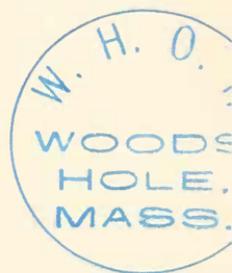


ANNALS
OF THE
SOUTH AFRICAN MUSEUM

VOLUME XVII.



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OF THE
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VOLUME XVII.

PART I, containing :—

- 1.—*Descriptions of South African Micro-Lepidoptera.*—By E. MEYRICK, B.A., F.R.S.
- 2.—*South African Crustacea* (Part IX of S.A. Crustacea, for the Marine Investigations in South Africa).—By the Rev. THOMAS R. R. STEBBING, M.A., F.R.S., F.L.S., F.Z.S., Fellow of King's College, London, Hon. Memb. of New Zealand Inst., Hon. Fellow Worcester College, Oxford. (With Plates I-VIII of Vol. XVII. Plates XC-XCVII of Crustacea.)
- 3.—*New Geometridae (Lepidoptera) in the South African Museum.*—By LOUIS B. PROUT, F.E.S.



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2. *South African Crustacea* (Part IX. of S.A. Crustacea, for the Marine Investigations in South Africa).—By the Rev. THOMAS R. R. STEBBING, M.A., F.R.S., F.L.S., F.Z.S., Fellow of King's College, London, Hon. Memb. of New Zealand Inst., Hon. Fellow Worcester College, Oxford.

(Plates I–VIII of Vol. XVII. Plates XC–XCVII of Crustacea.)

OF the eighteen species here considered, sixteen belong to the Malacostraca and two to the parasitic Copepoda. Three of the plates refer to species discussed in Part VIII of these Investigations, and illustrations are offered of forms named by various authors in cases where it seemed desirable by this means either to establish the identification of the specimens concerned or to give experts a reasonable opportunity of correcting it.

With regard to *Philocheras megalochair*, described in Part VIII, it is right to mention that Mr. Stanley Kemp in 1912 argued that *Pontophilus*, Leach, and *Philocheras* were so connected by intermediate species that *Philocheras* could not properly be separated from the earlier *Pontophilus*. It is interesting to remember that for a long time science was engaged in splitting up comprehensive genera such as *Cancer* into an endless number of subdivisions. Now, with the discovery of links and gradations, there is a natural tendency to reunite the severed parts.

MALACOSTRACA.

Brachyura.

TRIBE OXYRRHYNCHA.

FAMILY INACHIDAE.

GEN. ACHAEOPSIS, Stimpson.

1857. *Achaeopsis*, Stimpson, Pr. Ac. Sci. Philad., vol. 9, p. 219.
 1873. *Dorynchus*, Norman Wyville-Thomson, Depths of the Sea,
 p. 174, fig. 34.
 1880. *Lispognathus*, A. Milne-Edwards, Crust. reg. Mexicaine, p. 349.
 1893. *Achaeopsis*, Ortmann, Zool. Jahrb., vol. 7, p. 36.
 1910. *Achaeopsis* and *Dorynchus*, Stebbing, in these Annals, vol. 6,
 pt. 4, p. 285.
 1911. *Achaeopsis*, Rathbun, Tr. Linn. Soc. London, vol. 14, pt. 2,
 p. 247.
 1916. „ Rathbun, Pr. U.S. Mus., vol. 50, p. 535.

Additional references for the united genera will be found in these Annals for 1910. *A. superciliaris*, Ortmann, and the little *A. suluensis*, Rathbun, seem to be closely related one to the other, but well distinguished from other species by the large median spine of the carapace.

ACHAEOPSIS THOMSONI (Norman).

Plate XC.

1873. *Dorynchus thomsoni*, Norman, Depths of the Sea, p. 174, fig. 34.
 1910. „ „ Stebbing, Ann. S. Afr. Mus., vol. 6, pt. 4,
 p. 286.
 1911. *Achaeopsis thomsoni*, Rathbun, Tr. Linn. Soc. London, vol. 14,
 pt. 2, p. 247.

Among many females laden with ova and smaller males the specimen here figured was conspicuous by its chelipeds strikingly larger than in any other specimen, and with the palm very much longer than the fingers. In other respects there appeared to be no trustworthy marks of difference to justify the naming of a new species. The parallelism or divergence of the horns of the rostrum is certainly a variable character. All the specimens examined, of either sex, have the strongly curved process on the ventral surface of the rostrum

in front of the recesses for the first antennae. In the male the pleon is bent at the third (the widest) segment, so that the first and second segments occupy a position nearly, if not quite, at right angles with the last three segments. From the second segment nearly to the end of the pleon there is a raised central lobe. In the female this lobe begins on the first segment, which is the narrowest, while the fifth is the broadest, the sixth also being very broad, the whole forming a capacious bowl for the ova.

The male specimen here figured is about 24 mm. long by 17 mm. broad.

Locality. Vasco de Gama S. 75° E., 13½ miles. Depth 166 fathoms. No. 248. Sent by Dr. Gilchrist.

GEN. HYASTENUS, White.

1847. *Hyastenus*, White, Proc. Zool. Soc. London, p. 56.
 1913. „ Calman, Ann. Nat. Hist., ser. 8, vol. 11, p. 313.
 1916. „ M. J. Rathbun, Proc. U.S. Mus., vol. 50, pp. 542-548.

Dr. Calman explains that it is *Pisa aries*, Latreille, which has been referred to *Hyastenus*, not *Halimus aries*, Latreille (in Guérin), so that the supposed necessity for making *Hyastenus* a synonym of *Halimus* does not arise.

HYASTENUS UNCIFER, Calman.

1909. *Hyastenus uncifer*, Calman, Proc. Zool. Soc. London, pp. 705, 712, pl. 72, figs. 8, 9.
 1911. *Halimus uncifer*, Mary J. Rathbun, Trans. Linn. Soc. London, vol. 14, pt. 2, p. 252, pl. 20, fig. 7.

Both authors lay stress on the marginal teeth of the fingers in the ambulatory legs as a distinctive feature. But Dr. de Man in his description of *Hyastenus hülendorfi* (J. Linn. Soc. London, vol. 22, p. 18, 1887) says: "The dactylopodites are armed with a row of acute spinules along their inner margins; these spinules gradually increase in length towards the tip." In the specimen which I am referring to Calman's species these spinules were completely concealed until the organism was removed, which covered almost the whole of the upper surface of the body and the fingers with a close, felt-like matting. The skin when uncovered had a satiny, dull red appearance.

The horns measured along the inner margin are 21 mm. long, the interval between the tips is 13 mm., and the length from

the middle of that interval to the base is 18 mm. From that base to the foremost median spine of the carapace the length is 8 mm., and thence to the hindmost slightly procurved spine 30 mm. Between the tips of the lateral strongly projecting branchial spines the breadth is 36 mm., and between the bases of those spines 26 mm. The breadth at the obscure eyes is 10 mm. The length of the chelae (hand and finger) is 17 mm., of which the finger on the left takes 7 mm., the right finger being slightly shorter. The finger of the fifth peraeopod is 8 mm. long.

The hindmost spine of the carapace is preceded at a distance of 10 mm. not by another spine or tubercle, but by a very prominent swelling.

The terminal segment of the narrow tuberculate pleon of this male specimen is triangular with the tip slightly truncate.

Calman states that "the basal antennal segment has a sharp spine at the antero-external angle." In clearing the coat of the present specimen I may have removed this spine. I cannot certify its presence. Unless the hypothesis be admitted that the relative lengths of horns and spines are subject to much variation, a new species might have to be coined for the specimen here described.

Locality. Umsunduzi River, Pietermaritzburg. No. 228.

MACRURA ANOMALA.

TRIBE GALATHEIDEA.

FAMILY GALATHEIDAE.

GEN. GALATHEA, Fabricius.

For these systematic divisions see the General Catalogue in these Annals, vol. 6, pt. 4, pp. 349, 360, 362.

GALATHEA INTERMEDIA, Liljeborg.

- | | | |
|-------|------------------------------|---|
| 1851. | <i>Galathea intermedia</i> , | Liljeborg, Ofvers. Vet. Akad. Forhandl., p. 21. |
| 1888. | " | Bonnier, Contrib. Faune Marine de Wime-reux, p. 44. |
| 1894. | " | A. M.-Edwards et Bouvier, Camp. Sci. Monaco, Fasc. 7, pt. 1, pp. 79, 81, pl. 8, figs. 1-10. |
| 1900. | " | A. M.-Edwards et Bouvier, Crust. Décap. Travailleur et Talisman, p. 277. |

The late Monsieur Jules Bonnier has given (*loc. cit.*) an elaborate bibliography of this small species. The specimen which I now assign to it was without the first and second peraeopods, and the third and fourth, though present on one side, were only in a state of recuperation. It was otherwise in good condition and probably adult, the carapace being 8 mm. long, therefore near to the size of 9 mm., which Bonnier gives as its measurement in an adult male. There are some slight differences in detail. Behind the rostral region on the median line of the carapace Bonnier gives only a couple of spinules placed transversely. In the African specimen there are four. The eyes are rather stouter. In the first antennae the two sharp prolongations of the characteristic basal joint have each below the apex a long spine which reaches well beyond the apex of the prolongation, in place of the seta which in Bonnier's figure does not reach the apex. Bonnier finds the telson divided into two symmetrical halves by the distal groove. The African specimen shows a slight inequality in the two lobes. These small variations, apart from possible differences in the missing peraeopods, can have no specific importance, since the mouth-organs as well as the size and superficial details all conform to the northern standard.

Locality. Seal Island, W.S.W. (Mossel Bay). No. 238.

MACRURA GENUINA.

TRIBE THALASSINIDEA.

FAMILY AXIIDAE.

GEN. CALOCARIS, Bell.

CALOCARIS ALCOCKI, McArdle.

Plate XCI.

(The discussion of this species appeared last year (1915) in these *Annals*, vol. 15, pt. 2, p. 59.)

TRIBE ERYONIDEA.

(See General Catalogue of S.A. Crustacea, p. 377.)

FAMILY ERYONIDAE.

1910. *Eryonidae*, Stebbing, Ann. S.A. Mus., vol. 6, pt. 4, p. 377.
 1914. ,, Selbie, Fisheries, Ireland, Sci. Invest., pt. 1, p. 8.
 1916. ,, de Man, Siboga Exp., vol. 39a², p. 1.

Dr. de Man now assigns to this family the genera *Polycheles*, Heller, 1862, *Willemoesia*, Grote, 1873, *Eryoneicus*, Bate, 1882, *Stereomastis*, Bate, 1888, and gives lists of all the species to be apportioned to these genera respectively. He considers that Alcock was right in distinguishing the two groups which he named *Polycheles* and *Pentacheles*, but that his *Polycheles* should properly be identified with Bate's *Stereomastis* and that *Pentacheles*, Bate, 1878, should lapse as a synonym of Heller's *Polycheles*.

GEN. POLYCHELES, Heller.

1862. *Polycheles*, Heller, Sitz. K. Akad. Wiss. Wien, vol. 45, p. 389.
 1912. „ (part), Kemp and Sewell, Records Indian Mus.,
 vol. 7, pt. 1, no. 2, p. 23.
 1914. „ „ Selbie, Fisheries, Ireland, Sci. Invest., pt. 1,
 p. 9.
 1916. „ de Man, Siboga Exp., vol. 39a², p. 1.

As characters for the genus Dr. de Man proposes the following: The thoracic legs, except the last pair, provided with epipods, normal but varying in length; the epipod of the third maxillipeds also of variable size, but, so far as known, rudimentary only in *P. tanneri*, Faxon; the lateral borders of the carapace commonly armed with more than twenty spines, except in the small and probably juvenile form, *P. obscurus* (Bate); the median dorsal carina of the carapace usually double, granulated, rarely nodulated, and in most cases presenting no definite small number of spines, being often traversed by bead-like tubercles or granulations or covered with crowded spinules; the first abdominal tergum, finally, is probably never armed with the two small spines at and near the outer ends of the anterior border, that generally occur in the species of *Stereomastis*.

POLYCHELES DEMANI, n. sp.

Plate XCII.

1908. *Polycheles beaumontii* (?), Stebbing, Ann. S. Afr. Mus., vol. 6,
 pt. 1, p. 25.
 1910. „ „ (?), Stebbing, Ann. S. Afr. Mus., vol. 6,
 pt. 4, p. 377.

In naming this species after my friend Dr. de Man I now accept the opinion expressed in his latest very valuable work,

in which he agrees with the late Mr. C. M. Selbie, that this form is distinct from Alcock's *P. beaumontii* and the *P. granulatus*, Faxon. In common with Miss Rathbun, those authors regard *P. beaumontii* as a synonym of Faxon's species.

In 1908 I gave some particulars of a male and of a female specimen, both taken in localities near to that from which the female now figured was obtained. The measurements are very similar, the length from the base of the rostral spines to apex of telson being 130 mm.; but from the foremost lateral spine to a point parallel with the tip of the telson the interval is 138 mm.; greatest breadth of carapace 51 mm.; the length of the telson detached is 26 mm. The longer flagellum of the first antenna measured 78 mm., its companion about 22 mm.; the flagellum of the second antenna was 70 mm. long.

The lateral teeth of the carapace form sets of 7, 4, and 20 or 21: at the base of the rostral pair there is a small unpaired denticle; in various parts of the surface there are small teeth some of which show a symmetrical arrangement, but for many this is doubtful, because of the short pubescence which conceals them. This dark felt puts the carapace in strong contrast with the smooth polished pleon. Of this the first four segments have each a small forward-pointing carinal tooth, the fifth a carinal elevation, while the sixth is quite devoid of a carina. The telson has a pair of converging ridges, distant both from the base and the apex.

The third maxillipeds have a well-developed, but slender, epipod.

In the first peraeopods the third joint is 24 mm. long, the fourth 43 mm., the fifth 30 mm., the sixth 50 mm., and the finger 25 mm. The denticles on the distal half of the fourth joint are in this specimen very small, successively diminishing. In the fifth peraeopods the fifth and sixth joints and the finger are longitudinally carinate, with long setae springing from the carina; the process of the sixth joint is feebly carinate, and its tip meets that of the finger.

Numerous small ova were attached to the pleopods of this specimen.

Locality. Cape Point Lighthouse approx. NE. 40 miles; depth 560-700 fathoms. No. 182.

GEN. STEREOMASTIS, Bate.

1901. *Polycheles*, Alcock (not Heller), Catal. Indian Deep-sea Crustacea, Macrura and Anomala, p. 166.
 1902. „ Stebbing, S.A. Crustacea, pt. 2, p. 35.
 1908. „ (part), Stebbing, S.A. Crustacea, pt. 4, p. 25.
 1910. „ „ Stebbing, S.A. Crustacea, pt. 5, p. 377.
 1912. „ „ Kemp and Sewell, Records Indian Mus., vol. 7, pt. 1, no. 2, p. 23.
 1914. „ „ Selbie, Fisheries, Ireland, Sci. Invest., pt. 1, p. 9.
 1916. *Stereomastis*, de Man, Siboga Exp., vol. 39a², p. 1.

For assigning species to this genus de Man gives the following characters: The lateral margins of the carapace are constantly armed with fewer than 20 spines; the median dorsal ridge of the carapace carries a definite number of 4 to 7 spines, the outer angles of the anterior border of the first pleon segment have 2 spines in all the known species except *Stereomastis ceratus* (Alcock), and the epipod of the third maxillipeds is rudimentary, while on the thoracic legs it is a membranous expansion of the base of the podobranch.

Consequently the species which in 1902 I called *Polycheles sculptus*, S. I. Smith, should now be named *Stereomastis sculptus* (Smith). In the general catalogue of S.A. Crustacea, p. 377, 1910, by a misprint the Museum number for this species is given as 182, instead of 152, the former number belonging to the new species of *Polycheles* here described.

STEREOMASTIS NANUS (S. I. Smith).

1884. *Pentacheles nanus*, Smith, Rep. U.S. Mus., Fish. Comm. for 1882, p. 359.
 1908. *Polycheles nanus*, Stebbing, S.A. Crustacea, pt. 4, p. 27.
 1916. *Stereomastis nana*, de Man, Siboga Exp., vol. 39a², pp. 2, 4, 20

Having now examined and in part dissected a specimen little more than an inch in length, with the pleon in good condition, and the other parts fairly so, I do not hesitate to assign it to this species. But the third, fourth, and fifth pleon-segments have the large recurved carinal teeth each surmounted by a little denticle, which is not shown in figures of this species or of the very similar *S. andamanensis* (Alcock).

Locality. Table Mountain N. 79 E., distant 40 miles. Depth 250 fathoms. No. 70.

Mr. Selbie in 1914 describes and figures *Polycheles nanus* (Smith), var. *Grimaldii*, Bouvier.

TRIBE PENAEIDEA.

FAMILY PENAEIDAE.

See General Catalogue of S.A. Crustacea, p. 379, and add

1911. *Penaeidae*, de Man, Siboga Exp., vol. 39a, pt. 1, p. 1.
 1915. „ Kemp, Mem. Indian Mus., vol. 5, p. 316.

GEN. AMALOPENAEUS, S. I. Smith.

1882. *Amalopenaeus*, Smith, Bull. Mus. Comp. Zoöl., vol. 10, p. 86.
 1910. „ Kemp, Fisheries, Ireland, Sci. Invest., p. 13.

For references to *Gennadas*, Bate, with which this genus has been by many authors considered synonymous, see Trans. R. Soc. Edinburgh, vol. 50, pt. 2, p. 282, 1914.

AMALOPENAEUS ELEGANS, S. I. Smith.

1882. *Amalopenaeus elegans*, Smith, Bull. Mus. Comp. Zoöl., vol. 10,
 p. 87, pl. 14, figs. 8-14, pl. 15, figs. 1-5.
 1908. *Gennadas elegans*, Bouvier, Rés. Comp. Sci. Monaco, fasc. 33,
 p. 35, pl. 7.
 1910. *Amalopenaeus elegans*, Kemp, Fisheries, Ireland, Sci. Invest.,
 p. 14, pl. 1, figs. 1-16.

This attractive species has been amply illustrated by the three authors above mentioned, and also by Lo Bianco and Riggio, whose figures I have not seen. The length appears rarely to exceed 30 mm., but Kemp mentions a specimen of 38 mm. The South African specimen is 33.5 mm. long. After 16 years in formalin there are still spots of a rich blue on the first four pairs of pereopods, some less vivid on the first antennae, purplish on the stalks of the golden yellow eyes, with the mouth organs darkly red and the carapace covering a lighter red substance, its own rostrum and probably all the rest of it being pellucid.

Locality. Cape Point Lighthouse S. 83° E., 35½ miles. Depth 360 fathoms. No. 66.

GEN. PENAEUS, J. C. Fabricius.

(For references see South African Crustacea in these Annals, in the years 1910, 1914, 1915.)

PENAEUS INDICUS, Milne Edwards.

1837. *Penacus indicus*, Milne Edwards, Hist. Nat. Crustacés, vol. 2, p. 415.
 1906. *Peneus indicus*, Alcock, Catal. Indian Macrura, p. 12, pl. 1,
 figs. 3, 3a (with synonymy).
 1915. *Penaeus indicus*, Kemp, Mem. Indian Mus., vol. 5, p. 319.

The specimens which I refer to this species have a thelycum corresponding with that which Bate figures in the Ann. Nat. Hist., ser. 5, vol. 8, pl. 12, fig. 5 *vp.*, 1881. They are far smaller than the length of about 6 in. with which Milne Edwards, or 8 in. with which Alcock, credits the species, one of them having a total of 64 mm., the other of about 60 mm., in the former the carapace being 43.5 mm. long, in the latter 39 mm. The larger specimen has 7 dorsal teeth on the rostral carina, the seventh very far from the apex, the ventral teeth being 5 in number. In the other case there are 8 dorsal teeth and only 3 widely spaced ventral. In each case 3 of the teeth are behind the base of the eye-stalk. The characters answer to Alcock's statement, "This is an extremely variable species, especially in respect of the length of the rostrum, which in young individuals projects far beyond the tip of the antennal scales, whereas in adults it is often not longer than that of *P. monodon*." In 1888 Spence Bate retains the species, but is inclined to believe it an over-toothed variety of *P. monodon*, with which he further identifies *P. semisulcatus*, de Haan. In 1892 de Man described and figured a variety *longirostris*, which he retains in his "Siboga" treatise, 1911-1913.

Our specimens have the fifth and sixth pleon segments carinate, the sixth of the same length as the telson, which is longitudinally sulcate, acute at the apex, the sides setose but without spines. In the smaller specimen the flagella of the first antennae were 18 mm. long, but the flagellum of the second antenna 140 mm., thus more than twice the length of the body. The third peraeopod reached the extremity of the scale of the second antenna, the fifth is longer than the fourth.

Locality. Umgeni River, Durban. A 1191.

GEN. SOLENOCERA, Lucas.

(See these Annals, vol. 15, pt. 2, p. 66, 1915.)

SOLENOCERA AFRICANUS, n. sp.

Plate XCIIIa.

As this species makes a near approach to *S. siphonoceros* (Philippi), as recently described and figured by Mr. Stanley Kemp, the following points of difference may be noted. The eyes cannot be described as "grey, with a coppery reflection," but are rather of a deep brownish red. The carina on the sixth pleon-segment is not "produced posteriorly to a short spine." The flagella of the first antennæ are longer as compared with the carapace. The teeth of the rostral carina have a different arrangement. The mandibles, though agreeing fairly as to the palps, have a very different cutting edge. In the second maxillipeds the terminal joint is here longer instead of shorter than the penultimate. And in the petasma of the male this species seems to have a more specialised form.

From *S. comatus*, the South African species described last year, the present form is separated by its shallower rostrum with a different dentation, the want of a postero-dorsal tooth to end the carina of the sixth pleon-segment, the different cutting-edge of the mandibles and the shorter penultimate joint of their palp, in addition to the very different though remotely allied form of the petasma. The same terms may be applied to the petasma of *S. melantho*, de Man, but here again additional differences point to the propriety of specific distinction.

The female, 70.5 mm. long, has the carapace 22.5 mm., and the pleon 48 mm. in length, from the apex of the rostrum to the cervical groove measuring 13.5 mm., the faintly continued carina to the end of the carapace accounting for 9 mm. The third to the sixth pleon-segments are all carinate, the sixth scarcely as long as the fifth; the sulcate telson closely agrees with that of *S. comatus*, its lateral processes being much stronger than those shown for *S. melantho*, de Man, and rather further from the apex than in *S. siphonoceros*. The slightly incomplete flagella of the first antennæ are 32 mm. long. In the male, which was about 53 mm. in length, these flagella were 26 mm. long, the carapace 18 mm. The apex of the rostrum, acute in the female, is slightly damaged in the male specimen. The flagella of the first antenna bear witness alike to their importance as a generic character and as constituents of a respiratory tube by their persistence years after death in springing back, when released from separation, to reform the tube. In the petasma the shorter inner lamina differs from all the forms above compared by its bidentate apical crook, but something similar, though not the same, is seen in *S. agassizii*, Faxon.

Locality. Sebastian Bluff NW. $\frac{3}{4}$ W., 8 miles; depth 34 fathoms. A 1213.

TRIBE CARIDEA.

FAMILY PALAEMONIDAE.

1915. *Palaemonidae*, Borradaile, Ann. Nat. Hist., ser. 8, vol. 15,
p. 206.
1915. „ „ Kemp, Mem. Indian Mus., vol. 5, p. 264.

GEN. LEANDER, Desmarest.

(For the family and genus see also references in Trans. R. Soc.,
Edinburgh, vol. 50, pt. 2, p. 286, 1914, and these Annals, vol. 15,
pt. 2, p. 75, 1915, and add 1915, Kemp. Mem. Indian Mus., vol. 5,
p. 273.)

LEANDER PACIFICUS, Stimpson.

Plate XCIIIb.

1860. *Leander pacificus*, Stimpson, Pr. Ac. Philad., vol. 12, p. 40
(109).
1888. „ „ de Man, Arch. Naturg. Jahrg. 53, p. 559.
1902. „ „ de Man, Abhandl. Senckenb. Nat. Gesell-
schaft, vol. 25, pt. 3, p. 806.

The specimen figured measured 54 mm., the measurement taken being from apex of rostrum to the end of the second pleon-segment and thence to apex of telson. The dorsal carina shows nine teeth, the foremost small, not far from the acute apex, but considerably in advance of the main series, seven in number, with the hindmost or ninth smaller than any of the seven and a little remote. The ventral teeth are five, the foremost small, midway between the apex and the first of the serial dorsal seven, the hindmost of the ventral five being just under the antepenultimate of the dorsal seven. The telson is rather shorter than the inner blade of the uropods, and has the first pair of dorsal spines much below the middle, and about as far from the second pair as those are from the narrow apical margin, which has a central spine-like apex of the same length as its lateral pair of spines, the long spines between it and them being nearly three times as long, with the usual pair of setae of nearly the same length as the long spines.

The eyes as preserved are grey, with two black spots adjoining the peduncle, the divisions of which are alternately orange and white.

The two pairs of antennae agree closely with those of *L. peringueyi*. In the first pair the longer flagellum is 28 mm. long, its companion in brief attachment to it being about 6.5 mm. in length, while the free flagellum is 19 mm. long. The flagellum of the second antennae I make out to be 56 mm. in length.

The mandibles belong to the group which have the palp three-jointed. The third joint in this species is little longer than the first. In the first maxillae the blunt inner lobe of the bifid apex has the sinuous spine which has been observed in other species. In the third maxillipeds the antepenultimate joint is less curved than in *L. peringueyi*. The first peraeopods have the chela three-fifths the length of the wrist, the fingers subequal to the palm; in the second pair the movable finger is seven-ninths the length of the palm, which is a little shorter than the wrist.

Dr. Gilchrist reported the colour as dark green in parts which turned red, but the red has since disappeared.

Locality. Little Brak River, Mossel Bay. No. 23.

This widely distributed and rather variable species has been several times described, but, so far as I can find, has not hitherto been figured.

FAMILY OPLOPHORIDAE.

GEN. ACANTHEPHYRA, A. Milne-Edwards.

ACANTHEPHYRA BRACHYTELSONIS, Bate.

Plate XCIV.

(This species was discussed last year—1915—in these Annals, vol. 15, pt. 2, p. 97.)

FAMILY NEMATOCARCINIDAE.

GEN. NEMATOCARCINUS, A. Milne-Edwards.

NEMATOCARCINUS PARVIDENTATUS, Bate.

Plate XCV.

(For discussion of the species, see these Annals, vol. 15, pt. 2, p. 99.)

SCHIZOPODA.

Order Mysidacea.

See General Catalogue of S.A. Crustacea, p. 395, and add
1912. *Schizopoda*, Hansen, Mem. Mus. Comp. Zoöl. Harvard, vol. 35,
p. 175.

FAMILY LOPHOGASTRIDAE.

GEN. GNATHOPHAUSIA, von Willemoes Suhm.

(See General Catalogue, pp. 401, 402.)

GNATHOPHAUSIA ZOEAE, Suhm.

1875. *Gnathophausia zoea*, Suhm, Trans. Linn. Soc. London, ser. 2,
vol. 1, p. 32, pl. 9, figs. 2-15, pl. 10, fig. 4.
1885. " " Sars, Rep. Voy. Challenger, vol. 13, pt. 37,
p. 44, pl. 6, figs. 6-10.
1906. " " Ortmann, Pr. U.S. Mus., vol. 31, pp. 28, 42
pl. 2, figs. 2a, 2b.
1908. " " Hansen, Ingolf-Exp., vol. 3, pt. 2, p. 93,
pl. 4, figs. 3a-e.
1910. " " Hansen, Siboga Exp., vol. 37, p. 17.
1912. " " Hansen, Mem. Mus. Comp. Zoöl. Harvard,
vol. 35, p. 186.

Ortmann and Hansen agree in making *G. willemoesii*, Sars, a synonym of *G. zoea*, to which Hansen adds *G. sarsii*, Wood-Mason, already regarded by Ortmann as merely a variety of *G. zoea*. In the specimen here assigned to that species "the outer spine of the antennal squama projects" rather considerably "beyond the end of the lamellar lobe," but not nearly so much as shown for *G. longispina* of Sars. This feature may probably be subject to considerable variation. The supra-orbital spine, antennal spine, and branchiostegal expansion answer the figure given by Sars. The total length from the apex of the rostrum to the end of the telson is 66 mm. The rostrum, apparently complete, is 25.5 mm. long, the whole carapace from apex of rostrum to the end of the hinder process being 56.5 mm. in length.

Locality. Cape Point N. 81° E., 32 miles; depth 460-630 fathoms. A 1312.

ISOPODA.

TRIBE FLABELLIFERA.

FAMILY EURYDICIDAE.

GEN. CIROLANA, Leach.

(For references see these Annals, vol. 6, pt. 4, pp. 419, 421.)

CIROLANA CRANCHII, Leach.

1818. *Cirolana cranchii*, Leach, Dict. Sci. Nat., vol. 12, p. 347.

1890. „ „ Hansen, Vid. Selsk. Skr., ser. 6, vol. 5, pp. 321, 341, pl. 3, figs. 3-3l.

In these Annals, vol. 10, pt. 11, p. 351a, pl. 30b, 1914, Mr. Barnard describes and illustrates *Cirolana vicina*, n. sp., distinguishing it from *C. cranchii*, Leach, and *C. parvus*, Hansen. It is a case somewhat parallel to one previously mentioned, but here concerning species instead of genera. *C. vicina* seems to tie *C. parvus* so closely to *C. cranchii* that one name may well serve for all three.

The specimen which I have especially examined has the male stilet of the second pleopod well developed. It agrees thoroughly in shape with Hansen's fig. 3i of the male telson and uropod of *C. cranchii*, the rami being acute, not sub-bifid. The number of the spines on the telsonic apex is 12. Thus two of the five characters relied on for distinguishing *C. vicina* are wanting. The rather uncertain difference in size of specimens, between 15 and 13 mm., surely is not of specific importance, and the comparative slenderness of the legs is not a very striking feature. There is still the distinction that in the second gnathopods and first peraeopods the fourth joint is not produced externally in *C. vicina* as it is in *C. cranchii*. Yet even in that respect specimens show that the non-production is far from absolute.

Locality. Sebastian Bay, beach, low tide. No. 132.

AMPHIPODA.

TRIBE GAMMARIDEA.

FAMILY LYSIANASSIDAE.

GEN. ICHNOPUS, A. Costa.

For these systematic divisions I may refer to Das Tierreich, Lieferung 21, pp. 1, 5, 6, 52, published in 1906. Here, however, I must add hearty thanks to my friend A. O. Walker, Esq., F.L.S., who has sorted into their genera a mass of South African Amphipoda, a tedious and time-absorbing task, even when lightened in his case by extensive knowledge of the subject and long-continued interest in it. *Ichnopus serricrus*, Walker, was added to the genus in 1909.

ICHNOPUS MACROBETOMMA, n. sp.

Plate XCVIA.

This species is at once remarkable for the large dark eyes, with innumerable little components, occupying almost the whole surface of the head, at the top of which they are contiguous, while in lateral view the front outline of each eye suggests a capital **B**, to which formation the specific name refers. There are many points of agreement with *I. spinicornis* and *I. taurus*, the approximation being the closer to the latter species, the palp of the first maxillae having the peculiar widening of its distal joint just below the spine margin, as shown in Heller's figure, and the finger of the first gnathopod being of the structure which he shows, except that here there are ten spines on its widened base.

The first antennae have a secondary flagellum of ten joints, the first of them considerably the longest. The mandibles are similar to those which Della Valle figures for *I. taurus*, differing from those figured by Sars for *I. spinicornis*, though the palps agree. In our specimen between the cutting edge and molar there is a spine row of very short spines, perhaps worn down by use; on the upper edge of the retroverted molar there are prominent teeth, none visible on the lower edge, the reverse of this appearing in Della Valle's figure. Of the inner plate of the first maxillae I cannot speak, as it was unfortunately broken. Heller's figure of it for *I. taurus* does not agree with Della Valle's.

In the first and second peraeopods the fourth and sixth joints are longer than the fifth, this and the fourth being fringed with setae on

the hind margin. The three following pairs have short spines on both margins of the fourth, fifth, and sixth joints; the fifth and sixth are very slender.

The third uropods end very acutely, the outer branch having, according to Sars, a distinct terminal joint, a character attested in the present species by its flatness and mode of attachment rather than its size. The telson, cleft for seven-ninths of its length, in the preserved specimen was held erect. It is of glass-like transparency, a quality which in other parts of the organism obscured the outlines.

From the top of the head to the end of the third pleon segment the bent specimen measured a little less than 8 mm. At full stretch it might have been 15 mm. long, with the upper antennae about 5 and the lower 8 mm. in length.

Locality. 33° 9' 30" S., 28° 3' 00" E. Depth 47 fathoms. No. 84.

FAMILY METOPIDAE.

GEN. METOPA, Boeck.

(The family and genus are described in Das Tierreich, Lief. 21, pp. 171, 172, 724.)

METOPA ROTUNDUS, n. sp.

Plate XCVI.B.

The specimen, a female with some well-advanced young, in its firmly rounded position measured not more than 3 mm. in a straight line from the head to the third pleon-segment, the depth at the fourth side-plate being about 2 mm.

The eye is round, of moderate size. The antennae in both pairs have the flagella shorter than the peduncles, tapering, seven- or eight-jointed; the first joint of the peduncle in the first pair longer than the second and third joints combined, the last joint in the second pair only slightly shorter than the penultimate.

The upper lip is more unequally bilobed than that of *Metopa alderii* (Bate) as figured by Sars, nor does the mandible show the spine-row which Sars figures for that species. The maxillæ and maxillipeds appear to agree with those of the species named.

In the first gnathopods the sides of the hand are parallel as far as the commencement of the oblique palm, over which the smooth finger bends, only the extreme tip overlapping it. The fifth joint is wider but little longer than the hand. The second gnathopod is far more robust, the wrist broader than long, the hand massive, with a

convex serrate palm, abruptly descending to form a cavity, within which the apex of the strong curved finger meets a transverse row of spinules and some palm-defining spines. Whether the cavity is open on both sides it is difficult to say. Possibly the finger rests against a transparent cuticle on one side.

The first peraeopod is rather longer than the second. The third is distinguished from the two following pairs by the slenderness of its second and fourth joints, the fourth joint in the last two pairs being extended completely over the fifth joint.

The first uropods are as usual much the longest; the second are intermediate in length. The third pair have the peduncle longer than the ramus, of which the first joint is longer than the almost spine-like second.

The telson, only seen in uplifted lateral view, appears to have a single pair of lateral spinules.

Locality. Gericke Point N. by E., 9 miles. Depth 42 fathoms. No. 136.

ENTOMOSTRACA.

Copepoda.

TRIBE CALIGIDEA.

FAMILY CALIGIDAE.

(See General Catalogue of S.A. Crustacea, p. 558, 1910. To the species there mentioned may be added *Pandaras lugubris*, Heller, 1866, of which a specimen, taken from a shark, has been sent by Mr. Gibson from Natal to Dr. G. S. Brady, F.R.S.)

GEN. ACHTHEINUS, C. B. Wilson.

1908. *Achtheinus*, Wilson, Proc. U.S. Mus., vol. 35, p. 450.

1911. „ Wilson, Proc. U.S. Mus., vol. 39, pp. 630, 632.

In 1849 Dana presented to the American Academy of Sciences his description of a new genus and species which he called *Lepidopus armatus*. The account was published in the Proceedings and also in the thirteenth volume of the U.S. Exploring Expedition. To the text of 1853 figures were added in 1855 on pl. 95 of the Atlas. The generic name being preoccupied, Steenstrup and Lütken in 1861 changed it to *Perissopus*, a genus which they instituted for *P. dentatus* n. sp., including with

some doubt *P. armatus* (Dana). This arrangement was accepted by Bassett-Smith in 1899, but rejected by C. B. Wilson in 1907, who separated Dana's species under the new generic name of *Pholidopus*. All the available information appears to be derived from Dana, whose report seems to depend on a single specimen of the female sex, a third of an inch long, without egg-strings. Under the circumstances it is allowable to suggest that Dana may have made mistakes in the minute and difficult details which separate *Pholidopus* from *Achtheinus*. Thus, he represents the third and fourth pairs of feet as alike having the rami one-jointed, but he only figures separately one of these two pairs, and may have taken for granted that the third was like the fourth. He records the first pair as uniramous, but these minute limbs might easily have lost one of the branches in the process of dissection. In *Achtheinus* all four pairs of feet are biramous, and only the fourth pair have the rami one-jointed. Since, however, Wilson has now instituted *Achtheinus* with well-ascertained characters, the merely conjectural identity of *Pholidopus* may stand aside.

It should be noticed that Wilson in his account of *Achtheinus dentatus* says, "The present specimens agree in every generic particular with the type species *A. oblongus*." Still, in diagnosing the female of the latter he says, "Genital segment much smaller than the carapace," whereas in *A. dentatus* it is much larger than the carapace.

ACHTHEINUS DENTATUS, Wilson.

Plate XCVII.

1911. *Achtheinus dentatus*, Wilson, Proc. U.S. Mus., vol. 39, p. 630, pl. 67, figs. 22-31.

The female sex has been fully described by Wilson, whose figure shows the relative length and breadth of the carapace more accurately than mine does, which from a depression of the front disguised the true length. This is in fact somewhat greater than the breadth.

One male was found in close attachment to the underside of a female. The carapace is more than twice as broad as the following segments and longer than the whole five of them together. Of these the first three combined are little longer than the fourth, which equals them in breadth and is more

than twice as broad as the pentagonal fifth. The short rami of the latter are fringed each with four setae, and a spicule on either side of the setae. The second antennae are similar in character to those of the female, but less elongate and without reverted teeth. The mouth-organs showed near agreement with those of the female, with the maxillipeds stronger.

The specimens measured varied between 5.5 and 6.5 mm. in length for the females, with egg-strings about three times as long; the male was a little over 3 mm. in length.

Locality. Algoa Bay. The parasites were obtained by Dr. Gilchrist from the tail of a shark.

FAMILY LERNAEIDAE.

(See General Catalogue of S.A. Crustacea, p. 560.)

GEN. LERNEAENICUS, Lesueur.

1824. *Lernaenicus*, Lesueur, Journ. Ac. Philad., vol. 3.
 1861. *Lernaenicus*, Steenstrup and Lütken, K. Danske Vid. Selsk. Skr., ser. 5, vol. 5, pp. 398, 400.
 1861. *Lernaenicus*, Steenstrup and Lütken, loc. cit., pp. 401, 432.
 1899. *Lernaenicus*, Bassett-Smith, Pr. Zool. Soc. London, p. 484.
 1908. „ Wilson, Proc. U.S. Mus., vol. 35, p. 458.

It is obvious that Steenstrup and Lütken, from whom I borrow the reference to Lesueur, must be giving the original spelling of the generic name in their list of corrigenda on p. 432. They there note an additional erratum on p. 347, where *Lernaenicus* is printed instead of *Lernaenicus*.

LERNEAENICUS MEDUSAEUS ?, Wilson.

1908. *Lernaenicus medusaeus* ?, Wilson, Proc. U.S. Mus., vol. 35, p. 458, pl. 76, figs. 99, 100.

On a small fish, which Dr. Gilchrist informed me he had named *Scopelus argenteus*, there occurred a parasite displaying a genital segment and neck, together 6.5 mm. long, with egg-strings not quite double that length. The very short neck, sharply bent, left the remainder of the animal immersed between the gills of the fish, but so firmly embedded in its tissues that very patient endeavours produced no intelligible result, except such as might well correspond with that described

and figured by Wilson for his species. He says of the part in question, "When buried in the tissues of the host this mass of processes forms a most effective attachment organ." Of the visible portion he says, "genital portion cylindrical without posterior processes: no abdomen," in agreement with our specimen. The identification is hypothetical, but plausible.

Locality. The fish was taken, "Constable Hill (near Saldanha Bay) bearing E. $\frac{3}{4}$ S., distant $19\frac{1}{2}$ miles, and Green Point bearing SE. by E. $\frac{1}{2}$ E., distant 36 miles." No. 177.

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* Mr. K. H. Barnard, Ann. S.A.M., vol. xv, p. 123, identifies this species with *I. taurus* (Costa).

EXPLANATION OF PLATES.

PLATE I. (Crustacea, Plate XC.)

Achaeopsis thomsoni (Norman).

n.s. Dorsal view of a male specimen, natural size, showing the left cheliped and last two ambulatory legs in position; the right cheliped detached, its fixed finger broken; the other limbs missing. Parts of the carapace magnified, in ventral aspect, are shown in the median line, and a lateral view on the right shows the eye, the first and second antennae, and the rostrum with its strongly curved ventral process.

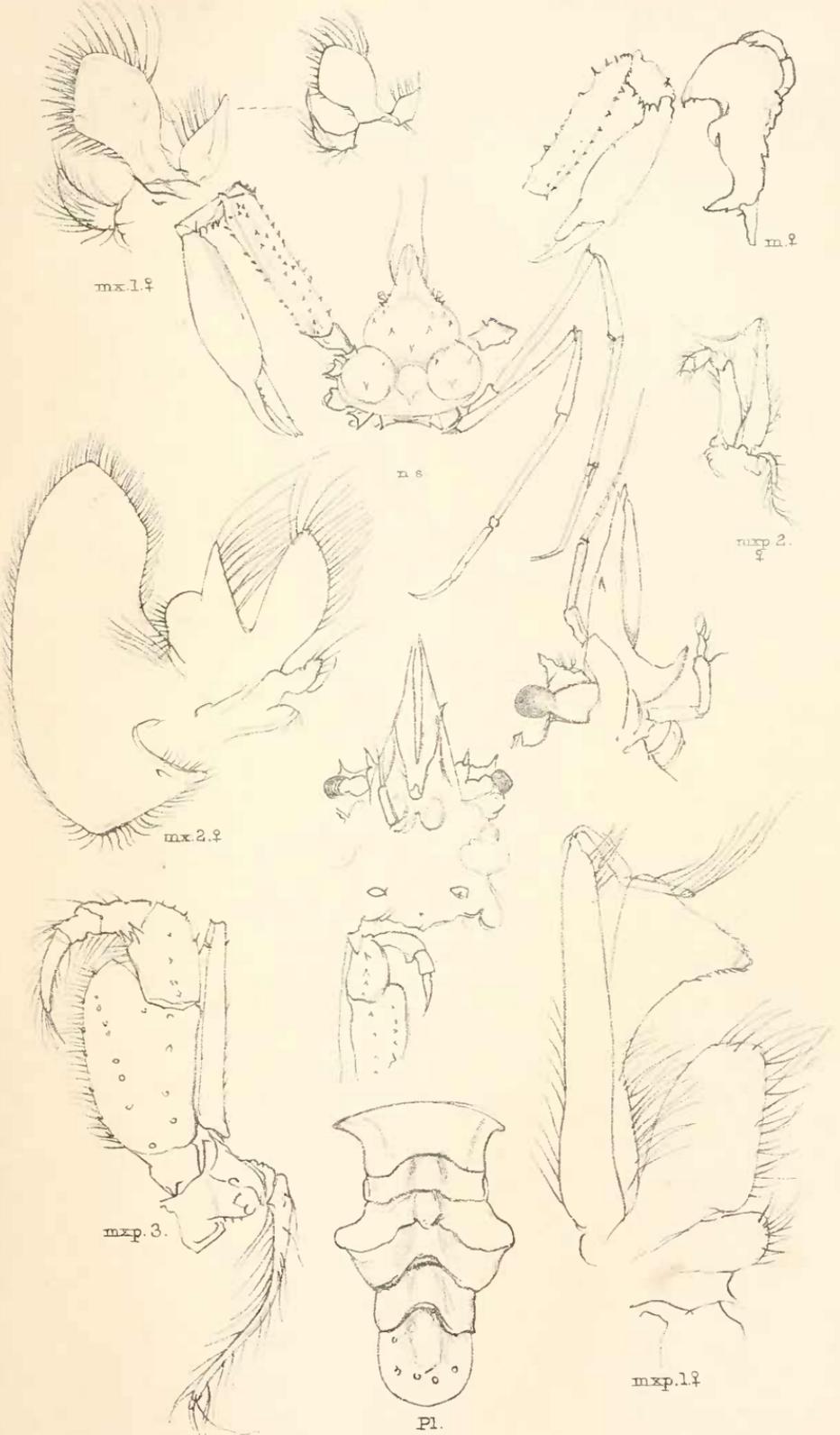
Pl. The pleon flattened out.

The remaining figures are from a female specimen.

m. ♀, mx. 1, ♀. The mandible and first maxilla, the latter with further magnification.

mx. 2, ♀, mxp. 1, ♀. The second maxilla and first maxilliped, uniform with higher magnification of first maxilla.

mxp. 2, ♀, mxp. 3, ♀. Second and third maxillipeds, magnified to the same scale as the mandible.



Del. T. R. R. Stebbing

Adlard & West, Newman, lith.

ACHÆOPSIS THOMSONI (Norman)

PLATE II. (Crustacea, Plate XCI.)

Calocaris alcocki, McArdle.

- n.s. Specimen in lateral view, natural size; fourth peraeopod missing on that side, as also flagellum of second antenna and one of the flagella of the first.
- car. Dorsal view of carapace much enlarged, with first antenna on the left, second on the right, both imperfect; eyes partially seen.
- T., urp. Telson in dorsal view, and one of the uropods.
- m., mp. One of the mandibles and palp of the other.
- l.i., mx. 1, mx. 2, mxp. 1, mxp. 2. Lower lip, first and second maxillae, first and second maxillipeds.
- mxp. 3, prp. 5, plp. 1, plp. 2, plp. 5. Third maxilliped, fifth peraeopod, first, second, and fifth pleopods. For considerations of space these parts are less highly magnified than the others, except in regard to the extra figures showing the dentate margin in the third maxilliped and the peculiar apical joints of the first and second pleopods.

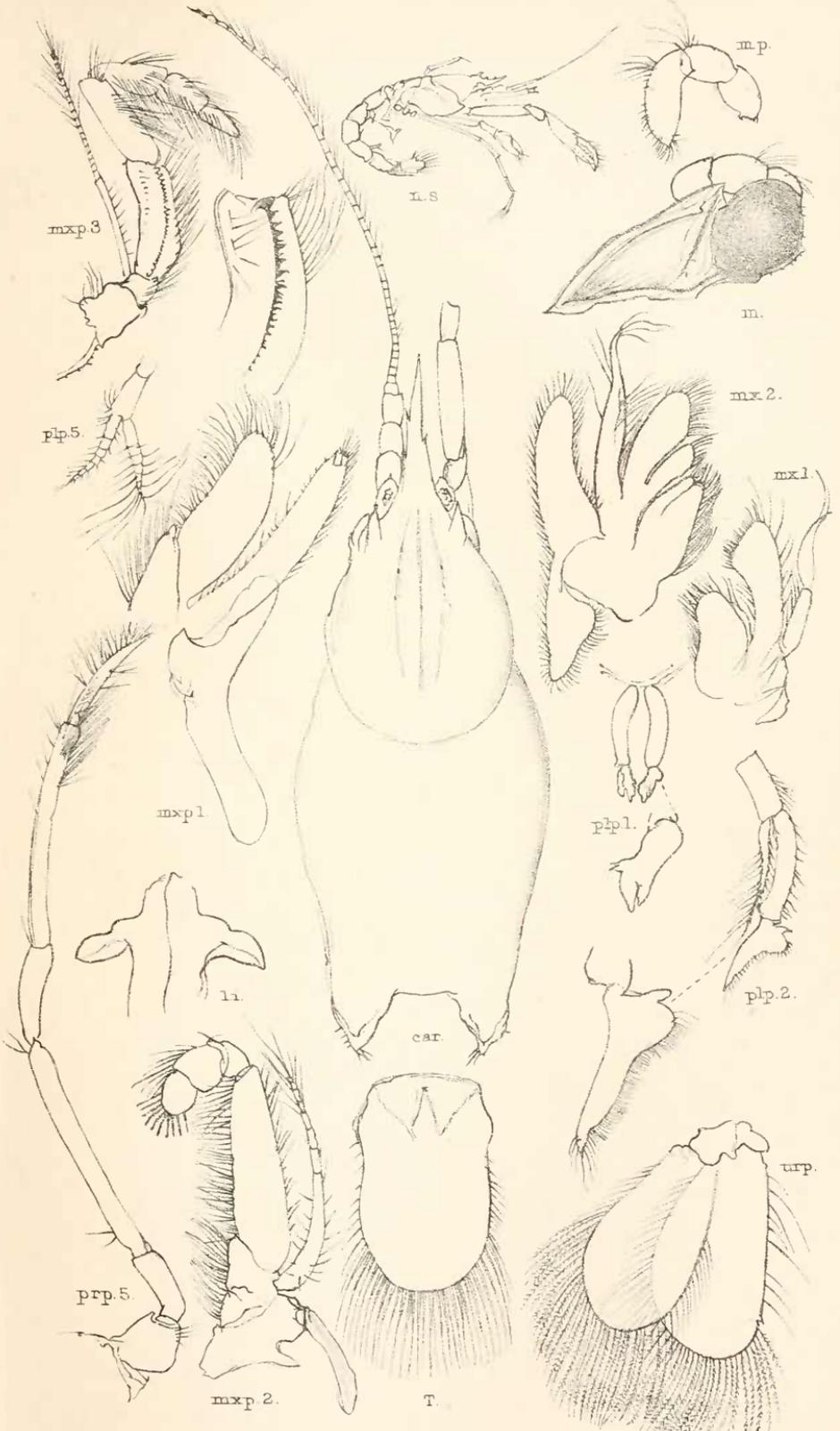
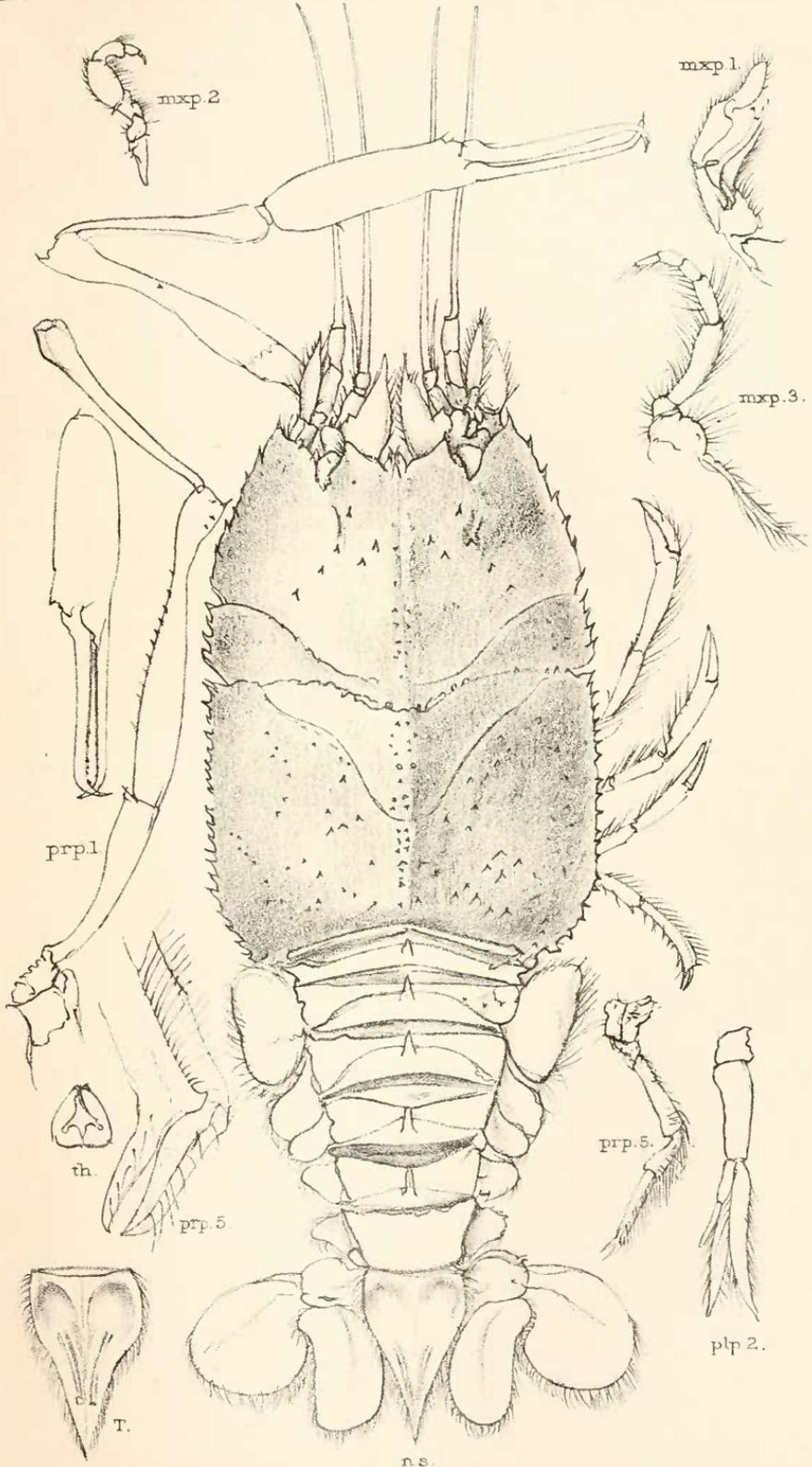


PLATE III. (Crustacea, Plate XCII.)

Polycheles demani, n. sp.

- n.s. Female specimen in dorsal view, natural size; flagella of the antennae curtailed by want of space, the frontal and telsonic parts slightly fore-shortened, the epimeral parts of the pleon a little expanded from their natural aspect.
- th. Thelycum.
- T. The telson. This and all the other separate parts of natural size, except the terminal part of the fifth peraeopod.
- mxp. 1, 2, 3. First, second, and third maxillipeds.
- prp. 1. First peraeopod, the chela detached, for considerations of space.
- prp. 5. Fifth peraeopod on the right, with terminal portion on the left magnified.
- plp. 2. Second pleopod.



Del. TRR Stebbing.

POLYCHELES DEMANI, n. sp

Adlard & West, Newman lith

PLATE IVB. (Crustacea, Plate XCIIIb.)

Leander pacificus, Stimpson.

n.s. Specimen in lateral view represented of the natural size.

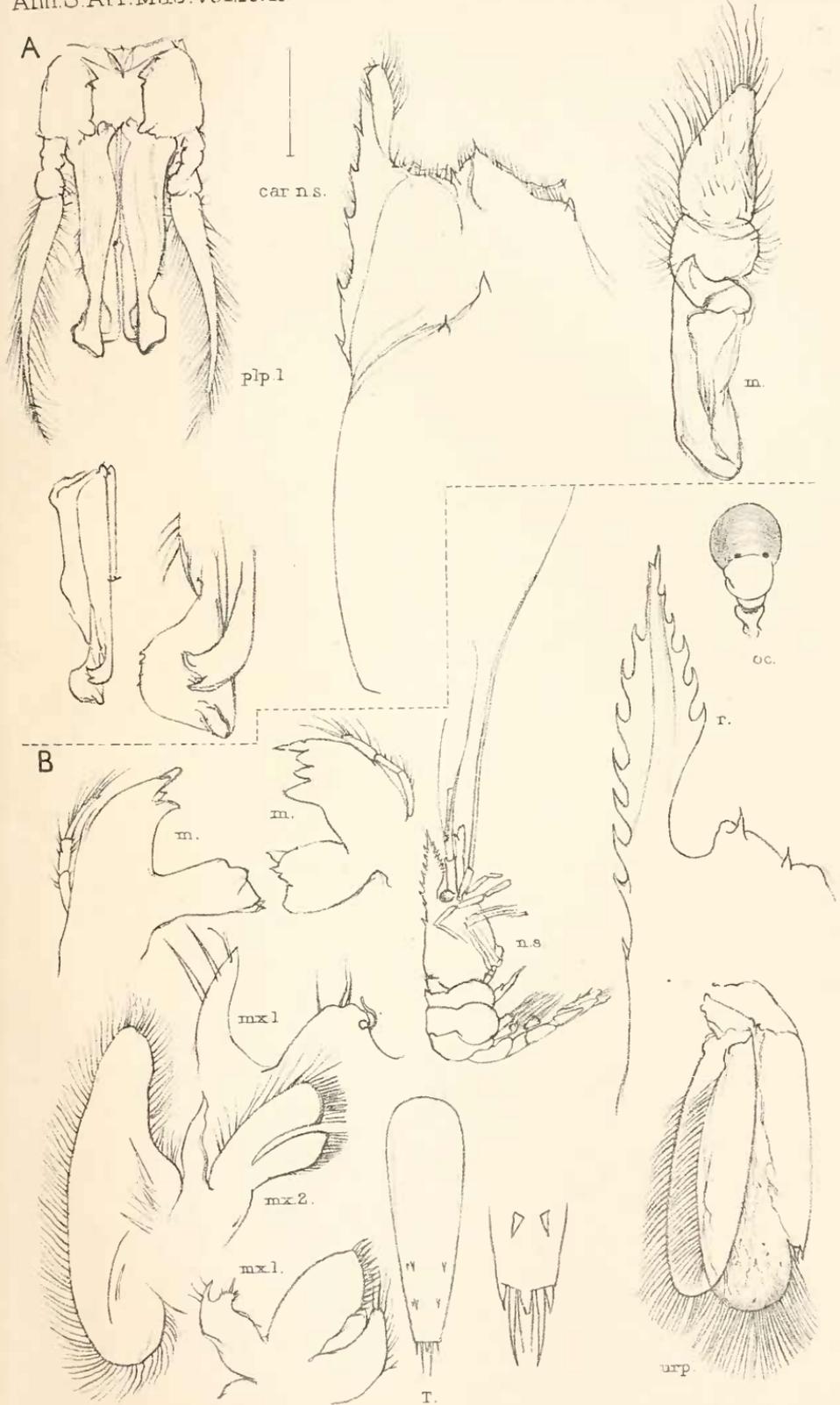
r. The rostrum and adjoining part of carapace magnified.

oc. One of the eyes.

T., urp. Telson and uropod in dorsal aspect to the same scale as the rostrum,
with additional magnification of the end of the telson.

m.m. Parts of the mandibles on the higher scale.

mx. 1, mx. 2. First and second maxillae, on the same scale as the mandibles,
with apex of first maxilla more highly enlarged.



Del. T.R.R. Stebbing.

SOLENOCERA AFRICANUS, n.sp.

Adlard & West, Newman lith.
LEANDER PACIFICUS, Stimpson.

PLATE V. (Crustacea, Plate XCIV.)

Acanthephyra brachytelsonis, Bate.

- car. Rostrum and front of carapace in lateral view enlarged.
T. Telson in dorsal view, enlargement uniform with that of the carapace.
a.i. Apical portion of the scale of the second antennae, without its fringing setae, magnified to the same scale as the following figures.
m.m. The mandibles from the inner or upper surface.
mx. 1, mx. 2. First and second maxillae with one of the spiculate setae of the first more magnified.
mxp. 1, mxp. 2. First and second maxillipeds.
mxp. 3. Antepenultimate joint of the third maxillipeds.

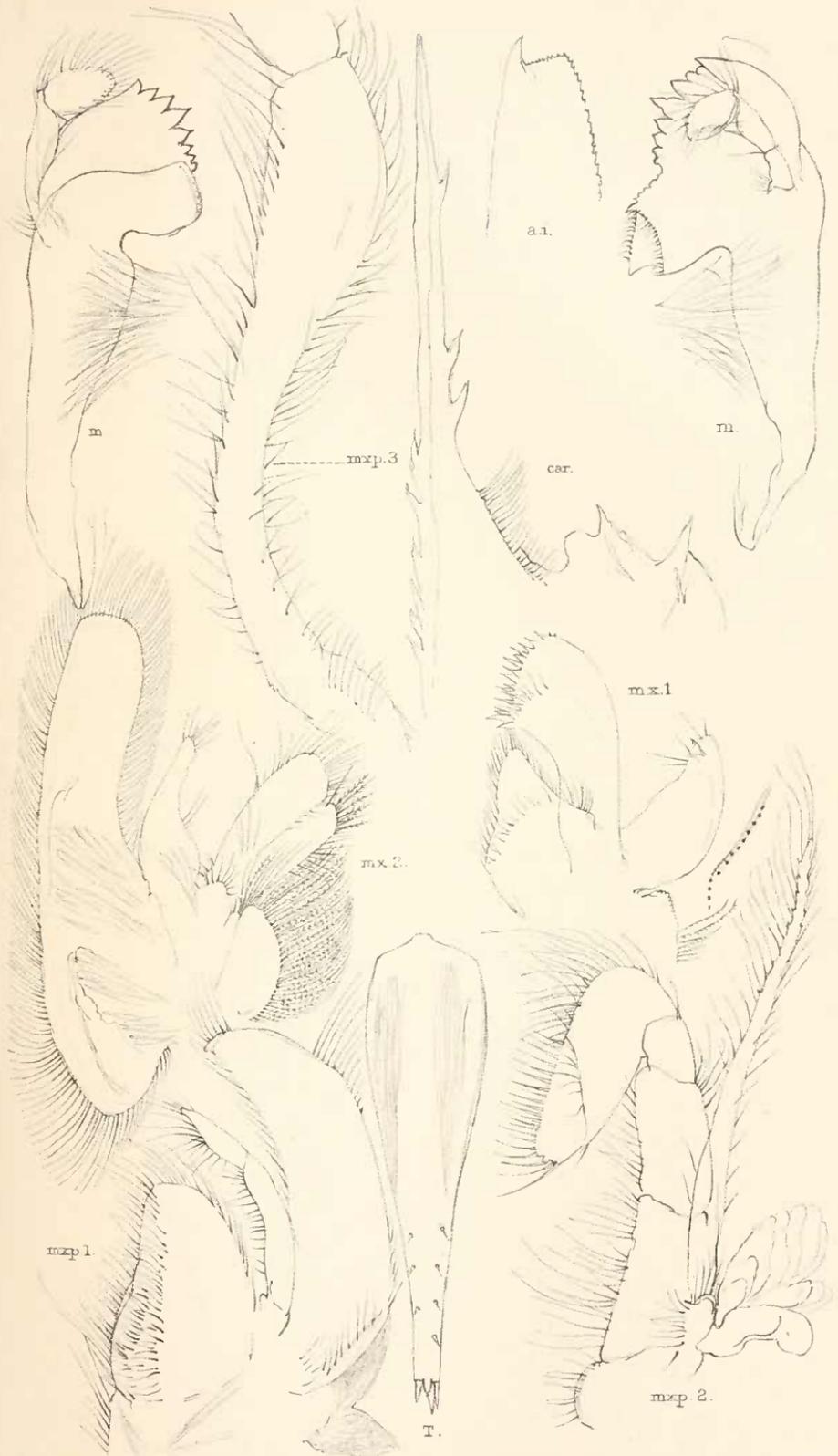
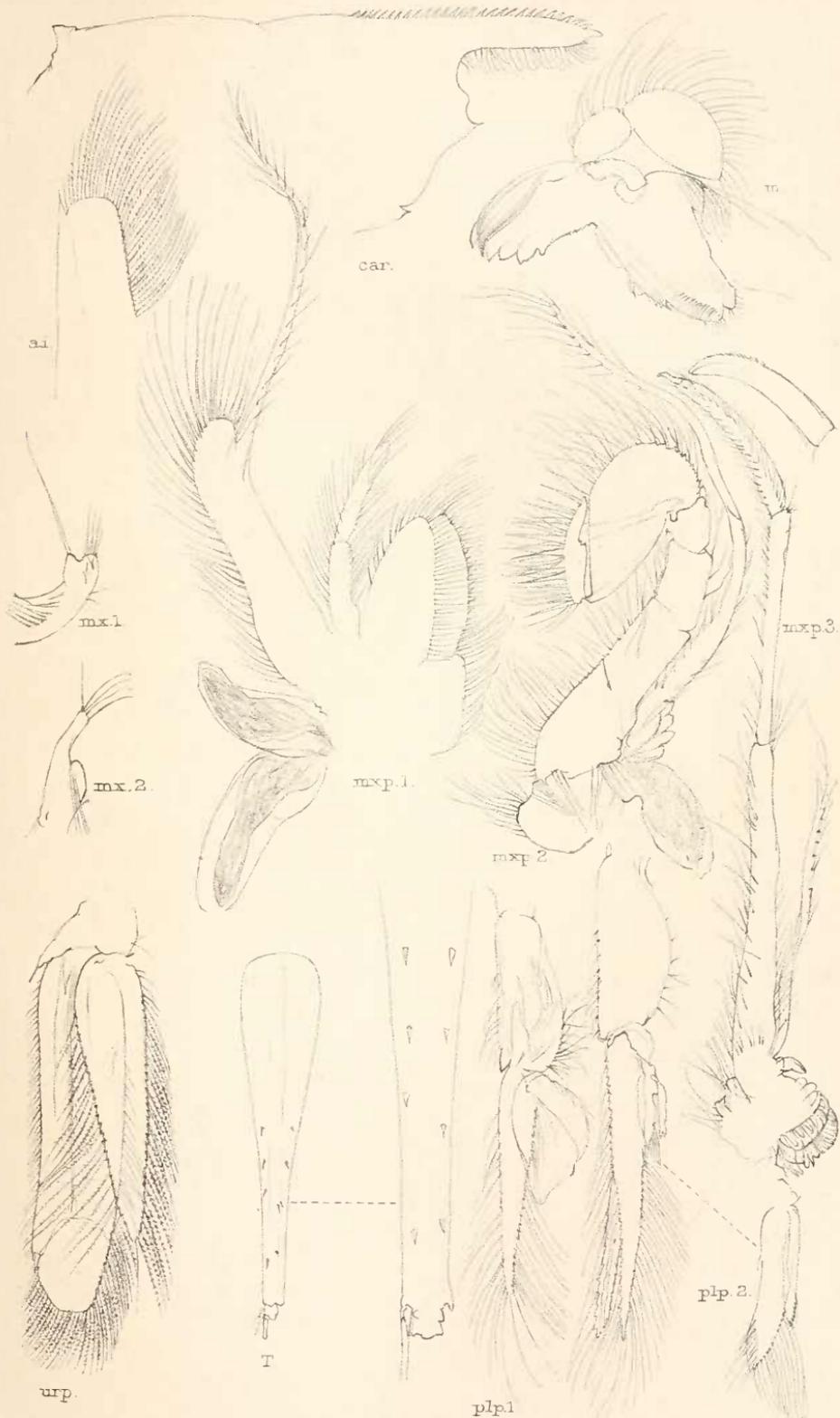


PLATE VI. (Crustacea, Plate XCV.)

Nematocarcinus parvidentatus, Bate.

- car. Part of carapace in lateral view, on a lower scale of enlargement than other parts.
- T. Telson in dorsal view, with higher magnification of the spiniferous part.
- a.i. Apical part of the scale of the second antenna.
- m. One of the mandibles.
- mx. 1, mx. 2. The apical plate of the first maxilla and the corresponding part of the second.
- mxp. 1, mxp. 2, mxp. 3. The first, second, and third maxillipeds, the third on account of its great length less highly magnified than the other mouth organs, but the terminal spine more highly instead of less.
- plp. 1, plp. 2. The first and second pleopods, the second with higher magnification of the male appendage and retinaculum.
- urp. One of the uropods.



Del. T.R.R. Stebbing.

Adlard & West, Newman, lith.

NEMATOCARCINUS PARVIDENTATUS, Bate.

PLATE VIIA. (Crustacea, Plate XCVIA.)

Ichnopus macrobetomma, n. sp.

- n.s. Line showing actual length from head to third pleon segment across the bent specimen, as shown in the adjoining figure.
- a.s., a.i. First and second antennae, the flagella only in part.
- m., mxp. One mandible and half the maxillipeds.
- gn. 1, gn. 2. The first and second gnathopods, with higher magnification of the finger of the first, of the hand and finger of the second.
- urp, T. Third uropod, with tip of exopod more highly magnified, and dorsal view of the telson.

PLATE VII. (Crustacea Plate XCVI.)

Metopa rotundus, n. sp.

n.s. Line indicating natural size, measured round from head to third pleon-segment of the female specimen shown in lateral view.

a.s , a.i. First and second antennae.

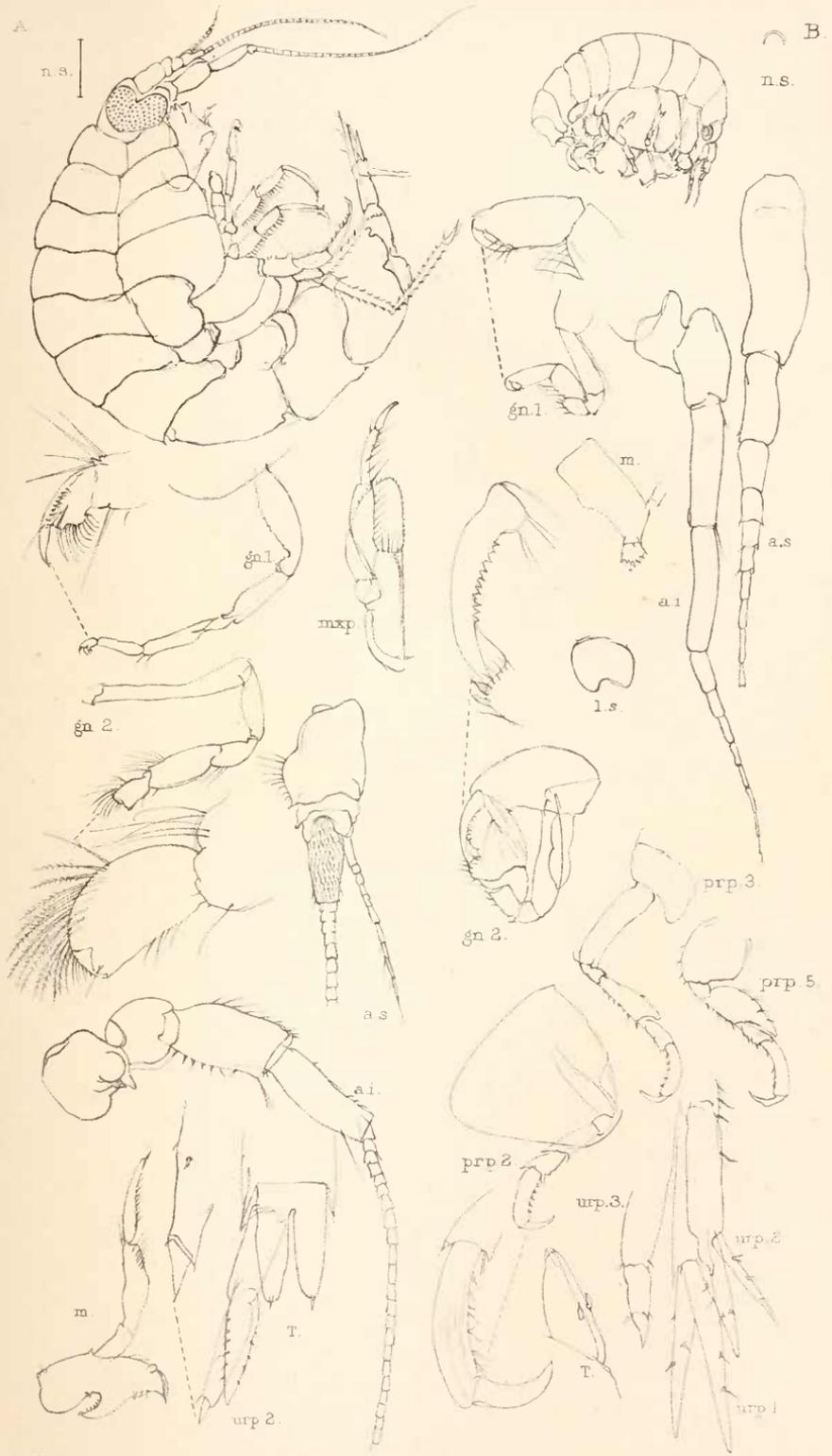
l.s., m. Upper lip and mandible (the palp broken).

gn. 1, gn. 2. First and second gnathopods, with distal parts more highly magnified.

prps. 2, 3, 5. Second, third, and fifth peraeopods (basal joint of fifth imperfect), sixth and seventh joints of second more highly magnified.

urps. 1, 2, 3, T. The three uropods and the telson, the latter upturned in lateral view.

The gnathopods and peraeopods (except the extra enlargements) are on a lower scale than the other details.



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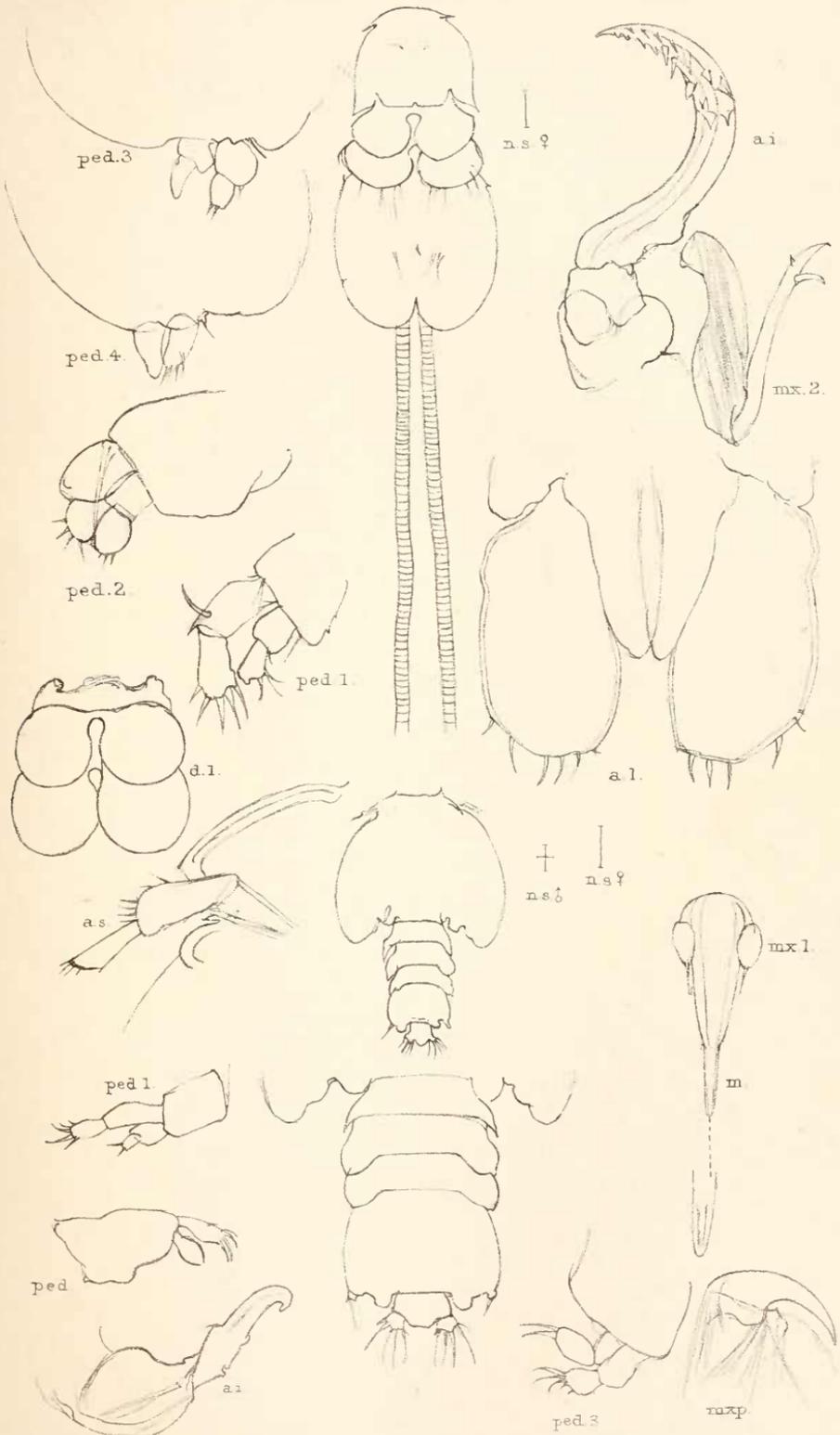
Adlard & West, Newman, lith.

ICHNOPUS MACROBETOMMA, n. sp. METOPA ROTUNDUS n. sp.

PLATE VIII. (Crustacea, Plate XCVII.)

Achtheinus dentatus, Wilson.

- n.s. ♀. Line indicating natural size of female specimen shown in dorsal view, with egg-strings incomplete. The following parts, in the upper half of the plate, of uniform magnification on a higher scale, were taken from the same specimen (except d.l.).
- a.i. Second antenna.
- mx. 2. Second maxilla.
- ped. 1, 2, 3, 4. First, second, third, and fourth feet, the expanded segment of the third and of the fourth incomplete.
- a.l. Anal laminae.
- d.l. Dorsal laminae, from a different specimen, detached from the carapace to show the small lateral laminae "covering the bases of the second legs" (Wilson), in connexion with the two following pairs of foliaceous laminae.
- n.s. ♂, n.s. ♀. Lines indicating natural size of male specimen shown in dorsal view, and of the female specimen to which it was attached. The following figures, uniform in magnification with the details of the female, are taken from the male.
- a.s., a.i. First antenna in position, and second antenna.
- m., mx. 1. Mouth-tube, with first maxillae and mandibles, the latter with additional magnification.
- mxp. Part of maxilliped.
- ped. 1, ped. 3, ped. The first and third feet, and a foot which is probably the fourth.



Del. T. R. Stebbing

Adlard & West, Newman lith

ACHTHEINUS DENTATUS, Wilson.