 7 fathoms and off Mast Head Island in 17 fathoms (common).

Carapace broad. The striæ on the interior half are broken up into short rounded scales behind which there are four longer and complete ones; all have a thin fringe of short setæ interspersed with longer hairs. The carapace is laterally armed with 6-7 spines, of which there is also a pair on the gastric region.

The rostrum is very broad and long, medially grooved and clothed with scattered setæ. It is armed with a median and three lateral spines, all of which are very acute.

The chelipeds are short and stout, armed with a few spines and thickly beset with very long hairs; the setose scales are obscured and even absent in parts. In old males the left cheliped is much enlarged, and is rather more than twice as long as the carapace, the hand being as long as all the other joints and very broad. The dactylus is nearly equal to the palm in length and much longer than the carpus, which almost equals the rostrum. Both fingers have a prominent tooth near their base. The smaller hand and those of young males and females have similar proportions, but are without teeth on the fingers.

The ambulatory legs are armed normally, scaly and clothed with very long hairs.

The ischium of the external maxillipeds bears a spine on its inner distal margin; the outer, though finely produced, is obtuse.

The anterior toothed ridge has about twenty-eight closely placed denticles. The merus has two prominent spines on its inner margin; its outer margin is smooth. There are several setose scales on the under surface, and all the joints are hairy.

Our examples from more northern waters show only traces of the brilliant colour markings described by the original author. These consist only of a faint purple band on the abdominal segments of some of the specimens, and in all a bright pink band near the tips of the fingers. Otherwise they differ only from the types in the Australian Museum in being much less hairy; the characteristic long hairs are, however, not absent.

The specimen figured was dredged off Mast Head Island in 17 fathoms.

Mr. Baker, of South Australia, has very kindly forwarded us on loan the type specimens of his *G. setosa*, as to which he writes: "To my mind this seems to approach nearer to *G. magnifica* than to any other." In a note following his description he points out certain differences between *setosa* and *magnifica*, but of these colour is the only one constant, and this we cannot regard as a specific character. We have accordingly sunk his name in synonymy as above, a conclusion with which, after having been furnished with specimens taken by us in Port Curtis, he has expressed his agreement.

GALATHEA ACULEATA Haswell. (Plate iv. figs. 4, 4a).

1882. Haswell, Proc. Linn Soc. N. S. Wales, vi. p.761, and Cat. Aust. Crust. p.162.

1900. Whitelegge, Mem. Aust. Mus. iv. Pt.2, p.190.

This species did not occur in our collection.

The figure submitted, and the following description, are taken from the type in the Australian Museum, from Holborn Island, Q.

Carapace broad, the striations on the anterior half broken up into short rounded scales, behind which are four complete ones, all fringed with short hairs with a few longer ones interspersed. There are six large lateral spines and a pair on the gastric region.

The rostrum is large, medianly grooved, sparsely scaly, and armed with a central and three lateral spines, all of which are slender and acute.

The chelipeds are short, slender, spiny, and clothed with long hairs; the scales are not very distinct. The hand of the female is equal in length to the carapace, and is as long as the rest of the limb. Dactylus much longer than the palm, which is a little longer than the carpus, which is about the same length as the rostrum. The fingers are slender and not armed with prominent teeth, but are finely toothed along the whole of their trenchant margins, which almost meet when closed.

The ambulatory legs are armed normally and clothed with scattered hairs.

The ischium of the external maxillipeds has both its inner and outer distal angles produced as spines, the anterior ridge has 26 sharply pointed denticles. The merus has two prominent spines on its inner margin, and its outer margin is trispinose. All the joints carry scattered hairs.

This species is readily distinguished from *G. australiensis* Stimp., which it somewhat resembles, by the broken striæ on the anterior half of the carapace as well as by the great length of the fingers. There are four specimens in the Australian Museum from Holborn Island and Port Molle, Q., in all of which these characters are constant.

The identity of the specimens taken by the "Challenger" is uncertain. They may possibly represent another species, as suggested by Whitelegge.

GALATHEA PUSILLA Henderson. (Plate iv. figs. 5, 5a).

1885. Henderson, Ann. Mag. Nat. Hist. (5) Vol. xvi. p. 407.

1888. „ Rep. Anom. "Challenger," p. 121, pl. xii. figs. 1, 1a and 1b.

1898. Thomson, Trans. N.Z. Institute, Vol. xxxi. p. 193, pl. xxi. fig. 7.

1900. Whitelegge, Mem. Aust. Mus. iv. Pt. 2, p. 185.

Mast Head Island; dredged in 17 fathoms.

The accompanying figure and description are taken from an adult male dredged by the late Mr. J. Bracebridge Wilson off Port Phillip Heads, Vic., in which the carapace including rostrum is 6.5mm. long, while the large cheliped has attained a length of 20mm. Specimens previously figured appear to have been either females or immature males.

Carapace broad with eight cross striæ (and in some specimens with intermediate lines) fringed with setæ and scattered longer hairs. There are 7-8 lateral spines and either one or two pairs of gastric spinules.

The rostrum is short, somewhat concave above, and carrying short hairs. It is armed with a small median spine, which has at its base on either side a small spinule.

The antennæ are very short and robust.

The right cheliped of an old male is robust and greatly developed, not very spiny, and rather thickly clothed with long hairs. It is three times the length of the carapace, the palm alone being nine-tenths as long. The finger is much shorter than the palm and does not equal the carpus. There is a single large tooth, the base of each of the fingers, which are much flattened and incurved at the tips, giving to them the appearance of being spoon-excavate.

The ambulatory legs are normal.

The ischium of the external maxillipeds has its inner and outer distal angles produced into spines. The anterior ridge is finely tuberculate, but is not spinose. The merus has one spine only on its inner border, and its outer distal angle is sharply produced. All the joints bear fine hairs.

From the original description, some of our specimens and those taken by the "Thetis" differ in *not* having the carapace "comparatively smooth," and in having a single pair of spines on the gastric region.

GALATHEA ELEGANS Adams & White. (Plate iv. figs.6, 6a).

1848. *Galathea elegans* Ad. & White, Crust. in Voy. "Samarang," p.11, pl.xii. fig.7.

1882. *Galathea elegans* Haswell, Cat. Aust. Crust. p.163.

1884. *Galathea elegans* Miers, Zool. H.M.S. "Alert," p.278.

1882. *Galathea deflexifrons* Haswell, Proc. Linn. Soc. N.S. Wales, vi. p.76; and Cat. Aust. Crust. p.163.

Port Curtis; one specimen (♂) dredged in 7 fathoms.

Carapace elongate; the striations, of which there are eight principal ones and about an equal number of minor ones, are continuous from side to side; all are fringed with forwardly directed short hairs. There are six principal lateral spines on each side but none on the dorsal surface.

The rostrum, which frequently shews a tendency to be deflexed, is much elongated, its length from the tip to the first of the dorsal striæ being equal to that of the rest of the carapace. It is medianly grooved in its distal half only, and is everywhere clothed with small scales and short hairs. Its armature consists of a median spine, and a series of seven fine forwardly directed spinules at regular intervals on its lateral margins.

The chelipeds, of which all the joints are cylindrical, are very long, being $2\frac{1}{3}$ times the length of the carapace, rostrum included. They are everywhere clothed with close imbricating scales fringed with short hairs, and on the merus and carpus with sharp spinules. The dactylus and immobile fingers are each about one-half the length of the palm; their trenchant borders, which almost meet when closed, are finely toothed in their whole length.

The ambulatory legs, which are normally armed, are covered with close-set imbricating scales similar to those on the chelipeds, but are without the long hairs characteristic of other species.

The ischium of the external maxillipeds has its inner and outer distal angles produced as spines, the anterior ridge has sixteen sharply pointed denticles. The merus has two sharp spines on its inner margin, and its outer distal angle is produced to a blunt point. All the joints are sparingly scaly and carry long hairs.

The figure submitted is from a specimen in the Australian Museum from Holborn Island, Q.

A great divergence is observable between the Australian examples of this variable species which we have studied and the figure given by Adams & White. Should the examination of a

series from the Malay Archipelago and Australia demonstrate that the differences are of a specific value, Haswell's name of *deflexifrons* will stand for our specimens.

Miers (*loc. cit.*), who has compared Australian specimens with the type in the British Museum, has given a detailed description, with which our example is in accord except that the fingers, which are said to be "rather shorter than the palm," are with us scarcely half its length. In this it is in agreement with *G. longirostris* Dana, which, however, appears to have a shorter cheliped, "as long as the body."

There is in the Australian Museum an unlocalised specimen in which the rostrum is slightly deflexed, being intermediate between the type of *G. deflexifrons* Haswell, and typical forms of *G. elegans*. It appears to us to afford ample confirmation of the view of Miers that the two species are identical, the one which we have here adopted.

Henderson* has expressed a view that this species is identical with *G. grandirostris* Stimpson, but with this we cannot agree.

The colour of the species is most variable; our specimen from Port Curtis was, when alive, a bright scarlet with a central longitudinal purple band only on the last segment of the abdomen.

EXPLANATION OF PLATES I.-IV.

Plate i.

- Fig. 1.—*Pilumnus terræ-reginæ* Haswell.
 Fig. 1a.— " " ; larger cheliped.
 Fig. 2.— " *spinicarpus*, n.sp.
 Fig. 2a.— " " ; larger cheliped.
 Fig. 3.—*Metaplax hirsutimana*, n.sp.
 Fig. 3a.— " " ; buccal region.
 Fig. 3b.— " " ; left cheliped with hairs removed.

* Henderson, "Challenger," Anomura, p.119, 1888.

Plate ii.

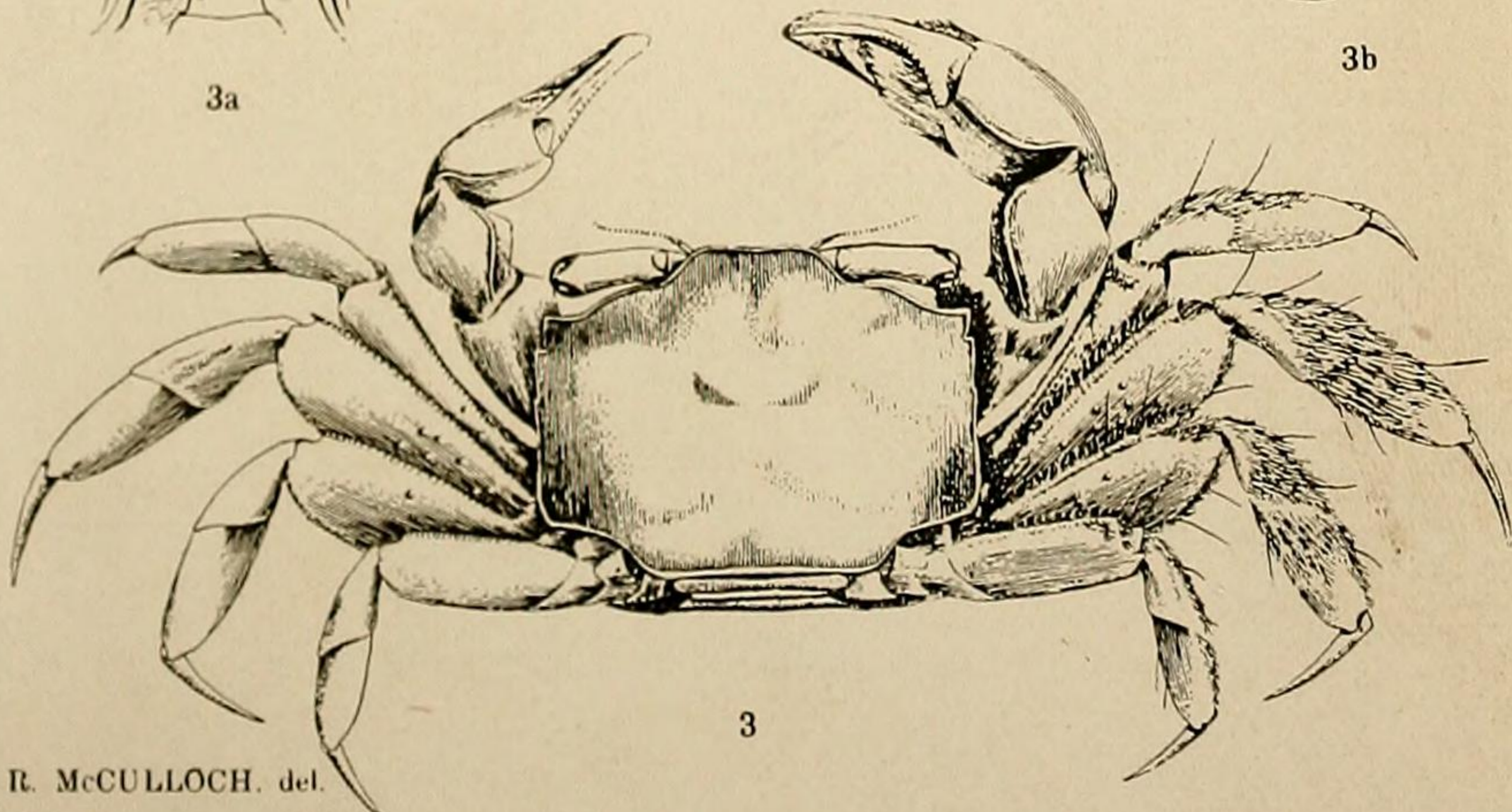
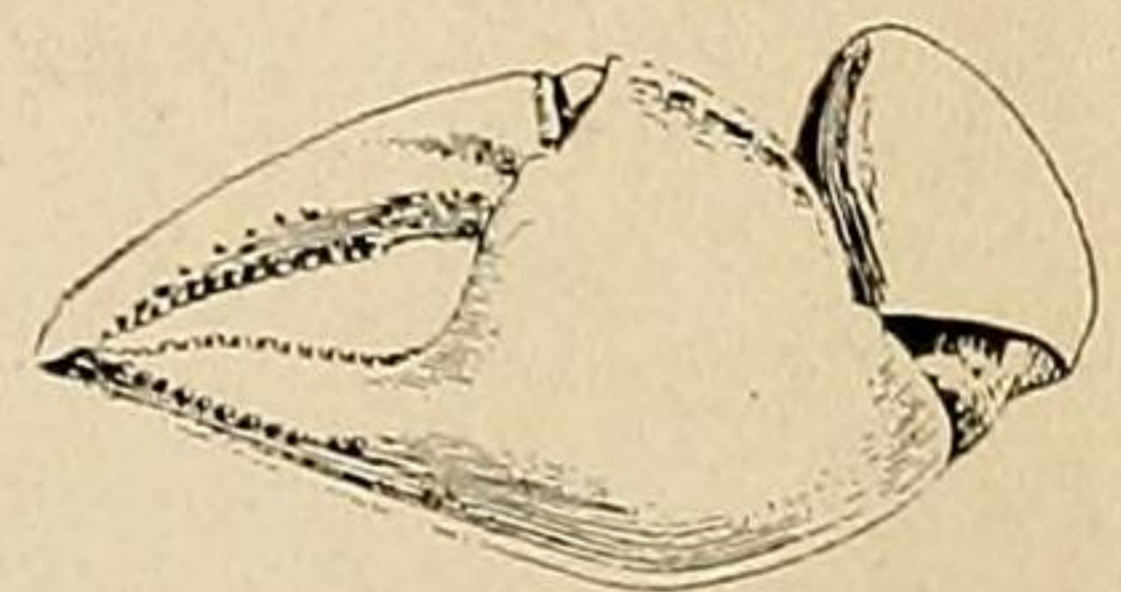
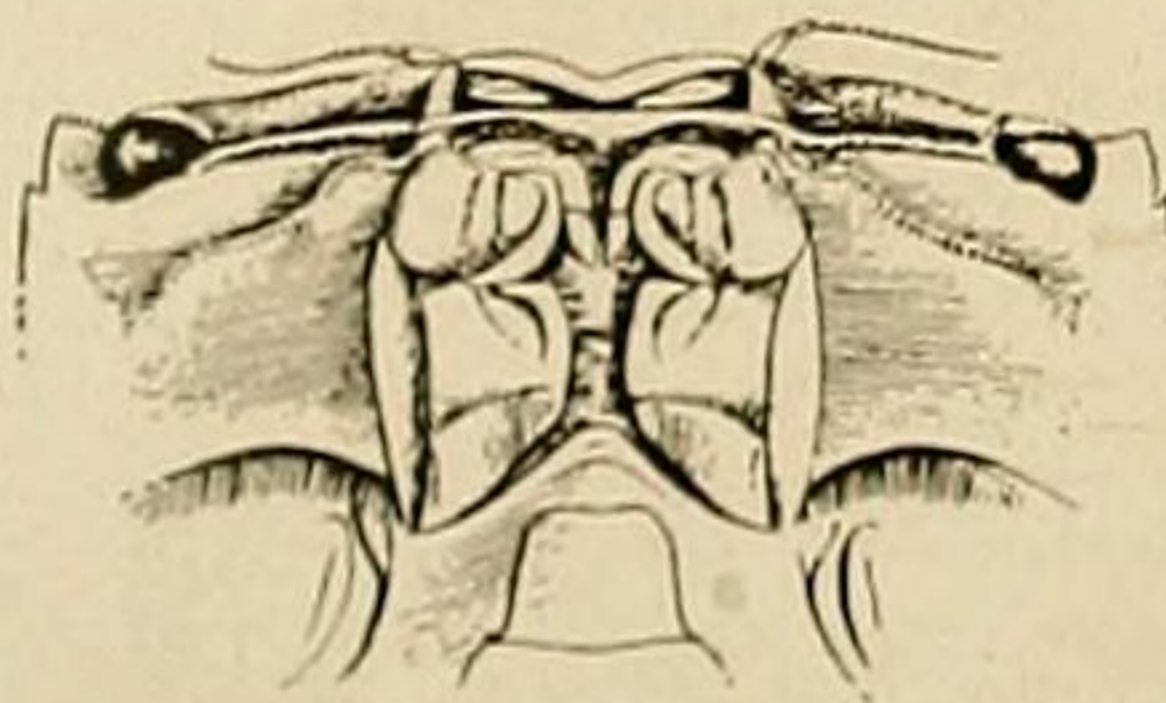
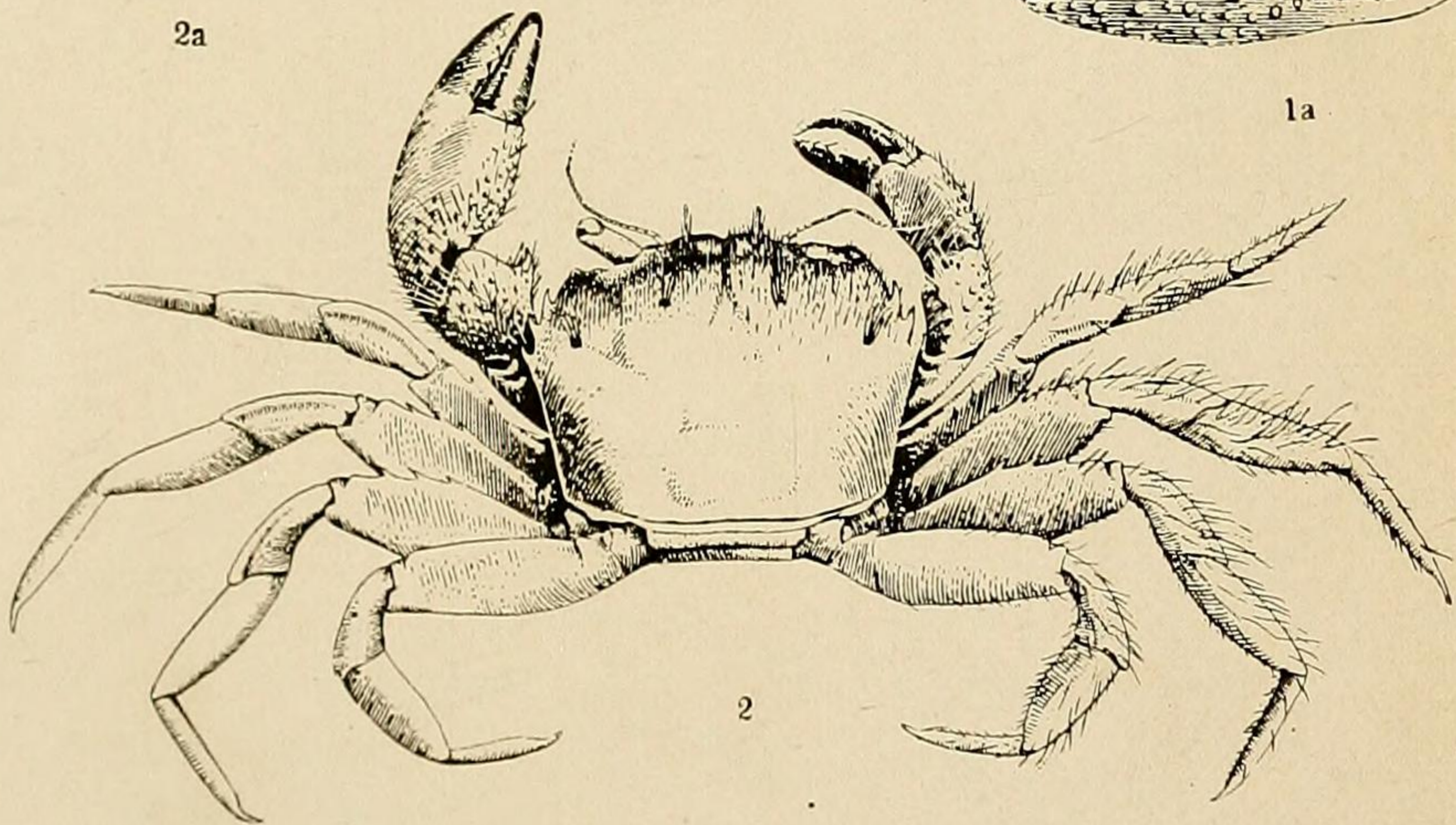
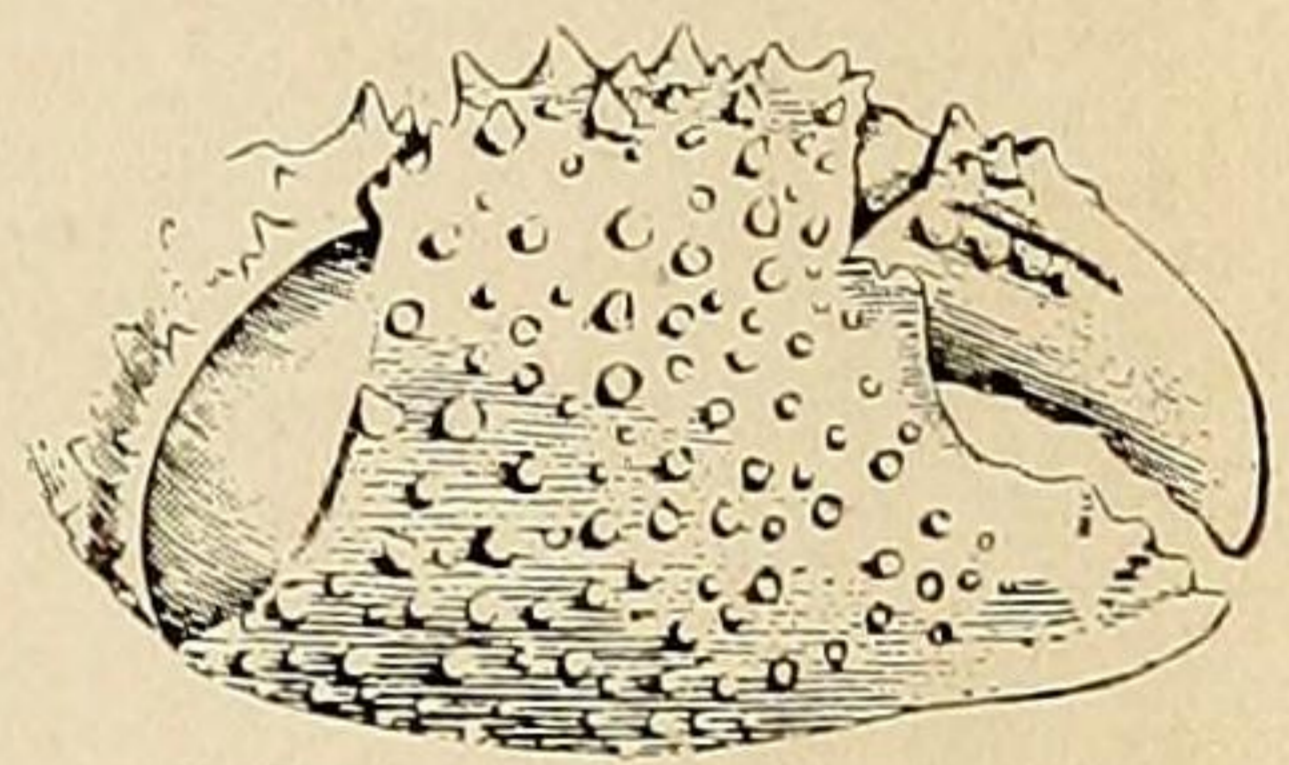
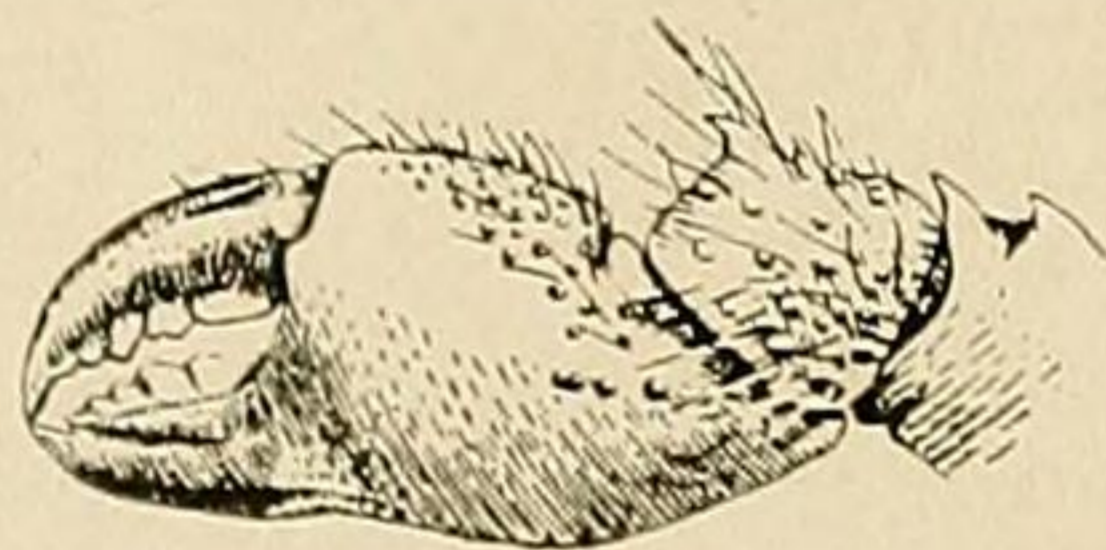
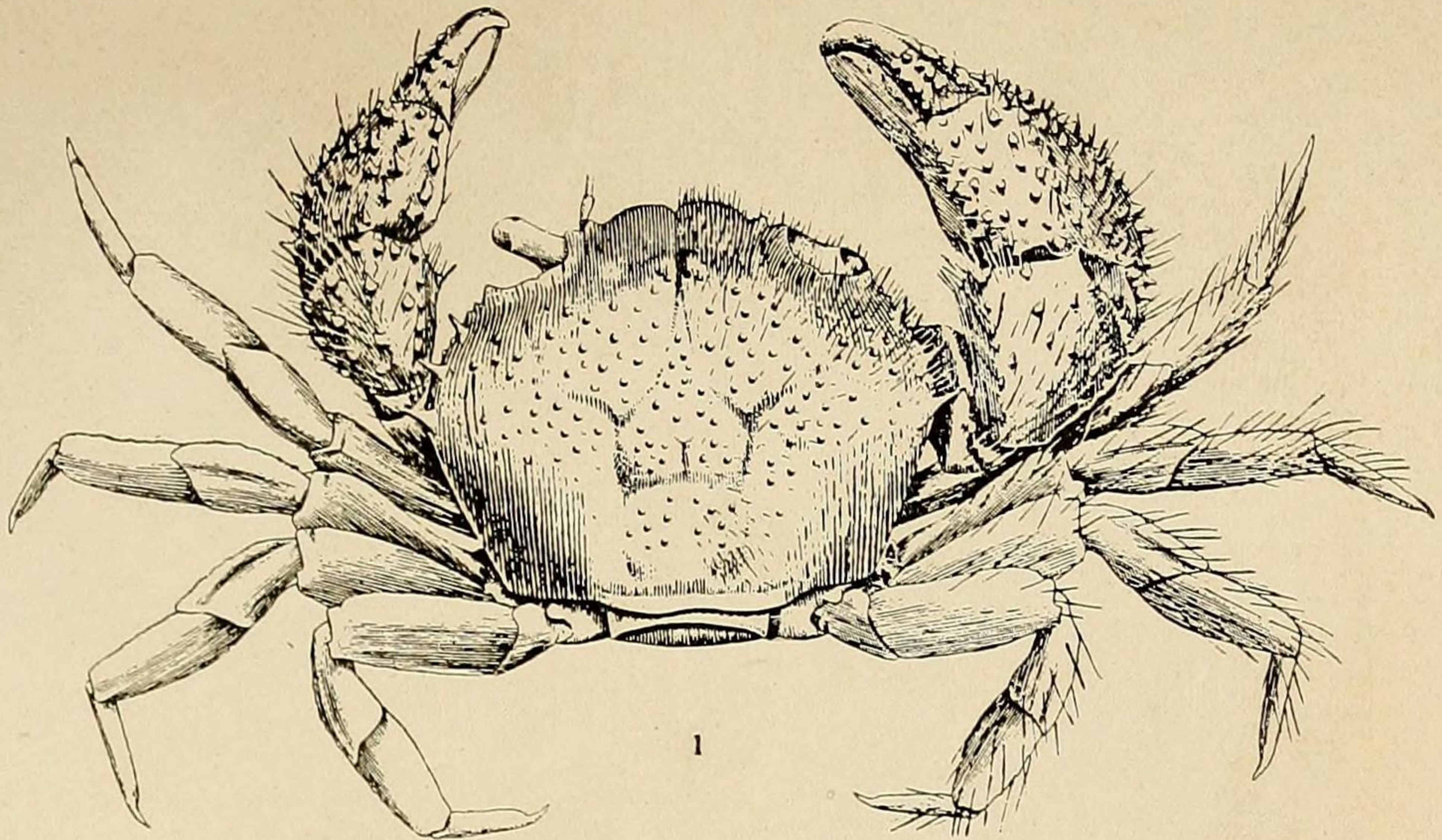
- Fig. 1.—*Pachycheles sculptus* (M. Edw.).
 Fig. 2.—*Cryptocnemus crenulatus*, n.sp.
 Fig. 2a.— „ „ ; seen from below.
 Fig. 3.—*Paramithrax coppingeri* Haswell.

Plate iii.

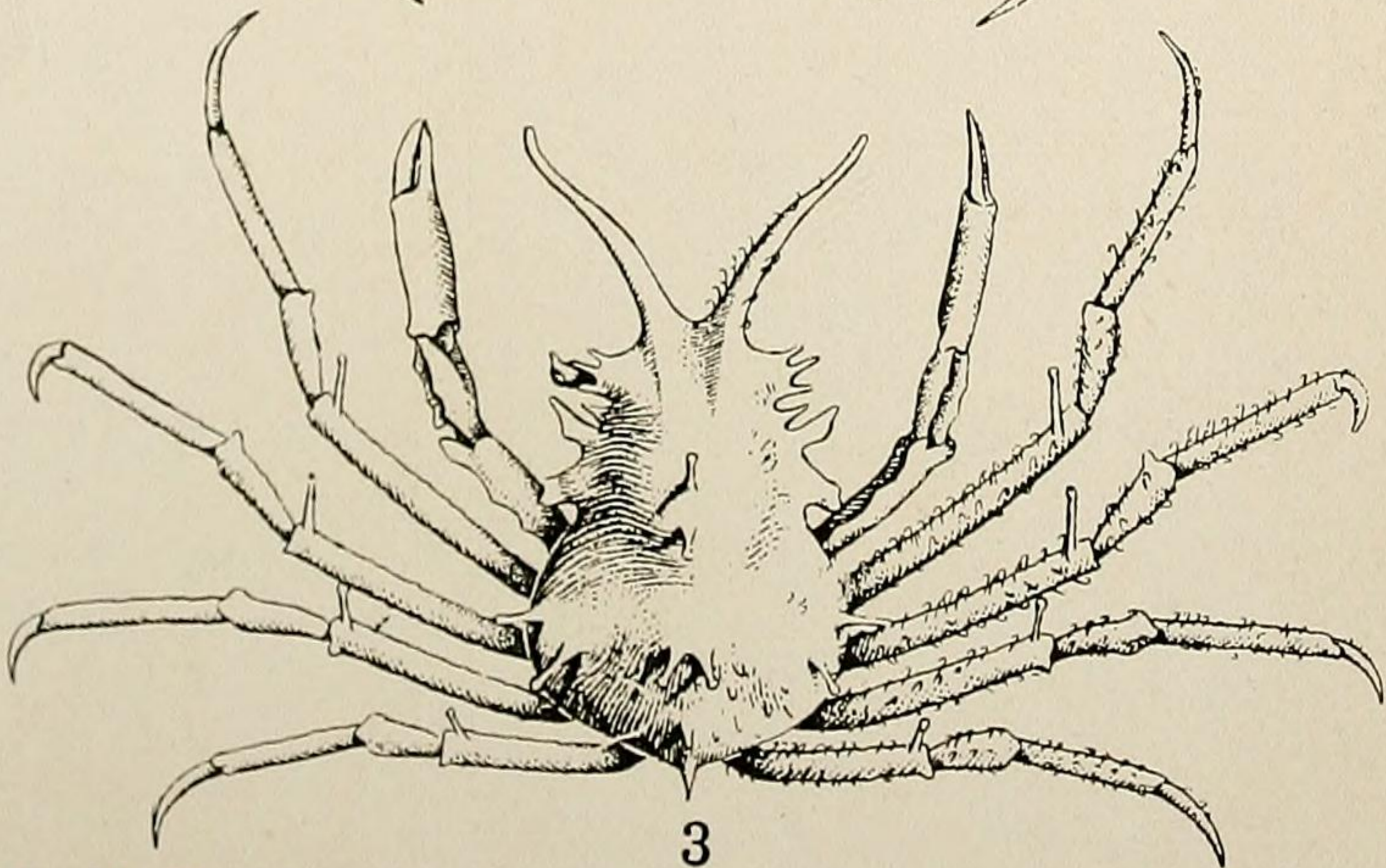
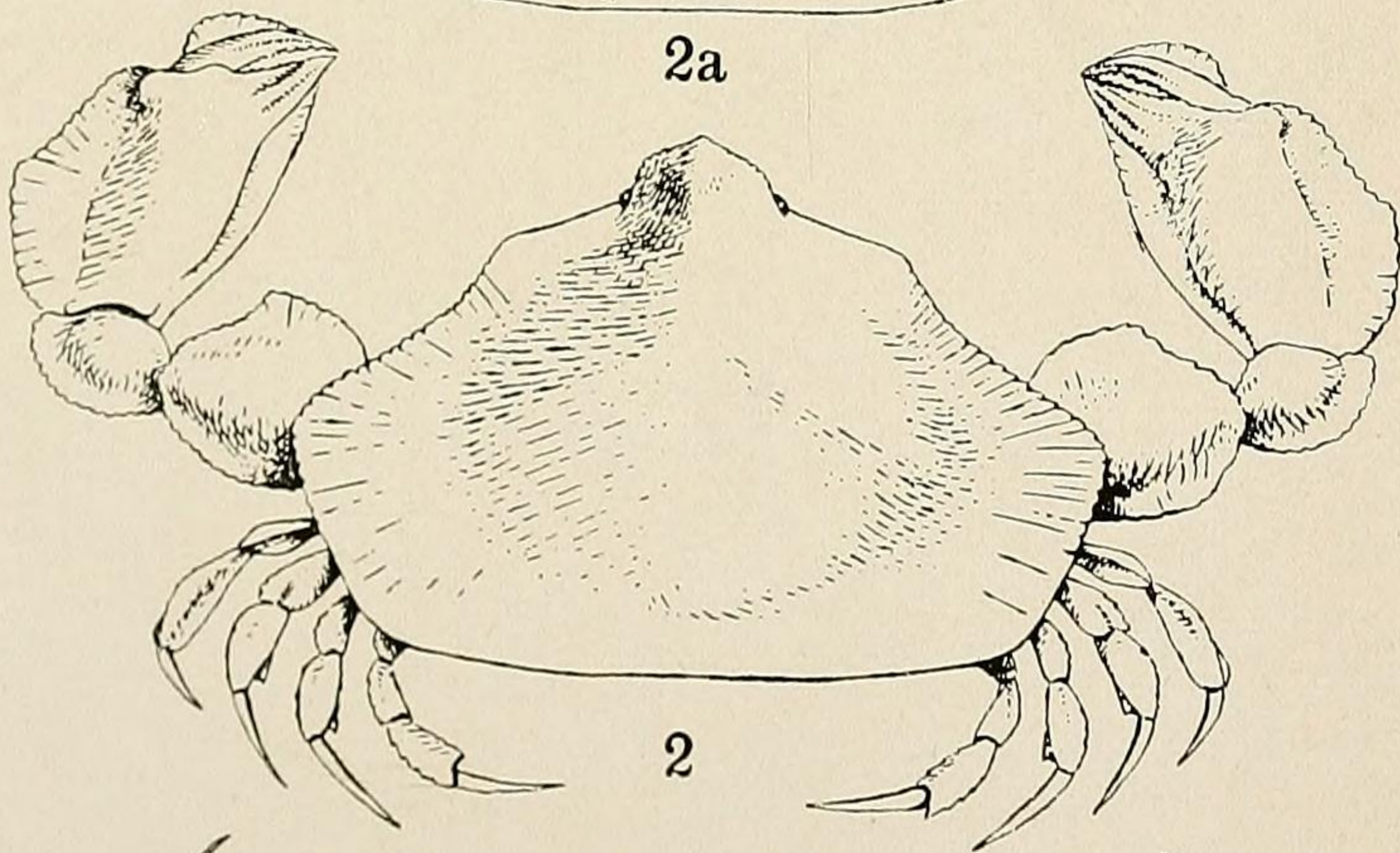
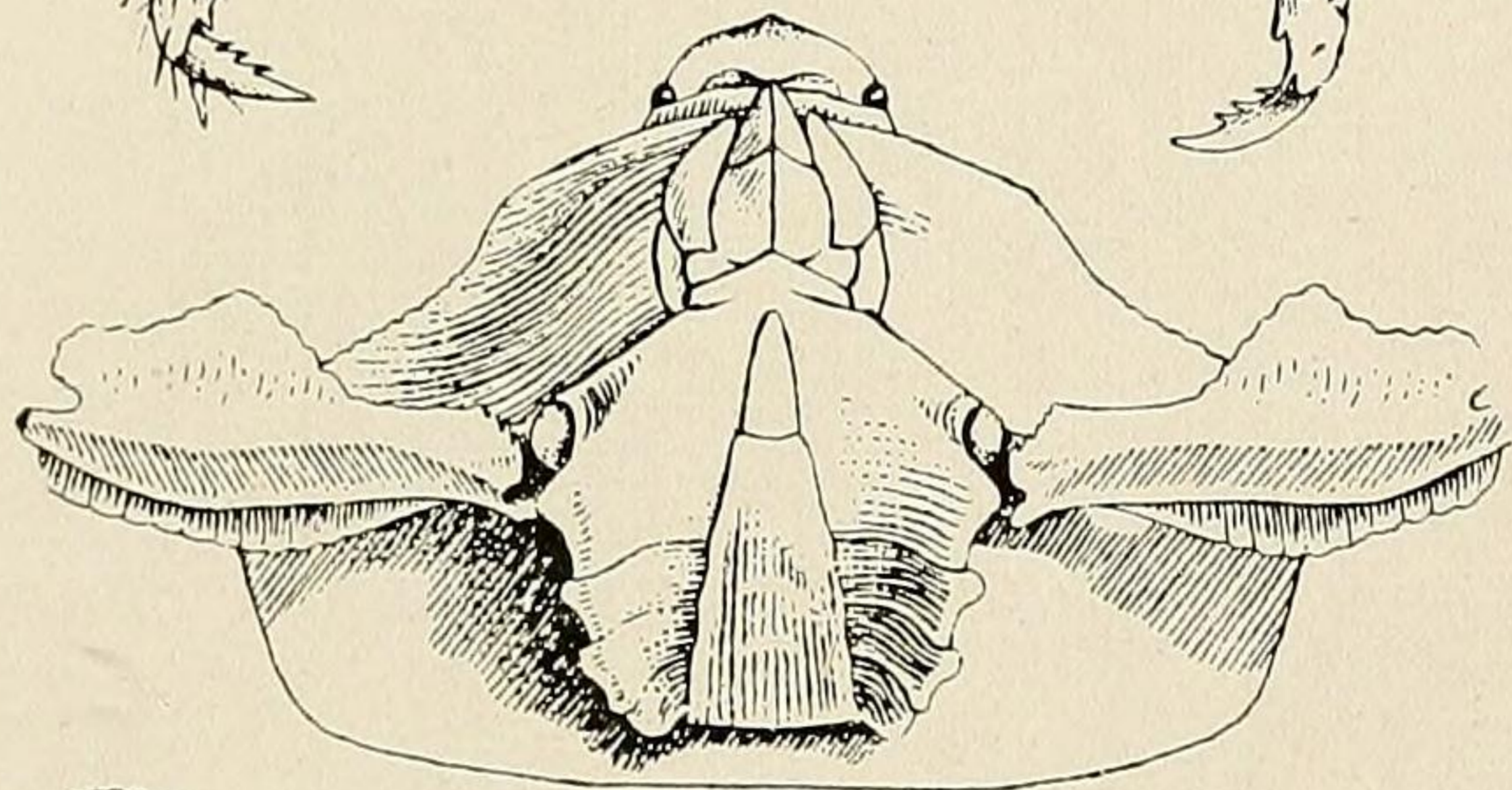
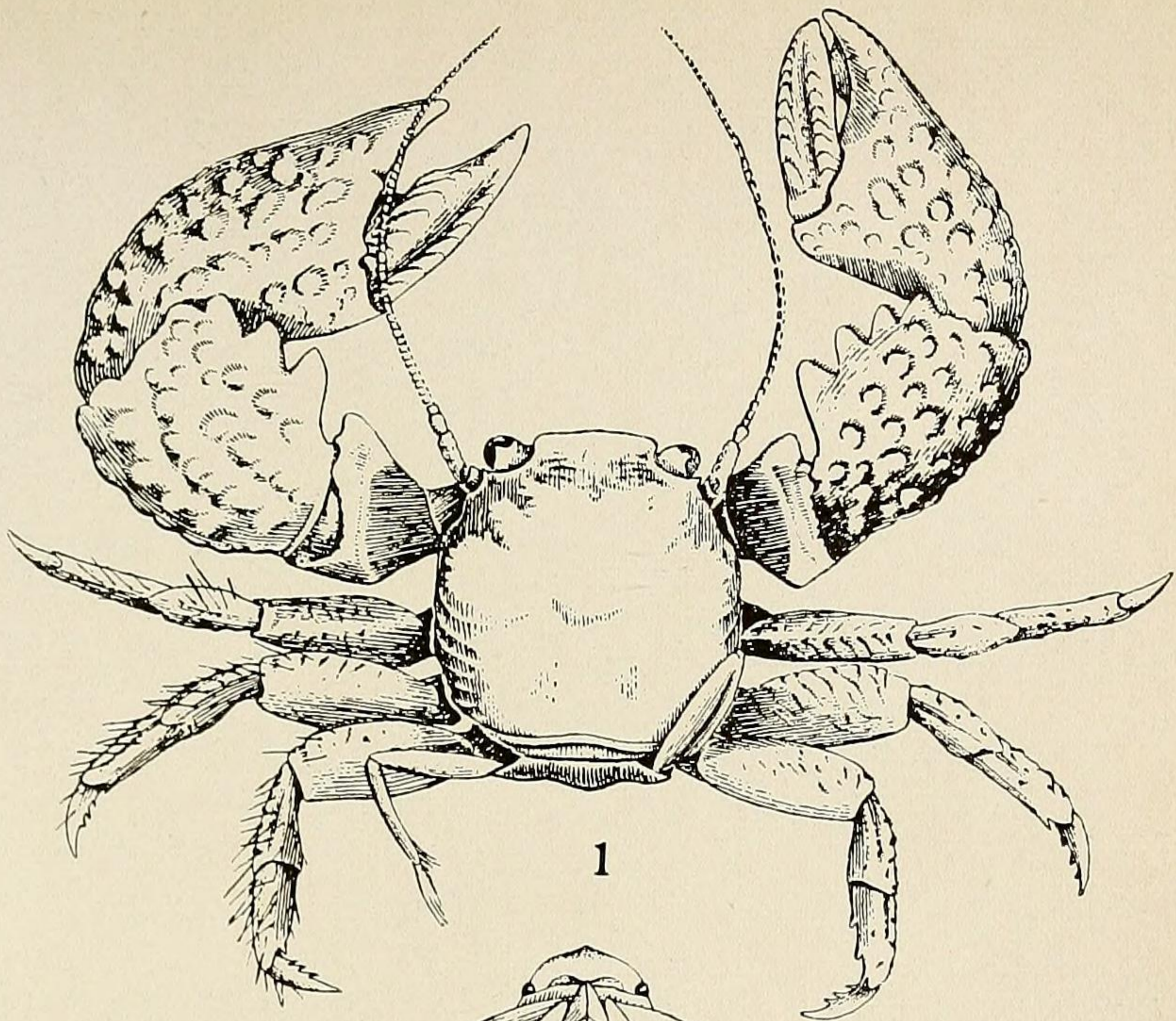
- Fig. 1.—*Achæus lacertosus* Stimpson.
 Fig. 2.—*Paramithrax sternocostulatus* A.M. Edw.
 Fig. 2a.— „ „ ; seen from below.
 Fig. 3.—*Diogenes capricorneus*, n.sp.
 Fig. 3a.— „ „ ; frontal process, enlarged.

Plate iv.

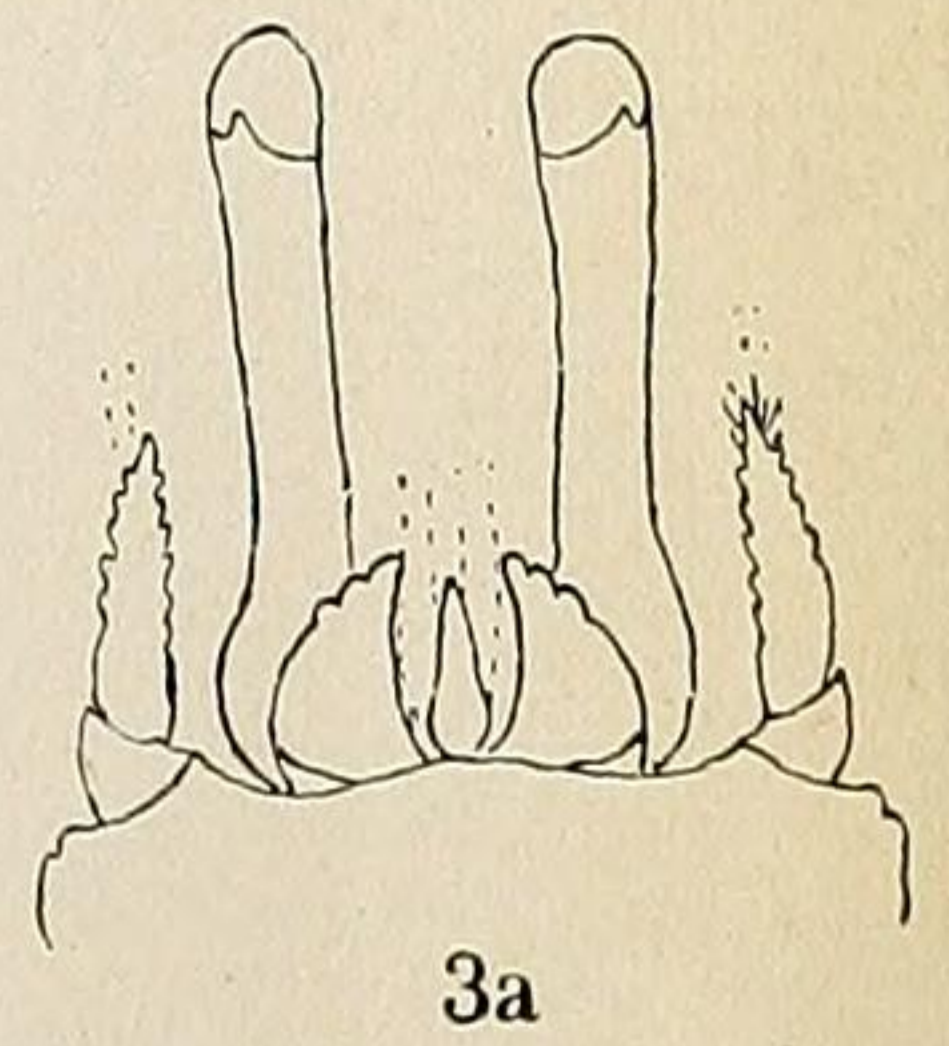
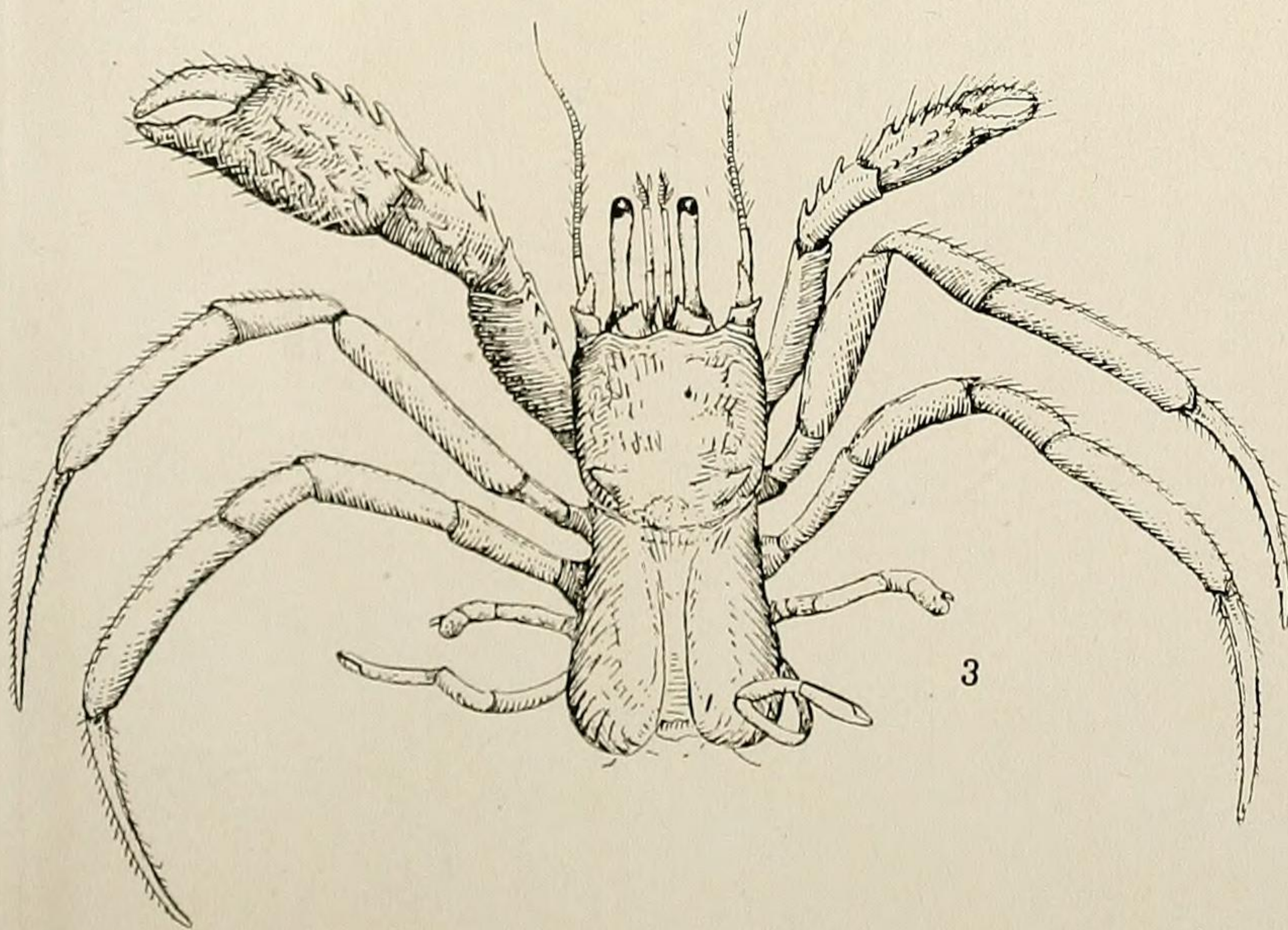
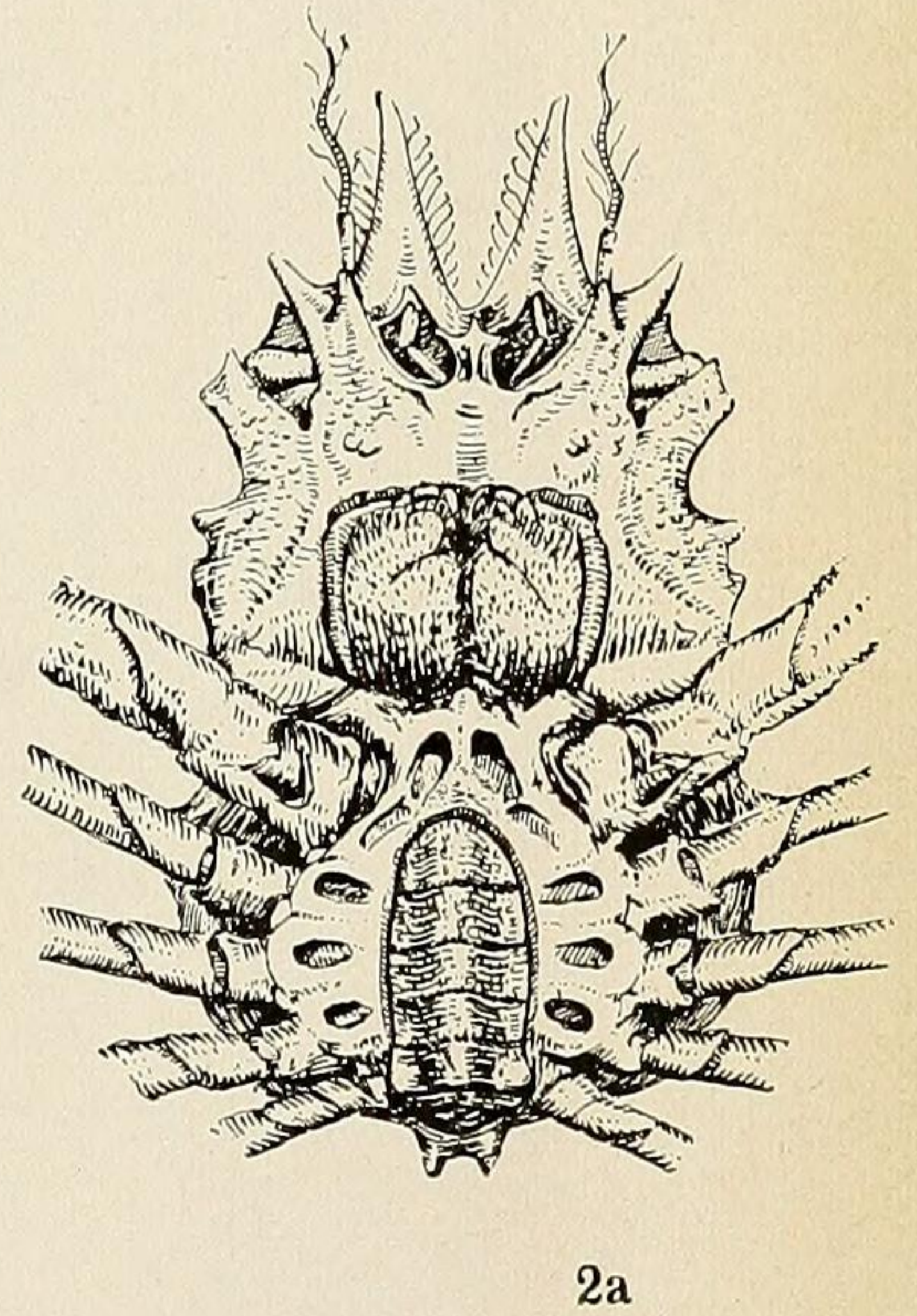
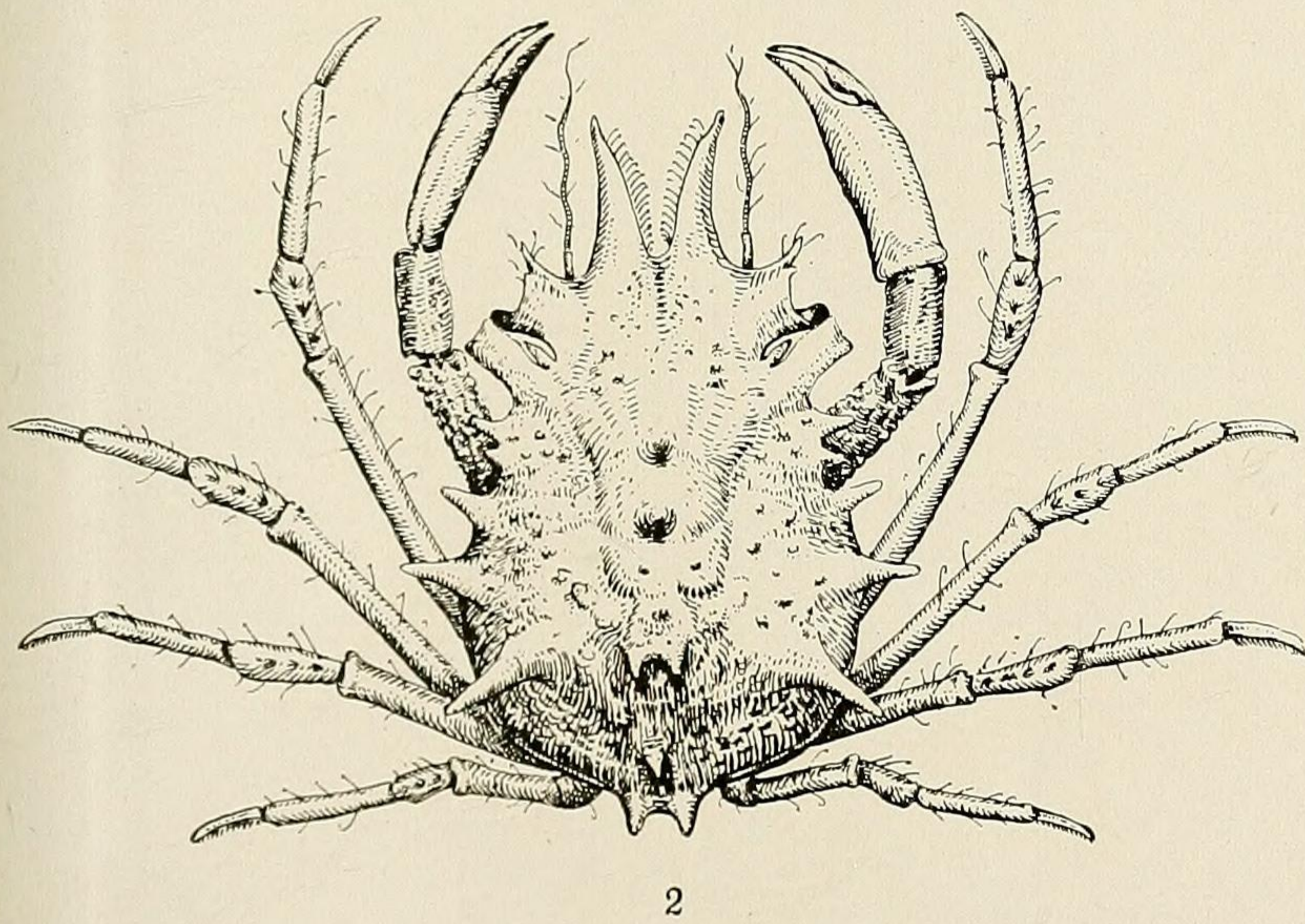
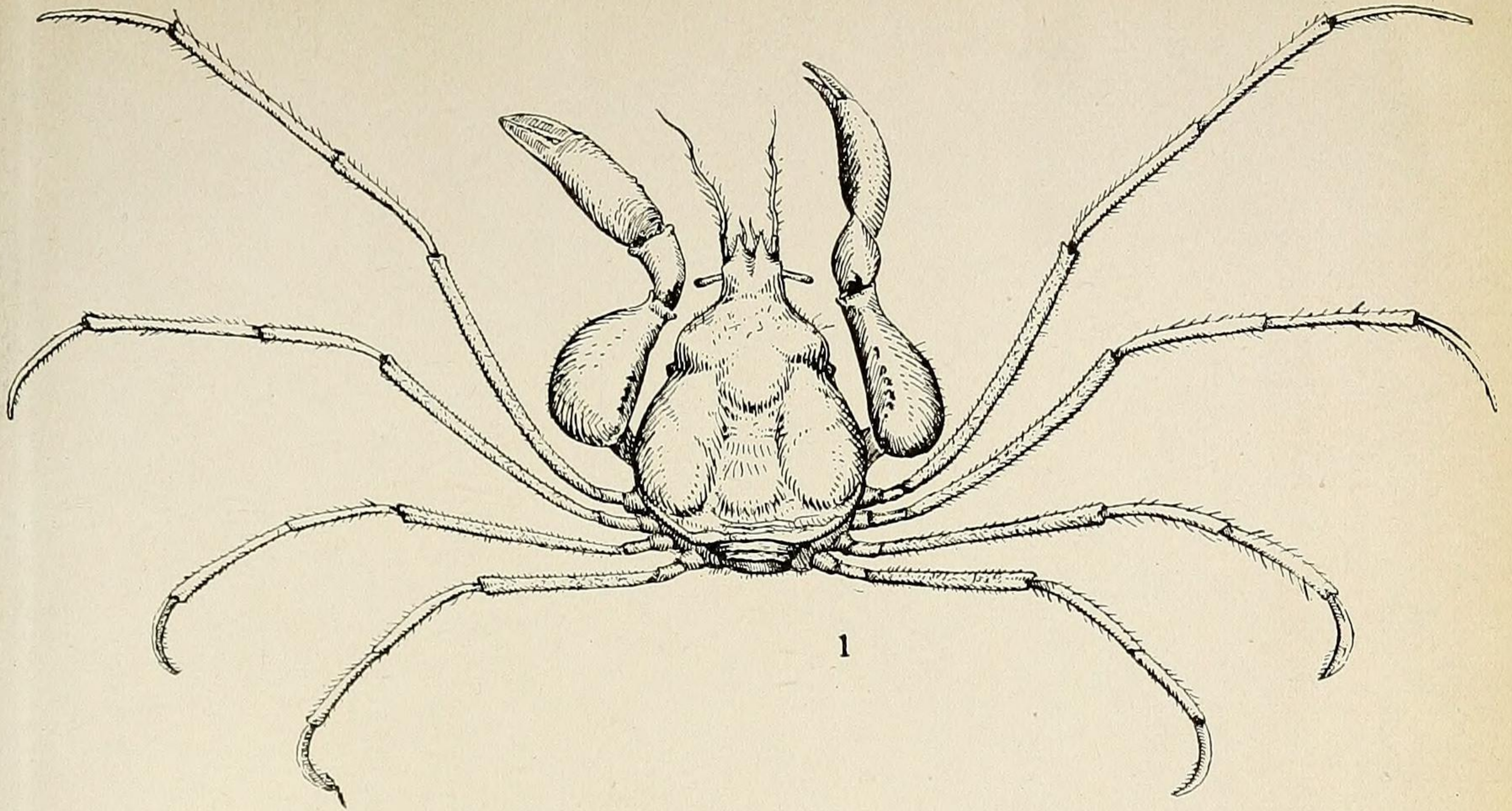
- Fig. 1.—*Galathea australiensis* Stimpson.
 Fig. 1a.— „ „ ; third maxilliped.
 Fig. 2.— „ *whiteleggii*, n.sp.
 Fig. 2a.— „ „ ; third maxilliped.
 Fig. 3.— „ *magnifica* Haswell.
 Fig. 3a.— „ „ ; third maxilliped.
 Fig. 4.— „ *aculeata* Haswell.
 Fig. 4a.— „ „ ; third maxilliped.
 Fig. 5.— „ *pusilla* Henderson.
 Fig. 5a.— „ „ ; third maxilliped.
 Fig. 6.— „ *elegans* Adams and White.
 Fig. 6a.— „ „ ; third maxilliped.



A. R. McCULLOCH. del.



A. R. McCULLOCH, del.



F.E.G. del.

