

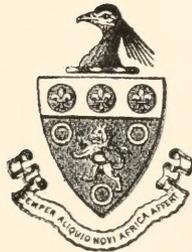
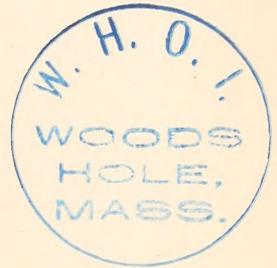


ANNALS
OF THE
SOUTH AFRICAN MUSEUM

VOLUME XV.

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ANNALS
OF THE
SOUTH AFRICAN MUSEUM.

(VOL. XV.)

1.—*South African Crustacea* (Part VII. 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. New Zealand Inst., Hon. Fellow Worcester College, Oxford.

(Plates I.—XII. of Vol. XV. Plates LXV.—LXXVI. of Crustacea.)

AT various opportunities Dr. Gilchrist and Dr. Péringuey have sent me specimens of *Macrura* from South African waters. I was in hopes of being able to deal with the accumulated material in a single essay. But it now seems expedient to offer the present contribution as a first instalment of the report. There is some excuse for going slowly. The literature of the subject has become voluminous, and not infrequently the student is confronted with two opposite difficulties, in having to guess what species was intended by an old meagre description, and in having to weigh critically all the minute distinctions of a modern elaborate one. When there are many specimens at his disposal all superficially alike, he has to guard against overlooking important characters that may differentiate some of them. When the specimen is unique, there is the torturing alternative of spoiling it for exhibition in a museum by dissection, or spoiling it for any real use to science by leaving it intact. With the extension of research the task of assigning specific names becomes increasingly hard, as connecting links are discovered between species and species, and the range of variability within an acknowledged species is demonstrated. Of the South African macruran fauna it is probably true that its members have very near relatives in almost every part of the ocean.

Six new species are here proposed, and two new genera, *Haliporoides* and *Macropetasma*. Further, the name *Pomatochelidae* is substituted for the family previously called *Pylochelidae*, and for the preoccupied names *Sicyonia* and *Ogyris* the new generic names

Eusicyonia and *Ogyrides* are offered respectively in exchange. Incidentally a parasitic isopod is named *Hemiarthrus nematocarcini* and the amphipod *Platyschnopus mirabilis* is added to the South African fauna.

MACRURA.

MACRURA ANOMALA.

TRIBE PAGURIDEA.

1888. *Paguridea*, Henderson, Rep. Voy. Challenger, vol. 27, p. 40.

FAMILY POMATOCHELIDAE.

1888. *Pylochelidae*, Bate, Rep. Voy. Challenger, vol. 24, pp. 10, 11.
 1892. *Parapaguridae*, Ortmann, Zool. Jahrb., vol. 6, pp. 243, 274.
 1893. „ „ Stebbing, Hist. Crust., Internat. Sci. Ser.,
 vol. 74, pp. 166, 169.
 1901. *Pylochelidae*, Alcock, Catal. Indian Deep-sea Crust. Anomala,
 p. 209 (*Pomatochelidae* ?, p. 210).
 1905. „ „ Alcock, Catal. Indian Deep-sea Anomura, fasc. 1,
 pp. 12, 13.
 1913. „ „ Balss, Abhandl. K. Bayer. Ak. Wiss., Suppl.
 vol. 2, pt. 9, p. 34.

The genera included in this family, according to Alcock, are *Pomatocheles*, Miers, 1879, *Pylocheles*, A. Milne-Edwards, 1880, *Mixtopagurus*, A. Milne-Edwards, 1880, *Cheiroplatea*, Bate, 1888, and *Parapylocheles*, Alcock, 1901. The proximity of *Pomatocheles* to *Pylocheles* was noticed by A. Milne-Edwards and Bouvier in 1893, and in 1913 the species *Pomatocheles jeffreysii*, Miers, is transferred by Balss to *Mixtopagurus*. But clearly the generic name given by Miers has the precedence, and the union of the two genera requires that the *Mixtopagurus paradoxus* of A. Milne-Edwards and Henderson's *Pylocheles spinosus* should be renamed as species of *Pomatocheles*. There is a difficulty in regard to *Mixtopagurus gilli*, Benedict, 1901, that it has a very unsymmetrical telson, which would seem to exclude it from this family altogether. That the family should be named *Pomatochelidae* after its premier genus, as Alcock suggested in 1901, is to my mind obvious, but *quot homines, tot sententiae*.

GEN. POMATOCHÉLES, Miers.

1879. *Pomatocheles*, Miers, Pr. Zool. Soc. London, p. 49.
 1880. *Mixtopagurus*, A. Milne-Edwards, Bull. Mus. Comp. Zoöl.,
 vol. 8, pt. 8, p. 39.
 1893. „ A. M.-Edwards and Bouvier, Mem. Mus. Comp.
 Zoöl., vol. 14, No. 3, p. 23.
 1905. *Pomatocheles* and *Mixtopagurus*, Alcock, Catal. Indian Deep-
 sea Anomura, fasc. 1, p. 14.
 1913. *Mixtopagurus*, Balss, Abhandl. K. Bayer. Ak. Wiss., Suppl.
 vol. 2, pt. 9, p. 34.

In his synopsis of the genera, Alcock distinguishes *Pomatocheles* as having "hands of chelipeds forming an operculum" from *Mixtopagurus* with "chelipeds not operculiform." Both are distinguished from *Pylocheles* and *Cheiroplatea* by having the third maxillipeds normal instead of cheliform. The new species here described is distinguished from *P. gilli* by its symmetrical telson, from *P. paradoxus* by having the palp of the first maxillae simple instead of two-jointed, from *P. spinosus* by its unequal chelipeds, and from *P. jeffreysii* by longer eyestalks, the rostrum acute instead of rounded, unequal and strongly tuberculose chelipeds, and the much more sharply separated lobes of the telson.

POMATOCHÉLES BALSSI, n. sp.

Plate LXV.

The anterior half of the carapace is calcified, the rest more or less membranaceous, as is the case with the pleon except in the short first segment and the sixth, the latter appearing to be immovably bent, as though the telson and uropods were permanently folded forwards and underneath. It is rather remarkable that this symmetrical hermit should have been found occupying a simple cylindrical coral which is itself curved and tapers to a narrow completely closed foot. But similarly *P. jeffreysii* occupied the curved shell of a *Dentalium*. The general surface is pilose, the rostral point acute, a smaller acute point being formed by the front margin outside each ocular peduncle. These peduncles are long, a little dilated for the small dark cornea; the small scales at the base are not contiguous and are produced on the inner side into a single acute point. The telson is much longer than broad, bilobed with a deep apical incision, the sides of which, like the free border all round, are fringed with plumose setae; the

outer lateral margins are convex, with no such concavity as is shown in the figures of *P. jeffreysii* and *P. spinosus*. In *P. paradoxus* the sides of the telson are sinuous in the figure, but in the description the telson is said to be "broadly emarginate behind and excavate on the sides."

The first antennae have a first joint rather longer than the second, with an apical tooth on one side and one below the apex on the other; the third joint is rather shorter than the second; the principal flagellum is subequal in length to the peduncle, its first half broad, with very long plumose setae, the whole nearly twice as long as the slender companion flagellum. The peduncles are perhaps scarcely as long as the eyes. Benedict, in comparing *P. gilli* with *P. paradoxus*, remarks that in the latter species these peduncles do not reach the corneae, while in the former they pass them. But it may be asked whether he is not comparing the peduncles of his own species fully extended with those of Milne-Edwards' figured in their natural geniculate position, which shows the second joint end on, thus giving no idea of its actual length.

The long third joint of the mandibular palp is partially fringed with setules. The middle plate of the first maxillae is fringed with numerous strong spines, the narrow one-jointed "palp" has six slender spines at the apex. The long sinuous apical joint of the second maxillae, broad at its base, is drawn out to a fine point at the lightly armed apex. In the third maxillipeds the third joint is armed with a long row of teeth, the fourth joint has two teeth at the outer apex, the sixth joint is elongate, carrying the short spinose seventh at its end, with no suggestion of the chelate character which makes these appendages notable in *Pylocheles*.

The first peraeopods are not symmetrical, that on the left side being considerably the larger. In both, the fourth, fifth, and sixth joints are furnished with numerous teeth, the fingers of the left chela being stout, shorter than the palm, while those on the right are subequal to it in length. The small but sturdy fifth peraeopods have the sixth joint fringed with close-set spines, the short finger closing tightly on the truncate or slightly concave apex.

The first pleopods of the male are set rather near together, membranaceous, fringed with setae, in shape like a flat spoon, the handle curved, of uniform width, the bowl pointed. The second pair wide apart, with stiff peduncle, the single ramus ending in a membranaceous trowel-shaped expansion. The three remaining pairs all membranaceous, each with a long and a short ramus. Peduncle of the uropods with a small tooth at each apex, both rami fringed

with long plumose setae and pads of short stout spines along the outer margin.

Total length, allowing for an extended telson, about 18 mm., the carapace accounting for 6 mm. The eyes are 3 mm. long. The coral is 33 mm. long, width of interior at the top nearly 7 mm. externally 10 mm., narrowest part 6 mm.

Locality. Near East London, Cove Rock NW. $\frac{3}{4}$ W. 13 miles (Cape Colony); depth 80–130 fathoms. A 1571.*

The specific name is given in compliment to Dr. Heinrich Balss, a valued carcinologist.

TRIBE GALATHEIDEA.

1888. *Galatheidea*, Henderson, Rep. Voy. Challenger, vol. 27, p. 103.

FAMILY GALATHEIDAE.

1853. *Galatheidæ*, Dana, U.S. Expl. Exp., vol. 13, p. 1431.

GEN. GALATHEA, Fabricius.

1793. *Galathea*, Fabricius, Entomologia Sytematica, vol. 2, p. 472.

GALATHEA DISPERSUS, Bate.

1858. *Galathea dispersa*, Bate, Journ. Pr. Linn. Soc. London, vol. 3, No. 9, p. 3.

1863. *G. nexa*, Heller (not Embleton), Crust. südl. Europa, p. 191, pl. 6, fig. 4 (by misprint 3 in expl. pl.).

1888. *G. dispersa*, Henderson, Rep. Voy. Challenger, vol. 27, pt. 69, p. 119, pl. 12, figs. 6, 6a.

1888. „ Bonnier, Bull. Sci. France Belgique, Ser. 3, vol. 1, Nos. 4–8, p. 68, pl. 13, figs. 1–3.

1900. „ A. Milne-Edwards et Bouvier, Crust. Decap., Travailleur et Talisman, p. 278, pl. 29, figs. 2, 3.

1910. „ Stebbing, Ann. S. Afr. Mus., vol. 6, pt. 4, p. 364.

The fuller description of Stimpson's *Galathea labidoleptus*, published in 1907, long after Stimpson's death, appears to show

* The number given with a locality only concerns the South African Museum.

many points of difference from *G. dispersus*. Thus he describes the rostrum as long, with the four lateral teeth as small and very slender, the gastric region of the carapace carrying 2 little spines anteriorly, the chelipeds as rather stout, hand with a thick palm, but very slender fingers, which together are much narrower than the palm, straight and not toothed.

In the specimens here referred to *G. dispersus* the rostrum cannot properly be called long, and three of the lateral teeth are not small nor always slender, the teeth behind the rostrum on the gastric region are 6 in number. Within and slightly below the antero-lateral tooth there is a small denticle, and a row of denticles runs behind the antero-lateral to a pterygostomian tooth; a line of seven teeth runs down each side. The first joint of the first antennae has three long apical processes. The fingers of the chelipeds are together not strikingly narrower than the palm, and they are not devoid of teeth on their confronting margins, though the teeth are inconspicuous except one near each curved apex. Perhaps the most distinctive feature of this species is one to which Stimpson's account makes no allusion, namely, the four conspicuous teeth on the oblique distal margin of the fourth joint in the third maxillipeds. The difficulty of deciding anything as to the independence of Stimpson's species is in large measure due to the varying characters of *G. dispersus*. Thus Hender-son states that "the first striated ridge on the gastric area, situated at the base of the rostrum, bears from two to six spinules, but in some cases they are obsolete." A. Milne-Edwards and Bouvier have discussed the great differences in size that occur between adult specimens. In our three South African specimens, of graduated sizes, the medium one was 23 mm. long, of which the carapace accounted for 12.5 mm., the rostral part of it being 4.5 mm., and the greatest breadth 8 mm. Only in the smallest of the three did the rostral lateral teeth give the impression of slenderness.

Locality. Great Fish Point Lighthouse, W. by N. 5 miles (Cape Colony); depth 22 fathoms. A 919.

GEN. MUNIDOPSIS, Whiteaves.

1874. *Munidopsis*, Whiteaves, Amer. J. Sci., Ser. 3, vol. 7, p. 212.
 1882. „ S. I. Smith, Bull. Mus. Comp. Zoöl., vol. 10,
 No. 1, p. 21.

1888. *Munidopsis*, Henderson, Rep. Voy. Challenger, vol. 27, pt. 69, p. 148.
1895. ,, Faxon, Mem. Mus. Comp. Zoöl., vol. 18, p. 81.
1900. ,, A. Milne-Edwards et Bouvier, Exp. Travailleuseur et Talisman, Crust. Decap., pt. 1, p. 312.
1901. ,, Alcock, Catal. Indian Deep-sea Crustacea, p. 247.
1902. ,, Benedict, Pr. U.S. Mus., vol. 26, pp. 244, 315.
1904. ,, Calman, Ann. Nat. Hist., Ser. 7, vol. 14, p. 214.

Alcock's synonymy of this genus includes *Galathodes*, *Orophorhynchus*, *Elasmonotus*, instituted by A. Milne-Edwards in 1880, *Anoplomotus*, Smith, 1883, *Galathopsis*, Henderson, 1885, and *Bathyankyristes*, Alcock and Anderson, 1894, the intergrading of all but the last having been already discussed by Faxon in 1895. But, while making the name *Munidopsis* generically paramount, Alcock divides the genus into five groups under the names *Munidopsis*, *Galathodes*, *Orophorhynchus*, *Elasmonotus*, *Bathyankyristes*, so that the last four generic names seem to be practically readmitted as it were by the back door, after being turned out by the front one. Group 1 is defined as:—

“*Munidopsis* proper, with the antero-lateral angles of the carapace spiniform, even if the lateral borders are not anteriorly spinose or dentate; with the rostrum styliform or acutely triangular, without any lateral spines; with the chelipeds decidedly longer than the legs and usually, in the male, as long as, or longer than, the fully extended body; and with the eyes terminal on the eye-stalks, which are almost always freely movable.”

MUNIDOPSIS SIMPLEX, A. Milne-Edwards.

1880. *Galathodes simplex*, A. Milne-Edwards, Bull. Mus. Comp. Zoöl., vol. 8, p. 56.
1894. *Munidopsis simplex*, A. M.-Edwards et Bouvier, Ann. Sci. Nat., Ser. 7, vol. 18, p. 275.
1897. ,, ,, A. M.-Edwards et Bouvier, Mem. Mus. Comp. Zoöl., vol. 19, No. 2, p. 89, pl. 5, figs. 2-7.
1900. ,, ,, A. M.-Edwards et Bouvier, Exp. Travailleuseur et Talisman, Crust. Decap., p. 314.

1902. *Munidopsis simplex*, Benedict, Pr. U.S. Mus., vol. 26, pp. 277, 326.
 1908. „ „ Hansen, Danish Ingolf Exp., vol. 3, Crust. Malac., p. 37.

In Benedict's useful key to fifty-one species of the genus, *M. simplex* is distinguished as one of those in which eye spines are not present, the rostrum is simple and curved upward, the armature of the pleon confined to the median line, the median line on the gastric area armed with spines or tubercles, orbicular (? orbital) sinus lacking, and finally with carapace of nearly uniform width, widest in middle, not cut up into lobes. *M. longirostris*, A. M.-Edwards and Bouvier, agrees with it, according to the key, except in having "carapace not uniform in width, cut into lobes by cervical sutures" and "broadest near anterior end." Our specimens have the carapace narrowest near anterior end, with antero-lateral spines less pronounced than those figured for *M. longirostris*. On the other hand, the third maxillipeds have only two teeth on the inner margin of the fourth joint, which the French authors mention as a character of their species, compared with the three teeth in *M. simplex*. Here also the carapace has a transverse pair of teeth followed by a single tooth near them and another quite distinct at a distance, in accord with *M. longirostris*. Thus, as the French authors themselves suggest, the two forms are probably not specifically distinct. The carapace including rostrum of the larger specimen measures 22 mm. in length, the pleon being rather shorter; it contained eggs in no great quantity. The carapace of a much smaller specimen measured 18 mm., of which the rostrum accounted for 7.5 mm.

Locality. Cape Point, N. 77° E. (Cape Colony); depth 660 fathoms. A 912.

MACRURA GENUINA.

TRIBE THALASSINIDEA.

1893. *Thalassinidea* (part), Stebbing, History of Crustacea, Internat. Sci. Ser., vol. 74, p. 180.
 1901. „ „ Alcock, Catal. Indian Deep-sea Macrura, p. 151.
 1903. „ „ Borradaile, Ann. Nat. Hist., Ser. 7, vol. 12, p. 534.

FAMILY AXIIDAE.

1888. *Axiidae*, Bate, Rep. Voy. Challenger, vol. 24, p. 36.
 1901. „ Alcock, Catal. Indian Deep-sea Macrura, p. 186.
 1901. „ Rathbun, Bull. U.S. Fish. Comm. 1900, vol. 2, p. 95.
 1906. „ Rathbun, Bull. U.S. Fish. Comm. 1903, pt. 3, p. 893.
 1907. „ Borradaile, Ann. Nat. Hist., Ser. 7, vol. 19, pp. 468,
 475, 476.
 1914. „ Balss, Abhandl. K. Bayer. Ak. Wiss., Suppl. vol. 2,
 pt. 10, p. 85.

GEN. CALOCARIS, Bell.

1853. *Calocaris*, Bell, Brit. Stalk-eyed Crust., p. 231 (dated 1847 by
 White in List of British Crustacea in Brit. Mus.,
 p. 33, 1850).
 1891. „ Ortmann, Zool. Jahrb., vol. 6, p. 50, pl. 1, fig. 5,
 (mouth organs).
 1901. „ Alcock, Catal. Indian Deep-sea Macrura, p. 187
 (with synonymy, p. 189).
 1908. „ Lagerberg, Göteborgs K. Vet. Handl., Ser. 4, vol.
 11, p. 51.
 1908. „ Hansen, Danish Ingolf Exp., vol. 3, Crust. Malac.
 p. 41 (distribution).

CALOCARIS BARNARDI, n. sp.

Plate LXVI.

From Bell's *C. macandreae* the present species is well distinguished by the very different proportions of the large chelae in the first pereopods, the fingers in the former being about three times as long as the palm, while here the fixed finger is not longer than the palm and the movable finger about once and a half as long as that shorter part of the palm to which it is attached. In *C. alcocki*, McArdle, the palm is as long as the fingers, but the whole structure is more slender than in the new species. There also the rostrum is upturned, whereas here it is perfectly straight and horizontal; the carinae diverging backwards from the rostrum are each surmounted by three denticles. The telson has a minute median spine in its very shallow apical emargination.

The eyes are large, flattened, and as preserved opaque white.

In the first antennae the proximal portion of the first joint is much wider than the distal; of the two slender flagella one is rather more than thrice, the other more than four times as long as the peduncle. In the second antennae the penultimate joint of the peduncle is twice as long as the last joint, but only a little longer than the ante-penultimate joint; the flagellum is about twice as long as the longer one in the first pair.

In the palp of the mandibles the third joint is the longest. The long two-jointed palp of the first maxillae has the first joint straight, the second sinuous. The third maxillipeds have an apical tooth on the first joint and also on the second, the remaining joints are beset with numbers of very long spine-like setae; the third joint has a slightly oblique surface row of 8 or 9 teeth, and the following joint has a small sub-terminal tooth as in *C. alcocki*; the seventh joint has a close brush of serrate spines in addition to its long setae.

The fixed finger of the first peraeopods has its inner margin crenulate, met before the centre by a prominence of the movable finger. The confronting margins of both fingers in the second peraeopods are finely denticulate.

The first pleopods resemble the petasmata of the Penaeids, but are described and figured by Alcock as common to both sexes. The remarkable second pleopod of the female found in *C. alcocki* is not represented in our specimens. They attain a length of 38 mm.

Locality. Cape Castle, E. $\frac{1}{2}$ N. 9 miles (near Saldanha Bay, Cape Colony); depth 89 fathoms. A 1549.

The specific name is given to mark my sense of the excellent service which Mr. K. H. Barnard is rendering to carcinology at the South African Museum under the auspices of Dr. Péringuey.

TRIBE ERYONIDEA.

1901. *Eryonidea*, Alcock, Catal. Indian Deep-sea Macrura, p. 151.
 1910. „ Stebbing, Ann. S. African Mus., vol. 6, p. 377.

FAMILY ERYONIDAE.

1852. *Eryonidae*, Dana, U.S. Expl. Exp., vol. 13, p. 515.
 1901. „ Alcock, Catal. Indian Deep-sea Macrura, p. 164
 (with synonymy).

GEN. PENTACHELES, Bate.

1878. *Pentacheles*, Bate, Ann. Nat. Hist., Ser. 5, vol. 2, p. 276.
 1888. „ Bate, Rep. Voy. Challenger, vol. 24, p. 143.
 1901. „ Alcock, Catal. Indian Deep-sea Macrura,
 pp. 165, 171.

PENTACHELES GRANULATUS (Faxon).

1893. *Polycheles granulatus*, Faxon, Bull. Mus. Comp. Zoöl., vol. 24,
 p. 197.
 1894. *Pentacheles beaumontii*, Alcock, Ann. Nat. Hist., Ser. 6, vol. 13,
 p. 236, and Illustrations Zool. Investigator, Crust., pt. 2,
 pl. 8, fig. 3.
 1895. *Polycheles granulatus*, Faxon, Mem. Mus. Comp. Zoöl., vol. 18,
 p. 123, pl. 32, fig. 1, pl. 33, figs. 2, 2a.
 1901. *Pentacheles beaumontii*, Alcock, Catal. Indian Deep-sea
 Macrura, p. 175.
 1906. *Polycheles granulatus*, Rathbun, Bull. U.S. Fish. Comm., 1893,
 p. 899, fig. 54.

Both specimens in the collection are small, only reaching a length of 38 or 39 mm. Unfortunately in both the first peraeopods are damaged, but the other details are well within the limits of variation shown by the descriptions which Faxon and Alcock have respectively given. The specimen more particularly examined has the small fifth peraeopod not chelate, the sixth joint being only shortly produced over the seventh, which is stated to be a male characteristic.

Locality. Cape Point E. by N. $\frac{3}{4}$ N. 34 miles (Cape Colony); depth 480 to 600 fathoms. A 1025.

TRIBE PENAEIDEA

1888. *Penaeidea*, Bate, Rep. Voy. Challenger, vol. 24, p. 219.

FAMILY PENAEIDAE.

1881. *Penaeidae*, Bate, Ann. Nat. Hist., Ser. 5, vol. 8, pp. 171,
 173.

GEN. GENNADAS, Bate.

1881. *Gennadas*, Bate, Ann. Nat. Hist., Ser. 5, vol. 8, pp. 171, 191.
 1914. „ Balss, Abhandl. K. Bayer. Ak. Wiss., Suppl. vol. 2,
 pt. 10, p. 4.
 1914. „ Stebbing, Trans. R. Soc. Edinb., vol. 50, pt. 2,
 No. 9, p. 282 (with synonymy).

GENNADAS KEMPI, Stebbing.

1914. *Gennadas kempfi*, Stebbing, Trans. R. Soc. Edin., vol. 50,
 pt. 2, No. 9, p. 283, pl. 27.

In one of the specimens with petasmata, those organs are in precise agreement with the same parts as figured for an example obtained by Dr. Bruce's "Scotia" Expedition. The present specimens have more slender eye-stalks with the lateral process more produced, and the little tooth at the end of the scale of the second antennae is rather longer, but the details in general present no differences. The length of a female specimen was 31 mm., and the male with petasmata well developed was approximately the same. It is no doubt nearly allied to *G. calmani*, Kemp, which appears to be a considerably larger species, and distinguished by a prominent ventral spine on the first pleon segment in both sexes, not found in either sex of the present species.

Locality. Cape Point, NE. $\frac{1}{2}$ N. 47 miles (Cape Colony); depth 700-1,000 fathoms. A 1256.

GEN. PENAEUS, J. C. Fabricius.

1798. *Penaeus*, J. C. Fabricius, Suppl. Ent. Syst., p. 408.

PENAEUS JAPONICUS, Bate.

1888. *Penaeus canaliculatus*, Olivier, var. *japonicus*, Bate, Rep. Voy.
 Challenger, p. 245, pls. 31, 32,
 fig. 4, pl. 37, fig. 2.
 1906. „ „ „ Alcock, Catal. Indian Mus. Macrura,
 fasc. 1, p. 14, pl. 2, figs. 6, 6a-c.
 1906. „ *japonicus*, Nobili, Ann. Sci. Nat., Ser. 9, vol. 4,
 pp. 6, 10.
 1911. „ „ de Man, Siboga Exp. 39a, p. 107.
 1914. „ „ Balss, Abhandl. K. Bayer. Ak. Wiss., Suppl.
 vol. 2, pt. 10, pp. 7, 13.

The rostrum of the specimen is broken, but the sculpture of the carapace and the thelycum agree with Alcock's figure, and the telson has three small lateral spines on one margin and two on the other. The length of the specimen, with allowance for the broken rostrum, may be estimated as 140 mm.

Locality. Van Staden River, N. by E. $\frac{1}{2}$ E. 3 miles (St. Francis Bay, Cape Colony); depth 32 fathoms. A 1038.

PENAEUS CANALICULATUS, Olivier.

1811. *Penaeus canaliculatus*, Olivier, *Encycl. Méthodique*, p. 660.
 1888. " " Bate, *Rep. Voy. Challenger*, vol. 24,
 p. 243, pl. 32, figs. 1, 2.
 1911. " " de Man, *Siboga Exp.*, vol. 39a, p. 147.
 1913. " " de Man, *Siboga Exp.*, vol. 39a, pl. 9,
 figs. 34a, 34b.

Bate's account of this species gives "rostrum slightly arched, furnished on the upper surface with nine teeth, the posterior of which stands on the gastric region a little unequally distant from the preceding, and one tooth on the lower margin immediately below the most anterior of those on the upper." With this our specimen agrees, except in having ten teeth instead of nine, as also with Bate's account of the telson, "acuminate and fringed with hairs at the sides; dorsal median line longitudinally channelled to the apex." It agrees also with de Man's observation that the telson is characterized by bearing no spinules on its lateral margins. So far as could be discovered without dissection the thelycum corresponds with that which de Man figures for the young female. The only point in which the specimen appears to differ from earlier descriptions regards the extension of the rostrum, which reaches beyond the dark bean-shaped eyes, but not nearly to the apex of the peduncle of the first antennae. This peduncle reaches the level of the lateral tooth of the scale of the second antennae. The scale extends some distance beyond this tooth. The flagella of the first antennae are of no great length; the upper stouter one is the shorter. The flagellum of the second antennae measured 70 mm., therefore being longer than the body, which is only 50 mm. The first pereopods are short, nor are any of the limbs conspicuously elongate. The inner branch of the uropods is longer than the telson and shorter than the outer branch,

in which the marginal tooth is inconspicuous, being close to the apex of the branch.

Locality. Bluff Lighthouse, SW. 5 miles; depth 15 fathoms (Durban). A 1190.

PENAEUS PULCHRICAUDATUS, n. sp.

Plate LXVII.

The small slender specimen for which this new species is instituted after long preservation in spirit was still beautifully variegated with lines of little blue spots. The nearest ally appears to be *Penaeus japonicus*, Bate, with which the carapace closely agrees. There are 9 dorsal spines, the hindmost remote from the rest, of which 2 are behind the orbit and the foremost rather remote from the apex and slightly in advance of the single ventral tooth. Between the fourth peraeopods there is a long adpressed spine-like ventral process, and a similar but shorter one between the fifth peraeopods. The sixth pleon segment is longer than the telson, sharply carinate, ending posteriorly in a medio-dorsal tooth, and having a smaller tooth at each postero-lateral angle. The telson is narrowly lanceolate, behind the centre having eight pairs of marginal spines, four pairs successively larger at successively smaller intervals, followed by a series of four microscopical pairs, all outflanked by the last of the large pairs and placed on the converging sides of the apical tongue, which then becomes nearly parallel-sided, with a slight bulge before running out to a point.

The eyes are large, dark, and bean-shaped, with a narrow peduncle. The two pairs of antennae are like those of *P. japonicus*, with which the mouth organs show much agreement, but in place of the very long terminal joint which Bate attributes to the palp of the first maxillae there are here two short joints, together shorter than Bate's long single joint. In the second maxillae the lowest lobe is notable for the paucity of setae; on the apical lobe there are 3 very short spines, and below them on the inner margin a group of denticles. In the second maxillipeds the terminal joint is shorter instead of longer than the preceding joint, and in both second and third maxillipeds the exopod is much less strongly developed than it appears in the figures of *P. japonicus*. This, however, may be referable to the age of the specimen.

In the first, second, and third peraeopods the fingers of the chela are longer than the palm, and the confronting denticulation is more or less limited in its extent. In the first pair groups of little serrate

spines are present subapically on the fifth and proximally on the sixth joint. In the first pair the second and third joints carry each a strong apical spine. In the second pair only the second joint is thus provided. All the peraeopods have exopods, those on the fifth pair being very small. The fifth pair is slightly longer than the fourth, both being considerably shorter than the third. The uropods extend beyond the telson, the outer branch beyond the inner, its small terminal tooth being on a level with the apical margin. Length of specimen 45 mm., the carapace with its rostrum constituting about one-third of this measurement.

Locality. Great Fish Point Lighthouse, N. $\frac{1}{2}$ W., 2 miles (Cape Colony); depth 30 fathoms. A 1046.

GEN. PENAEOPSIS, A. Milne-Edwards.

1881. *Penaeopsis*, A. M.-Edwards in Bate, Ann. Nat. Hist., Ser. 5, vol. 8, pp. 171, 182.
 1888. „ Bate, Rep. Voy. Challenger, vol. 24, p. 273.
 1891. *Metapeneus*, Wood-Mason, Ann. Nat. Hist., Ser. 6, vol. 8, p. 271.
 1906. *Metapeneus*, Alcock, Catal. Indian Decap. Crust., pt. 3, fasc. 1, pp. 5, 7, 16.
 1909. *Penaeopsis*, Bouvier, Mem. Mus. Comp. Zoöl., vol. 27, No. 3, pp. 205, 220.
 1911. „ de Man, Siboga Exp., vol. 39a, pp. 8, 53.

This genus, according to Dr. de Man, comprises nearly fifty species. Some of them appear to be very closely connected together.

PENAEOPSIS QUINQUEDENTATUS (de Man).

1902. *Penaeus*, sp., de Man, Abhandl. Senckenb. Naturforsch. Gesell., vol. 25, p. 906, pl. 27, figs. 65, 65a-c.
 1907. *Metapeneus quinquedentatus*, de Man, Notes Leyden Mus., vol. 29, p. 133.
 1911. *Penaeopsis q.*, de Man, Siboga Exp., vol. 39a, pp. 8, 71.
 1913. „ de Man, Siboga Exp., vol. 39a, pl. 7, fig. 23a-d.

Among points to be observed in this species, it may be noted that the carapace is without stridulating ridges, the body is finely tomentose, the rostrum setulose below, with five or six teeth on the convex upper margin, its apex reaching little beyond the large red bean-shaped cornea of the eye. There is a small epigastric tooth at some distance behind the

rostrum. The carina of the pleon is most marked on the sixth segment. The pointed apex of the telson has a subapical process on each side, these processes being completely flanked by a pair of movable spines planted higher up, these in turn being partially flanked by a nearly equal pair further up, succeeded further up by a much smaller pair. The first antennae have a large first joint hollowed out to receive the eye, a shorter but still rather long second joint, twice the length of the third joint, which nearly reaches the apex of the scale of the second antenna; the two flagella are little longer than the two preceding joints of the peduncle combined, the more slender flagellum a little longer than its companion.

The second joint of the palp of the mandible is much larger than the first, widening distally and having a shallow emargination in the setose distal border between the two rounded corners. The second peraeopod is longer than the first, the third than the second, the wrist contributing notably to the successive elongation. The confronting ends of the fingers are microscopically denticulate. The fifth peraeopod is considerably longer than the fourth. The petasmata, as observed in a specimen in which they had not come into contact, and are presumably not fully developed, are in near agreement with those figured by de Man. In a specimen 38 mm. long from apex of rostrum to apex of telson, the carapace measured 12 mm., or 8 mm. without the rostrum, which in this instance had six teeth on the dorsal margin. The sixth pleon segment was nearly 7 mm. long, and the telson slightly over 5 mm., a little shorter than the inner branch of the uropod, which in turn was shorter than the outer branch. In a specimen 38 mm. long, with 5 rostral teeth, the slender flagellum of the second antenna measured 28 mm. in length.

Locality. Cape Natal, W. by N. $6\frac{1}{2}$ miles (Natal); depth 54 fathoms. A 1207.

PENAEOPSIS AFFINIS (Milne-Edwards).

1837. *Penaeus affinis*, Milne-Edwards, Hist. Nat. Crust., vol. 2, p. 410.
 1906. *Metapeneus a.*, Alcock, Catal. Indian Decap. Crust., pt. 3, fasc. 1, pp. 17, 20, pl. 3, figs. 8, 8a-b (with synonymy).
 1911. *Penaeopsis a.*, de Man, Siboga Exp., vol. 39a, p. 57.

1913. *Penaeopsis a.*, de Man, Siboga Exp., vol. 39a, pl. 6, figs. 15a,
15b.
1914. „ Balss, Abhandl. K. Bayer. Ak. Wiss., Suppl.
vol. 2, pt. 10, p. 7.

The separate tooth on the carina of the carapace is followed by eight teeth on the rostrum, which has no ventral teeth and reaches about to the end of the peduncle of the first antennae, this being level with the tooth of the scale of the second antennae. In the first antennae the second joint is stout and long; the flagellum of the second pair is much longer than the body. The telson is dorsally sulcate, sharp-pointed, with lateral setae but not spines. The length of the single dry and brittle specimen is about 52 mm. The place of origin is uncertain, and perhaps the same epithet should be applied to the identification, as thorough examination was not feasible. A 1198.

PENAEOPSIS SPINULICAUDA, n. sp.

Plate LXVIII.

The characters which induce me to name this species as new are to be found in the lanceolate telson which has no large or projecting lateral spines or processes, but numerous little spines within the margins and some that are dorsal among a large number of spicules; further, in the second maxillae, of which the endopod has at the apex two notable spines on one surface and one on the other, and seven or eight little teeth along the inner margin; and further in the symmetrical petasmata, which are fringed along the adjoining margins with innumerable microscopic hooks, and at the two extremities appear to differ somewhat from these organs so far as known in other species.

The rostrum has no ventral teeth but eight dorsal, the last of which is behind the orbit and is followed at a distance by a small tooth on the long carina of the carapace. The eyes are very dark, bean-shaped. In the first antennae the second joint is more than half as long as the first and more than twice as long as the third; the flagella are a little shorter than the first two joints of the peduncle combined, one flagellum for two-thirds of its length much stouter than the other. The scale of the second antennae reaches the end of the peduncle of the first; the flagellum is 96 mm. long.

The mandibles have the molar broad, the second joint of the palp very large and setose, distally narrowed. Lower lip with a small group of setules at the inner corner of the broad lobes. The first

1905. *Neopenaeopsis*, Bouvier, Comptes Rendus, vol. 141, p. 747.
 1906. *Parapeneus*, Alcock, Catal. Indian Deep-sea Macrura, pp. 7, 30, 52.
 1909. *Parapeneus*, Bouvier, Mem. Mus. Comp. Zoöl., vol. 27, p. 228.
 1911. „ de Man, Siboga Exp., vol. 39a, p. 77.
 1913. *Parapeneus*, Balss, Schultze's Forschungsreise in Südafrika, vol. 5, pt. 2, p. 105.
 1914. *Parapeneus*, Balss, Abhandl. K. Bayer. Ak. Wiss., Suppl. vol. 2, pt. 10, p. 10.

Rostrum without ventral teeth; carapace with longitudinal and vertical sutures usually present; flagella of first antennae not very elongate; "palp" of first maxilla unsegmented; all the pereopods without exopods; no pleurobranch on the last thoracic segment.

Alcock in 1906 retains *P. rectacutus* (Bate) in the genus, though pointing out that its carapace is without the sutures which he includes among the characters of the genus. Dr. de Man notices the difficulty.

PARAPENAEUS FISSURUS (Bate).

Plate LXIX.

1881. *Penaeus fissurus*, Bate, Ann. Nat. Hist., Ser. v., vol. 8, p. 180.
 1888. „ „ Bate, Rep. Voy. Challenger, vol. 24, p. 263, pl. 36, figs. 1, 1'', 1γ, 1z.
 1899. „ „ Borradaile, Willey's Zool. Results, pt. 4, p. 404.
 1905. *Parapeneus f.*, Alcock, Ann. Nat. Hist., Ser. 7, vol. 16, p. 520.
 1906. „ Alcock, Catal. Indian Decap. Macrura, p. 31, pl. 5, figs. 16, 16a, 16b.
 1911. *Parapeneus f.*, de Man, Siboga Exp., vol. 39a, p. 79.
 1913. „ de Man, Siboga Exp., vol. 39a, pl. 8, figs. 25a, 25b.
 1914. „ Balss, Abhandl. K. Bayer. Ak. Wiss., Suppl. vol. 2, pt. 10, p. 10, text-fig. 4.

In the specimens examined the rostrum makes a double curve, with six teeth on its dorsal carina, the last small, at some distance from the upturned apex; the sides are also carinate. Of the seven teeth on the carapace the pair between

the first and second antennae are the largest. The sutures are not easily seen until the carapace is detached. The eyes as preserved are orange-red. In the first antennae the third joint is about half as long as the second, and one flagellum two-thirds the length of the other. The flagellum of the second antenna is considerably longer than the body.

In the palp of the mandible the second joint exhibits remarkable width. The chela of the first pereopods is not longer than the wrist, the fingers are considerably longer than the palm, their confronting margins microscopically denticulate, the whole limb more setose than those which follow, with minute brushes, distal on the wrist, proximal on the hand, such as are more effectively developed elsewhere in the Caridea. The last four joints of the fifth pereopods are very decidedly longer than the corresponding four respectively of the fourth pair. The first two-fifths of the telson are broad, the sides then becoming fringed with plumose setae and converging to a sharp apex, but midway or a little beyond sending out a pair of unjointed teeth.

Locality. Tugela River, N. by W. $\frac{3}{4}$ W. $15\frac{1}{2}$ miles (Natal); depth 40 fathoms. A 1195.

HALIPOROIDES, n. g.

Near to *Haliporus*, but distinguished by having the palp of the mandibles three-jointed. Rostrum with one or two teeth on the lower edge. Telson trifurcate. Both flagella of first antenna very elongate. First pereopods with clasping arrangement of spines between the distal margin of the fifth joint and proximal of sixth.

In 1901 Alcock speaks of Bate's *Haliporus* as having the rostrum "toothed dorsally only, as in all the subgenera of *Peneus* excepting *Peneus* itself." Since then, however, Bouvier and de Man have shown that teeth may occur on the ventral margin in various species of *Haliporus*. Thus Bouvier, commenting on the variability of the rostrum in *H. debilis* (S. I. Smith), says that it has the ventral edge sometimes unarmed, more often armed, with from one to three denticles. The trifurcate telson is noted for some species of the genus, but has not been adopted as a generic character. Similarly the clasping spines of the first pereopods are not present in some of the species, unless they have been overlooked. I have earlier suggested that the corresponding spines in *Sergestes* may be used as brushes and combs for the long flagella of the antennae.

The many striking points of resemblance between the species for which the new genus is proposed and *Haliporus sibogae*, de Man, 1911, greatly perplexed me in view of the undoubted fact that the new species differed not only from de Man's species, but, so far as I could find, from the whole known range of the Penaeidae in having the palp of the mandible three-jointed. Recently, however, Calman has pointed out that Boas in 1880 assigned a three-jointed palp to the mandible in *Sicyonia*, which he himself has verified for *Sicyonia carinatus* (Olivier), adding the same character for *Benthescymus investigatoris*, Anderson, thus for the former species controverting Bate's express statement, and for the latter the generic definition alike of Bate and of Alcock.

HALIPOROIDES TRIARTHURUS, n. sp.

Plates LXX., LXXI.

The carapace has a medio-dorsal carina beginning some way in front of the hind margin, with a slight depression where the arms of the cervical groove nearly meet it; thence it ascends to a denticle, followed by a second, remote and reaching to a point level with the base of the orbit; at a rather less distance a series of eight denticles begins, running along the arch of the rostrum, leaving a space intervening to the upturned apical tooth, behind which on the ventral margin there is a denticle about on a level with the foremost denticle on the upper edge; to the rear the margin is concave, closely fringed with setules. Some specimens have a second ventral denticle. The front of the carapace has on each side a small antero-lateral tooth, a larger antennal tooth leading to a short carina at the back of which is another carinate tooth, while further back and lower down is a denticle at the end of the cervical sulcus. The telson is shorter than the uropods, apically acute, with fringes of setae and two divergent processes, about half as long as the portion of the telson from their bases to its apex.

Both flagella of the first antenna are elongate, one much longer than the other. The flagellum of the second antenna attains a great length, in one specimen, not the largest, being 200 mm. long.

The first joint of the mandibular palp is perfectly distinct, rather broader than long, the very large second joint is almost twice as long as the third, and in its expanded proximal half more than twice as broad. The lower lip is perfectly smooth. The palp or terminal joint of the endopod in both the first and second maxillae is completely fringed on both margins with setae or spines, except for a

small smooth interval near the apex in the second maxillae, to make up for which there is a closely packed group of spines on the surface close to the apex. The second and third maxillipeds agree with all the five pairs of peraeopods in having each a minute exopod, the smallness being in striking contrast with the great length of the endopod in the third maxillipeds and most of the following appendages.

For the three chelate pairs of limbs the relations of length between the several joints may be sufficiently estimated by help of the illustrations, as they do not appear to show anything exceptional. It may, however, be noticed that in each pair the teeth of the opposing margins are not continued even half-way along the fingers from their blunt apices. A transparent membrane shielding these marginal teeth is perhaps usual in this family.

The total length of the specimen dissected was 87 mm., the carapace with rostrum being 31 mm. long, the sixth pleon segment 11 mm., and the telson 12.5 mm.

Locality. East London NW. $\frac{1}{2}$ N. 18 miles (Cape Colony); depth 250-300 fathoms. Obtained by Dr. Gilchrist. No. 208. The specific name alludes to the distinctly three-jointed character of the mandibular palp.

GEN. MACROPETASMA, n.

A Penaeid with long stiletto-like terminals to the petasma. Rostrum without ventral teeth. Peduncle of first antennae elongate, both flagella rather long. Flagellum of second antennae longer than the body. Second joint of mandibular palp large but distally narrowed. Upper lip and lobes of lower lip broad. An epipod on each of the first three peraeopods, an exopod only on the first. Fourth and fifth peraeopods very slender.

MACROPETASMA AFRICANUS (Balss).

Plate LXXII.

1913. *Parapeneus africanus*, Balss, Schultze's Forschungsreise in Süd-afrika, vol. 5, pt. 2, p. 105, text-figs. 1-6.

The rostrum, which reaches just beyond the dark globular eyes, has a variable number of dorsal teeth, 12 according to Balss, 11 in a female, 8 in a male of our specimens; at some distance behind the rostrum there is a small tooth. The sixth pleon segment is more than twice as long as the fifth and much longer than the telson, which is very narrow, the sharply

pointed apex having at the base a pair of articulated spines, above which are three pairs of minute marginal spines, inconspicuous among the plumose marginal setae.

The first joint of the first antennae has a leaf-like appendage at the base, the second and third joints successively shorter, but both rather long, the flagella longer than the peduncle, the shorter one (in the male) being at the base the wider and at a little distance from the base expanding and then abruptly narrowing so as to become less wide than its longer companion. In the second antennae the apical tooth of the scale does not quite reach the top of the setose distal margin.

The characters of the maxillae and maxillipeds are well shown by Dr. Balss; those of the lower lip and one mandible are seen in the present plate; the other mandible appears to have the molar process rather less strongly developed.

The first three peraeopods are, as usual in this family, similar in structure, but their difference in size is here very striking, the first pair being very short and the third very long; the first pair differs from the others in having the apparatus of little brushes of spines, serrate on both edges, situate near the base of the hand and distal end of the wrist. The figures sufficiently show the characters of the exopod and epipod attached to this pair. The fourth pair is considerably shorter than the fifth, and is sometimes difficult to observe from its tendency to fold inwards. The thelycum of the female has been figured and described by Dr. Balss.

The petasma of the male appears to be exceptional by the long terminal stilets, to which the generic name alludes. These appendages are very similar to the male organs of some Isopoda, formed by adaptation of the inner branch of the second pleopods. In the present species the second pleopods have the inner ramus represented by two little folded plates with a diminutive terminal flagellum of seven joints. A female specimen, 67 mm. in length, had a carapace just over 19 mm. long, of which the rostrum took barely 7 mm.; the fifth pleon segment was 5.5 mm. long, the sixth 12 mm., the telson 8 mm., the uropods 11 mm., the third peraeopods 25 mm., the fifth 20 mm. In the somewhat smaller male specimen from which the figures were drawn, the third peraeopods measured 18 mm. and the fifth 15 mm.

Locality. Flesh Point N. $\frac{1}{2}$ W. 2 miles (Mossel Bay, Cape Colony); depth 15 fathoms. A 1206.

GEN. ARISTAEOMORPHA, Wood-Mason & Alcock.

1891. *Aristaeomorpha*, Wood-Mason and Alcock, Ann. Nat. Hist., Ser. 6, vol. 8, p. 286.
1895. *Plesiopeneus*, Faxon, Mem. Mus. Comp. Zoöl., vol. 18, pp. 197, 199.
1901. *Aristaeomorpha* (subgen.), Alcock, Catal. Indian Deep-sea Macrura, pp. 13, 38.
1908. *Aristeomorpha*, Bouvier, Camp. Sci. Monaco, fasc. 33, pp. 52, 53 (with synonymy).
1911. *Aristeomorpha*, de Man, Siboga Exp., vol. 39a, p. 6.

Professor Bouvier in his account of the "Série des *Aristeae*" says, "Premier article des palpes mandibulaires plus étroit et notablement plus court que le second qui est triangulaire et souvent échancré." The peculiar shape of the second joint with its dilated base is no doubt an interesting characteristic of this group, but the preceding joint is shown to be considerably longer, instead of notably shorter, alike in Bate's figure of this palp in his *Aristeus armatus* and in Bouvier's own figures of it in *Hepomadus tener*, Smith, and *Plesiopeneus edwardsianus* (Johnson).

ARISTAEOMORPHA ROSTRIDENTATUS (Bate).

1881. *Aristeus rostridentatus*, Bate, Ann. Nat. Hist., Ser. 5, vol. 8, p. 189.
1888. " " Bate, Rep. Voy. Challenger, vol. 24, pp. 221, 317, pl. 51.
1891. *Aristaeomorpha rostridentata*, Wood-Mason and Alcock, Ann. Nat. Hist., Ser. 6, vol. 8, p. 286.
1892. " " Wood - Mason, Illustrations Zool. Investigator, Crust., pl. 2, fig. 1.
1895. *Plesiopeneus rostridentatus*, Faxon, Mem. Mus. Comp. Zoöl., vol. 18, pp. 196, 199.
1901. *Aristaeus* (*Aristaeomorpha*) *rostridentatus*, Alcock, Catal. Indian Deep-sea Macrura, p. 39.
1908. *Aristeomorpha rostridentata*, Bouvier, Camp. Sci. Monaco, fasc. 33, p. 56.
1911. " " de Man, Siboga Exp., vol. 39a, p. 6.

1912. *Aristeomorpha rostridentata*, Kemp and Sewell, Rec. Indian Mus., vol. 7, pt. 1, p. 17.

The figure, natural size, in the Investigator Illustrations would do service excellently for the South African specimen, except that the latter is not quite so large, and that the last three teeth on its rostrum are more widely spaced. Alcock's description speaks of 10 or 11 carinal teeth. The figure shows only 10, and of these the penultimate is obscure; our specimen has only 8. Bate in 1881 estimated the "flagellum of second pair of antennae about six times the length of the animal"; in 1888 he reduces it to "about four times." In our specimen, much as in that of the Investigator, it does not exhibit so disproportionate a length, but it is imperfect. As in Bate's figure, the second joint of the mandibular palp is not so long as the first. The fourth and fifth pereopods are remarkably slender. Length of the animal from apex of rostrum to that of telson about 5 inches or 125 mm.

Bate was evidently inclined to remove this species from *Aristeus*, since he observes that in that genus three teeth are the almost constant armature of the rostrum, while here alone a number of small teeth arm it to the apex, and that a small tooth at the anterior extremity of the hepatic region, constant in *Penaeus*, is absent in *Aristeus* in all species except *A. rostridentatus*.

Locality. Buffalo River N. 15 miles (East London, Cape Colony); depth 310 fathoms. A 1294.

GEN. EUSICYONIA, nom. nov.

1830. *Sicyonia* (preocc.), Milne-Edwards, Ann. Sci. Nat., vol. 19, p. 339.
 1837. ,, Milne-Edwards, Hist. Nat. Crust., vol. 2, pp. 405, 408.
 1849. ,, de Haan, Crust. Japonica, decas 6, pp. 187, 189.
 1888. ,, Bate, Rep. Voy. Challenger, vol. 24, pp. 219, 292.
 1895. ,, Faxon, Mem. Mus. Comp. Zool., vol. 18, p. 179.
 1901. ,, Rathbun, Bull. U.S. Fish. Comm., 1900, vol. 2, pp. 100, 103.
 1906. ,, Rathbun, Bull. U.S. Fish. Comm., 1903, p. 908.
 1911. ,, de Man, Siboga Exp., vol. 39a, pp. 10, 111.

Milne-Edwards separated the genus from *Penaeus* because the pleopods have only one branch instead of two. He did not take account of the male petasma. Miss Rathbun in 1901

uses the median dentate crest of the carapace to distinguish this genus from *Penaeus*, *Parapenaeus*, and *Xiphopeneus*. In 1911 de Man enumerates twenty named species, a named variety, and two unnamed species as belonging to the genus. Between some of them the distinguishing characters seem to be of slight importance.

EUSICYONIA LONGICAUDA (Rathbun).

Plate LXXIII.

1906. *Sicyonia longicauda*, Rathbun, Bull. U.S. Fish. Comm., 1903, p. 908, pl. 20, fig. 6.
 1911. „ „ de Man, Siboga Exp., vol. 39a, pp. 11, 113.

The South African specimens are in clear agreement with the figure and the characters supplied by Miss Rathbun, except in an unimportant detail. The rostrum is apically bidentate, the upper tooth projecting a little beyond the lower one. The earlier description gives to the rostrum "tip oblique truncate, with three projections, a tooth between two spines." In describing the telson as having "a pair of lateral spines not far from the tip," it is not unlikely that Miss Rathbun refers to the pair of unjointed processes which occupy the position in question in our specimens. There are three pairs of microscopic spines spaced higher up, and much of the telson is fringed with plumose setae. In the first antennae the lower spine-tooth of the first joint does not nearly reach the base of the apical tooth. In the first maxilla the outer plate or palp has two setae at the inner corner of its apex, and within the outer margin has a row of seven spines on the surface. The second maxilla has three very small stumpy spines about the apex. The first pleopod shows a little wart-like piece apparently distinct from the peduncle by the side of the single ramus.

The largest of the South African specimens was about 56 mm. long, the carapace with rostrum measuring 19.5 mm., the fifth pleon segment 5 mm., the sixth 8 mm., the telson 8.5 mm. The uropods were slightly shorter than the telson, both branches with rounded apices.

Locality. Buffalo River N. 15 miles (East London, Cape Colony); depth 310 fathoms. A 1219.

FAMILY LEUCIFERIDAE.

1852. *Sergestidae*, Dana, U.S. Expl. Exp., vol. 13, pp. 601, 608 (in Penaeidea).
1852. *Luciferidae*, Dana, U.S. Expl. Exp., vol. 13, figs. 636, 639, 668 (in Mysidea).
1888. *Sergestidae*, Bate, Rep. Voy. Challenger, vol. 24, pp. 219, 345 (sub-family *Sergestinae*, p. 345, *Luciferinae*, p. 443).
1896. „ Hansen, Pr. Zool. Soc. London, p. 937.
1905. „ Faxon, Mem. Mus. Comp. Zoöl. Harvard, vol. 18, p. 208.
1914. „ Illig, Deutsche Südpolar-Exp., vol. 15 (Zool. 7) p. 349.
1914. *Leuciferidae*, Stebbing, Trans. Roy. Soc. Edinb., vol. 5, pt. 2, p. 284.

If the right of primogeniture is admitted, the genus *Lucifer* is entitled to give its name to the family, having been born a year sooner than the rival claimant *Sergestes*. The genus itself, having been properly instituted, does not lose its privilege, although the name originally given to it was preoccupied, and therefore yields to another.

GEN. LEUCIFER, Milne-Edwards.

1829. *Lucifer*, Vaughan Thompson, Zoological Researches, vol. 1, pt. 1, mem. 3, p. 68 (not *Lucifer*), Linn., Amoen. Acad., vol. 6, p. 70, 1760, Sherborn, nor *Lucifer*, Lesson, Aves, ? 1829.
1831. „ Latreille, Cours d'Entomologie, p. 386.
1837. *Leucifer*, Milne-Edwards, Hist. Nat. Crust., vol. 2, p. 467 (in Tribu des Leuciferiens).
1852. *Lucifer*, Dana, U.S. Expl. Exp., vol. 13, pp. 639, 668.
1880. *Leucifer*, Boas, Vidensk. Selsk. Skr., Ser. 6, vol. 1, pp. 37, 165.
1888. *Lucifer*, Bate, Rep. Voy. Challenger, vol. 24, pp. 443-469.
1896. *Leucifer*, Hansen, Pr. Zool. Soc. London, p. 937.
1903. *Lucifer*, Ortmann, Ergebn. Plankton Exp., vol. 2, G. b., pp. 71, 108.
1904. *Leucifer*, Calman, Ann. Nat. Hist., Ser. 7, vol. 13, p. 151.
1905. *Lucifer*, Faxon, Mem. Mus. Comp. Zoöl. Harvard, vol. 18, p. 208.

Vaughan Thompson enlarges on the characters of the genus

and species, but, while supplying illustrative figures of the latter, he gives it no name. Milne-Edwards, after describing the genus under an altered name, assigns to it first a new species, *L. reynaudii*, and then secondly distinguishes Thompson's species, for which he supplies the name *typus*, in a footnote misquoting Thompson as authority for the generic name *Leucifer*. Milne-Edwards speaks of his *L. reynaudii* as being about 4 inches long. His enlarged figure of it, however, only measures 3 inches, and a line indicating the natural size is 14 mm. long, not very greatly in excess of Dana's measurement for the same species. Dana adds three species to the genus—*L. aestra*, *pacificus*, and *acicularis*. The first of these is regarded by Faxon as probably identical with *L. reynaudii*, and the second is made a synonym of *L. typus* by Bate, who says (*loc. cit.* p. 448): "So far as I can determine, there are only two species of *Lucifer*." Later Hansen states that there are four species preserved in the Copenhagen Museum.

LEUCIFER TYPUS, Milne-Edwards.

1829. *Lucifer*, sp., Vaughan Thompson, Zool. Researches, vol. 1, pt. 1, Mem. 3, pp. 58, 67, pl. 7, fig. 2, the animal enlarged and natural size, parts, 1c, 2c, f1, f3, a1, a2, s, e, t.
1837. *Leucifer typus*, Milne-Edwards, Hist. Nat. Crust., vol. 2, p. 469.
1888. *Lucifer t.*, Bate, Rep. Voy. Challenger, vol. 24, p. 464, pl. 83.

Adult males, a little over 8 mm. long, clearly belonging to this species, were taken at the surface.

Locality. Seven miles SE. from Flesh Point (Mossel Bay, Cape Colony); surface. A 1563.

TRIBE CARIDEA.

1852. *Caridea* (part), Dana, U.S. Expl. Exp., vol. 13, p. 528.

FAMILY CRANGONIDAE.

1853. *Crangonidae*, Bell, British Stalk-eyed Crustacea, p. 255.
1910. ,, Kemp, Fisheries, Ireland, Sci. Invest., 1908, i. [1910], p. 134.

GEN. SCLEROCRANGON, G. O. Sars.

1885. *Sclerocrangon*, Sars, Norske Nordhavs Exp., vol. 14, Crustacea, vol. 1, p. 14.
1886. „ S. I. Smith, Rep. U.S. Fish. Comm. for 1885, p. 652 (48).
1895. „ Faxon, Mem. Mus. Comp. Zoöl., vol. 18, p. 132.
1910. „ Kemp, Fisheries, Ireland, Sci. Invest., 1908, i. [1910], pp. 135, 139.
1914. *Crangon* (*Sclerocrangon*), Balss, Abhandl. K. Bayer. Ak. Wiss., Suppl. vol. 2, pt. 10, pp. 62, 65.

SCLEROCRANGON BELLMARLEYI, n. sp.

Plate LXXIV.

The new species is closely allied to two earlier members of the genus. The first of these was named *Pontophilus jacqueti* by A. Milne-Edwards in 1881, *Ceraphilus agassizii* by Smith in 1885, *Sclerocrangon agassizii* by Smith in 1886, *S. jacqueti* by Faxon in 1895, and more decidedly by Kemp in 1910. The name *Ceraphilus* was no doubt an oversight for *Cheraphilus*. The second allied species is *Sclerocrangon procax*, Faxon, 1895. In the sculpture of the carapace the new species shows general agreement with its allies, but with some differences of detail. Thus the supra-ocular teeth are not produced nearly as far as the short rostrum, the large ascendant process over the rostrum is common to both sexes, the smaller median process behind it is set more forward than in either of the other species, and so is the little marginal tooth to the rear of the large antero-lateral processes. In our specimens the pleon is without medio-dorsal carina except a faintly expressed blunt one on the sixth segment, which has its lateral carinae well marked. In these respects, however, they agree with the variety of *S. jacqueti* which Kemp has figured. From that species they differ in having, like *S. procax*, a longer second joint to the first antennae. The scale of the second antennae is narrow in *S. procax*, apically bifid into two processes, both figured as acute. In the other two species the scale is broad, in *S. jacqueti* having a normal tooth with no bifid appearance, such as is produced in the new species by a tooth with a broad base and a serrate inner margin the tip of which is on a level with the setose rounded part of the apical margin.

The eyes are not very small, with no perceptible tubercle, dark red as preserved.

The mouth organs agree fairly well with those figured by Sars for the typical species, but the mandible has the cleavage of its bifid apex more distinct or less overlapping than as shown for that species, and the vibratory fan of the second maxilla has its lower portion much broader. The middle plate of the first maxilla has six spines instead of four, and the outer border of the palp has only two setae instead of a fringe. The endopod of the first maxilliped is shorter in relation to its exopod than that figured by Sars.

The large subchelate first pereopods, the slender second with their small chela, the slender third pair with needle-like sixth and seventh joints, and the stouter fourth and fifth pairs, do not offer any striking differences from those of the allied species. Differences in the relative lengths of joints are only such as may be referred to individual variation.

The first pleopods have the small inner branch distally narrowed as if to serve the purpose of a coupling apparatus, but no hooked spine could be perceived, nor is such apparatus present on any of the following pairs. Faxon says of *S. procax* that "the terminal segment of the inner branch of the second abdominal appendage in the male bears on its inner margin a short blunt stylamblys, which is absent in *S. agassizii*." I cannot see any indication of this in his figure of the second pleopod in question. In our species the inner branch is distally bilobed, the inner lobe the longer, both distally setose. The following pleopods have each a small simple inner branch, these branches in each pair set so far apart that they could not easily be coupled together. The medio-ventral spines between them appear to be characteristic of the male sex.

The female specimen is 40 mm. long, and much more bulky than the male, which measured only 22 mm. in length.

Locality. Cape Natal N. by E. 24 miles (Natal); depth 440 fathoms. A 1564.

The specific name is given out of respect to Mr. W. H. Bell-Marley, of Durban, to whose kindness I am indebted for various interesting specimens. The present species must, I think, be regarded as a connecting link between *S. jacqueti* and *S. procax*.

FAMILY PALAEMONIDAE.

1910. *Palaemonidae*, Stebbing, Ann. S. African Mus., vol. 6, p. 383 (with synonymy).

GEN. LEANDER, Desmarest.

1849. *Leander*, Desmarest, Ann. Soc. Entom. France, Sér. 2, vol. 7, pp. 87, 91.
 1914. „ Stebbing, Tr. R. Soc. Edinb., vol. 50, pt. 2, No. 9, p. 286 (with synonymy).

LEANDER SERRIFER, Stimpson.

1860. *Leander serrifer*, Stimpson, Pr. Ac. Sci. Philad., vol. 12, p. 41 (110).
 1890. „ „ Ortman, Zool. Jahrbüch., vol. 5, pp. 521, 525, pl. 37, fig. 17.
 1902. *Palaemon s.*, Rathbun, Pr. U.S. Mus., vol. 26, p. 52.
 1902. *Leander s.*, Doflein, Abhandl. K. Bayer. Ak. Wiss., vol. 21, pt. 3, p. 640.
 1914. „ Balss, Abhandl. K. Bayer. Ak. Wiss., Suppl. vol. 2, pt. 10, p. 57.

A single specimen, 60 mm. in length, has on the carapace ten dorsal teeth, two of which are behind the orbit. There are four ventral teeth to the rostrum, which is as long as the scale of the second antennae. The short flagellum of the first antennae has at the base the marking of eight coalesced joints with several more than twenty joints free. In the first peraeopods the chela is much shorter than the wrist, with its fingers longer than the palm. In the second peraeopods the wrist, rather shorter than the fourth joint, is 8 mm. long, while the chela is 10 mm., of which the palm occupies 6.5 mm.

Locality. Baakens River, Swartkop R., Port Elizabeth (Cape Colony). A 1277.

FAMILY ALPHEIDAE.

1899. *Alpheidae*, Coutière, Thèse à la Faculté des Sciences de Paris (with synonymy).

GEN. OGYRIDES, nom. nov.

1860. *Ogyris* (preocc.), Stimpson, Pr. Ac. Sci. Philad., vol. 12, p. 36 (105).
 1880. „ Kingsley, Pr. Ac. Sci. Philad., 1879, p. 420.
 1893. „ Ortman, Ergebn. Plankton Exp., vol. 2, G. b. p. 45.

1911. *Ogyris*, de Man, Siboga Exp., vol. 39a, p. 135.

1914. „ Balss, Abhandl. K. Bayer. Ak. Wiss., Suppl. vol. 2, pt. 10, p. 37.

Ortmann distinguishes three species, the original *O. orientalis*, Stimpson, *O. alphaeirostris*, Kingsley, in both of which the wrist of the second peraeopod is three-jointed, and his own *O. occidentalis*, which has a four-jointed wrist. Dr. de Man adds *O. sibogae*, which also has a quadriarticulate carpus, but only four teeth on the dorsal carina.

OGYRIDES OCCIDENTALIS (Ortmann).

1893. *Ogyris occidentalis*, Ortmann, Ergebn. Plankton Exp., vol. 2, G. b. p. 46, pl. 3, figs. 4, 4a, d, f-i, k-s, z.

Ortmann mentions that the denticles on the medio-dorsal carina of the carapace number from seven to nine. In our specimens examined it varied from six to eight. The palp of the first maxilla has a bilobed apex, with a seta on each lobe. In the second maxilliped the third joint is much broader than the fourth, and the broad seventh joint, which is not at all finger-like, is remarkable for its size. As in the other species the long stalks of the small eyes are a notable feature. Length from apex of carapace to that of telson 15 mm.

Locality. Saldanha Bay (Cape Colony); depth 10 fathoms. A 1298.

With this species there occurred a specimen of the curious amphipod, *Platyischnopus mirabilis*, Stebbing.

FAMILY PASIPHAEIDAE.

1852. *Pasiphaeidae*, Dana, U.S. Expl. Exp., vol. 13, pp. 532, 536.

1908. „ Lagerberg, Göteborgs K. Vet. Handl., Ser. 4, vol. 11, p. 5.

1914. „ Stebbing, Tr. R. Soc. Edinb., vol. 50, pt. 2, p. 293 (with synonymy).

GEN. PARAPASIPHAË, S. I. Smith.

1884. *Parapasiphaë*, Smith, Rep. U.S. Fish Comm., 1883, p. 383 (39).

1901. *Parapasiphaea*, Alcock, Catal. Indian Deep-sea Macrura, pp. 58, 64.

1910. *Parapasiphaë*, Kemp, Fisheries, Ireland, 1908, pp. 37, 47.
 1914. „ „ Stebbing, Tr. R. Soc. Edinb., vol. 50, pt. 2,
 p. 294.

The mandibles have a slender two-jointed palp.

PARAPASIPHAË SULCATIFRONS, S. I. Smith.

1884. *Parapasiphaë sulcatifrons*, Smith, Rep. U.S. Fish Comm.,
 1883, p. 384 (40), pl. 5, fig. 4,
 pl. 6, figs. 1-7.
 1886. „ „ „ Smith, Rep. U.S. Fish Comm.,
 1885, pp. 5, 8, 12, 13, 15, 79.
 1908. „ „ „ Hansen, Danish Ingolf Exp.,
 vol. 3, pt. 2, p. 79.
 1910. „ „ „ Kemp, Fisheries, Ireland, 1908,
 p. 47, pl. 5, figs. 1-21.
 1913. *Parapasiphae* „ „ Stephensen, Meddel. om Grön-
 land, vol. 22, p. 48.

The South African specimen agrees completely with the excellent figures and description supplied by Professor S. I. Smith, and corroborated by Mr. Stanley Kemp, who in addition gives interesting information as to the development. In this species the rostrum is much shorter than in the Indian species of the genus described by Colonel Alcock. The mouth organs in this genus have several noteworthy peculiarities, such as the abrupt narrowing of the palp in the first maxillæ. Our specimen measured 79 mm. in length, of which the carapace occupied 28 mm. and the telson 12.5 mm.

Locality. Cape Point ENE. 36½ miles (Cape Colony); depth 660 fathoms. A 1255.

GEN. PHYE, Wood-Mason.

1893. *Phye*, Wood-Mason, Ann. Nat. Hist., Ser. 6, vol. 11, p. 164.
 1914. „ „ Stebbing, Tr. R. Soc. Edinb., vol. 50, pt. 2, p. 294.

PHYE PACIFICUS (Rathbun).

1902. *Pasiphaca pacifica*, Rathbun, Pr. U.S. Mus., vol. 24, p. 905.
 1904. „ „ „ Rathbun, Decap. Crust. NW. coast N.
 America, p. 20, text-figs. 2, 3.

The South African specimen shows no difference of any importance from Miss Rathbun's figures and description. The front is rounded at the centre; behind this a small

forward pointing tooth rises, the upper edge of which is continued in a carina almost to the end of the carapace; the pleon is carinate from the second to the end of the sixth segment without any tooth-like extension. The sixth segment is rather longer than the furcate telson, the fork of which is fringed with 22 graduated spines. The palpless mandible has a cutting edge of 12 teeth, one of them minute, the largest double. The middle plate of the first maxilla is fringed with 13 spines, the inner plate has only armature on one corner, the palp, not abruptly narrowed, carries 8 setae. The first peraeopod has 3 spines on the inner margin of the fourth joint, the second 19 on the corresponding margin, with 7 on the margin of its second joint, of which Miss Rathbun only says that it "is armed with a small spine at the distal end of its inferior margin." Total length of specimen in median line 103 mm., the carapace accounting for 33 mm., the sixth pleon segment 13.5 mm., and the telson 11.5 mm.

Locality. Cape Natal N. by E. 24 miles (Natal); depth 440 fathoms. A 1254.

FAMILY HIPPOLYTIDAE.

1910. *Hippolytidae*, Stebbing, Ann. S. African Mus., vol. 6, pt. 4, p. 390 (with synonymy).

GEN. SARON, Thallwitz.

1891. *Saron*, Thallwitz, Zool. Anzeiger, vol. 14, p. 99.
 1906. ,, Calman, Ann. Nat. Hist., Ser. 7, vol. 17, p. 30.

Calman, in his provisional synopsis of the family Hippolytidae, distinguishes this genus as having arthrobranchiae at the bases of the first four pairs of peraeopods, mandibles with incisor process and palp, more than seven jointlets in the wrist of the second peraeopods, and a movable spine at the base of the second peraeopods.

SARON MARMORATUS (Olivier).

1811. *Palaemon marmoratus*, Olivier, Encycl. Méth., vol. 8, p. 665.
 1852. *Hippolyte gibbosus*, Dana, U.S. Expl. Exp., vol. 13, p. 565, pl. 36, fig. 4a-e.
 1891. *Saron gibberosus*, Thallwitz, Zool. Anzeiger, vol. 14, p. 99.

1898. *Saron marmoratus*, Borradaile, Pr. Zool. Soc. London, p. 1009.
 1906. *Spirontocaris marmorata*, Rathbun, U.S. Comm. Fish for 1903,
 pt. 3, p. 913.
 1914. „ *gibberosa*, Balss, Abhandl. K. Bayer. Ak. Wiss.,
 Suppl. vol. 2, pt. 10, p. 46.

For this species Borradaile supplies an ample synonymy, with explanatory discussion. Miss Rathbun supplements Borradaile's reference to Olivier by giving the page, and the reference to the Atlas of the Encycl. Méth., vol. 24, pl. 319, fig. 3, 1818; but appears to be unaware of the contributions to the literature of the subject by Thallwitz and Borradaile. In 1904 Miss Rathbun enumerated no fewer than 51 species of *Spirontocaris* as found in the Pacific, and exhibiting great diversity in form. Since then two more species have been added to that genus by Rathbun and two by Brashnikow, if the generic name *Euales*, which he used for one of them, is to be considered a synonym of *Spirontocaris*. According to Calman's synopsis in *Spirontocaris* (with several synonyms) there are no arthrobranchiae on the peraeopods, only seven jointlets in the wrist of the second peraeopods, and the mandibular palp is two-jointed. In *Saron marmoratus* I find the mandibular palp three-jointed, so that at least that species is properly withdrawn from *Spirontocaris*. But, as even the numbers above mentioned do not show the complete series of species at present assigned to that genus, it may eventually prove desirable to make a much more extensive redistribution of its members.

The single South African, or rather South-east African, specimen exactly resembles Dana's figure in the dentation of the carapace, but in addition has many tufts of feathered setae. The mandibles have a long molar and four small distinct teeth to the cutting edge. In the first maxillae the apex of the palp is emarginate, with a strong spine on the inner corner. The vibratory plate of the second maxillae is short, the apical plate of the endopod narrow, tipped with one long and two short setae, the intermediate lobes large, but the lower small, with the upper division insignificant. In the first and second maxillipeds the exopod extends much beyond the endopod and in the second is attached to a joint compounded of the second and third joints, with the fourth and fifth joints small, the sixth and transversely attached seventh large. The long third pair do not reach the end of the scale of the second

antennae, carry long feathered setae, and have an exopod which does not reach the end of the antepenultimate joint. First pereopods much stouter than second. Wrist of second pereopods with not fewer than ten jointlets. The carapace with rostrum measures 16 mm., the remainder of the body 20 mm.

Locality. Mozambique, where the specimen was obtained by Mr. K. H. Barnard. A 2215.

FAMILY PANDALIDAE.

1888. *Pandalidae*, Bate, Rep. Voy. Challenger, vol. 24, pp. 480, 625.
 1901. „ Alcock, Catal. Indian Deep-sea Macrura, pp. 55, 56, 91 (with synonymy).
 1902. „ Doflein, Abhandl. K. Bayer. Ak. Wiss., vol. 21, pt. 3, p. 615.
 1904. „ Rathbun, Harriman Alaska Exp., p. 43.
 1910. „ Calman, Ann. Nat. Hist., Ser. 8, vol. 5, p. 524.
 1914. „ Balss, Abhandl. K. Bayer. Ak. Wiss., Suppl. vol. 2, pt. 10, p. 27.

GEN. PANDALUS, Leach.

1814. *Pandalus*, Leach, Edinb. Encycl., vol. 7, p. 432.

PANDALUS MODESTUS, Bate.

1888. *Pandalus modestus*, Bate, Rep. Voy. Challenger, vol. 24, p. 670, pl. 114, figs. 4, 4b, k, l, l', m.

Bate's 3 specimens were obtained by the "Challenger" at the Agulhas Bank, from a depth of 150 fathoms. The 3 specimens from the South African Museum are without notification of special locality. Though all imperfect, they show so many points of agreement with Bate's account that I am disposed to attribute discrepancies either to his imperfect observation or to variation within the species. Thus the only perfect carapace has 8 dorsal teeth, of which 5 with appearance of articulation are behind the orbit, the remaining 3 on the rostrum are not articulated; there are only two little ventral teeth, both in advance of the dorsal series. According to Bate "the frontal margin beyond the orbit has no well-defined teeth." In our specimen it has a well-marked antennal tooth, and a small antero-lateral.

Of the first antennae the more robust flagellum is also the longer. The stiliform extremity of the first peraeopods appears to have an apical slit. Bate speaks of the second peraeopods as unequally long and slender. Each of our specimens has only one member of the pair, the wrist in two instances being four-jointed, in the third instance much longer and obscurely multiarticulate, thus among them agreeing with Bate's figures for this pair. The last three pairs of peraeopods are in agreement with Bate's account, except that the curved fingers, instead of only 2 teeth on the concave border, have on its proximal part a series of 4 or 5 slender spines, successively larger towards the apex. Bate says that the first pair of pleopods is single-branched. In our specimen it has a short but conspicuous inner blade. The uropods are longer than the telson, their rami nearly equal in length, the broader outer one prolonged beyond the lateral tooth in a broadly rounded apex. The narrow telson has 7 pairs of lateral spines and 2 pairs that are much longer on the irregularly truncate apex. Total length of the specimen specially examined, not quite the largest, was 23.5 mm., of which the carapace with rostrum occupied a little more than 7 mm.

Locality uncertain. A 1280.

GEN. PLESIONIKA, Bate.

1888. *Plesionika*, Bate, Rep. Voy. Challenger, vol. 24, pp. 626, 640.
 1899. *Parapandalus* (part), Borradaile, Willey's Zool. Results, pt. 4, pp. 396, 411.
 1901. *Plesionika*, Alcock, Catal. Indian Deep-sea Macrura, pp. 91-94.
 1910. ,, Stebbing, Ann. S. African Mus., vol. 6, p. 392.
 1914. ,, Balss, K. Ak. Wiss., Wien, Ak. Anzeiger, No. 9, p. 1.

Alcock distinguishes *Plesionika*, in which there are epipodites on the first four pairs of paraeopods, from *Parapandalus* which has no epipodites on those limbs, with the result, as Balss points out, that *Parapandalus longirostris*, Borradaile, must be transferred to *Plesionika*.

PLESIONIKA LONGIROSTRIS (Borradaile).

1899. *Pandalus* (*Parapandalus*) *longirostris*, Borradaile, Willey's Zool. Results, pt. 4, pp. 396, 413, pl. 37, figs. 10, 10a-h.
 1914. *Plesionika l.*, Balss, K. Ak. Wiss., Wien, Ak. Anzeiger, No. 9, p. 1.

Although a length of not more than 2 inches might be expected to distinguish our specimens from those which Dr. Willey collected in New Britain, exceeding a length of 5 inches, yet in most other respects the South African examples show very exact agreement with Borradaile's description and figures of his species. The upturned rostrum is a striking feature, being about twice the length of the trunk of the carapace in the medio-dorsal line, armed above and below with teeth, those at the base above being for the most part longer and further apart than those towards the free end. But Borradaile both in his sub-generic definition and in his description of this species speaks of movable spines, which cannot be reconciled either with his figure or with our specimens. It may be noticed indeed that Alcock omits the character from the definition of *Parapandalus* as restricted, and in describing *Pandalus (Parapandalus) spinipes* (Bate) expressly states that the serrations of the rostrum in that species are comb-like and fixed, while to *Plesionika* he assigns a "rostrum armed dorsally with fixed teeth and sometimes with movable teeth also." The figures of the mouth organs in Borradaile's plate are all characteristic of those in the South African specimens, except that in the cutting plate of the mandible each external tooth of the five is larger than any of the three intermediate teeth. The other member of the pair of mandibles differs a little from its fellow in having six teeth. The second maxilliped has the very short broad seventh joint more distinct than might be expected from the figure. The first peraeopods have on the distal part of the fifth joint and the proximal part of the sixth several transverse rows of short spines or stiff setules, which may perhaps be of use for cleansing the long flagella of the two pairs of antennae. The second pair of peraeopods with their small setose chela and many-jointed wrist are equal. The narrow end of the telson carries a short spine flanked by two long ones.

Locality. Cape Natal, W. by N. $\frac{3}{4}$ N. 11 miles (Natal); depth 185 fathoms. A 1272.

GEN. HETEROCARPUS, A. Milne-Edwards.

1881. *Heterocarpus*, A. Milne-Edwards, Ann. Sci. Nat., Ser. 6, vol. 11, art. 4, p. 8.

1888. *Herterocarpus*, Bate, Rep. Voy. Challenger, vol. 24, pp. 480, 626, 627.
1893. „ Stebbing, History of Crustacea, p. 238.
1895. „ Faxon, Mem. Mus. Comp. Zoöl. Harvard, vol. 18, p. 148.
1901. „ Alcock, Catal. Indian Deep-sea Macrura, pp. 92, 102.
1912. „ Kemp and Sewell, Records Indian Mus., vol. 7, pt. 1, p. 20.

Bate, in describing the genus, says that the two long and slender flagella of the first antennae “both only reach a little beyond the distal extremity of the rostrum,” but his figure of *H. gibbosus* contradicts this, and in his description of the species he states that of these flagella “the longest is nearly as long again as the rostrum.” Of the nearly allied *H. tricarinatus* Alcock and Anderson say that “the subequal antennular flagella are more than three-fourths the length of the body, rostrum included.”

HETEROCARPUS TRICARINATUS, Alcock and Anderson.

1894. *Heterocarpus tricarinatus*, Alcock and Anderson, J. Asiat. Soc. Bengal, vol. 83, pt. 2, p. 14 (154).
1901. „ „ Alcock, Catal. Indian Deep-sea Macrura, pp. 103, 107; Zool. Investigator, Crustacea, pl. 51, fig. 1.

The authors distinguish this species from *H. gibbosus*, Bate, 1888, “by its smaller size, and by the indistinctness of the lower lateral carina, which fades completely before reaching the posterior half of the carapace.” Alcock in 1901 says: “In an egg-laden female the length of the rostrum is 21 millim., of the carapace 24 millim., of the abdomen 49 millim.” The rough measurements taken of our single South African specimen agree almost to a nicety with the foregoing, thus giving in each case a total length of $3\frac{3}{4}$ inches. Bate gives the entire length of his species as 43 mm., but to that must evidently be added 20 mm. for the rostrum and 5 mm. for the telson, bringing the total to 68 mm.; even so, however, the small size is no doubt due to immaturity, since Alcock records an egg-laden Indian specimen measuring 156 mm. in length, thus leaving *H. tricarinatus* much inferior in that respect,

though it has the more numerous dorsal spines on the rostrum and the more extensively developed flagella on the first and second antennae.

In our specimen the eyes have an unusual appearance, the dark red cornea being mapped out into quadrangular areas of different sizes, an effect due to the vicissitudes of captivity and travel. The carapace has 8 teeth on the medio-dorsal carina, the hindmost 3 very small; it has 6 on the rostrum dorsally and 8 very distinct ventrally with one or more among the setules close to the orbit. The flagella of the first antenna are elongate, distally of extreme tenuity; the flagellum of the second antenna is considerably over 100 mm. long. The two second peraeopods are very unequal, and the fourth pair much longer than the fifth.

Locality. Buffalo River, N. 15 miles (East London, Cape Colony); depth 310 fathoms. A 1292.

HETEROCARPUS ALPHONSI, Bate.

1888. *Heterocarpus alphonsi*, Bate, Rep. Voy. Challenger, vol. 24, pp. 629, 632, pl. 112, fig. 1, 1l, 1l".
 1891. " " Wood-Mason and Alcock, Ann. Nat. Hist., Ser. 6, vol. 7, p. 196.
 1892. " " Wood-Mason and Alcock, Ann. Nat. Hist., Ser. 6, vol. 9, p. 367.
 1901. " " Alcock, Catal. Indian Deep-sea Macrura, pp. 103, 106.

From other species of the genus Alcock distinguishes this as having the third, fourth, and fifth pleon segments sharply carinate, and each prolonged into a backward pointing tooth, the other pleon segments not carinate, the sixth not twice as long as the fifth and shorter than the telson. Length of the South African specimen from tip of the long slender rostrum to end of telson about 5 inches. The rostrum has 11 teeth on the lower edge, above 9 teeth are spaced along the rostrum on to the body of the carapace.

Locality. Cape Natal N. by E. 24 miles (Natal); depth 440 fathoms. A 1291.

HETEROCARPUS LAEVIGATUS, Bate.

1888. *Heterocarpus laevigatus*, Bate, Rep. Voy. Challenger, vol. 24, p. 636, pl. 112, fig. 3.

1899. *Heterocarpus laevigatus*, Alcock and Anderson, Ann. Nat. Hist., Ser. 7, vol. 3, p. 285; Illustrations, Investigator, pl. 41, figs. 1, 1a.
1901. " " Alcock, Indian Deep-sea Macrura, pp. 103, 105.

Alcock's figure of this species differs from that given by Bate in having more numerous ventral teeth to the long upward pointing rostrum. The two agree in having the foremost of the five teeth on the medio-dorsal carina in advance of the eye. In the South African specimen that tooth is over the eye not in advance of it; and the ventral teeth of the rostrum are ten in number. According to Alcock and Anderson "the under margin of the rostrum is armed with eleven to thirteen teeth."

Locality. East London NW. $\frac{1}{2}$ N. 20 miles (Cape Colony); depth 408 fathoms. A 1295.

GEN. CHLOROTOCUS, A. Milne-Edwards.

1882. *Chlorotocus*, A. Milne-Edwards, Rapport Comm. pour la faune sous marine, p. 18.
1883. " A. Milne-Edwards, Recueil figs. Crust. Nouv., pl. 16.
1888. ? " Bate, Rep. Voy. Challenger, vol. 24, pp. 627, 673.
1901. " Alcock, Indian Deep-sea Macrura, pp. 92, 100.
1902. " de Man, Abhandl. Senckenb. Nat. Gesellschaft, vol. 25, pt. 3, p. 856.
1914. " Balss, Abhandl. K. Bayer. Ak. Wiss., Suppl. vol. 2, pt. 10, p. 33.

From the other Pandalidae this genus is distinguished by having the wrist of the second peraeopods only bipartite. The first peraeopods are simple.

For the single South African specimen which Bate assigned to this genus as *C. incertus*, he figured and described the palp of the mandible as two-jointed, and in place of a dentate cutting edge represented a sort of stiletto. On each side of the rostrum he gave an orbital tooth, but no antero-lateral tooth below. Also, according to Alcock, the branchial formula which he gives does not conform with that of the type-species, *C. gracilipes*, at least as represented by the variety *anda-*

manensis. Bate also mentions the presence of an ocellus, of which Alcock says the eye is devoid.

CHLOROTOCUS CRASSICORNIS (A. Costa).

Plate LXXXV.

1871. *Pandalus crassicornis*, A. Costa, Annuario Mus. Zool. R. Univ. Napoli, Ann. 6, p. 89, pl. 2, fig. 2.
1882. *Chlorotocus gracilipes*, A. Milne-Edwards, Archiv. Missions scient. littér. (3), vol. 9 (Senna), p. 18 (Bate).
1883. " " A. Milne-Edwards, Recueil figs. Crustacés, pl. 16.
1885. " " Carus, Prodromus faunae Mediterraneae, vol. 1, p. 474, and *Pandalus crassicornis*, p. 477.
1888. " " Bate, Rep. Voy. Challenger, vol. 24 pp. 674, 681.
1904. " *crassicornis*, Senna, Annuario Mus. Zool. R. Univ. Napoli, n. ser., vol. 1, No. 18, pp. 1-3, fig. 1 (with synonymy).
1914. " *gracilipes*, Balss, Abhandl. K. Bayer. Ak. Wiss., Suppl. vol. 2, pt. 10, p. 33.

The carapace has 11 or 12 dorsal teeth, 4 behind the orbit, the rest on the rostrum, which beyond the eye has 5 ventral teeth; on each side of the rostrum there is an orbital tooth and an antero-lateral tooth below. The telson has five pairs of dorso-lateral spines, the last pair adjoining the abruptly narrowed apex, which is flanked by a pair of much longer spines and bordered with long setae. The fifth pleon segment has no postero-lateral tooth; the sixth is dorsally spinulose between two sharp points.

The eye shows no ocellus. The mandibular palp is distinctly three-jointed; one cutting-plate has six, the other five teeth. The widely divergent lobes of the lower lip have little sharp tips. The emarginate palp of the first maxillae is tipped with several setae. The second and third joints of the second maxillipeds are coalesced, with only a small notch in the margin. Other mouth organs agree fairly with those figured by Bate for *C. incertus*. The first peraeopods are very setose, and on the surface of the simple seventh joint have many rows of microscopic spinules. In the second peraeopods the "chelae are, for a *Pandaloid*, large," as Alcock observes,

while for *C. incertus* this point is not noticed. The third peraeopod is longer than the fifth. The larger specimen, a female with eggs, measured 58 mm., the smaller, from which the figures were drawn, was about 40 mm. in length.

Localities. Cape Point NE. by E. 6 miles (Cape Colony); depth 80 fathoms. A 1269; and Cape Natal W. by N. $\frac{3}{4}$ N. 11 miles (Natal); depth 185 fathoms. A 1271.

Two opposite questions suggest themselves, one, whether *C. incertus* may not be a synonym of *C. crassicornis*, the other, whether, if correctly described, they should not be assigned to different genera.

FAMILY NEMATOCARCINIDAE.

1888. *Nematocarcinidae*, Bate, Rep. Voy. Challenger, vol. 24, pp. xiii, 809, 927.
 1914. ,, Stebbing, Tr. Roy. Soc. Edinb., vol. 50, pt. 2, p. 296 (with synonymy).

GEN. NEMATOCARCINUS, A. Milne-Edwards.

1881. *Nematocarcinus*, A. Milne-Edwards, Ann. Sci. Nat., Zool., Ser. 6, vol. 11, art. 4, p. 14.
 1914. ,, Stebbing, Tr. Roy. Soc. Edinb., vol. 50, pt. 2, p. 297 (with synonymy).
 1914. ,, Balss, Abhandl. K. Bayer. Ak. Wiss., Suppl. vol. 2, pt. 10, p. 22.

This genus is well fitted to excite wonder at the length and tenuity of the flagella in both pairs of antennae and of the three median joints in the last three pairs of peraeopods. Admiration, however, may well be tinged with disappointment when the student finds that, owing to these very characters, all his specimens are mutilated. In the present collection not a single example could be found with the third peraeopod complete, the fourth and fifth pairs offering respectively no more than two and three perfect limbs. Similarly, the more or less elongate rostrum, scarcely ever absolutely uninjured, is often seriously damaged or broken short off at the base. Spence Bate, who uses the length of the rostrum and its denticulation to justify a variety of specific distinctions, in his discussion of *N. productus* practically admits that the criterion is untrustworthy. For two species, *N. undulatipes* and *N. tenuirostris*, Bate gives the character that the finger in the

third and fourth peraeopods (or one of them) is undulated. This would separate the former from *N. cursor*, A. Milne-Edwards, with which Alcock in 1901 suggests its identity. Alcock in the same year refers to the close affinity between Bate's *N. tenuipes* and the same author's *N. tenuirostris*. But in redescribing the latter he makes no mention of undulated fingers, while of *N. tenuipes* Bate expressly says that the fingers are straight. Between his *N. lanceopes* and his *N. longirostris* Bate draws the distinction that in the former the eggs are large and oval, but in the latter small and round. Whether the eggs observed were at the same stage of development he does not state. In this genus the large size of the second joint in the second maxillipeds may be worthy of notice, though much the same character occurs in neighbouring families.

Specimens, differing much in bulk, all from considerable depths, and all from the same area of the South African waters, have been sent from the following stations:—

1. Cape Point N. 81° E. 32 miles; depth 460 fathoms. A 1312. No. 180.

2. Cape Point E. by N. $\frac{3}{4}$ N. 34 miles; depth 480–600 fathoms. A 1242.

3. Cape Point NE. $\frac{3}{4}$ E. 6 miles; depth 600 fathoms. A 1287.

4. Cape Point Lighthouse N. $2\frac{3}{4}$ E. 36 miles; depth 600 fathoms. No. 179.

5. Cape Point Lighthouse NE. $\frac{3}{4}$ E. 36 miles; depth 600 fathoms. No. 200.

6. Cape Point N. 89° E. 36 miles; depth 700 fathoms. A 1243.

7. Cape Point NE. by E. $\frac{1}{2}$ E. 43 miles; depth 900 fathoms. A 1229.

8. Cape Point N. 58° E. 49 miles; depth 900 fathoms. A 1290.

A specimen which has come to light from a ninth station must be reserved for discussion at a future opportunity.

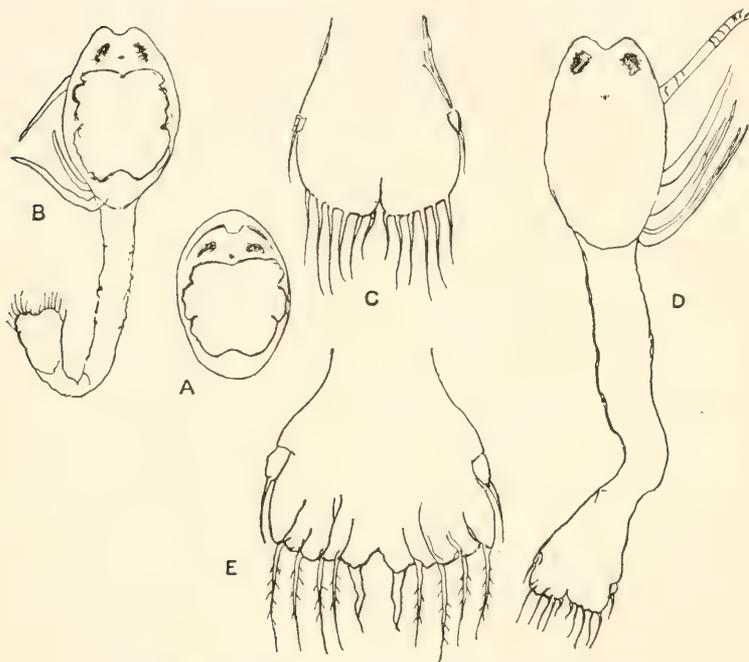
NEMATOCARCINUS LANCEOPES, Bate.

1888. *Nematocarcinus lanceopes*, Bate, Rep. Voy. Challenger, vol. 24, p. 804, pl. 131.
 1914. „ „ „ Stebbing, Tr. Roy. Soc. Edinb., vol. 50, pt. 2, p. 298, pl. 32b.

In using the above specific name for the present collection I must confess that it is only adopted after long deliberation as a counsel of despair. Some of the specimens have a length of 7 inches, retaining as preserved and while shielded from light a deep red colour. A specimen from No. 7 in the list of stations given above has the following dimensions: total length 175 mm., of which the carapace with rostrum accounts for 75 mm. and the telson for 21.9 mm. The rostrum from the base of the orbit is nearly 41 mm. long; the dorsal teeth are 30 in number, 7 of them behind the base of the orbit, the foremost 3 widely spaced, ventral teeth 3, widely spaced, the ventral margin as usual setulose. The sixth pleon segment is of the same length as the telson, the fifth peraeopod 109 mm. long. The finger of this limb is much shorter than that of the fourth pair, but broader at the base, triangular with a setule at the tip, surrounded as in the preceding pair by long setae finely fringed, some of them more conspicuously armed near the base. Neither in this nor in any other specimen is the third pleon segment dorsally extended into an acute point.

Only two specimens in the collection are carrying ova, each being an example of very large size, with very long rostrum, the length of it conjectural in one case but easily inferred from companion specimens. In each instance the eggs are abundant, not round but decidedly oval, yet curiously differing in size and other respects. Those of the larger pattern are from the smaller depth of 460 fathoms, the smaller from the depth of 600 fathoms (No. 4 in the list). It is interesting to compare these forms with that which Mr. Stanley Kemp has figured and described in 1910 (Fisheries, Ireland, p. 79, pl. 9, figs. 9, 10), extracted from an egg of "*Nematocarcinus ensifer*, var. *exilis*, Spence Bate." Mr. Kemp says: "The chief features of this larva are the long, sharp, downwardly curved rostrum and an obtuse angle in the posterior third of the third abdominal somite. The telson (Fig. 10) is apically emarginate and bears seven pairs of plumose setae. The mandibles, maxillae, and maxillipedes are present, but no pleopods or pereopods are developed." Presumably my figures show an earlier stage of development, as there is a nauplian eye, no rostrum, but on the other hand there appears a small plate tipped with a seta and indicative of the coming uropods (the Figs. A, B, C are from station No. 179, D, E from No. 180. The telson, Fig. C, is more highly magnified than the telson, Fig. E).

Specimens from the third, fifth, and eighth stations are all of comparatively small size and have reddish brown eyes, while in specimens from the other stations, whether large or small, the eyes are black. A specimen from the third station, with the rostrum perfect, shows that arrangement of its denticulation which Bate describes and figures for his Japanese species *N. longirostris*, the dorsal teeth very numerous, to the rear closely packed, but widely separated forward, where they are accompanied by five ventral teeth. This specimen was



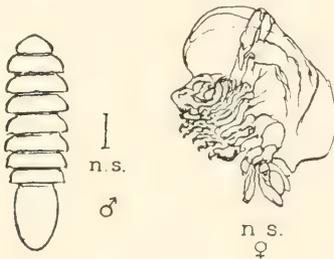
Ovum, and larvae from ova of *Nematocarcinus*, sp.

83 mm. in total length, the carapace 34 mm., inclusive of the rostrum, which measured 18 mm. Another specimen with carapace 30 mm. long has a rostrum 14 mm. in length. This specimen also has five ventral teeth, the dorsal numbering 36. A specimen from the eighth station has a carapace 32 mm. long, of which only 12 mm. belong to the rostrum. The dorsal teeth are 19, the tooth most to the rear being clearly separate from the 8 immediately in advance of it. There are 4 ventral teeth nearly corresponding in position to the

4 anterior dorsal teeth behind the foremost dorsal tooth. The antennal tooth and the antero-lateral tooth of the carapace are acute and conspicuous, but this seems to be a character common to the South African specimens. The telson agrees in length with the rostrum. Another specimen from the same station, measuring 81 mm., has a carapace 28 mm. long, with rostrum 10 mm., dorsal teeth 28, and no ventral teeth.

In the mouth organs of different specimens there do not appear to be variations on which any reliance can be placed for specific discrimination.

The Epicaridean parasite here figured, with a specific name alluding to the genus of its host, was lodged among the anterior pleopods of a large specimen taken at Station A 1229. The parasite itself has the characters of a genus very clearly described by Professor Sars in his *Crustacea*



Hemiarthrus nematocarcini, n. sp.

of Norway (vol. 2) under the preoccupied name *Phryxus*. For this Giard and Bonnier substituted the name *Hemiarthrus*, rather unfortunately as the closely similar name *Hemiarthrum* had already been used. The male of the new species is distinguished from that of *H. abdominalis* (Krøyer) by the very different shape of its oval pleon. On its first extraction from an apparently symmetrical situation the female may well excite surprise by its extremely lop-sided structure, but Sars has explained that "the parasite is always found to be firmly attached by the aid of the one series of legs to the basal part of one of the anterior pleopods of its host, sometimes the right, sometimes the left, and the distortion of the body to the one or the other side depends on this mode of attachment" (*Crustacea of Norway*, vol. 2, p. 217). Nevertheless, the distortion, which is so adequately explained

when a Bopyrid is lodged in the cheek-piece of a prawn, seems far less natural when its residence is between the pleopods, unless inherited from an ancestry differently located. *Cryptione elongatus*, Hansen, was described in 1897 from the branchial cavity of *Nematocarcinus agassizii*, Faxon, and quite recently Mr. K. H. Barnard has described *Zonophryxus quinquedens*, n. sp., found in company with an unnamed South African species of *Nematocarcinus*.

FAMILY ATYIDAE.

1879. *Atyidae*, Kingsley, Pr. Ac. Sci. Philad., p. 414.

GEN. CARIDINA, Milne-Edwards.

1837. *Caridina*, Milne-Edwards, Hist. Nat. Crust., vol. 2, p. 362.
 1910. „ Stebbing, Ann. S. African Mus., vol. 6, pt. 4, p. 393
 (with synonymy).
 1912. „ Lenz, Arkiv för Zoologi, vol. 7, No. 29, p. 4.
 1913. „ Bouvier, Tr. Linn. Soc. London, Ser. 2 Zool., vol. 15,
 pt. 4, p. 447.

CARIDINA NILOTICUS (Roux).

1833. *Pelias niloticus*, Roux, Ann. Sci. Nat., vol. 28, p. 73, pl. 7.
 1908. *Caridina nilotica*, de Man, Records Indian Mus., vol. 2,
 pp. 255, 262, 263.
 1910. „ „ Stebbing, Ann. S. African Mus., vol. 6,
 pt. 4, p. 394.

To judge by the elaborate researches of Dr. de Man and Professor Bouvier the species of *Caridina* are capable of yielding an endless number of variations. Professor Bouvier has patiently dealt with hundreds, nay, thousands, of specimens. With seven specimens at my disposal from a single locality, it may be interesting to give details as to the rostrum in each. The first examined excited attention by a feature which did not recur in any of the others, namely, by having three dorsal teeth lying closely in succession behind the apex; they were separated by a long smooth interval from the series of 17 dorsal teeth, of which 2 are behind the orbit; 10 ventral teeth form a series beginning some way in front of the eyes and ending in advance of the dorsal row but at some distance from

the apex. The second specimen showed 21 dorsal teeth in series, 1 after a long interval, and still another after a shorter interval lying close to the apex, the first and second dorsal teeth were behind the orbit, the twenty-first just behind the foremost of the 10 ventral teeth. A third specimen bore 17 teeth in dorsal series, 3 of them behind the orbit, a single tooth after a long interval, and after a short interval 1 tooth near the apex; the ventral teeth were 14, the foremost almost under the single dorsal tooth following the long interval. The fourth specimen, a female with eggs, had 16 dorsal teeth, 2 of them behind the orbit, then a very long interval followed by 2 teeth close to the apex, the 14 ventral teeth reaching much beyond the dorsal series, but not nearly to the apex. The fifth specimen, also a female with eggs, had 17 dorsal teeth followed at a long interval by 2 at the apex, which was approached at a shorter interval by the 13 ventral teeth. The sixth specimen, a small one, had 18 dorsal teeth, of which the foremost was slightly more distant from its neighbour than the others and followed at a long interval by 2 at the apex, with 12 ventral teeth also distant from the apex. The seventh specimen differs much from the others, having a series of 6 teeth, 3 of them behind the orbit, followed at a short distance by a series of 3 ending a little in advance of the eyes, all the rest of the rostrum being devoid of teeth, except a minute group below the apex. This is perhaps a monstrosity rather than a variation. The first specimen measured 24.5 mm. in length; the apex of the telson carried 7 long spines, 3 on one side and 4 on the other of the minute central point, flanked by a short pair of lateral spines, a similar pair a little higher up being unsymmetrically placed. That one of the named varieties may claim these specimens for its own is not unlikely.

Locality. Vaal River at Parys (Orange Free State). Collected by Mr. H. A. Fry. 1471.

FAMILY STYLODACTYLIDAE.

1880. *Stylodactylidae*, Bate, Rep. Voy. Challenger, vol. 24, pp. 481, 850.
 1902. „ de Man, Abhandl. Senckenb. Naturforsch. Gesells., vol. 25, p. 897.

1906. *Stylodactylidae*, Rathbun, Bull. U.S. Fish Comm. for 1903, pt. 3, p. 927.
 1907. „ Borradaile, Ann. Nat. Hist., Ser. 7, vol. 19, p. 466; *Stylodactyloida*, pp. 467, 471.
 1914. „ Balss, Abhandl. K. Bayer, Ak. Wiss., Suppl. vol. 2, pt. 10, p. 26.

In this family remarkable characters are furnished by the second maxillipeds and the first two pairs of peraeopods. According to Bate the second maxilliped "terminates in two branches, subequal in size and importance," though his figure qualifies the subequality by showing one branch nearly twice as long as the other. From his specific descriptions it is evident that he regarded both branches as representing the seventh joint. Borradaile takes a different view, assigning to this family "second maxillipeds with the sixth and seventh joints articulating separately on fifth." Against this explanation it may be urged that the short curved joint which follows the long third joint has the appearance of being actually representative of the fifth joint. Bate speaks of it as "analogous to the carpos." But if the third joint be in reality composite, ischium and merus in one, the following joint will be the true fifth. Whatever their numerical position, the two terminal branches are very anomalous. Dr. Calman has suggested to me that the smaller branch may be a process of the sixth joint which has become movable, like the thumb of the first peraeopod in the genus *Psalidopus*, Wood-Mason. In the first and second peraeopod the palm has dwindled to the shortest span, and the long slender setose fingers lie so closely one upon the other that the ordinary function of chelae as grasping organs seems almost out of the question.

GEN. *STYLODACTYLUS*, A. Milne-Edwards.

1881. *Stylodactylus*, A. M.-Edwards, Ann. Sci. Nat., Ser. 6, vol. 11, art. 4, p. 11.
 1888. „ Bate, Rep. Voy. Challenger, vol. 24, pp. 481, 850.

Milne-Edwards established the genus for a single species, *S. serratus*, though giving precedence in 1883 to another species, *S. rectirostris*, on Plate 35 of his "Recueil de Figures de Crustacés Nouveaux ou peu connus," *S. serratus* being

figured on the following, Plate 35a. Bate in 1888 added *S. discissipes*, *S. orientalis*, and *S. bimaxillaris*, in the first and third directing attention by the specific names to the most notable characters of the family. The grounds assigned for separating *S. orientalis* from *S. discissipes* can scarcely be accepted as adequate. In 1902 de Man describes a very young specimen, related to *S. bimaxillaris*, under the provisional name of *S. amarynthis*. There are thus six nominal species in the genus, if we include *S. rectirostris*, which has been overlooked since its institution. The figures very clearly differentiate it from *S. serratus*. The rostrum shows 37 teeth above and 7 below in addition to a tooth close to the base; the first peraeopod has the wrist or fifth joint longer than that of the second peraeopod, and the telson is only about twice as long as broad, with a blunt apex. In *S. serratus* the rostrum shows 36 teeth above, 27 below, without tooth close to the base; the second peraeopods decidedly longer than the first, the wrist and fingers contributing to this superiority in a marked degree; the telson more than thrice as long as broad, with apex acute.

STYLODACTYLUS SERRATUS, A. Milne-Edwards.

Plate LXXVI.

1881. *Stylodactylus serratus*, A. Milne-Edwards, Ann. Sci. Nat.,
Ser. 6, vol. 11, art. 4, p. 11.
1883. " " A. Milne-Edwards, Recueil figs. Crust.
 Nouv., pl. 35a.
1888. " " Bate, Rep. Voy. Challenger, vol. 24,
 p. 853.

The South African specimens appear essentially to agree with the descriptions and figures given by A. Milne-Edwards, except that the wrist of the second peraeopods does not differ in length from that of the first pair, although the fingers are much longer. These fingers are quite straight, strongly setose, the apex not acute. In the preserved condition they are resilient, upon separation springing back into position, one overlapping the other so as to look like a single joint. On these limbs and some other parts the long setae, instead of being finely and continuously plumose, have spicules discontinuously projecting at various angles on different lines.

A specimen with rostrum and telson practically complete measured 52 mm., rostrum 13 mm., carapace with rostrum 23 mm., pleon 29 mm., of which the telson accounted for 7 mm. Here the upper carina carried 34 teeth and the lower margin of the rostrum 17. The length of the telson is more than thrice its greatest breadth; dorsally there is a small group of setae near the base; 6 pairs of spines are spaced to the place whence the sides abruptly converge to form a pointed apex flanked by a short pair of spines, with a longer pair outside them, one of the pair in our specimen abnormally shorter than the other.

The eyes are of moderate size, as preserved reddish brown, with the pigment broken up into irregular compartments. In Milne-Edwards' account the eyes are small, but he adds that they are in contact on the median line, which would imply some tumidity. To the first antennae he attributes a little pointed scale, but his figure shows that this stylocerite, as Bate calls it, is at least as long as the joint of which it forms a part; the flagella are very unequal. The scale of the second antennae has the smooth margin somewhat concave, with the distal tooth reaching beyond the narrowed apical margin.

As the figures show, the denticulation of the mandibles is not absolutely identical in the two members of the pair or in different specimens of the same species. According to Bate the palp or outer branch of the first maxillae is bifid at the extremity; in our species the extremity is only faintly emarginate, with a strong seta at the inner corner, three slighter setae at the outer, and a curved surface spine below the apex. The vibratory apparatus of the second maxillae carries very long setae on the lower end which is narrower than the upper. The second maxillipeds have the terminal joints as represented by Milne-Edwards, the longer but narrower plate attached near the inner margin of the preceding joint, but partly overlapping the attachment of the shorter and broader plate; both are beset with masses of curved plumose setae alike from their own margins and surfaces and from the preceding joint, which contains muscles directed to each of the plates. Third peraeopods stouter than fourth or fifth, fingers small, with dentate inner margin.

The outer branch of the uropods has a sinuous diaeresis

leading to a tooth on the outer margin, this tooth partially overlapping a stout spine.

The specimen figured is an ovigerous female, measuring by allowance for the imperfect rostrum about 3 inches or 75 mm.

Locality. Buffalo River NW. $\frac{1}{2}$ W. 19 miles (East London, Cape Colony); depth 300 fathoms. A 1284.

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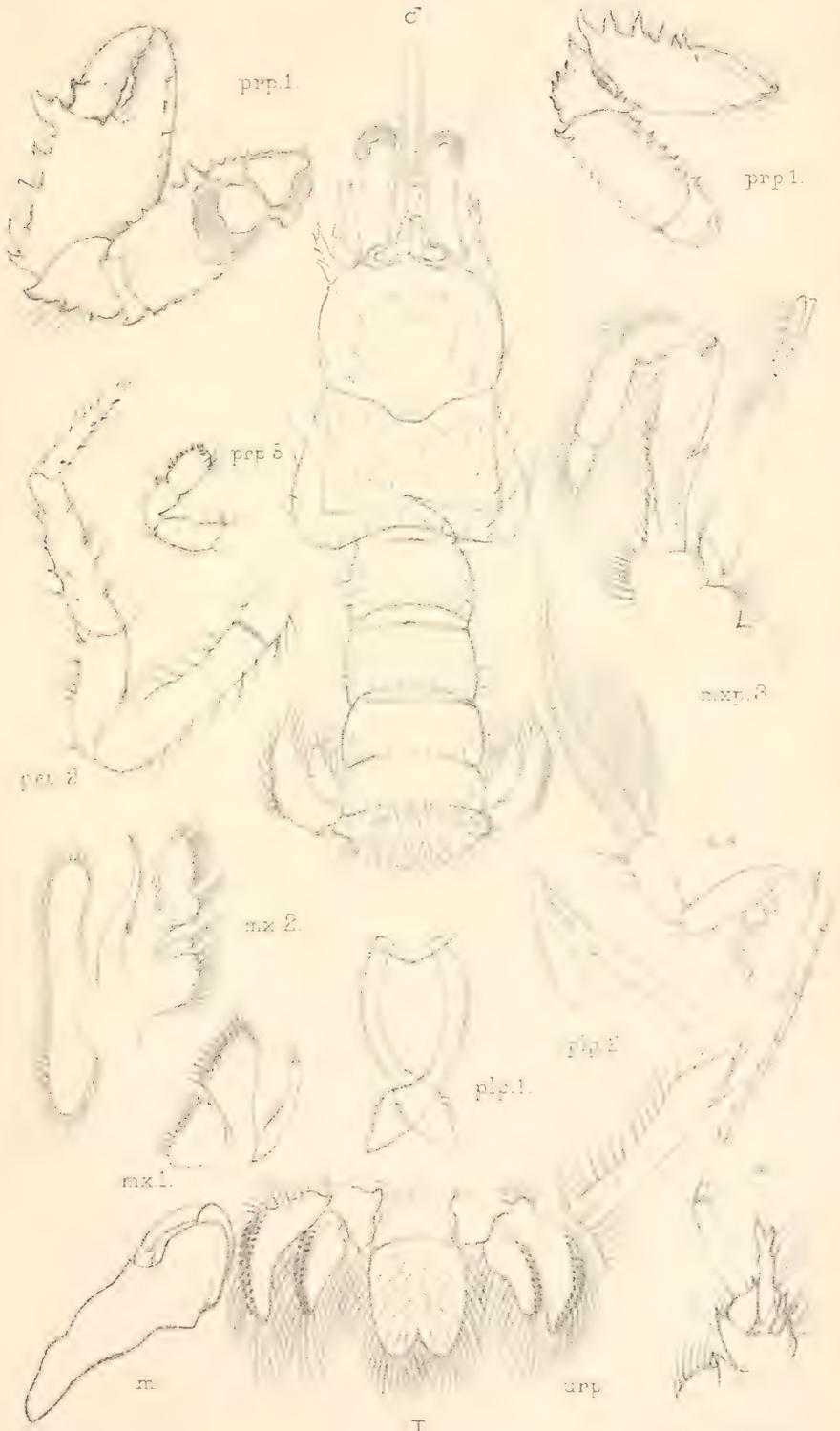
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agassizii (Nematocarcinus)	48	Hippolytidae	34
alcocki (Calocaris)	10		
Alpheidae	31	investigatoris (Benthesicymus)	21
alphonsi (Heterocarpus)	40		
amarynthi (Stylodactylus)	51	jacqueti (Sclerocrangon).....	29
Aristaeomorpha	24	japonicus (Penaeus).....	12
Atyidae	48	jeffreysii (Pomatocheles)	2
Axiidae	9		
		kempi (Gennadas)	12
balssi (Pomatocheles), pl. 65	3		
barnardi (Calocaris), pl. 66	9	labidoleptus (Galathea)	5
beaumontii (Pentacheles)	11	laevigatus (Heterocarpus)	40
bellmarleyi (Sclerocrangon), pl. 74	29	lanceopes (Nematocarcinus), text-	
Benthesicymus.....	21	figures	44
bimaxillaris (Stylodactylus)	51	Leander.....	31
		Leucifer	27
Calocaris	9	Leuciferidae	27
canaliculatus (Penaeus)	13	longicauda (Eusicyonia), pl. 73	26
Caridea	28	longirostris (Munidopsis)	8
Caridina	48	longirostris (Nematocarcinus)	44
carinatus (Eusicyonia)	21	longirostris (Parapandalus)	37
Chlorotocus	41	longirostris (Plesionika)	37
Crangonidae	28		
crassicornis (Chlorotocus), pl. 75 ...	42	Macropetasma	22
crassicornis (Pandalus)	42	marmoratus (Saron)	34
Cryptione	48	Metapeneus	15
		mirabilis (Platyischnopus)	32
discissipes (Stylodactylus)	51	Mixtopagurus	3
dispersus (Galathea)	5	modestus (Pandalus)	36
		Munidopsis	6
elongatus (Cryptione)	48		
ensifer (Nematocarcinus)	45	nematocarci (Hemiarthrus), text-	
Eryonidae	10	figures	47
Eryonidea	10	Nematocarcinidae	43
Eusicyonia	25	Nematocarcinus	43
		niloticus (Caridina).....	48
fissurus (Parapenaeus), pl. 69	19		
		occidentalis (Ogyrides)	32
Galathea	5	Ogyrides	31
Galatheidae	5	Ogyris	31
Galatheidea	5	orientalis (Stylodactylus)	51
Gennadas	12		
gilli (Mixtopagurus)	2	pacificus (Phye)	33
gracilipes (Chlorotocus)	42	Paguridea	2
granulatus (Pentacheles)	11	Palaemonidae	30

	PAGE		PAGE
Pandalidae	36	rectirostris (Stylodactylus).....	50
Pandalus	36	rostridentatus (Aristaeomorpha) ...	24
paradoxus (Pomatocheles)	3	rostridentatus (Aristeus).....	24
Parapaguridae	2	Saron.....	34
Parapandalus	37	Sclerocrangon	29
Parapasiphaë	32	serratus (Stylodactylus), pl. 76.....	51
Parapenaeus	18	serrifer (Leander)	31
Pasiphaeidae	32	sibogae (Haliporus).....	21
Penaeidae	11	Sicyonia	25
Penaeidea	11	simplex (Galathodes)	7
Penaeopsis	15	simplex (Munidopsis)	7
Penaeus.....	12	spinus (Pomatocheles).....	2
Pentacheles	11	spinulicauda (Penaeopsis), pl. 68 ...	17
Phryxus.....	47	Spirontocaris	35
Phye	33	Stylodactylidae	49
Platyschnopus.....	32	Stylodactylus	50
Plesionika	37	sulcatifrons (Parapasiphaë)	33
Pomatocheles	3	tenuipes (Nematocarcinus).....	44
Pomatochelidae	2	Thalassinidea	8
procax (Sclerocrangon)	29	triarthrus (Haliporoides), pls. 70, 71	21
pulchricaudatus (Penaeus), pl. 67...	14	tricarinatus (Heterocarpus)	39
Pylocheles	2	typus (Leucifer)	28
Pylochelidae	2	Zonophryxus	48
quinquedens (Zonophryxus)	48		
quinquedentatus (Penaeopsis)	15		

PLATE I. (Crustacea, Plate LXV.)

Pomatocheles balssi, n. sp.

- ♂. Dorsal view of male specimen magnified, the telson folded out of sight.
- T., urp. Dorsal view of telson and uropods. This figure and the peraeopods on the same scale as the full figure, the rest more highly magnified.
- a.s., a.i. The first and second antennae, flagellum of the second incomplete.
- m., mx. 1, mx. 2, mxp. 3. Mandible, first and second maxillae, and third maxilliped.
- prp. 1, 1, 2, 5. Both members of the first pair in their relative positions, but the inner side of the large left cheliped is shown and the outer of the smaller right-hand one. The peraeopod marked prp. 2 is open to a little doubt, as, besides being detached, it was the only one present of the three intermediate peraeopods, and may therefore be the third; the fifth peraeopod was in position when received.
- plp. 1, 2. The first pair of pleopods and one member of the second pair.



Del. T.R.R. Stebbing.

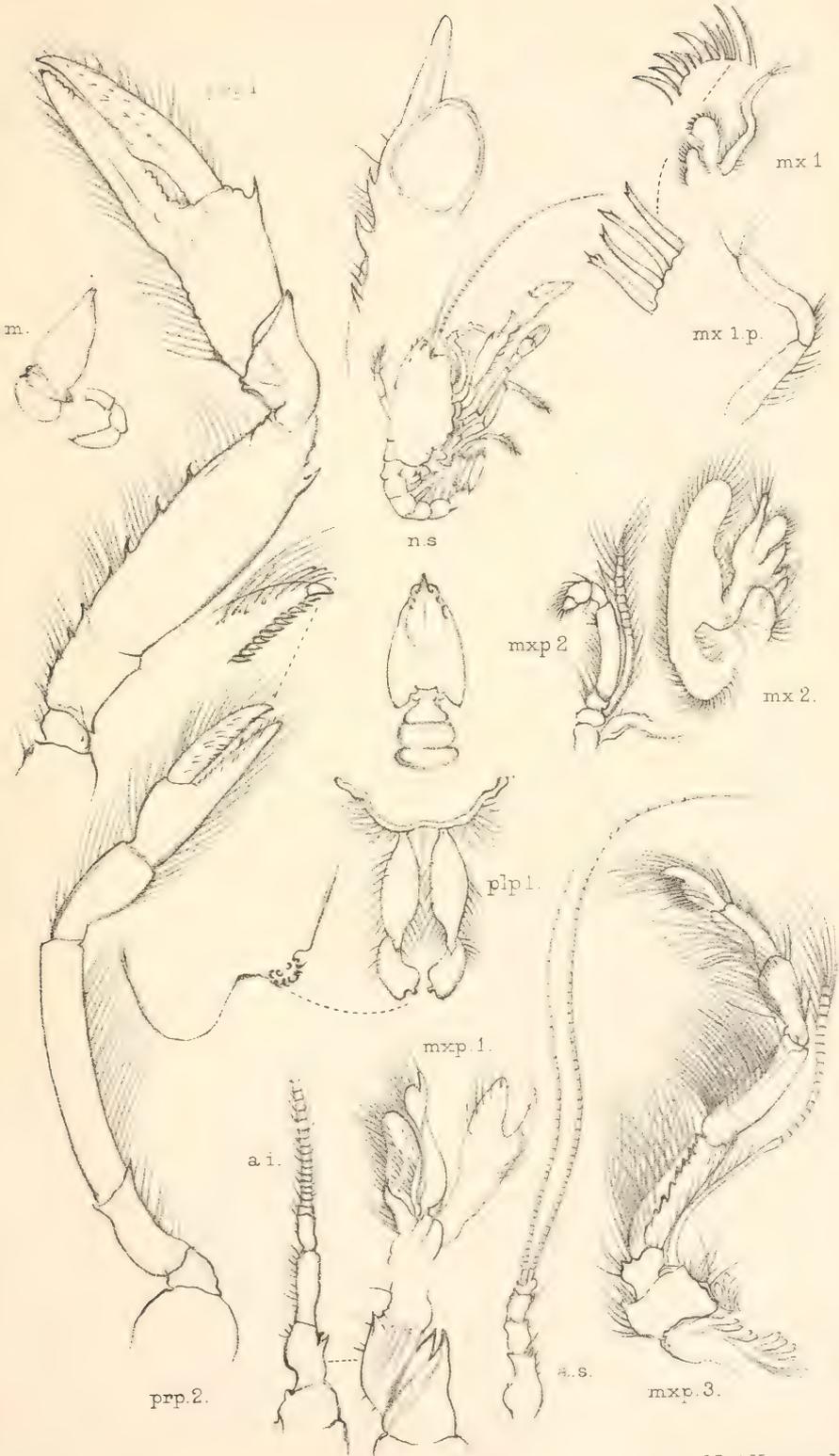
West, Newman lith.

POMATOICHELES BALSSI n. sp.

PLATE II. (Crustacea, Plate LXVI.)

Calocaris barnardi, n. sp.

- n.s. A specimen in lateral view, natural size, and the same without appendages in dorsal view below; the rostrum and eye in lateral view above, magnified.
- a.s., a.i. The first and second antennae; only a small portion of the flagellum of the latter shown, the antepenultimate joint of its peduncle more highly magnified.
- m., mx. 1, mx. 1 p., mx. 2. Mandible, with palp detached, first maxilla, with higher magnification of spines, palp of the other mx. 1 more highly magnified; second maxilla on a higher scale of magnification.
- mxp. 1, 2, 3. First, second, and third maxillipeds.
- prp. 1, 2. First and second peraeopods, with higher magnification of the apex of the movable finger of the second.
- plp. 1. The first pair of pleopods, with apex more highly magnified.



T.R.R. Stebbing del.

West, Newman lith.

CALOCARIS BARNARDI, *n.sp.*

PLATE III. (Crustacea, Plate LXVII.)

Penaeus pulchricaudatus, n. sp.

car. Carapace in lateral view.

T. Telson in dorsal view, with much higher enlargement of the distal portion.

mx. 1. First maxilla with terminal joints much more enlarged.

mx. 2. Only the apical plate of the second maxilla, on the higher scale.

mxp. 2. The second maxilliped, with higher enlargement of the three distal joints.

prps. 1-5. The five pereopods, the first with higher enlargement of the second and third joints and the exopod; the second with further enlargement of second joint and exopod; basal joints of fourth and fifth on the higher scale, with the adjoining ventral processes.

urp. One of the uropods.



Del. J. H. C. Stebbing

West, Newman lith.

PENÆUS PULCHRICAUDATUS *n.sp.*

PLATE IV. (Crustacea, Plate LXVIII.)

Penaeopsis spinulicauda, n. sp.

car. Part of carapace in lateral view.

T. Telson in dorsal view.

a.s. First antenna.

p.m. Palp of mandible.

mx. 1. First maxilla, with much higher magnification of terminal joints (the palp).

mx. 2. Second maxilla, with much higher magnification of the lobes and terminal joint.

mxp. 1. First maxilliped, with much higher magnification of intermediate joints of the endopod.

mxp. 2. Second maxilliped.

plp. 1. First pleopod with the petasma, with much higher magnification of the proximal and distal ends of one of its members.

plp. 2. Second pleopod.

The various parts are drawn to a uniform scale, with the higher magnifications also uniform.



Del. J.H.P. Stebbing.

West, Newman lith.

PLATE V. (Crustacea, Plate LXIX.)

Parapenaeus fissurus (Bate).

- n.s. Specimen in lateral view, natural size, flagellum of second antennae imperfect.
car. Carapace of a smaller specimen detached, to show more clearly the teeth and the fissures, with higher magnification of distal portion of the rostrum.
T. The telson much enlarged.
a.s. First antenna.
m., mx. 1, mx. 2, mxp. Mandibles, first and second maxillae, first maxilliped, with higher magnification of the palp or apical joint of the first maxilla, and still higher of the apex in the second maxilla and the base of the flagellar portion of the first maxilliped.



Del. T. R. R. Stebbing.

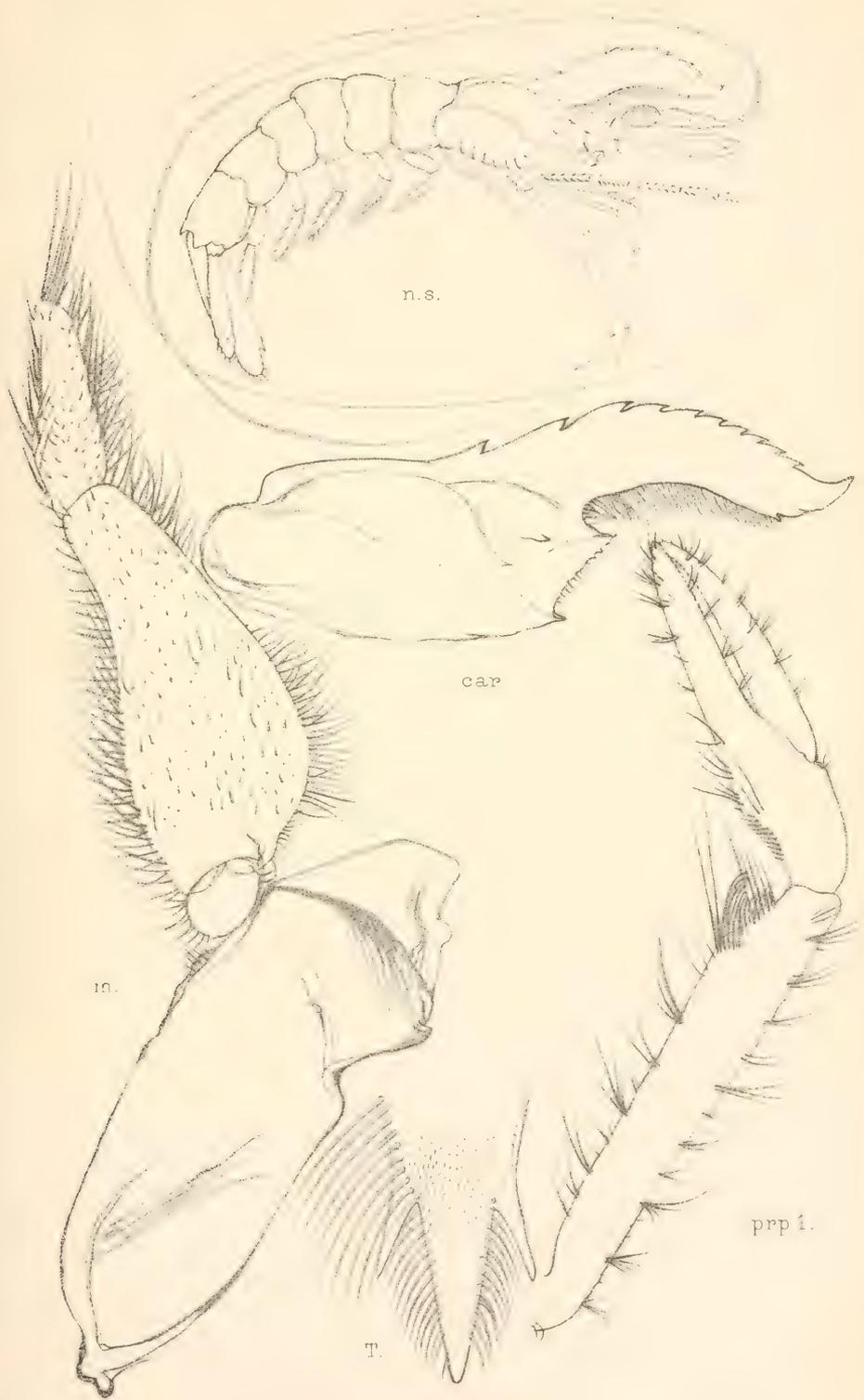
West, Newman lith.

PARAPENÆUS FISSURUS (Bate)

PLATE VI. (Crustacea, Plate LXX.)

Haliporoides triarthrus, n. g. et sp.

- n.s. Lateral view of specimen figured above, natural size.
- car. Much enlarged view of the carapace.
- T. Apical part of the telson.
- m. Mandible.
- prp. 1. Wrist and chela of first peraeopod.



Del. T.R.R. Stebbing.

West, Newman lith.

HALIPOROIDES TRIARTHUS n.g. et sp.

PLATE VII. (Crustacea, Plate LXXI.)

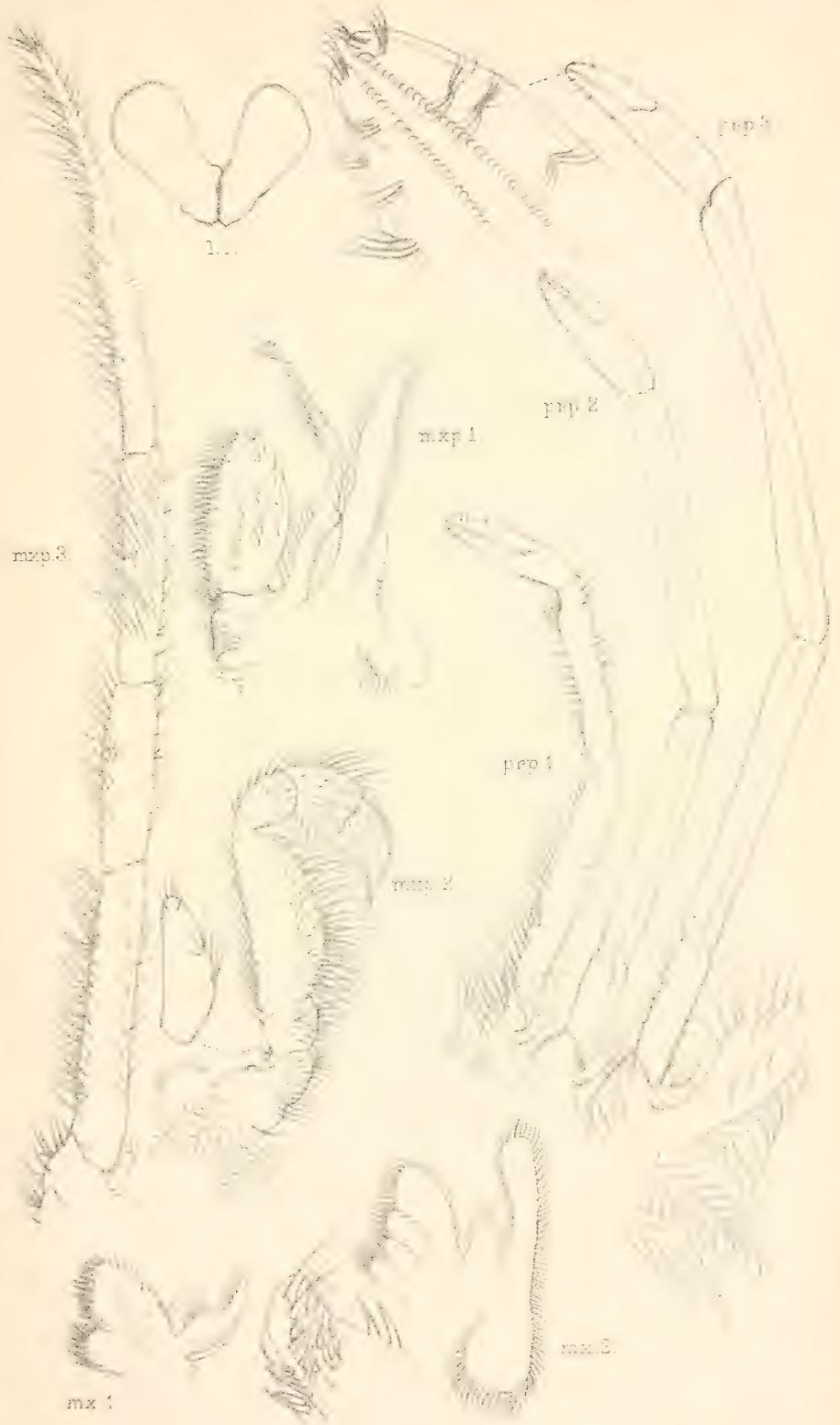
Haliporoïdes triarthrus, n. g. et sp.

l.i. Lower lip.

mx. 1, mx. 2. First and second maxillae, with higher magnification of the apex of the endopod of the second.

mxp. 1, 2, 3. First, second, and third maxillipeds, with exopod of the second more highly magnified.

prp. 1, 2, 3. First, second, and third pereopods, with apices of the fingers of the third pair more highly magnified.



Del. T.R.R. Stebbing

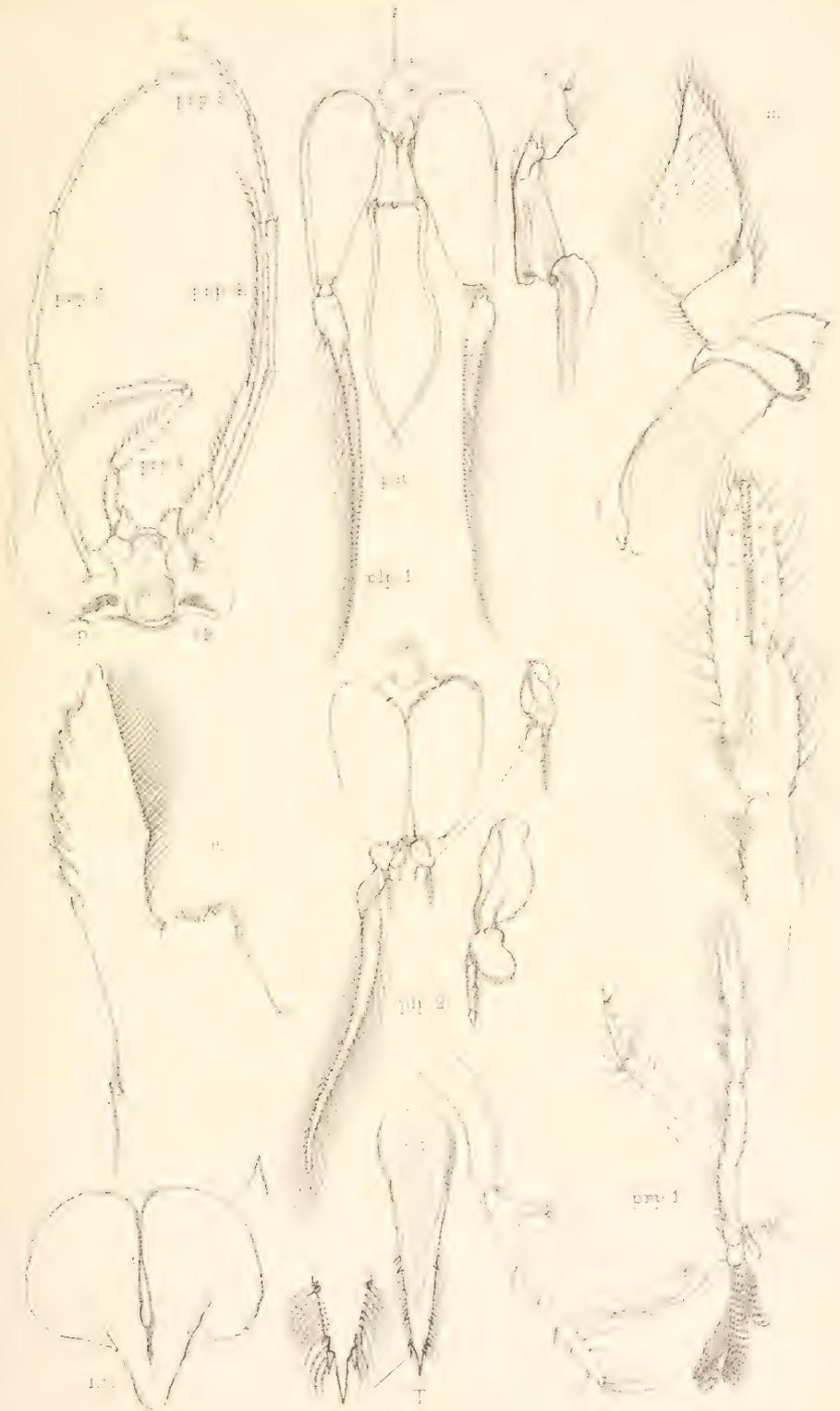
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HALIPOROIDES TRIARTHURUS *n.g. et sp.*

PLATE VIII. (Crustacea, Plate LXXII.)

Macropetasma africanus (Balss).

- r. Rostrum and part of carapace.
- T. Telson, with apex more highly magnified.
- m., l.c. Mandible and lower lip.
- prp. 1. First peraeopod, with higher magnification of the epipod, the exopod, chela and part of fifth joint.
- prp. 4, prp. 5, sp., sp. Fourth peraeopods, one of the pair in its partially folded position, and fifth peraeopods with spermatophores.
- plp. 1, plp. 2, pet. First pair of pleopods with the petasma, part of which is more highly magnified, and second pleopods, omitting the outer ramus of one member, the vestigial ramus more and more highly magnified.

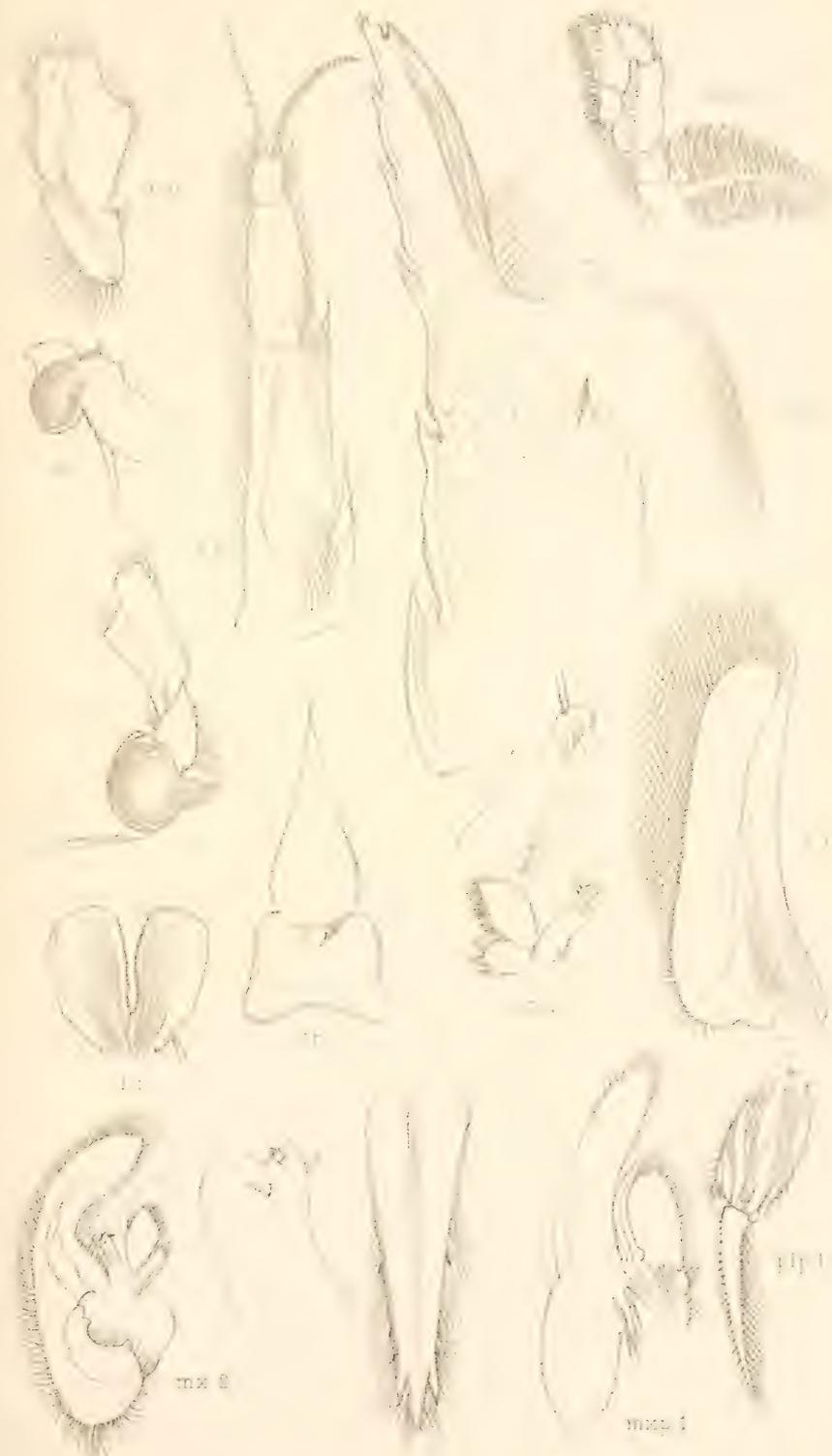


MACROPETASMA AFRICANUS

PLATE IX. (Crustacea, Plate LXXIII.)

Eusicyonia longicauda (Rathbun).

- car. Carapace in lateral view, incomplete.
- T. Telson in dorsal view.
- a.s., a.i. First antenna and scale of second.
- m., m.p., m. Mandible with the palp detached, the other mandible with its palp oblique.
- l.i. Lower lip.
- mx. 1, mx. 2. First and second maxillae, the first incomplete, each with the apical plate more highly magnified.
- mxp. 1, mxp. 2. First and second maxillipeds.
- th. Thelycum.
- plp. 1. First pleopod.



Del. T.R.R. Stebbing.

West, Newman lith.

EUSICYONIA LONGICAUDA (*Rathbun*)

PLATE X. (Crustacea, Plate LXXIV.)

Sclerocrangon bellmarleyi, n. sp.

n.s. ♀. Lateral view of a female specimen, natural size.

car. ♂, urp., T. Carapace of male specimen, flattened out; one of the uropods, and the telson in dorsal view; these figures to the same scale, less highly magnified than the following, but all alike taken from the male specimen.

a.s., a.i. The first and second antennae, the flagellum of the second missing.

m., mx. 1, mx. 2, mxp. 1, mxp. 2. Mandible, first and second maxillae, and first and second maxillipeds.

mxp. 3. Third maxilliped, ending with base of the penultimate joint.

plp. 2. Second pleopod, with still higher magnification of the inner branch.



mx.1.

Sclerocrangon bellmarleyi

Del. T.R.R. Stebbing.

West, Newmar lith.

PLATE XI. (Crustacea, Plate LXXV.)

Chlorotocus crassicornis, A. Costa.

car. Part of carapace in lateral view.

T. Telson in dorsal view.

oc. One of the eyes.

m., m. One mandible complete, with higher magnification of its molar's apical border, the same magnification being used for the cutting edge and molar apex of the other mandible.

li., mx. 1, mxp. 2. Lower lip, first maxilla and second maxilliped on the same scale as the whole mandible.

prp. 1, prp. 2. First and second peraeopods, on the same scale as the telson, parts more highly magnified, on the same scale as the whole mandible.

PLATE XII. (Crustacea, Plate LXXVI.)

Stylodactylus serratus, A. Milne-Edwards.

- n.♀. ♀. Lateral view of female specimen, natural size, rostrum imperfect.
- car. Carapace of a smaller specimen, magnified; tip of the rostrum still more enlarged.
- T. Dorsal view of telson from the smaller specimen, with distal portion more enlarged; the fellow to the long spine on the left is imperfectly developed.
- m., m., m. Mandibles, the uppermost figure from the female specimen, the other two from the smaller specimen.
- prp. 1, prp. 2. The first pereopod and distal part of the second, from the female specimen.



Del. T.R.R. Stebbing.

West, Newman lith.

STYLODACTYLUS SERRATUS *A. Milne-Edwards.*

2.—*South African Crustacea* (Part VIII. 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. New Zealand Inst., Hon. Fellow Worcester College, Oxford.

(Plates XIII.—XXV. of Vol. XV. Plates LXXVII.—LXXXIX. of Crustacea.)

IN the General Catalogue of South African Crustacea (Ann. S.A. Mus., 1910) forty-nine species were enumerated under the heading of *Macrura Genuina*. To this list twenty-eight species were subsequently added (Ann. S.A. Mus., 1914). Of the twenty-two species considered in the present essay eleven are proposed as new, one of them representing a new genus. As nineteen are additional to the two earlier lists, the total of the group in question stands for the moment at ninety-six species. In other divisions of the crustacean class a large number of new species have been added to the South African fauna by various authors, especially Dr. G. S. Brady and Mr. K. H. Barnard, since the publication of the General Catalogue. In any future revision of it attention would have also to be directed to several older species, the habitat of which in these waters as recorded by Lenz and others I overlooked. To undertake such a revision just now would perhaps be premature, and at any rate on the present occasion is not convenient. But I venture to take this opportunity of cordially thanking Mr. W. H. Bell-Marley, of Durban, for the large number of specimens with which he has favoured me during a course of years from the coast of Natal, effectively corroborating the work of Krauss, who made that coast his principal hunting ground.

In addition to specimens already acknowledged in this series, Mr. Bell-Marley has sent the following:—

Dehaanius dentatus (Milne-Edwards), with varieties.

Blastus fascicularis (Krauss).

Huenia proteus, de Haan, new to S. African fauna.

Pilumnus xanthoides, Krauss.

- Eriphia smithii*, McLeay.
Callinectes gladiator (Fabricius), new to S. African fauna.
Charybdis cruciatus (Herbst), small specimens.
Lupa sanguinolentus (Herbst).
Thalamita prymna (Herbst).
Cyclograpsus punctatus, Milne Edwards.
Ocypode cordimanus, Desmarest.
Hymenosoma orbicularis, Desmarest, carrying a comparatively large *Balanus*.
Matuta lunaris (Forskål).
 ? *Leucisca squalimus*, McLeay.
Clibanarius virescens (Krauss).
Diogenes extricatus, Stebbing.
Porcellana dehaanii, Krauss.
Macropetasma africanus (Balss).
Leander affinis (Milne Edwards).
Alpheus edwardii (Audouin).
Gonodactylus chiragra (Fabricius).
Talorchestia africanus, Bate.
Anthosoma crassus (Abildgaard), on old shark. New to S. African fauna.
Balanus capensis, Darwin, on *Hymenosoma orbicularis*.

TRIBE THALASSINIDEA.

(See these Annals, vol. 15, pt. 1, p. 8, 1914.)

FAMILY AXIIDAE.

1888. *Axiidae*, Bate, Rep. Voy. Challenger, vol. 24, p. 36.
 1891. „ Ortmann, Zool. Jahrb., vol. 6, p. 46.
 1914. „ Stebbing, Ann. S. African Mus., vol. 15, pt. 1, p. 9.

GEN. CALOCARIS, Bell.

- (1847) 1853. *Calocaris*, Bell, Brit. Stalk-eyed Crust., p. 231.
 1888. „ Bate, Rep. Voy. Challenger, vol. 24, pp. 7, 54
 (*Callocaris*, pp. 11, 46).
 1895. „ Faxon, Mem. Mus. Comp. Zoöl., vol. 18,
 p. 105.
 1900. „ McArdle, Ann. Nat. Hist., Ser. 7, vol. 6,
 p. 476.

1914. *Calocaris*, Stebbing, Ann. S. African Mus., vol. 15, pt. 1, p. 9.

Other references for the family and genus are given in the last-mentioned paper.

CALOCARIS ALCOCKI, McArdle.

1900. *Calocaris alcocki*, McArdle, Ann. Nat. Hist., Ser. 7, vol. 6, p. 476.
 1901. „ „ Alcock, Catal. Indian Deep-sea Macrura, pp. 189, 190; Zool. Investigator, Crust., pt. 9, pl. 50, figs. 4, 4a.

McArdle's specimen, measuring 54 mm. in length, was taken in the Bay of Bengal, off Ceylon, from a depth of 542 fathoms. The description given of it essentially fits the South African example. Thus, to quote from Alcock, "the rostrum, which reaches to the end of the antennular peduncle, is up-curved and dorsally grooved; on either lateral border, near the middle, are 1 or 2 spines, and on each of the epigastric continuations of the lateral borders is a single spine." In our specimen the upturned apex of the rostrum reaches somewhat beyond the peduncle of the first antennae, but so it appears to do in the figure on Plate 50 of the Investigator's Crustacea. It may be only an accidental coincidence, but it may be noticed that the African rostrum has 2 spines on the left margin and only 1 spine on the right. The considerable length of the penultimate joint in the peduncle of the second antennae as compared with the terminal joint should be noticed, as it is a mark distinguishing this species from the recently established *C. barnardi*. Only one of the flagella was preserved in the first antennae, and the same seems to have been the case with the Indian specimen, which, however, retained the flagellum of the second pair, missing in ours. No special notes are given on the mouth-organs of the Indian specimen, except that the fourth joint of the third maxillipeds "has a subterminal spine on the inner border." This applies equally to ours, if we accept the term spine as signifying a small unjointed tooth. In *C. barnardi* this tooth is also present, though much obscured by the crowded setae, but that species shows a great difference in the denticulate border of the third joint, having some nine strong teeth in place of the 28 mixed large and small which form the row in the present species, in addition to an irregu-

larly placed dozen of minute ones at the base. A comparison of the figures for the two species will show rather considerable differences of detail in the maxillae and other maxillipeds. But without more specimens for control it may be imprudent to lay too much stress on such details.

A detached first peraeopod, beginning with the third joint, and measuring 23 mm. in length, agrees well with Alcock's account of the large chelipeds in the female, having the hand as long as the fourth and fifth joints combined (carpus and merus being evidently intended, in agreement with the figure, not "carpus and ischium" as printed), the fifth joint is two-thirds the length of the palm, and the palm is as long as the fingers; there is a terminal tooth on the lower border of the third joint and on the upper border of the fourth joint and the palm. In the second peraeopods the last three joints measure together 6.5 mm., equally divided between the wrist, palm, and fingers, while the fourth joint, 7.5 mm. long, exceeds the whole combination. The three following peraeopods appear to have a total length respectively of 25, 24, 21 mm., the apical part of the sixth joint in all, but especially in the fifth pair, and the fingers being copiously furnished with setae.

The pleopods are perplexing. A comparison of the figures will show that the first pair in this species differs from that of *C. barnardi*. The second pair of the present species would, I imagine, apart from contradictory evidence, be regarded as male organs. But Alcock is evidently describing these organs when he writes: "In the female the protopodite and endopodite of the second pair of abdominal appendages are long and rigid, and articulated to the tip of the endopodite is a large boot-shaped plate, its toe pointing backwards and its heel armed with a spine." The sole, it will be seen, is fringed with spinules. In describing the family Axiidae Alcock says: "In the Indian species from the deep sea it is common to find orifices, corresponding with the genital orifices of the male, in adult females." In defining the genus *Calocaris* he says: "The first pair of abdominal appendages are slender and uniramous in both sexes, the 2nd-5th pairs are slender and biramous, and have a slender styliform internal appendix." This appendix I have sought in vain in the present species. The characters of the telson and uropods are sufficiently shown in the figures, the diaeresis in the exopod of the latter incomplete.

The total length of the specimen was about 33 mm., the carapace 13 mm. including the rostrum, the telson 4.5 mm. The plate illustrating this species is reserved for future publication.

Locality. Cape Natal, N. by E., 24 miles; depth 440 fathoms. A 1550.

TRIBE SCYLLARIDEA.

This tribe, established as the "Tribu des Scyllariens" by Milne-Edwards in 1837, has been already noticed in these Annals, vol. 6, part 1, p. 28, 1908, and vol. 6, part 4, p. 372, 1910.

FAMILY SCYLLARIDAE.

With the above-mentioned notices of the tribe will be found many references to the literature of the family. As might have been expected, the singular bodily shape and the spade-like second antennae of the "Mother-lobsters" have excited attention in very early times. Linnaeus, however, in 1758 was content to group all the forms then known as a single species, *Cancer arctus*. To determine which of them, according to modern rules, has a right to the specific name *arctus* requires some consideration.

In the *Fauna Suecica*, ed. 2, p. 496, No. 2040, 1761, Linnaeus again named *Cancer arctus*, but this time with a single reference, "Rumph. mus. t. 2. f. C. D." These figures illustrate what were supposed to be the two sexes of *Ursa-Cancer*, Rumphius, as described in his *D'Amboinsche Rariteitkamer*, Book 1, p. 3, 1705. Fig. C is now referred to *Parribacus*, Dana, and Fig. D to *Thenus*, Leach. By strict rule perhaps, therefore, *arctus* should be a species of one or the other of those two genera, but as the habitat is restricted to *Oceano septentrionali*, it is possible that Linnaeus was referring to yet a third species, an indefiniteness and confusion which may justify us in leaving the "Fauna Suecica" out of account. We next come to *Cancer arctus* in the *Systema Naturae*, ed. 12, vol. 1, part 2, p. 1053, 1767. Here we have the old distribution over the four quarters of the globe and contradictory references to the two figures in Rumphius and the single figure in Browne's *Jamaica* and the very different one in Seba's *Thesaurus*, but the reference to the "Fauna Suecica" is also given, and contrary to custom a comparatively full description is appended, as if drawn up from an

actual specimen. With regard to the application of this description I asked the advice of my friend, Dr. W. T. Calman, D.Sc., who, after consulting with his colleague, Mr. C. Tate Regan, writes: "He agrees with me that it applies very well indeed to a specimen of '*Scyllarus arctus*,' but cannot, by any stretch of imagination, be made to fit specimens of '*Parribacus antarcticus*' or of '*Thenus orientalis*.' . . . Only *S. arctus* can be described as 'aculeis inter oculos circiter 10' or as having the carapace 'quinquefariam antrorsum aculeatus.' The description of the 'cauda' puzzled me a good deal till Mr. Regan pointed out that the grooves on each abdominal somite except the first and last do really define three areas, the first smooth, the second rough, and the third rough and triply emarginate behind. Regan also makes the suggestion which I think probably right, that 'digito brevissimo' refers to a very minute tooth on the concave margin of the dactylus of the first pereopods."

In 1775, as Gill, Miss Rathbun, and Sherborn have stated, Fabricius instituted the genus *Scyllarus* for *Cancer arctus*, Linn. To this genus he added the species *S. australis* in 1781, and again recorded these two species in 1793 (Ent. Syst., vol. 2, p. 477), without reference to his own earlier records or any indication that the genus was not a new one. Under *S. arctus* he gives the old cosmopolitan distribution and mixture of references, as though quite unaware that they belong to a variety of species, here also as in 1781 quoting Rumph. Mus. tab. 2, fig. 6, D, by mistake for C, D. My own mistake in 1908 must be acknowledged. It consisted in accepting 1793 as the date for the genus *Scyllarus* and the species *S. australis*, in place of 1775 for the one and 1781 for the other. The year 1793, however, is rather deeply involved in the interests of the present family. For while Fabricius was leaving his genus in its primitive disorder, two of his contemporaries were independently making a systematic revision of it. Herbst (Krabben und Krebse, vol. 2, part 3, pp. 80, 82, 83, pl. 30, figs. 1, 2, 3), mentioning but not adopting *Scyllarus*, assigns to *Cancer (Astacus)* three species which he named respectively *arctus*, *ursus major*, *ursus minor*. Here it should be noted that the invaluable "Index Animalium" makes a slight slip by assigning these three names to 1792, which would have been correct had the descriptions occurred in part 2, ending with p. 78, but Sherborn now accepts Miss Rathbun's date 1793 for parts 3 and 4 of Herbst's second volume. This robs Herbst of any unquestionable precedence over N. T. Lund, who in the same year 1793 (Acta Hafn. or Skrivter af Naturhistorie-Selskabet, vol. 2,

part 2, p. 17, Slaagten Scyllarus) distinguished as species of *Scyllarus*: 1. *arctus* (Linn.); 2. *aequinoctialis*; 3. *antarcticus*; 4. *orientalis*. In this brief but admirable treatise Lund compares and distributes the illustrative figures from various authors, which had been so absurdly referred to a single species. At the same date Herbst gives a confused synonymy to his *Cancer* (*Astacus*) *arctus* (including *Scyllarus arctus*, Fabricius), but his description and figure make it quite clear that the species is *not* the *Cancer arctus* of Linnaeus discussed above, and further that it *is* the *Scyllarus orientalis* of Lund. Consequently, as the name *arctus* is preoccupied, Herbst's species so-called becomes a synonym of Lund's *orientalis*, subsequently referred to the genus *Thenus*, Leach.

Herbst's second species, *Cancer* (*Astacus*) *ursus major*, competes with Lund's third, *Scyllarus antarcticus*; since both writers agree in identifying the species with Rumph's tab. 2, fig. C, and Seba's tab. 20, fig. 1. Lund's specific name is misprinted *antarcticius* in the Suppl. Ent. Syst. of Fabricius, 1798, and misquoted as *ant-articus* by Milne Edwards in 1837. The latter author gives *C. ursus*, Seba, as the name applying to Seba's pl. 20, f. 3 [error for f. 1]. But Guérin, in the description of that plate (as reproduced in 1827) writes: "No. 1. *Ursa-cancer, seu Squilla lata, amboinensis*, Seb.—*Scyllarus antarcticus*, Fabricius." De Haan (Crust. Japon., decas 5, p. 133, 1841), has already called attention to the difference of Rumph's fig. C from others supposed to be identical. But Herbst's figure of *ursus major* and that which Milne-Edwards gives of *Ibacus antarcticus* in the illustrated edition of the "Règne Animal," pl. 45, fig. 3, are in good agreement, and Herbst's specific name having been accompanied by an excellent coloured figure from the first, should have a preference over Lund's name of the same date, but with a bare description. The species, after its transfer by Milne Edwards to *Ibacus*, Leach, was again transferred by Dana in 1852 to a new genus, *Parribacus*. Immediately after this transfer Dana proceeds to describe it as *Ibacus antarcticus* (Rumph), in U.S. Expl. Exp., vol. 13, p. 517, 1852, although Rumph has nothing to do with either the generic or the specific name, and was probably concerned with a different species of the genus. Herbst's figure is without the row of tubercles down the centre of the carapace, which are conspicuous in Seba's and Dana's figures and faintly marked in that given by Milne Edwards; but this detail does not appear to be important. The acceptance of the name *Parribacus ursus* (Herbst) in place of *Parribacus antarcticus* (Lund) has the advantage of displacing a name so puzzling and inappropriate as *antarcticus* for

a species recorded from the East Indies, Japan, and the Samoa Islands. There is a *Cancer ursus*, Fabricius, but that does not pre-occupy the use of the specific name in the clearly different genus *Cancer* (*Astacus*). Herbst's third species, *ursus minor*, instead of being a variety of *ursus major*, is accepted as a synonym of *Scyllarus arctus*. Lund's remaining species, *aequinoctialis*, is the type of *Scyllarides*, Gill. Hence each of the four species which Lund acutely distinguished stands now under a separate generic name, *Scyllarus*, *Scyllarides*, *Parribacus*, *Thenus*. Balss in his important treatise on East-Asiatic Decapoda (Abhandl. K. Bayer. Ak. Wiss., vol. 10, Suppl. 2, p. 81, 1914) states that "*Paribaccus papyraceus* Rathbun 1906," is a synonym of "*Paribaccus antarcticus* (Rumph.)," in his spelling of the generic name being no doubt misled by Bate's change of *Ibacus* into *Ibaccus*, which he also adopts, without noticing that the authors whom he cites usually follow Leach and Dana, though *Parribacus* is sometimes changed to *Paribacus*.

GEN. THENUS, Leach.

1815. *Thenus*, Leach, Trans. Linn. Soc. London, vol. 11, p. 338.
 1816. ,, Leach, Encycl. Britannica, ed. 5, Supplement, pp. 417, 419, Art. Annulosa.
 1825. *Scyllarus* (part), Desmarest, Consid. gén. Crustacés, p. 181.
 1837. *Thenus*, Milne Edwards, Hist. Nat. Crust., vol. 2, p. 285.
 1841. ,, de Haan, Crust. Japonica, decas 5, p. 151.
 1852. ,, Dana, U.S. Expl. Exp., vol. 13, p. 516.
 1888. ,, Bate, Rep. Voy. Challenger, vol. 24, pp. 56, 65.
 1891. ,, Ortmann, Zool. Jahrb., vol. 6, p. 38.
 1893. ,, Stebbing, Hist. Crust., Internat. Sci. Ser., vol. 74, p. 193.

In his Zoological Miscellany, vol. 2, p. 152, 1815, Leach remarks that "*Ibacus* is one of four distinct genera that have been confounded under the general appellation *Scyllarus*." He presently instituted the genus *Thenus*, to which Dana added *Parribacus* in 1852. The characters given by Leach for distinguishing *Thenus* from *Scyllarus* were, "*Hinder* legs with simple tarsi. *Thorax* subdepressed, broader anteriorly. *Eyes* inserted at the anterior angles of the thorax." The last character is emphasized by Herbst in his description of the type species by the remark that "in no single known insect do the eyes stand so far apart." Ortmann uses this character and the non-chelate fifth peraeopods of the female to distinguish

Thenus from *Scyllarus*, *Ibacus*, and *Parribacus*. The mouth-parts of the different genera are described by de Haan, whose work also shows that, while there are 21 pairs of branchiae in *Scyllarides*, *Parribacus*, *Ibacus*, and *Thenus*, there are only 19 pairs in *Scyllarus*. As, according to Miss Rathbun, *Scyllarus americanus*, S. I. Smith, is usually not more than half an inch long, great size is not an invariable characteristic of the "Mother-Lobsters."

THENUS ORIENTALIS (Lund).

1705. *Ursa Cancr*, Rumphius, D'Amboinsche Rariteitkamer, vol. 1, p. 3, pl. 2, fig. D.
 1758. *Cancr arctus* (part), Linn., Systema Naturae, ed. 10, p. 633.
 1775. *Scyllarus arctus* (part), Fabricius, Syst. Entom., p. 413.
 1793. " " " Fabricius, Ent. Syst., vol. 2, p. 477.
 1793. *Cancr (Astacus) arctus*, Herbst (not *arctus*, Linn., sensu strictiore), Krabben and Krebse, vol. 2, part 3, p. 80, pl. 30, fig. 1.
 1793. *Scyllarus orientalis*, Lund, Skrivter Nat.-Hist.-Selsk., vol. 2 part 2, p. 22.
 1798. " " Fabricius, Suppl. Ent. Syst., p. 399.
 1803. " " Latreille, Hist. Nat. Crust. Ins., vol. 6, p. 181.
 1815. *Thenus indicus*, Leach, Trans. Linn. Soc. London, vol. 11, p. 338.
 1816. " " Leach, Encycl. Brit., ed. 5, Suppl., p. 419.
 1825. *Scyllarus orientalis*, Desmarest, Consid. gén. Crust., p. 182, pl. 31, fig. 1.
 1837. *Thenus orientalis*, Milne Edwards, Hist. Nat. Crust., vol. 2, p. 286, and Règne Animal, illustr. ed. undated, pl. 45, figs. 2a-c.
 1888. " " Bate, Rep. Voy. Challenger, vol. 24, p. 66.
 1888. " " de Man, J. Linn. Soc. London, vol. 22, p. 261.
 1891. " " Ortmann, Zool. Jahrb., vol. 6, p. 46.
 1914. " " Balss, Abhandl. K. Bayer, Ak. Wiss., vol. 10, Suppl. 2, p. 80.

Ortmann assigns the species to Rumph, though without using Rumph's name for it. Jonston, Hist. Nat. de Exangvibus aquaticis, p. 21, pl. 4, figs. 3, 4, 8, 12, 1767, adopts the name *Ursa major* for three figures, 3, 4, 12, which on his

plate are called *Squilla lata*, while fig. 8 is named *Squilla Ursa minor*. The last appears to be *Scyllarus arctus*, and the position of the eyes suggests that fig. 3 is intended to represent *Thenus orientalis*. But as Jonston's work has been ruled out of court among treatises not consistently binomial, a discussion of his rude figures may be dispensed with.

The South African specimen is in unmistakable agreement with the illustrations by various authors cited in the synonymy. Milne Edwards speaks of the ocular peduncles in this genus as very long, no doubt meaning comparatively rather than absolutely. They enable the small cornea to project only very slightly beyond the lateral borders of the carapace. The stomach in our specimen is protruded, as happens sometimes with animals brought suddenly to the surface from a considerable depth. The first and second segments of the pleon have each a small medio-ventral process, the second much the smaller. Length of the specimen along the middle line, from the base of the cavity of the frontal process to the end of the telson 139 mm., breadth across front just behind the eyes 81 mm. Herbst says that the flesh of the animal is good eating, better than that of the lobster, as Rumph had observed many years earlier, though for actual comparison of flavours one would not expect *Astacus gammarus* to have been common in Amboyna, and *Thenus orientalis*, which is rare even in the East, can seldom have come to table in Germany.

Locality. Amatikulu River NW. by W. $\frac{1}{2}$ W. 12 miles (Natal); depth 26 fathoms. A 969.

TRIBE PENAEIDEA.

FAMILY PENAEIDAE.

(See these Annals, vol. 15, pt. 1, p. 11, 1914.)

GEN. SOLENOCERA, Lucas.

1850. *Solenocera*, Lucas, Ann. Soc. Entomol. de France, Ser. 2, vol. 8, p. 219.
 1884. ,, Koelbel, SB. Ak. Wiss., Wien, vol. 90 (1885), pt. 1 (1884), p. 314.

1885. *Solenocera*, S. I. Smith, Pr. U.S. Mus., vol. 8, p. 185.
 1895. „ Faxon, Mem. Mus. Comp. Zööl., vol. 18, p. 183.
 1901. „ Alcock, Catal. Indian Deep-sea Macrura, p. 19.
 1908. „ Bouvier, Camp. Sci. Monaco, fasc. 33, p. 86
 (with synonymy, p. 87).
 1910. „ Kemp, Fisheries Ireland, 1908, i., pp. 13, 20.
 1911. „ de Man, Siboga Exp., Mon., 39a, pp. 7, 45.
 1914. „ Balss, Abhandl. K. Bayer. Ak. Wiss., vol. 10,
 Suppl. 2, p. 5.

SOLENOCERA COMATUS, n. sp.

Plates LXXVII., LXXVIII.

The carapace is scabrous, the rostrum directed straight forward, only twice as long as deep, the medio-dorsal carina having a tooth just in front of the cervical groove, followed by a series of four teeth of which the hindmost is just behind the base of the orbit and the foremost separated by a distinct interval from the apical point; below this point the margin descends with a gentle curve adorned by a conspicuous series of plumose setae, to which the specific name alludes. Behind this series the lower margin of the rostrum is horizontal. The sides of the carapace have an antennal tooth and an antero-lateral, and on the surface a tooth a little above and behind the antennal with an apex not quite reaching the margin, and a tooth at the lower end of the cervical groove. The fourth, fifth, and sixth pleon segments are carinate, the sixth ending in a distinct tooth. The telson is shorter than the uropods, ending acutely, for nearly two-thirds of its length to the rear fringed with plumose setae, the last third narrow, with a pair of slightly divergent processes at its base which are not quite half its length.

The eyes are brownish red, short, with large oval cornea, protected by the first joint of the first antennae, this joint being as long as the second and third joints combined and having two small lateral teeth. The flagella are not quite twice the length of the peduncle, one flagellum about two-thirds the breadth of the other. In the second antenna the apical tooth of the scale reaches just beyond the setose margin; the flagellum (imperfect) considerably exceeds the length of the body.

The mandibular palp is very large and setose, with a twist at the base of the first joint, which is decidedly wider and not shorter than the long second, that being wide at the base, distally quite narrow. The plates of the lower lip are in close contact, longer than broad.

The "palp" of the first maxilla has a series of 5 long setae on the inner margin near the apex. The apical plate of the second maxillae has at the tip of its inner margin a notable tooth carrying spines on both edges and 3 on the surface. The long sinuous endopod of the first maxillipeds has a spaced row of very long setae on its sixth joint. The third maxillipeds are elongate, as is usual in the genus. The first pereopods are short, the second and third joints each produced into a tooth, the fourth rather longer than the fifth, the fifth longer than the sixth, the fingers rather less than twice the palm, their confronting margins armed with teeth distally for less than half the length. The cleansing apparatus of denticulate spines occurs near the apex of the wrist, and proximally on the palm. What remains of the fifth pereopod is long and slender.

The first pleon segment is ventrally produced into a short triangular process beset with slender spines, between the stout peduncles of the first pleopods. Of these the outer ramus is long and doubly serrate with the usual furniture of plumose setae; the inner ramus, attached much higher up, is short, pellucid, much of the feebly serrate outer margin fringed with setae, of which there are several also on the surface, while the smooth inner margin has but a single seta pointing inward near the base; the apex of this ramus is pointed, but the outer margin some way from the end forms a little oval lobe carrying a setule, before contributing to the apex proper.

The inner branch of the uropods is subequal in length to the telson, and has the end ovate, fringed round with plumose setae; the wider and considerably longer outer ramus has the outer margin straight, unarmed, its little apical tooth about on a level with the distal margin which at starting is only feebly convex.

The specimen measured 46 mm., the carapace with rostrum being 15 mm., the pleon 31 mm., of which the sixth segment and the telson each accounted for 6 mm. The flagella of the first antennae were about 16 mm. long, with 53 jointlets in the broader and 46 in the narrower flagellum, or thereabouts, for the counting is not easy. The imperfect flagellum of the second antenna was 60 mm. long, the third maxilliped 18 mm.

Locality. 33° 6' S., 27° 55' E.; depth 43 fathoms. A 1218.

Since the above description was written a male specimen from a neighbouring station has been observed, from which it will be convenient to supply some further details. The total length was practically the same, being 47 mm. Here the medio-dorsal carina has only 4 teeth, the 2 anterior teeth being rather far from the next to

the rear. The hands and fingers of the second and third peraeopods are very slender, the movable finger in each case extending somewhat beyond the fixed one. The fifth peraeopod is more slender and much less setose, but longer than the fourth, the difference in length of the fourth, fifth, and sixth joints being very marked, while the fingers are subequal, but the sixth joint in the fifth pair more than twice as long as the finger, in the fourth pair not more than once and a third of the finger's length.

The petasma, when unfolded and flattened, is seen to consist of two symmetrical conjoint halves, each ending in a rather broad, roughly oval lobe fringed on the outer end with 15 little teeth or spicules and on the inner end with 8 that are blunter but still microscopic. Before these transverse overlapping lobes are reached, each division has on its outer (inward folding) side a longitudinal lobe ending obtusely, although a thickening of the otherwise pellucid membrane gives the appearance of an inward curled hook. The second pleopods at the base of the endopod carry a trilobed process, one lobe unarmed extended outwards, the other two downwards on the inner side, one with a furniture of setae, the other with a small fringe of setules.

Locality. Nicea River, N. by W. 6 miles (near East London); depth 50 fathoms. A 1217.

GEN. PENAEUS, J. C. Fabricius.

(See these Annals, vol. 15, pt. 1, p. 12, 1914.)

PENAEUS SEMISULCATUS, de Haan.

1849. *Penacus semisulcatus*, de Haan, Crust. Japonica, decas 6, p. 191, pl. 46, fig. 1.

1911. „ „ de Man, Siboga Exp., vol. 39a, p. 97.

A specimen 148 mm. in length, with flagellum of the second antennae 245 mm. long, appears to belong to this species. It has a very small exopod on the fifth peraeopods, and the telson strongly sulcate. The petasma agrees well with that figured by Kishinouye for his *P. ashiaka*, which Dr. de Man identifies with *P. semisulcatus*, though not noticing the striking difference in length between the flagella of the first antennae as figured by Kishinouye for both sexes of *P. ashiaka* and those figured by de Haan for *P. semisulcatus*. The length represented by de Haan is exceeded by that in our specimen.

A female 160 mm. long (with telson slightly imperfect) has a thelycum corresponding with that figured by Alcock for *P. monodon*, which de Man supposed later to be *P. semi-sulcatus*. In this specimen the rostrum has 5 small ventral teeth instead of the usual three.

Locality. Delagoa Bay. A 2128-9. The specimen was obtained by Mr. K. H. Barnard in October 1912.

GEN. PENAEOPSIS, A. Milne-Edwards.

(For synonymy see these Annals, vol. 15, part 1, p. 15, 1914.)

PENAEOPSIS MONOCEROS (Fabricius).

1798. *Penacus monoceros*, Fabricius, Supplementum Ent. Syst., p. 409.
 1906. *Metapeneus monoceros*, Alcock, Catal. Indian Macrura, p. 18, pl. 3, figs. 7, 7a-c. (with synonymy).
 1911. *Penaeopsis monoceros*, de Man, Siboga Exp., vol. 39a, pp. 8, 55.
 1913. " " de Man, Siboga Exp., vol. 39a, Suppl., pl. 6, figs. 14a-c.
 1914. " " Balss, Abhandl. K. Bayer, Ak. Wiss., vol. 10, Suppl. 2, p. 7.

Dr. de Man distinguishes two sections in this genus. The first, to which this species belongs, he defines as follows: "No marginal subterminal articulating spines on the telson; last pair of thoracic legs without exopod; their merus in the adult male, with a notch and spine or tooth at its proximal end." The presence of this tooth in the adult male helps to distinguish this species from *P. spinulicauda*, Stebbing, 1914.

The specimen examined has 9 dorsal teeth on the carapace, the hindmost remote from the others, the end of the rostrum slightly upturned. The carapace has a length of 37.5 mm., the rostrum from the base of the eyes accounting for 15.5 mm.; the pleon is 68.5 mm. long, bringing the total to 106 mm. The flagellum of the second antenna measured 180 mm., this being probably its full extent, as it had to be extracted from what appeared to be secure shelter within the carapace and other parts of the animal. The slender fifth peraeopods were also protected by the carapace. Another specimen, 116 mm. long, has the flagellum of second antennae 225 mm. long, the flagella of the first pair only about 10 mm. in length.

Locality. Delagoa Bay. A 2128-9. The specimen was obtained by Mr. K. H. Barnard in October 1912. Another specimen, female, length 163 mm., flagellum of second antennae 430 mm., was earlier obtained by Dr. Gilchrist, together with a male of nearly the same size, off South Head of Tugela River, in depth between 12 and 14 fathoms, No. 149.

TRIBE CARIDEA.

(See these Annals, vol. 15, part 1, p. 28, 1914.)

FAMILY CRANGONIDAE.

1853. *Crangonidae*, Bell, British Stalk-eyed Crustacea, p. 255.
 1910. „ Stebbing, Ann. S. Afr. Mus., vol. 6, p. 382 (with synonymy).
 1914. „ Balss, Abhandl. K. Bayer, Ak. Wiss., vol. 10. Suppl., 2, p. 61.
 1914. „ Stebbing, Ann. S. Afr. Mus., vol. 15, part 1, p. 28.

GEN. PHILOCHERAS, Stebbing.

1862. *Cheraphilus* (part), Kinahan, Proc. Royal Irish Ac., vol. 8, pt. 1, p. 7.
 1900. *Philocheras*, Stebbing, Marine Invest. S. Africa, Crustacea, pt. 1, pp. 48, 49.
 1910. „ Kemp, Fisheries Ireland, 1908, pp. 135, 143.

The characters of this genus are very clearly explained by Mr. Kemp, and the species now to be described shows no disagreement with his exposition.

PHILOCHERAS MEGALOCHEIR, n. sp.

Plate LXXIX.

Of British and Irish species the present makes the nearest approach to *P. neglectus* (Sars), considered by Kemp to be only a variety of *P. bispinosus* (Hailstone and Westwood). It has only a single spine behind the rostrum, but it differs from the approximate species in having a much more broadly rounded rostrum, and still more in the great size of the hand and finger of the first peraeopods, to which

the specific name alludes. The finger is widely arched, and from its hinge the margin of the hand extends very obliquely to the widely projecting thumb, numerous setules lining the margin and resting on a membranaceous finely ribbed extension of the border. The small wrist has some little serrate spines at its inner corner, and a few of similar character are on the margin of the hand behind the thumb; otherwise these limbs are singularly devoid of any plumage, such as abundantly adorns the third maxillipeds and the much slighter second peraeopods. In the latter the hand is very insignificant, the feeble fingers much longer than the palm, which is not longer than its breadth. The telson is about three and a half times as long as its greatest breadth, tapering evenly almost to a point, but with a truncate apex just broad enough for a stout terminal spine, with a pair of much longer and more slender spines inserted in the margins just above it. The rami of the uropods are subequal in length to one another and to the telson, though from the manner of insertion the inner branch extends a little beyond the outer, and a little further still beyond the telson; the outer ramus is squarely truncate, its outer margin ending in a very small tooth on a level with the apical border.

The total length was 20 mm., of which the telson occupied 3 mm., a greater length than that of the sixth pleon segment.

Localities. Cove Rock NE. 2 miles; depth 25 fathoms (near East London). A 1317. And 33° 13' S., 27° 39' E.; depth 37 fathoms. A 1316.

FAMILY PALAEMONIDAE.

This family has been already considered in these Annals, vol. 6, part 1, p. 39, vol. 6, part 4, p. 383, and vol. 15, part 1, p. 30. In the first notice the new generic name *Macroterocheir* is proposed in place of Ortmann's subgenus *Macrobrachium*; in the second (a General Catalogue of South African Crustacea) five genera of the family are noted, these being, besides that just named, *Palaemon*, *Eupalaemon*, *Parapalaemon*, and *Leander*, but the species there named *Leander squilla* (Linn.) should, I think, rather be called *L. affinis* (Milne Edwards), and the result of raising Ortmann's subgenus *Eupalaemon* to generic rank is to make that name a synonym of *Palaemon*, Fabricius, *sensu strictiore*. *Palaemon quioianus*, Milne-Edwards, can no longer stand under *Palaemon* thus limited, and perhaps belongs to *Leander*. The characters of *Palaemon* as restricted by Ortmann have been very fully set out by de Man in 1892 and Coutière in 1905.

GEN. PALAEMON, Fabricius, s.s.

1798. *Palaemon* (part), Fabricius, Suppl. Ent. Syst., pp. 378, 402.
 1891. *Eupalaemon* (subgenus), Ortmann, Zool. Jahrb., vol. 5,
 pp. 696, 697.
 1892. „ „ de Man, in Max. Weber's Zool.
 Ergeb. Niederl. Ost.-Indien,
 vol. 2, p. 410.
 1902. „ „ de Man, Abhandl. Senck. Nat.
 Gesellsch., vol. 25, pt. 3, p. 763.
 1904. „ „ de Man, Trans. Linn. Soc. London,
 vol. 9, pt. 8, p. 291.
 1905. „ „ Coutière, Ann. Sci. Nat., Ser. 8,
 vol. 12, pp. 263, 273.
 1911. „ „ de Man, Notes from Leyden Mus.,
 vol. 33, p. 281.
 1912. „ „ de Man, Rev. Zool. Africaine,
 vol. 1, pt. 3, p. 413.
 1912. „ „ de Man, Ann. Soc. Zool. Belgique,
 vol. 46 (1911), p. 197.

PALAEMON SUNDAICUS, Heller.

(See these Annals, vol. 6, pt. 4, p. 384, 1910.)

The distinction of species in this family has been made largely to depend on the size, shape, and denticulation of the rostrum, the roughness or smoothness of the carapace and limbs, the relative proportions of various joints, details in the shape and armature of the chelae, and even on the position of small spines pertaining to the telson. Unfortunately for the systematist several of these characters are found to vary with the age or sex of individuals, and in some of these they may be obscured by wear and tear or by natural abnormality. While, therefore, it may be easy to say that such and such a species has been found in this or that locality, it may be a tedious business to confirm the statement.

The specimen here assigned to Heller's species is 100 mm. long, the carapace with the rostrum measuring 45 mm., and the telson 13 mm., equalling the length of the fifth and sixth pleon segments combined. The slightly imperfect rostral carina carries 10 or 11 dorsal teeth, much the longest interval being between the foremost 2 or 3 teeth and that next behind them; two of the teeth are behind the orbits; among the setules of the ventral margin 3 small teeth

could be felt. The carapace is very stout, with the hinder peraeopods contiguously paired beneath. The first peraeopods are very slender, with the wrist 14 mm. long, twice as long as the chela, the fingers of which are longer than the palm. The second peraeopods are both detached, one imperfect, but the remainder like its companion, these limbs being dark in colour, with none of the joints dilated, but the palm rather stouter than the wrist, that with the end unbroken measuring 126 mm. for the last 5 joints, composed as follows, beginning with the 3rd joint, 15, 24, 33, 54, 27 mm., the last of them, the finger, not adding to the length, as it closes accurately over the thumb which equals the palm in length and forms a very obtuse angle with it. The third, fourth, and fifth peraeopods are subequal, but the fifth rather the longest, all extending beyond the scale of the second antennae. The flagellum of these antennae attains a length of 153 mm., the longest flagellum of the first antennae (perhaps a little imperfect) measuring 118 mm. The uropods extend a little beyond the telson, and their exopod a little beyond the endopod.

Locality. Umlaas River, Natal; obtained by Dr. Gilchrist from salt water. A 1252.

PALAEEMON DELAGOAE, n. sp.

Plate LXXX.

The present species may be regarded as a link between *P. macrobrachion*, Herklots, and *P. sollaudii*, de Man, 1912, on both of which the latter author has bestowed so much accurate attention. In the form here assumed to be new the rostral carina has 5 ventral teeth, 9 dorsal, of which 2 are behind the orbit, and the foremost 3 are rather widely spaced; the oblique apex is perhaps imperfect. The carapace with rostrum measures 34.5 mm., the telson 10 mm., the intermediate part about 35.5 mm., thus giving a total of 80 mm. The slender first peraeopod is 34 mm. long. The right-hand second peraeopod has a total length of 108 mm., the 3rd joint 14 mm., 4th 19 mm., 5th 35.5 mm., the 6th 39 mm. In the 6th the palm counts for 25 mm., the thumb for 14 mm., the finger being only 13 mm. does not quite reach the thumb's apex; both are furred on their opposed margins. The second peraeopod on the left is decidedly shorter than its companion, the thumb (perhaps slightly imperfect) not reaching beyond the finger. Both of these limbs can with difficulty be seen to carry lines of microscopic prickles. The peduncle of the first antennae does not reach the end of the scale of the second,

and that scale falls a little short of the rostral apex. The mandible has a slender three-jointed palp, a tridentate incisor plate and a prominent molar ending in a group of three strong teeth. The palp of the first maxillae is apically deeply bifid. The telson has a pair of dorsal spines at the middle, two pairs on the sides of the triangular apex, the outer pair very small, a group of feathered setae extending beyond the inner pair; microscopic prickles fringe the lateral margins, and perhaps extend over much of the surface. Of the intermediate pair of dorsal spines the left-hand spine could not be discerned.

Locality. Mouths of rivers flowing into Delagoa Bay yielded a single specimen, named after the bay. A 2196.

GEN. LEANDER, Desmarest.

(See the General Catalogue of South African Crustacea, 1910, in these Annals, vol. 6, p. 386, where for *Leander squilla* should, I now think, be read *Leander affinis* (Milne Edwards). See also Trans. R. Soc. Edinb., vol. 50, p. 286, 1914, and these Annals, vol. 15, p. 81.)

LEANDER PERINGUEYI, n. sp.

Plate LXXXI.

This species belongs to the section of the genus in which the palp of the mandible is three-jointed, in company with *L. serratus* (Pennant), *L. affinis* (Milne Edwards), *L. adspersus* (Rathke). But from all the congeneric forms with which I am acquainted it is distinguished by its peculiar rostrum. A small tooth on the carapace is followed at a well-marked interval by a series of 4 teeth, successively larger, the hindmost of them slightly behind the base of the eyestalk; to these again at an interval succeeds a series of 3 small teeth successively smaller, leading to a slightly upturned apex, broad in lateral aspect, its ventral margin receding to a broad cavity formed by a curved acute process at some distance to the rear, with no other ventral teeth except a microscopic spinule between the apex and the cavity. The telson is sharply carinate for half its length, twice as broad at its base as distally at the base of its little acute apical triangle, this base being furnished with a pair of long spines, between which are two rather longer setae, while they are flanked by a pair of much smaller spines. From the 2 pairs of dorsal spines normally to be expected, one spine of the upper pair is wanting in this specimen.

In the first antennae the second and third joints are subequal in

length, the first longer than both combined; the flagella, not absolutely perfect, show a length of about 40 mm. for the stouter, and about 30 mm. for the slighter, the small third flagellum which separates from the former, has a free course of about 22 joints, together equal in length to the first joint of the peduncle.

The incisor process of one mandible shows 4 teeth, that of the other only 3; the palp is very slender, the third joint longer than the first and second combined. The inner lobe of the apical plate or palp of the first maxillae is armed at the inner corner with a little spine which is twisted outwards, but this and various other details of the mouth-organs occur similarly in *L. affinis*. At the apex of the third maxilliped that species has a single strong spine, where the present specimen has two such spines, but the variation may be a casual one.

In the first pereopods the fifth joint is nearly twice as long as the chela; in the second pair the fingers are about five-sixths the length of the palm.

The specimen, a female laden with eggs, had a total length of 66 mm., the carapace with rostrum accounting for 23 mm., and the telson for a little over 8 mm.

Locality. 33° 49' S. lat., 25° 56' E. long. A 1276.

The specific name is given as a mark of respect to Dr. Péringuey, Director of the South African Museum and Editor of these Annals.

LEANDER GILCHRISTI, n. sp.

Plate LXXXII.

This species differs, so far as I can find, from all other forms in the genus by having a good-sized distal tooth both on the dorsal and ventral margins of the rostrum, advanced nearly as far as the slightly upturned acute apex; there are in all 7 dorsal teeth, the hindmost situated on the carapace a little remote from the next, which is slightly behind the base of the orbit; the three anterior are a slightly larger group than the three behind, and correspond pretty precisely with the three ventral teeth. The telson is in very close agreement with that of *L. peringueyi*, but the apex is more abruptly narrowed, and the accompanying plumose setae are shorter instead of longer than the two long spines between which they extend. All four dorsal spines are present, but, as the figure shows, not symmetrically arranged, those on the left being wider apart than those on the right.

In the first antennae the teeth of the first joint are wider apart than in the other species, and the short flagellum separates from its companion sooner, the common portion showing only six instead of nine components; the companion (seemingly almost complete) is about four times as long.

The mouth-organs show no differences of any apparent importance, unless it be that the present specimen shows less expansion at the base of the exopod in the first maxillipeds and less flexure of the antepenultimate joint of the third pair.

In the first peraeopods the fourth and fifth joints are here rather shorter in relation to the third joint and the chela, and in the second peraeopods the fifth joint is here not longer than the palm of the chela.

The total length of the specimen, a female with eggs, was 57 mm.

Locality. East London wood, where, as long ago as April 4, 1900, it was taken by Dr. J. D. F. Gilchrist, after whom I have the pleasure of naming it.

GEN. PALAEMONETES, Heller.

1869. *Palaemonetes*, Heller, Zeitsch. wiss. Zool., vol. 19, p. 157.
 1890. „ Ortmann, Zool. Jahrb., vol. 5, p. 513.
 1904. „ Rathbun, Decap. Crust. N.W. coast of N. Amer.,
 p. 30.
 1906. „ Norman and Scott, Crust. Devon and Cornwall,
 p. 20 (with synonymy).
 1910. „ Kemp, Fisheries Ireland, 1908, pp. 127, 132.
 1912. „ Rathbun, Bull. Mus. Comp. Zoöl, vol. 54,
 p. 451.

In 1899 Borradaile instituted a genus *Palaemonopsis* for a specimen from New Britain, agreeing with *Palaemonetes* in the absence of a mandibular palp, but differing from it in having on each side of the carapace one antennal spine only. In these two respects the specimen about to be described agrees with *Palaemonopsis*, but differs so considerably from it in the first antennae and the second peraeopods that it cannot safely be assigned to that genus. On the other hand, with the first and third peraeopods missing, I am unwilling to found upon it another genus while the much-needed revision of the family Palaemonidae, to which Mr. Kemp has called attention, is still in abeyance.

PALAEMONETES NATALENSIS, n. sp.

Plate LXXXIII.

The dorsal teeth of the carapace are eleven in all, three behind the base of the orbit, followed by seven in close succession on the rostrum, but the two foremost more widely spaced than the rest, and finally a longer interval leading to a denticle just in advance of the apex; the three ventral teeth nearly correspond in position with the dorsal three behind the denticle. The sixth pleon segment is much longer than the fifth. The telson is nearly three and a half times as long as its greatest breadth, narrowing evenly to a shallowly triangular apex, the median point flanked by two small spines, outside of which is a much larger pair, with a very small pair at the corners similar to two lateral pairs, one about at the middle of the telson's length, the other intermediate between that and the apex.

In the first antennae the third joint is less than twice as long as broad, shorter than the second, both combined much shorter than the first, which has an apical tooth, the basal spine reaching little beyond the middle of the joint and scarcely beyond the globular cornea of the eye; the stouter flagellum with its longer branch is considerably longer than the peduncle; the shorter branch, which is also rather the stouter, is subequal in length to the part from which both branches spring, and combined with that part gives a length equal to the peduncle; the more slender independent flagellum equals in length the stouter in combination with its longer branch. The proportions of these flagella in *Palaemonetes varians* (Leach) and *Palaemonopsis willeyi*, Borradaile, differ markedly from those just described. The scale of the second antennae differs little from that of *P. varians*, the flagellum, which is incomplete, could scarcely have been the full length of the body.

The incisor process of the mandible has three unequal teeth. The palp of the first maxilla is apically bilobed, with a little upturned tooth or spinule on the inner lobe. In the second maxillae the *lacinia interna* is not produced into lobes, the median lobes are very slender, and the apical plate is unarmed. In the second maxillipeds the second and third joints are completely fused, the large sixth joint a little outflanks the large transversely attached and strongly fringed seventh. The antepenultimate joint of the third maxillipeds is long and curved, the exopod reaching nearly to its apex.

First peraeopods unknown; the second have the fourth joint about as long as the first three combined, considerably longer than the

fifth joint or carpus, which in turn is a little longer than the slender chela; proportions, quite unlike those in the two species above compared; the fingers close tightly together and are subequal in length to the palm; there are several groups of setae on the fixed finger, and a group near the apex of the carpus. The fourth and fifth pereopods are nearly alike, the long fourth and sixth joints subequal in length, but decidedly less than twice as long as the fifth joint without reckoning the little lobe by which that overlaps the sixth; the finger is very small and curved, about a tenth as long as the sixth joint. A little tooth precedes its upturned point, but this may be in preparation for the moult.

The first pleopod has a very short inner branch. The branches of the uropods are broad, the outer one a little the longer, much extended beyond the little apical tooth of the outer margin.

Total length 32 mm., carapace with rostrum 12.5 mm.

Locality. Cape Natal N. by E. 24 miles; depth 440 fathoms. A 1275.

The specimen had a very uninviting appearance, as if covered in all directions by a sort of scurf. This, however, was easily removed, and eventually proved to consist chiefly of the ova of some Epi-caridian, together with the larvae in great numbers, minute objects considerably less in total length than half a millimeter, otherwise in close agreement with the figures given by Sars (Crustacea of Norway, vol. 2, pl. 94) for the male larvae of *Dajus mysidis* (Kröyer).

FAMILY ALPHEIDAE.

1888. *Alpheidae*, Bate, Rep. Voy. Challenger, vol. 24, p. 528.
 1899. „ Coutière, Thèse à la Faculté des Sciences Paris
 (with bibliography), Ann. Sci. Nat. Zool., Ser. 8,
 vol. 9.
 1899. „ Borradaile, Willey's Zool. Results, pt. 4, p. 415.
 1901. „ Alcock, Indian Deep-sea Macrura, p. 139.
 1905. „ Coutière, Fauna Maldives-Laccadive Archip., vol. 2,
 pt. 4, p. 852.
 1911. „ de Man, Siboga Exp., vol. 39a', p. 135 (Suppl.
 Plates, 1913).
 1913. „ Zimmer, Zool. Jahrb., Suppl. 11, pt. 3, p. 381.
 1914. „ Balss, Abhandl. K. Bayer. Ak. Wiss., vol. 10,
 Suppl. 2, p. 37.

Through the above-cited authorities numerous other refer-ences may be traced.

GEN. ALPHEUS, Fabricius.

1798. *Alpheus*, Fabricius, Suppl. Ent. Syst., pp. 380, 404.

Notice has been already taken of this genus in the General Catalogue, South African Crustacea, part 5, 1910. The literature discussing it is very extensive.

ALPHEUS NOTABILIS, n. sp.

Plates LXXXIV., LXXXV.

The interesting specimen here described, besides being solitary, was without flagellum to the second antennae, had only one member of the first pair of peraeopods, neither of the second pair, and only one representative for each of the three following pairs. All the limbs were detached, but as there was no other specimen in the bottle there can be no reasonable doubt that the limbs belonged to the body which they accompanied.

The rostrum protrudes from between the raised and distally rounded eye-lobes and its carina is continued along two-thirds of the carapace. The covered eyes are dark and sub-rotund. In the first antennae the second joint is nearly as long as the first and two and a half times as long as the third; the shorter flagellum has its thickened part about half as long as its slender companion, with a slender 12-jointed continuation equal to nearly a third of the preceding length; this is composed of 26 joints, only the last of them having a freely projecting tip, which carries two long sensory filaments, 19 pairs of filaments being distributed over 9 joints. The well-marked apical tooth of the bent and strongly plumose scale of the second antennae just reaches the apex of the plumose portion.

The incisor process of the mandible has one rather large tooth between three or four much smaller teeth above and five very minute ones below; the powerful molar is fringed with combs or brushes of hair-like teeth; the palp with seta-fringed second joint is bent as usual on to the inner surface of the mandible. The palp of the first maxillae has a bilobed apex, with a single spine on the tip of the inner lobe. The corresponding joint of the second maxillae is small with a spinule at the narrow apex and a few setae low down on the outer margin. In the slender terminal part of the endopod of the first maxilliped the jointing is obscure. In the second maxillipeds there is a very large branchial plate attached to the first joint, the second and third joints are completely coalesced, the part representing the third joint being distally expanded, the sixth is

strongly dilated above the fifth, and the transversely apposed seventh is strongly spined. The third maxillipeds have the antepenultimate joint long and twisted, the penultimate distally expanded beyond the insertion of the last joint; this inward expansion carries a group of straight setae extending beyond the last joint, which is more than twice the length of the penultimate and itself very copiously furnished with long setae.

The first peraeopod, which from its structure is no doubt the smaller cheliped of the present species, is remarkable alike for its setose furniture and the great length of the hand. The character naturally suggested a comparison with *Alpheus longimanus*, Bate (Rep. Voy. Challenger, p. 551, pl. 98, fig. 4), a species which I cannot find mentioned in Dr. de Man's admirable monograph of the family, nor indeed by any other authority since its publication. Bate declares that the second peraeopods have the "carpos six-articulate," which would be a very important feature, were not the importance discounted by the circumstance that his figure clearly shows the wrist normally five-jointed. In the first antennae he represents the shorter flagellum as much less than half the length of the other, and in the second antennae the long joint of the peduncle overtops the scale, whereas in our specimen it does not reach the top of it. In the smaller first peraeopod Bate describes the fingers as "nearly, and in some instances quite, as long as the propodos," meaning of course the palm. In our species the fingers are very considerably shorter than the palm, and the fringes of very long setae with which fingers and palm are alike begirt are exceedingly notable. The fourth joint on the outer edge is as long as the palm, and on the inner edge near the base shows four slender spines and is lightly fringed with setae. The third and rather shorter fourth peraeopods have each the sixth joint fringed with long setae; the more slender fifth has the distal half of the sixth joint's inner margin fringed with more than twenty little groups of setae, increasing in size as they approach the straight pointed finger.

The first pleopods have the inner ramus very short, both rami fringed with long setae. In the second pair the inner ramus is longer than the outer, with a long slender retinaculum. In both pairs the peduncle is elongate, with stout setae above and below on the inner margin for holding the ova. The uropods are very broad and strongly plumose, the outer ramus rather the longer, a diaeresis ending in a small tooth low down. The telson is peculiar in shape, narrowing a little above the middle, at five-sixths of the length each

lateral margin ending in a little tooth, the remaining sixth forming a half oval fringed with 14 pairs of long plumose setae.

The total length of the body was 30 mm., the carapace being 10 mm. long and the telson 5 mm.

Locality. Delagoa Bay, the specimen obtained by Mr. K. H. Barnard. A 2130.

ALPHEUS LOTTINI, Guérin.

- 1826-30. *Alpheus lottini*, Guérin, Voy. de La Coquille, Atlas, Crust., pl. 3, fig. 3.
 1837. „ *ventrosus*, Milne Edwards, Hist. Nat. Crust., vol. 2, p. 352.
 1837. *Alpheus lothini*, Milne Edwards, Hist. Nat. Crust., vol. 2, p. 353 footnote.
 1838. *Alpheus lottinii*, Guérin Méneville, Voy. de La Coquille, Zool., vol. 2, pt. 2, p. 38.
 1839. *Alpheus laevis*, Randall, J. Ac. Sci. Philad., vol. 8, p. 141.
 1852. „ „ Dana, U.S. Expl. Exp., vol. 13, p. 556, pl. 35, fig. 8a-h.
 1899. „ „ Coutière, Ann. Sci. Nat. Zool., Ser. 8, vol. 9, pp. 250, 262, figs. 307, 324, 325.
 1905. *Alpheus ventrosus*, Coutière, Maldive-Laccadive Archip., vol. 2, pt. 4, p. 882.
 1911. „ „ de Man, Siboga Exp., vol. 39a', pp. 311, 339.

Milne-Edwards says that "L'Alphée de Lottin dont il a été publié une bonne figure, mais dont la description n'a pas encore paru, paraît être très-voisine de l'espèce précédente," namely, his own *Alpheus ventrosus*. But the description of *A. ventrosus* does not seem to justify any claim for the priority of that name over Guérin's *A. lottini*. Bate's figure of *A. laevis* in the *Challenger* report cannot easily be reconciled with the species here in question.

Our specimen, a female with eggs in a forward state of development, was unfortunately bereft of both members of the first pair of peraeopods. The second pair were attached to the body, and by their comparative stoutness and the relative lengths of the five compartments of the wrist are in unmistakable agreement with the figures by Dana and Coutière. A similar agreement is shown by the broad blunt-ended fingers of the hinder peraeopods, a character so unlike that which is found in most members of the genus. In the uropods a strong dark spine is extended from within and beyond the

distal tooth of the outer margin of the outer ramus. The apical breadth of the telson is a fourth of its length, as measured between the distal points of the lateral margins, beyond which it extends in a shallow three-sided convexity, bordered with plumose setae two central spines and a small and large pair at the corners. Between the mouth-organs of this and the preceding species there are several small differences of detail.

Total length of specimen 22 mm., the carapace 7 mm., the telson 3 mm.

Locality. Delagoa Bay, where the specimen was obtained by Mr. K. H. Barnard. A 2123.

ALPHEUS DISSODONTONOTUS, n. sp.

Plate LXXXVI.

This striking species is closely allied to *Alpheus praedator*, de Man, 1908, and to *A. bidens* (Olivier), as recently described and figured by de Man, who finds a synonym of it in *A. tridentatus*, Zehntner (Revue Suisse Zool., vol. 2, p. 204, pl. 8, fig. 24, 1894). The remarkable feature of these rare forms is the presence of two strong teeth on the back of the carapace, not beside the rostral tooth, but well to the rear of it. To this feature the new specific name refers, in agreement with Olivier's *bidens*, while the addition of the rostral tooth would justify the epithet *tridentatus*. In the two earlier species the medio-dorsal carina is interrupted behind the dorsal teeth and resumed with an obtuse tubercle. In the new species this tubercle is not found, and the dorsal teeth are separated from the carina by a very narrow groove. The most obvious further distinction is in the second pereopods, in which the first carpal joint is decidedly longer than the second, instead of shorter as in the other two species. The telson is just twice as long as its greatest breadth at the base; the apical curve is closely fringed with 24 strongly plumose setae and numerous short spines, with a very small pair at the outer corners and a rather larger pair just within this small pair. The upper dorsal pair of spines is a little above, and the lower pair a little below the middle of the telson.

The globular eyes are clearly visible beneath the inflated hoods; as to the latter de Man says that in *A. praedator* "the eye-hoods end anteriorly in an obtuse tubercle"; in the present species it is the eyes themselves that show a small tubercle which seems to project clear of the hoods. The first antennae have a broad stylocerite, the

sharp apex of which reaches the end of the first joint, the second is shorter than the first but considerably longer than the third joint; the stouter flagellum consists of 17 thick joints followed by 10 that are thinner; the other flagellum is more than thrice as long. In the second antennae the tooth of the scale reaches only a little beyond the setose portion of the blade, which slightly overtops the peduncle.

The incisor process of the mandible is broad, convex, its middle tooth the largest, the rest successively smaller in each direction. The first maxilla has the palp bifid, with a single spine at the apex of its inner lobe. The second maxilla has the palp weak, with a spine on its narrow apex, and the adjoining plate (*lacinia media*) appears to be completely undivided. The short, transversely articulated, finger of the second maxilliped is of notable breadth. The antepenultimate joint of the third maxilliped is strongly curved, thus differing from the straight form of that joint as figured by de Man for *A. praedator*, but the difference may be referable to the much smaller size of the specimen by which that species is represented; in both species the terminal joint carries very long setae; in the present the little epipods of these maxillipeds have hook-shaped apices as shown in the figure, and the same character may be noticed in the second peraeopods.

The relative dimensions of the large left and the much smaller right cheliped of the first pair may be judged from the figures, the left hand being about 19 mm. and the right about 12 mm. long. Notwithstanding the great difference in the bulk of the hands, the fourth joint is about the same for each limb, and has in each a sharp ridge ending in a conspicuous tooth. In the second peraeopods the first jointlet of the wrist is equal to the last three combined and decidedly longer than the chela, the fifth is longer than the third or fourth but not equal to both combined; the second jointlet is equal to the chela, in which the fingers are somewhat longer than the palm. In the third and fourth peraeopods the fourth joint has the inner margin produced into a prominent subapical tooth; in the third pair there are seven spines along the inner margin of the sixth joint; in the fourth pair only six spines in this position. The fifth pair is more slender, its fourth joint without the sub-apical tooth, its fifth joint rather longer than in the other two pairs. In all the fingers are simple.

The uropods are of great breadth, strongly fringed with plumose setae, the diaeresis of the outer ramus not strongly sinuous.

The total length of the specimen, a female with globular ova,

measured round the back was 44 mm., the carapace being 13.5 mm., the telson 6 mm. long.

Locality. 33° 50' S., 25° 46' E. ; depth 20 fathoms. A 1561.

GEN. SYNALPHEUS, Bate.

1888. *Synalpheus*, Bate, Rep. Voy. Challenger, vol. 24, pp. 480, 572.
 1899. ,, Coutière, Ann. Sci. Nat. Zool., Ser. 8, vol. 9,
 pp. 154, 334, etc.
 1905. ,, Coutière, Fauna Maldive-Laccadive Archip.,
 vol. 2, pt. 4, pp. 853, 869.
 1909. ,, Coutière, Pr. U.S. Mus., vol. 36, pp. 1-93.
 1911. ,, de Man, Siboga Exp., vol. 39a, p. 185.
 1913. ,, Zimmer, Zool. Jahrb., Suppl. 11, pt. 3, p. 381.

In Bate's original definition of the genus a salient point is the statement that the mandibles have a curved, sharply pointed, and almost rudimentary incisor process, with a small two-jointed palp. But Professor Coutière in 1899 explains that, while this is true for the single species on which Bate founded his genus, there are gradations which lead through closely allied species from this form of mandible to that which may be regarded as normal in this genus and *Alpheus*. Authors may well be excused for not foreseeing discoveries of this kind, since in the process of evolution every peculiarity, however striking, is liable to be neutralized in the same way for purposes of classification. A new and full description of the generic character is given by Coutière in 1899. As often happens, some of the features are shared with neighbouring genera, and some of the distinguishing points, besides the incisor of the mandibles, are alternative. Since 1888 there has been an amazing development of the genus, for in place of the single species then assigned to it by Bate, de Man in 1911 enumerated 62 species and 15 varieties from the Indo-Pacific region alone. In the discrimination of these species minute measurement plays an almost alarming part, because as the eyes are completely covered by the carapace the vision of these creatures must be dim, and without compasses the members of different species will never know one another apart. Perhaps indeed the numerous varieties may be the result of inconsiderate intermarriages.

In 1909 Coutière distributed the species then known among six groups, with keys which must be invaluable to those who

have varied material available for study. The *Comatularum* group is distinguished from the rest by having "supraorbital spines insignificant compared to the rostrum," while the others have these spines "at least equal to the rostrum in importance." Our South African species does not conform to either condition, but neither does Coutière's own, *S. paraneomeris*, 1905, since there the variable rostrum is described as always more or less, though not very considerably, longer than the supraorbital spines.

SYNALPHEUS ANISOCEIR, n. sp.

Plate LXXXVII.

Rostrum twice as long as breadth at the base, supraorbital spine not reaching the level of the rostral apex. Telson at base twice as broad as the interval between its postero-lateral teeth; between these the margin is produced to rather less than a semicircle, fringed with (about 30) plumose setae, a notch at each corner containing a small and a larger spine, the dorsal spines wide apart, the anterior pair not quite symmetrically placed, but in line with the lateral teeth the left-hand spine is slightly above, the right-hand slightly below the middle.

Peduncle of first antenna with spine of first joint longer, but the trunk rather shorter than second and third joints combined; the shorter flagellum with the stouter portion 10-jointed, as long as the peduncle, the last five joints carrying sensory filaments, the terminal point free, the slender continuation showing 6 joints, but imperfect; the slender flagellum is more than twice the length of the stout portion of its companion. In the second antennae the long joint or carpus of the peduncle reaches a little beyond the end of the long spine of the scale, this tooth reaching well beyond the blade of the scale and remaining free from it to below the middle; the blade itself is apically rounded and fringed with setae round the apex and inner margin, the remaining portion of the flagellum is 18-jointed, as long as the peduncle, and by its stoutness rather suggesting a length exceeding that of the first antennae. Coutière assigns to the *Comatularum* group "antennules shorter than the antennae," but to the other groups "antennules at least equal to the antennae." I am forced to join the conspiracy of silence which in the description of species seems invariably to leave this part of the organism indeterminate.

The incisor process of the mandible has seven well-pronounced but unequal teeth. The palp of the first maxilla is bilobed, with a single spine on the apex of the shorter inner lobe. The last joint of the third maxillipeds has some strong spines on the obliquely truncate apex, one surface thickly set with rows of spines, the preceding joint very short.

The asymmetry of the first pair of peraeopods is characteristic of the genus, but in this species, besides the usual diversity of form, the inequality of size in the hands, alluded to by the specific name, seems to be carried to an extreme. While the smaller chela is 3.5 mm. long by 1.3 mm. broad, the larger is 8.5 mm. long by 3.5 mm. broad, with a corresponding difference in thickness. Notwithstanding this great difference in the bulk of the hands the three preceding joints differ but little in size in the pair. In the second peraeopods the first jointlet of the carpus is rather shorter than the four following combined, the second, third, and fourth each little longer than broad, combined rather longer than the fifth, which equals the palm of the chela and is slightly shorter than the fingers; the fixed finger has several tufts of stiff setae. The fingers of the fourth and fifth peraeopods are strongly curved at the pointed apex, within which is a short tooth. The sixth joint of the fourth pair has 6 spines along the inner margin, which in the fifth pair carries numerous tufts of spinules. The rami of the pleopods are broad, and much more so those of the uropods, the outer of which is prolonged considerably beyond the tooth of its outer margin; between this and a longer inner tooth are planted two conspicuous spines; from the inner tooth starts the very sinuous diaeresis. Besides the extensive marginal fringes of plumose setae, the inner ramus down the centre of its ventral surface has numerous rows of spines. The ova are large, 2 mm. long, showing the eyes, but have become hardened. The total length of the mother was 18 mm., the carapace 7 mm. long, and the telson 2.5 mm.

Locality. Gordon's Bay, False Bay, whence it was obtained by Dr. Gilchrist more than ten years ago. A 1555.

GEN. ATHANAS, Leach.

1814. *Athanas*, Leach, Edinb. Encycl., vol. 7, p. 432.
 1817. „ Leach, Malac. Podophth. Britanniae, text to pl. 44,
 No. 14.
 1863. „ Heller, Crust. südlichen Europa, p. 280.
 1898. „ Borradaile, Pr. Zool. Soc. London, p. 1011.

1899. *Athanas*, Coutière, Ann. Sci. Nat., Thèse "Alpheidae," passim.
 1905. ,, Coutière, Fauna Maldive-Laccadive Archip., vol. 2,
 pt. 4, p. 856.
 1908. ,, Coutière, Bull. Soc. Philomathique, n. Ser., vol. 11,
 No. 5, p. 2.
 1911. ,, de Man, Siboga Exp., vol. 39a', p. 144.

ATHANAS, sp.

The specimen, an ovigerous female, was in a fragmentary condition, having none of its peraeopods except one member of the second pair, and the flagella of both pairs of antennae imperfect. Hence its systematic position cannot well be determined. The carapace agrees with *A. nitescens*, but the first joint of the first antennae is little longer than the second, the eleven remaining joints of its flagellum show no sign of a division, and the stylocerite springs nearly from the base of the peduncle and overlaps the base of its third joint. The scale of the second antennae is very broad, the tooth of the straight margin not reaching beyond the broadly convex distal margin. In each mandible the excisor process has 12 teeth, 6 large and 6 small, more or less regularly graduated from each corner in a broad curve; the second joint of the palp is fringed round the distal half or rather more with long setae. In the second maxillipeds the second and third joints are coalesced, the fifth joint is short, having the tongue-like process of the sixth bent against and beyond it, carrying as it were in transverse attachment the spinose finger, a broad short strip.

The second peraeopod has the third and fourth joints subequal in length, the first division of the wrist nearly as long as the other four combined, the second and third scarcely shorter than the fourth, and these three combined scarcely longer than the fifth; the chela is as long as the three preceding divisions of the wrist combined, the finger as long as the palm.

The branches of the uropods are not quite so broad as the telson, the inner subequal to it in length, the outer a little longer, with the part following the diaeresis broader than long. The broad convex distal margin of the telson has markings indicative of 14 pairs of setae within the pair of teeth and attendant spines at the corners; there are two pairs of dorsal spines not far from the smooth slightly converging lateral margins, the upper pair a little above, the lower a little below, the middle of the telson.

Total length 15 mm., the telson 2·5 mm.

Locality. False Bay, St. James (taken by Dr. Gilchrist).
 A 1296.

FAMILY HIPPOLYTIDAE.

1910. *Hippolytidae*, Stebbing, Ann. S. African Mus., vol. 6, pt. 4
p. 390 (with synonymy).
1912. „ M. J. Rathbun, Bull. Mus. Comp. Zoöl., vol. 54,
p. 454.
1914. „ Kemp, Records Indian Mus., vol. 10, pt. 2,
p. 81.
1914. „ Stebbing, Ann. S. African Mus., vol. 15, pt. 1,
p. 34.

Miss Rathbun adds a new genus *Barbouria*. Mr. Kemp adds two new genera, *Gelastocaris* and *Merquia*, and supplies a valuable key to 15 Indo-Pacific genera of the family.

GEN. HIPPOLYTE, Leach.

1814. *Hippolyte*, Leach, Edinb. Encycl., vol. 7, p. 431.

HIPPOLYTE KRAUSSIANUS (Stimpson).

1860. *Virbius kraussianus*, Stimpson, Pr. Ac. Sci. Philad., p. 105 (36).
1910. *Hippolyte kraussiana*, Stebbing, Ann. S. African Mus., vol. 6,
pt. 4, p. 391.

Three specimens in good agreement with Stimpson's description have been obtained by the *Pieter Faure*. One of them 29 mm. long considerably exceeds the size mentioned by Stimpson, and the rostrum much exceeds the length of the peduncle of the first antennae, though not reaching the apex of the scale of the second, and otherwise conforming to Stimpson's account, "above at the base bidentate, at the apex tridentate, on the lower margin quadridentate." A second specimen, a female, ovigerous, 18 mm. long, practically agreeing in this respect with Stimpson's, has, like his, the rostrum little longer than the peduncle of the first antennae, with the dentation numerically the same, except for the addition of a minute ventral tooth. This, however, does not exclude a different arrangement of the teeth in our two specimens, the ventral teeth in the larger being much more remote from the apex than in the smaller, and its median apical tooth being advanced beyond its smaller neighbours above and below, whereas in the smaller specimen the lowest tooth of the three is the largest and the most advanced. In the third specimen,

only 13 mm. long, and very insignificant in bulk compared with the first, the rostrum again is little longer than peduncle of the first antennae, but it has only one ventral tooth in addition to that of the apical trio, both the other members of which reach beyond it, the median tooth greatly exceeding both its partners. In the smaller specimens the flagella of the first antennae might justify Stimpson's characterization of them as subequal, but in the largest specimen the more slender flagellum is considerably the longer. The flagellum of the second antennae appears to be as long as the body; the scale is broad, the apical tooth of the outer margin not nearly reaching the end of the broadly rounded setose distal border.

The mandibles have a strong molar, the incisor process weak, ending in five little teeth. First maxillae with a short twisted palp. Second maxillae with lowest lobe receding, fringed with a few long setae, apical plate bent, tipped with one spine. First maxillipeds with the slender distal part of the endopod rising from a broad membranaceous base. Finger of second maxillipeds short, broad, with fan-like fringe of slender spines.

First peraeopods short, stout, fingers shorter, wrist rather longer than palm and subequal to the fourth joint. Second peraeopods, with wrist subequal to fourth joint, its proximal division as long as the other two combined, the third longer than the second. Fifth peraeopods having the finger fringed with 8 graduated spines, the largest adjoining the unguis, which is backed by a spine slightly longer and more slender.

Postero-lateral angles of the sixth pleon segment acute. Outer ramus of the uropods broad, its outer margin smooth, ending in a small tooth, within which is a large spine, the distal border of the ramus extending some way further, fringed with setae. The elongate telson has two pairs of dorso-lateral spines, as stated by Stimpson, but also three pairs of different sizes on the apex.

Localities. Knysna $\frac{1}{4}$ mile above jetty. A 1282. A specimen, ovigerous female, from East London, sent to the Museum by Mr. Wood, agrees with the largest of the three specimens described above exactly in the rostral character, and has a total length of 32 mm. A 1281.

GEN. SPIRONTOCARIS, Bate.

1888. *Spirontocaris*, Bate, Rep. Voy. Challenger, vol 24, pp. x, 576, 595.
1898. ,, Walker, Tr. Liverpool Biol. Soc., vol. 12, p. 276.
1904. ,, Rathbun, Decap. Crust. NW. Coast N. America, pp. 5, 56-107.
1906. ,, Norman and Scott, Crustacea of Devon and Cornwall, p. 18.
1906. ,, Calman, Ann. Nat. Hist., Ser. 7, vol. 17, pp. 31, 32.
1910. ,, Kemp, Fisheries Ireland, 1908, i., pp. 99, 102.
1914. ,, Balss, Abhandl. K. Bayer. Ak. Wiss., vol. 10, Suppl. 2, p. 42.

Through the above references there may be traced a large literature relating to this rather perplexing genus. The species now offered as an additional member of its numerous horde does not conform with the original definition, as it is devoid of the two supraorbital teeth therein mentioned, its rostrum is not deep, and the incisor process of the mandible cannot be called rudimentary. One or other or both of the first two deficiencies, however, it shares with several other species, and with regard to the third precise information is in most cases wanting. The mouth-organs are suggestive of agreement with Bate's *Hetairus*, but if that genus were resumed from the synonymy of *Spirontocaris*, Bate's statement that the third maxillipeds are without an exopod must be noted as erroneous.

SPIRONTOCARIS PAX, n. sp.

Plate LXXXVIII.

The species to which the present appears to make the nearest approach is *Spirontocaris cranchii* (Leach), 1817, which in turn closely resembles the rare form from Japan named *Hippolyte gracilirostris* by Stimpson in 1860, and transferred to *Spirontocaris* by Balss in 1814. Here the slender rostrum carries dorsally 4 teeth instead of 6 as in Stimpson's species, a smooth space being left anteriorly which he occupies with the 2 foremost teeth; ventrally there are 2 small teeth just behind the apical point in Balss's figure of the other species. In *S. cranchii* the 3 or 4 rostral teeth approach the bifid or trifid apex more nearly than here. In all

three species there is no other tooth, except the antennal. The third segment of the pleon is medio-dorsally produced over the fourth, but not acutely. The sixth segment is much longer than any of the preceding segments. The apical margin of the telson carries a pair of long spines, between which are 3 rather more than half as long and several setae; above them are a small pair of spines and outside them a rather short pair, above which on the left are a series of 6 spaced sub-lateral spines, while on the right, no doubt abnormally, there are only 3 spines, unsymmetrical in position. Stimpson gives the telson of his species 4 pairs of dorsal spines, and the same number is assigned to *S. cranchii* by Milne Edwards and Bell. Eyes dark, cornea globular. First antennae agreeing with Bate's account of those appendages in "*Hetairus gaimardii* (Milne-Edwards)." Second antennae nearly as long as the body, the tooth of the scale almost level with the rounded apical margin.

Mandibles with much denticulate molar, which is much stouter than the incisor process, the latter ending in an obliquely truncate apex, the anterior point of which is finely bifid, and the receding border cut into 6 or 7 little teeth; the two-jointed palp is rather feeble, the second joint carrying a few setae. The first maxilla has several strong spines about the curved apex of the lower plate, a close fringe of spines round much of the margin of the large median plate, and the palp proximally stout, with two unequal spines on the faintly emarginate much narrower apex. The second maxilla has the lower plate apparently undivided, carrying a curved series of some 10 long not very closely-set setae, the middle plate divided about to the middle, both lobes fringed with close-set setae or spines, the palp or apical plate not very broad, but the apical part rather abruptly narrowed, tipped with 2 very unequal spines, neither very large. The first maxilliped differs from that described and figured by Bate for *Hetairus gaimardii* (Milne Edwards), chiefly in the apical part of the endopod, which Bate speaks of as "a two-jointed continuation," the figure showing the two joints about equal in length. In our species the widest part at the base is short, followed by a narrower but much longer portion, to which succeeds a still narrower but quite short apical piece. I cannot definitely make out any articulation between these three divisions, though I cannot positively deny its existence between the last two compartments; the broad proximal part of the exopod has a distal fringe of long setae, not short ones as in Bate's figure. The second maxillipeds are in near agreement with the figure given by Bate. The

third maxillipeds have a small exopod, not nearly so long as the antepenultimate joint of the endopod; but this is not a point of distinction from "*Hetairus gaimardii*," since that also, as I stated in 1893, has the exopod in question, the species properly belonging to *Spirontocaris*.

The first peraeopods are moderately robust, the chela nearly as long as the fourth joint, not twice as long as the fifth joint, in this respect differing from *S. herdmani*, A. O. Walker, 1898; the fingers are rather less than two-thirds the length of the palm. The second peraeopods are slender, the divisions of the wrists not exactly corresponding in the pair of limbs, but the proximal first and second jointlets in both are coalesced, so that the wrist is 6-jointed. Here, however, the result is due to the coalescence mentioned, whereas in *S. cranchii*, according to Mr. Kemp's fig. 8, pl. 18, there is a jointlet missing. Stimpson speaks of the third, fourth, and fifth peraeopods in his species as all slender, which is an epithet not applicable to the third pair in the new species, and not specially appropriate to the fourth or fifth. Walker mentions that the third peraeopods in *S. herdmani* have 3 spines on the distal third of the fourth joint. In the new species no such spines were observable. In all three pairs the fifth joint is distally produced over the base of the long sixth, and the short stout finger is fringed with spines on the inner margin, and ends in a short stout unguis with a spine behind it.

The first pleopods are comparatively short, the second and third much longer, the long second joint being expanded, at first gradually, into a membranaceous wing which aids in securing the very numerous eggs; far down on the inner ramus there is a long coupling process with about a dozen minute hooks on the transverse apex. The uropods, which are rather longer than the telson, have the peduncle produced into a sharp point on its outer margin; the inner ramus, a very elongate oval, is a little shorter and narrower than the outer, which, besides the ordinary long plumose setae of its inner and rounded apical border, has the straight outer margin fringed all along with short setae to the distal tooth, this tooth not nearly reaching the apex.

Total length of the specimen, a female laden with eggs, was 14.5 mm., the carapace with rostrum being 4 mm. long, and the pleon to end of telson 10.5 mm.

Localities. 34° 11' S., 18° 31' E.; depth 20 fathoms. A 1297. And off Buffels Bay (False Bay); 30 fathoms. No. 116. The

specimen from this locality has on the rostrum 5 dorsal teeth and 3 very small ventral teeth.

With all Europe in the throes of war (August 17, 1914), this little species is a fitting representative of Peace, in honour and hope of which I name it.

GEN. EXHIPPOLYSMATA, nov.

1914. *Hippolysmata* (part), Kemp, Records of the Indian Museum, vol. 10, pt. 2, p. 112.

Closely allied to *Lyismata*, Risso, and *Hippolysmata*, Stimpson. Rostrum longer, usually much longer than carapace, with an elevated dentate basal crest; telson lanceolate, the acute apex unarmed. Upper flagellum of first antennae elongate, its basal portion apparently composed of two coalesced branches, the shorter free only at the apex. Mandibles without palp, the molar comprising a broad spinuliferous band and by its side a projecting dentate plate. In the first maxillipeds the endopod has a small conical joint at the apex tipped with a spinule, the preceding joint a little wider and about two and a half times as long.

Mr. Stanley Kemp has recently (April, 1914) given a key to the Indian species of *Hippolysmata*, separating a new species, *H. ensirostris*, with a variety *punctata*, from the rest by characters of which I have made use for instituting the present genus. The Indian species is said to be very variable in some of its features, so that it may be a question of taste whether nearly related forms shall be treated as named varieties or as distinct species.

EXHIPPOLYSMATA TUGELAE, n. sp.

Plate LXXXIX.

The dorsal crest is composed of 13 graduated teeth increasing in size towards the front, with a small tooth at a little distance on the carapace to the rear and another at a small distance on the rostrum in front; just behind the latter tooth begins a row of 7 ventral teeth, at first at small then at large intervals, while above all but the first the dorsal margin is perfectly smooth. The rostrum, measured from the base of the eye-stalk is once and a half as long as the rest of the carapace; the antennal tooth and the antero-lateral are acute and pronounced. The telson is very like that of *E. ensi-*

rostris, but has the margins feathered with setae for nearly two-thirds of the length from the apex; the latter is acute and appears to have a very small pair of spines at its base, the main body of the telson has two pairs of dorsal spines, not quite symmetrically placed in the specimen figured.

The eyes are cylindrical, with a rather small corneal area.

The first joint of the first antennae has a tooth at about the middle of one margin; the much shorter second joint is decidedly longer than the third; the flagella are about as long as the body and sub-equal in length, the upper one at the base being considerably the broader, a thicker part indicative of 28 jointlets being accompanied by a thinner part, about half its width, which carries some 56 groups of filaments, only the rounded apex of this portion being free. The division into jointlets along this apparently composite part of one flagellum and along the corresponding portion of the other depends rather on marginal constrictions than on any definite articulation. The second antennae have a flagellum considerably longer than the body, the rounded apex of the scale reaching well beyond the strong tooth of the outer margin.

The character of the mandibles has been in part explained above. The part which may perhaps function as an incisor process extends in one mandible all across the end of the molar in three large teeth, the largest fringed with setules; in the other the extent is smaller and the edge divided into five teeth of various sizes, the setaliferous band of the molar being here accompanied by an irregular strip of three blunt teeth.

The lower lip shows two broad lobes with rather irregular outlines. The first maxilla has a bilobed apex, the inner lobe the larger with one long spine among others that are seta-like. The second maxilla has its vibratory plate more flat-topped than usual. The third maxilliped ends in a strong apical spine, the exopod extends along two-thirds of the antepenultimate joint, and a small epipodal plate is setiferous on its anterior margin.

The first pereopods are short, the fifth joint rather shorter than the fourth or sixth, the movable finger as in *E. ensirostris* scarcely two-thirds the length of the palm. The more slender but longer second pereopods have the wrist in each limb divided into 12 jointlets, of which the first is the longest, the last being next in size sub-equal to the palm but longer than the fingers; the fourth joint is very faintly sub-divided into 4 compartments and equals in length the first 8 of the wrist; it is rather longer than the somewhat stouter third joint, which is distinguished by a peculiar armament of 6 or 7 hooked

spines on its inner margin; it has other simple spines, but these are less strongly developed than those on the corresponding joint of the next two pairs. The third, fourth, and fifth pereopods are stouter than the second, subequal to one another in length and similar in general appearance, but with certain differences, the fourth joint being successively shorter but the fifth successively longer; the fifth also near the end of its inner margin has four groups of serrate spines which are not represented on the two preceding pairs; in all three the finger has a group of spinules at the base of its acute unguis, and on the proximal part of the inner margin 3 spines successively larger; on the third and fourth pairs these are preceded by a very small spine, which in the fifth is perhaps hidden by the last serrate group.

In the uropods the broadly rounded apex of the exopod extends a little beyond the narrowly rounded apex of the endopod and much beyond the bifid, spine-including apex of the outer margin, from which the diaeresis starts its devious course.

The total length of the specimen was 67 mm., the carapace with rostrum 30 mm., the telson 9 mm., the flagellum of the second antennae about 85 mm.

Locality. Off South Head, Tugela River, from a depth of 12 fathoms. A 1274.

Another specimen was obtained at Cape Henderson, NW. $2\frac{1}{2}$ miles, from a depth of 26 fathoms. A 1203.

FAMILY OPLOPHORIDAE.

(See *Annals of S. African Museum*, vol. 6, part 4, p. 394, 1910.)

GEN. ACANTHEPHYRA, A. Milne-Edwards.

(See *Annals of S. African Museum*, vol. 6, part 4, p. 394, 1910.)

ACANTHEPHYRA PURPUREUS, A. Milne-Edwards.

1906. *Acanthephyra purpurea*, Kemp, Fisheries Ireland, 1905, i., p. 4, pl. 1, pl. 2, figs. 1-3.

Mr. Stanley Kemp has discussed this species so fully, with the long list of synonyms which he assigns to it, that there seems to be nothing left to say on the subject. Our small South African specimen agrees with Bate's *A. sica* in the long straight rostrum with 10 dorsal teeth of which the foremost is

rudimentary and the three to the rear are behind the 5 ventral teeth which cover the same space as 6 of the dorsal. Each of the pleon segments from the third to the sixth is extended about equally in the medio-dorsal line over the segment behind it; the sixth is as long as the telson. The latter on its narrow distal half has 4 pairs of spines, and on the narrow apex 3 small and 2 moderately large spines. Bate's much larger specimen of *A. sica* has 9 or 10 pairs of dorso-lateral spines on the telson, and the scale of the second antennae, according to Kemp as well as Bate, is regularly narrowed to a sharp point armed with an apical spine. In the present specimen the apical spine is distinct enough, but it overtops an apical border which is almost straightly truncate and broad enough to carry 9 little slightly overlapping lobes. Unfortunately all the setae are missing from this appendage. The mandibular palp is described and figured by Bate as two-jointed, but it appears to be undoubtedly three-jointed, as figured by S. I. Smith in 1882; the first joint and the setose third being each shorter than the second. The specimen had only two of its peraeopods remaining, a first and a fifth, the latter almost devoid of setae, but this bareness might be accidental. Length 46 mm., carapace 15 mm., of which the rostrum accounted for 7 mm. The telson was 6.5 mm. in length, the scale of the second antennae 6 mm. The outer branch of the uropods is considerably longer than the inner, the tooth of its outer margin at some distance from the rounded apex.

Locality. Cape Point NE. by E. $\frac{1}{4}$ E. 40 miles; 800 to 900 fathoms. A 1273.

ACANTHEPHYRA BRACHYTELSONIS, Bate.

1888. *Acanthephyra brachytelsonis*, Bate, Rep. Voy. Challenger, vol. 24, p. 753, pl. 126, figs. 7, 7a.
1891. ,, ,, Wood-Mason and Alcock, Ann. Nat. Hist., Ser. 6, vol. 7, p. 195.
1892. ,, ,, (? = *A. angusta*, Bate, and *A. eximia*, Smith), Wood-Mason and Alcock, Ann. Nat. Hist., Ser. 6, vol. 9, p. 362, fig. 4.

1901. *Acanthephyra eximia*, var. *brachytelsonis*, Alcock, Catal
Indian Deep-sea Macrura, p. 78,
(as *A. brachytelsonis*) Illustr. In-
vestigator, Crust., pl. 3, fig. 2.
1906. " " var. *brachytelsonis*, Kemp, Fisheries
Ireland, 1905, pp. 21, 23.
1914. " " var. *brachytelsonis*, Balss, Abhandl.
K. Bayer Ak. Wiss., vol. 10,
Suppl. 2, p. 21 (distribution).

A South African specimen, with damaged antennae and the body broken in two between the fourth and fifth segments of the pleon, has the rostrum "armed on the upper surface near the base with six small teeth, from which point it is smooth to the apex, the lower margin has one tooth about one-third its length from the apex, and two near together about one-third from the base of the rostrum," in these respects exactly corresponding with Bate's description and also with his illustration, which differs very considerably from that supplied for *A. eximius* by the trustworthy pencil of Professor S. I. Smith (Rep. Comm. Fish. for 1885, pl. 14, fig. 1, 1886). No doubt, however, there are many connecting links between the two forms. According to Bate his *A. angustus*, which Kemp identifies with *A. eximius*, has the pleon carinate from the second to the sixth segment, and Alcock ascribes the same character to *A. eximius*. In the form here considered the first segment is also carinate. The various descriptions agree in giving the length of the telson as less than that of the exopod of the uropods, but it is not on that account especially short as might be expected from the name *brachytelsonis*. Its narrow apex is armed with a central tooth flanked by a pair of spines that are longer and stouter, with a slender pair intervening from below; there are four dorso-lateral spines on the right and three on the left of the distal half of the telson.

The scale of the second antennae, though narrowing from the base, is not very narrow at the apex, which is just overtopped by the marginal tooth. The mandibles have a broad incisor process divided into 8 or 9 teeth of different sizes, the most prominent one more or less central. This process is attached to the molar, which in the left mandible, as seen from the upper or inner surface, appears partially to fold over it. The palp of the first maxillae has two small spines projecting from the inner surface near the apex, and on the

outer margin of the base there is a row of 7 or 8 spinulate setae. In the second maxillae the proximal lobe is far less prominent than the following deeply bifid lobe except in respect of the very long setae with which it is fringed; the top of the vibratory plate is flattened. In the first maxillipeds the apical joint is much shorter than the preceding, and is overtopped by the long and broad exopodal plate. In the second maxillipeds the second and third joints are coalesced though their limits are defined, the exopod reaches much beyond the down-bent sixth joint to which the triangular finger is obliquely attached. In the third maxillipeds the antepenultimate joint is notable for the strong flexure of the proximal half and the great widening of the distal.

The total length of the specimen was about 84 mm., the carapace measuring 30 mm., of which the rostrum occupied 14 mm. The first and second segments of the pleon were together 12.5 mm. long, equal to the third segment, including its extended postero-dorsal tooth; the three following segments together measured 23 mm., and the telson 12 mm. In adding the lengths of the different parts, allowance must be made for the overlapping, the process of the third pleon segment extending over nearly half of the short fourth segment. Each of the three following segments has a dorsal tooth, the last the longest, but none of them very important. Plates illustrating this and the next species are reserved for future publication.

Locality. Cape Natal N. by E. 24 miles; depth 440 fathoms. A 1210.

FAMILY NEMATOCARCINIDAE.

(See these Annals, vol. 15, part 1, p. 43, 1914.)

GEN. NEMATOCARCINUS, A. Milne-Edwards.

(See these Annals, vol. 15, part 1, p. 43, 1914.)

NEMATOCARCINUS PARVIDENTATUS, Bate.

1888. *Nematocarcinus parvidentatus*, Bate, Rep. Voy. Challenger, vol. 24, pp. lxxviii, lxxxvii, 214, 322, pl. 132.

The specimen here accepted as representing Bate's Japanese species above named makes as near an approach to his partial

figure and brief description as any that I have had an opportunity of examining. Bate could not describe the peraeopods, and on our specimen there were none to describe. The dorsal teeth on the carapace and rostrum number 27, and there is a little ventral tooth near the apex, just below the foremost of the dorsal teeth. Bate says "the frontal margin has a well-developed antennal tooth, but the fronto-lateral tooth appears to be entirely absent." If by "fronto-lateral" he means the tooth at the lower front corner, which I call the antero-lateral, it is well marked in his figure and is found in the South African specimen. The telson is narrow, and has only 4 pairs of dorso-lateral spines, two of the pairs in unsymmetrical arrangement; the spines of the apex are for the most part missing. The eyes are moderately large, dark red. The stylocerite of the first antennae is broad, ending acutely, not nearly reaching the apex of the first joint. In the second antennae the setose distal border is broad, slightly convex, on a level with the little apical tooth, the flagellum about 75 mm. long. The mandible has a broad incisor process edged with six unequal teeth, the molar stout, the third joint of the palp much the longest and broadest, with a fringe of long setae. The palp of the first maxilla is slightly emarginate at the apex, with a long seta at one corner, 4 short setae at the other, and 3 subapical spines on the surface. In the second maxilla the terminal plate is distally narrowed and tipped with 5 setae. Attention may be called to the strong spine, bent at the end, on the apex of the third maxillipeds. Calman in 1906 points out that Bate separated his *Stochasmus exilis* from *Nematocarcinus* through mistaking this spine for a separate joint or "dactylos." Kemp in 1910 reduces *N. exilis* to the rank of a variety of *N. ensifer* (S. I. Smith). The figures which Kemp gives point to a near alliance, but not, I think, identity, between the forms *exilis* and *parvidentatus*. In the second maxillipeds a further point arises for consideration. In his figure Bate represents the second and third joints in complete coalescence, probably by inadvertence, as usually in this genus they are quite distinct, as shown in Smith's figure of *N. ensifer*. Yet in the specimen here described the separation is very incomplete, as shown in the figure. The first pleopod of the male, in place of an inner branch, has a wide membranaceous plate, with little hooks low down on the inner margin, as though it were a retinaculum in coalescence with a

simple branch. The second pleopod has two branches lying so closely one on the other that they are with difficulty drawn apart; in independent attachment to the peduncle is a process, on the inner side of the inner branch, which carries a slender piece about one-third the length of the ramus, having its lanceolate end densely fringed with setae. To this piece on the inner side near its base is attached a rather long retinaculum, distally armed with numerous hooks, its blunt end level with the base of the lanceolate apex just mentioned. There are obvious differences between this arrangement and the corresponding parts figured by Kemp for *N. exilis*.

The peduncle of the uropods on the outer side is apically acute. The inner ramus is lanceolate, much shorter than the broad outer ramus, the setose outer margin of which meets the sinuous faintly marked diaeresis with a very small tooth, within which is a larger spine, and beyond which the margin is continued to form a broadly rounded apex, fringed like the other available edges of both branches with long plumose setae. Total length of specimen about 70 mm., rostrum 5 mm., carapace with rostrum 19 mm., telson 10 mm.

Locality. Cape Natal N. by E. 24 miles; depth 440 fathoms. A 1261.

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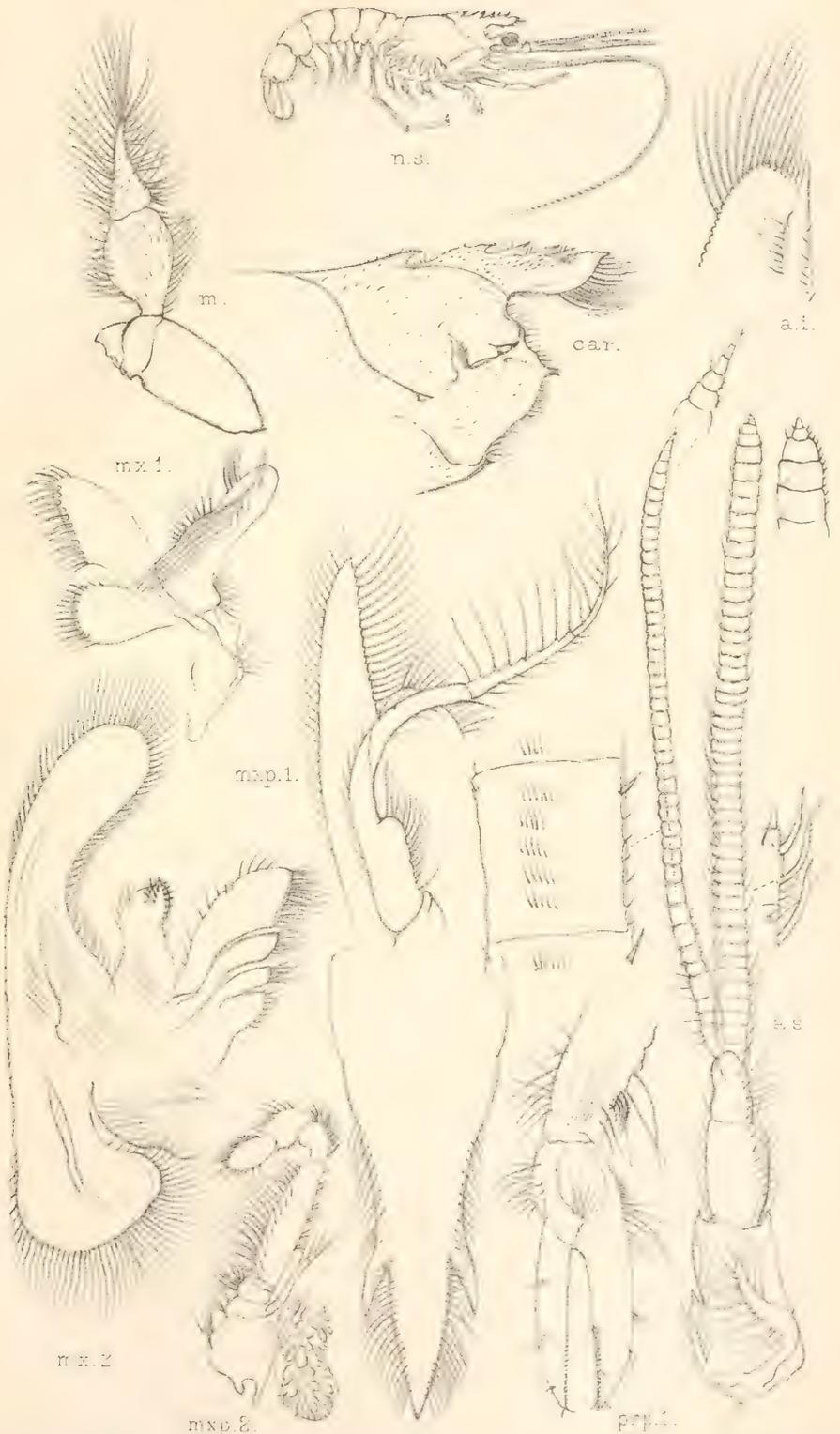
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PLATE XIII. (Crustacea, Plate LXXVII.)

Solenocera comatus, n. sp.

- n.s. Specimen in lateral view, natural size; peraeopods 2, 3, 4, almost entirely missing, and distal part of fifth peraeopod imperfect.
- car. Part of carapace much magnified.
- a.s. First antenna, with further enlargement of the tips of the two flagella, and still higher magnification of median parts.
- a.i. Apex of scale of second antenna.
- m., mxp. 2. Mandible and second maxilliped, less highly magnified than the other parts to economize space.
- mx. 1, mx. 2, mxp. 1. First and second maxillae and part of first maxilliped on a uniform scale.
- pp. 1. The chela of first peraeopod with part of the wrist.
- T. Dorsal view of the telson.



Del. T.R.R. Stebbing.

T.

West, Newman lith.

SOLENOCERA COMATUS, n.sp.

PLATE XIV. (Crustacea, Plate LXXVIII.)

Solenocera comatus, n. sp.

l.i. Lower lip.

mxp. 3. Third maxilliped.

plp. 1. First pleopod, with higher magnification of the inner ramus.

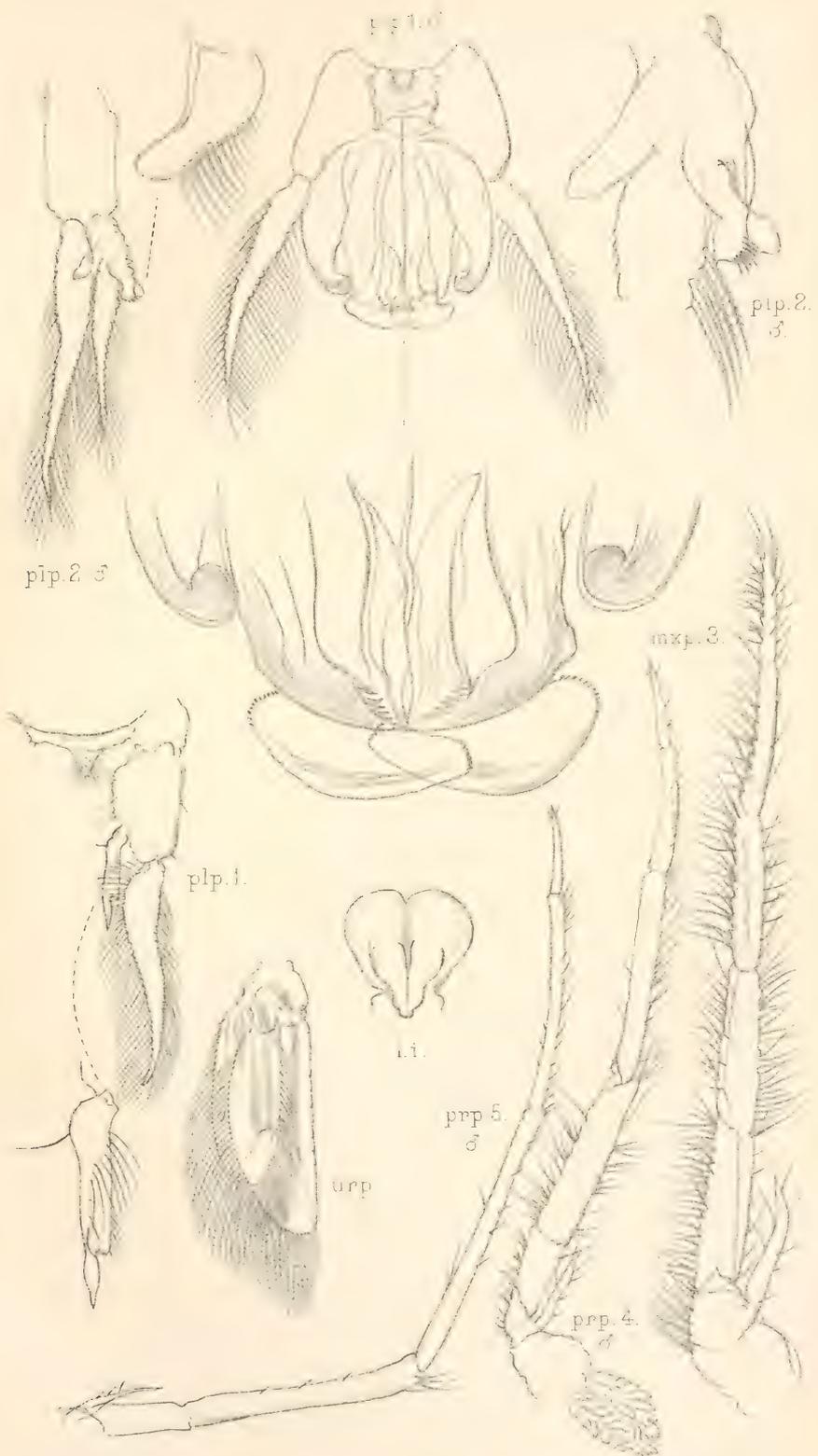
urp. One of the uropods.

The remaining figures are from a male specimen.

prp. 4, ♂, prp. 5, ♂. Fourth and fifth pereopods.

plp. 1, ♂. First pleopods, with the petasma flattened, and higher magnification of the free end.

plp. 2, ♂. Second pleopod, with higher magnification of the three proximal lobes of the inner ramus (on the right of the plate), the innermost lobe shown in full on the left.



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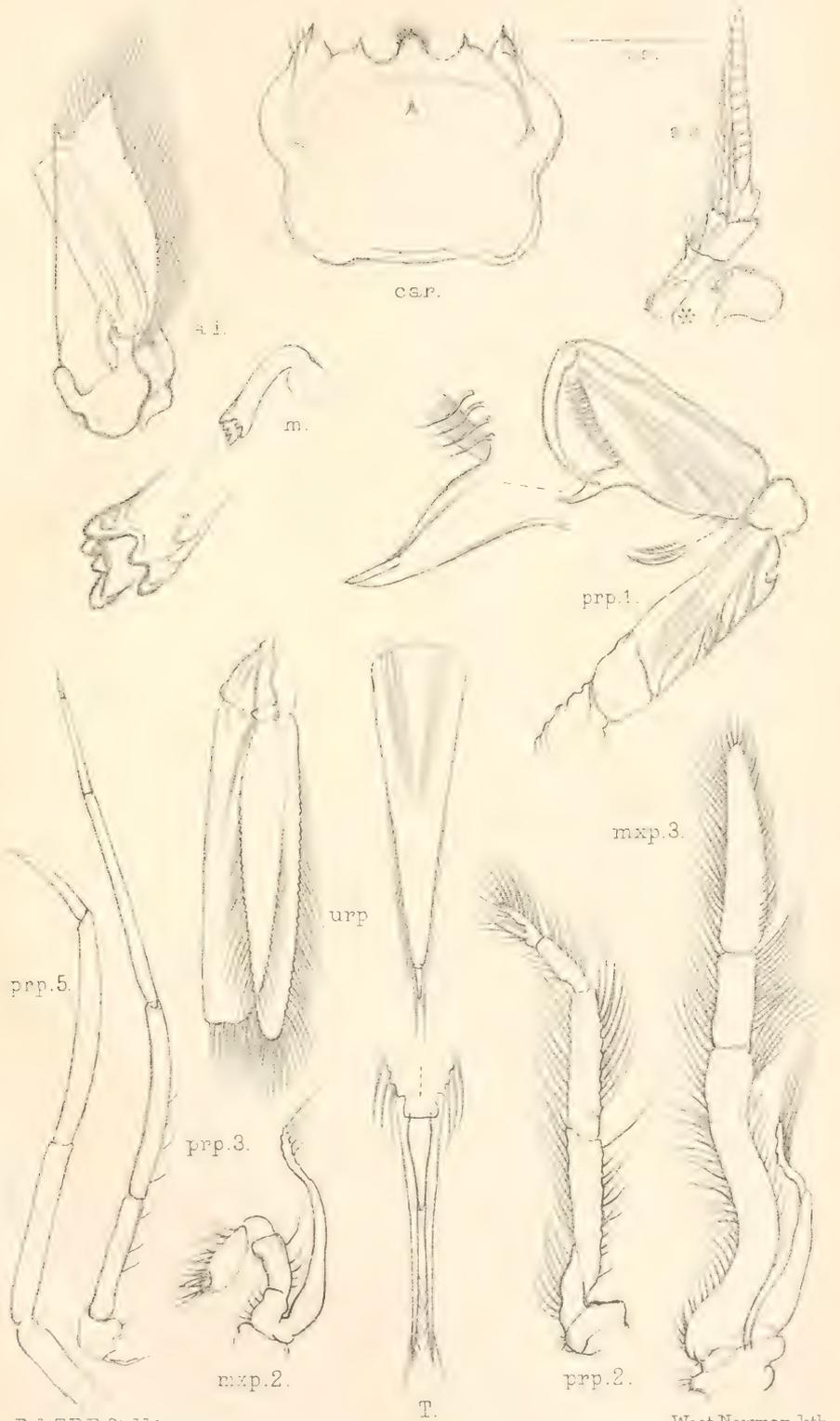
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SOLENOCERA COMATUS, n.sp.

PLATE XV. (Crustacea, Plate LXXIX.)

Philocheras megalocheir, n. sp.

- n.s. Line indicating natural size of the specimen from which the figures were drawn.
car. Carapace in dorsal view, somewhat flattened.
T. Telson on a higher scale of enlargement than the carapace, but uniform with the figures in general; its apex still more enlarged.
a.s., a.i. First antenna, and second to end of long joint of peduncle.
m. Mandible, with further enlargement of incisor process, uniform with the extra magnification of first peraeopod and telson.
mxp. 2., mxp. 3. Second and third maxillipeds.
prps. 1, 2, 3, 5. First peraeopod, with further enlargement of the sixth joint's tooth and serrate marginal spinules; second and third peraeopods; distal joints of the fifth.
urp. One of the uropods.



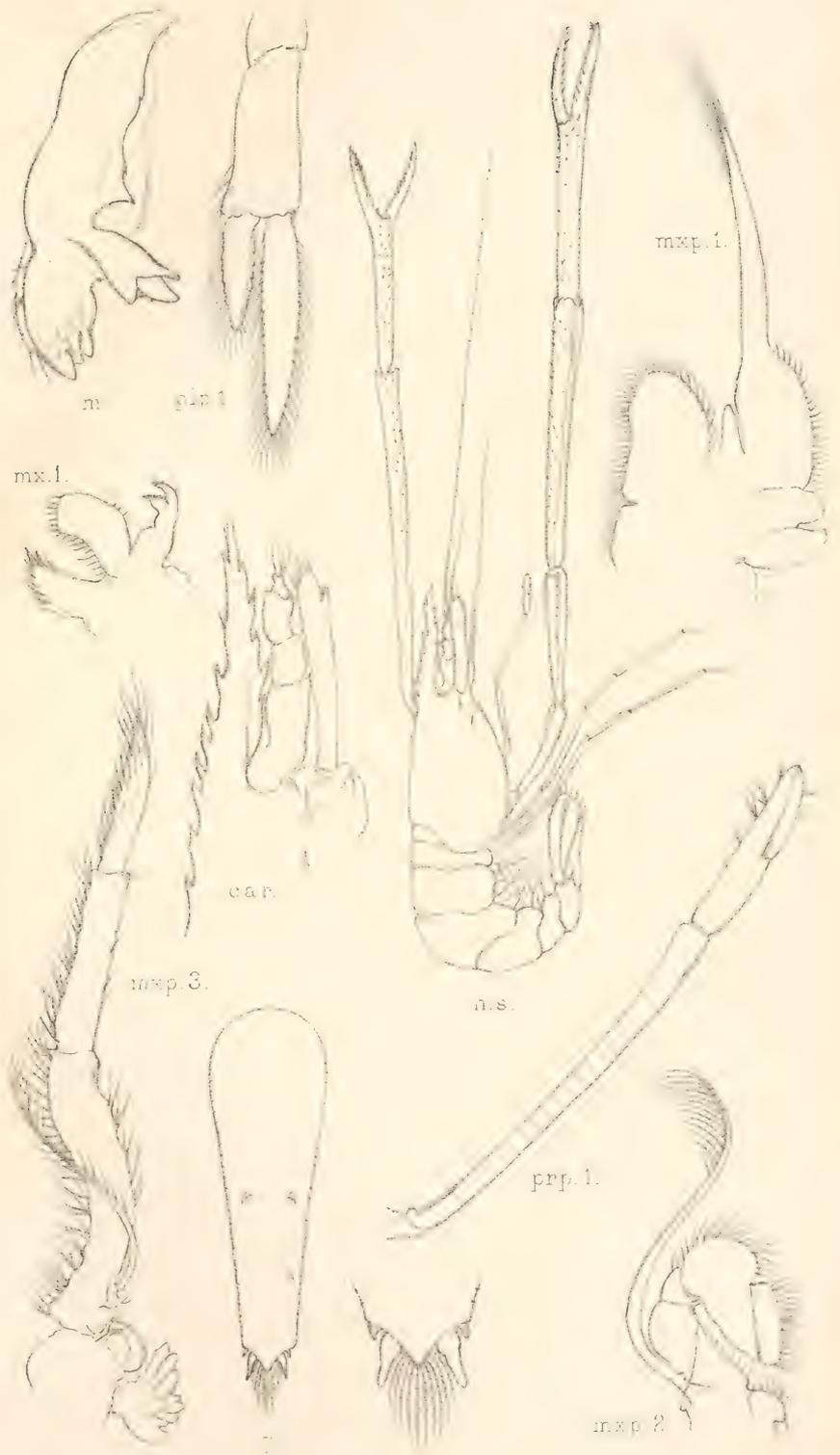
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PLATE XVI. (Crustacea, Plate LXXX.)

Palaemon delagoae, n. sp.

- n.s. Specimen above in lateral view, of the natural size, the antennae imperfect, and eye omitted.
- car. Rostral end of carapace with parts of first and second antennae, enlarged in conformity with other separate parts.
- T. Telson in dorsal view, with apex still further enlarged.
- m., mx. 1, mxp. 1, 2, 3. Mandible, first maxilla, first, second, and third maxillipeds.
- prp. 1. Last three joints of one of the first peraeopods.
- plp. 1. First pleopod.



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PLATE XVII. (Crustacea, Plate LXXXI.)

Leander peringueyi, n. sp.

- n.s. Specimen in lateral view, of the natural size, many appendages omitted.
- car. Rostrum and frontal margin in lateral view much enlarged.
- T. Telson in dorsal view, with further enlargement of the apex.
- a.s. First antenna, the two elongate flagella only in part.
- a.i. Apex of the scale of the second antenna.
- m., m. The mandibles from the inner or upper side, that on the right showing only the basal joint of the palp.
- mx. 1. First maxilla, with further enlargement of the inner apical lobe.
- prp. 1, 2, 5. First, second, and fifth peraeopods, incomplete, but all to the same scale.
- urp. One of the uropods.



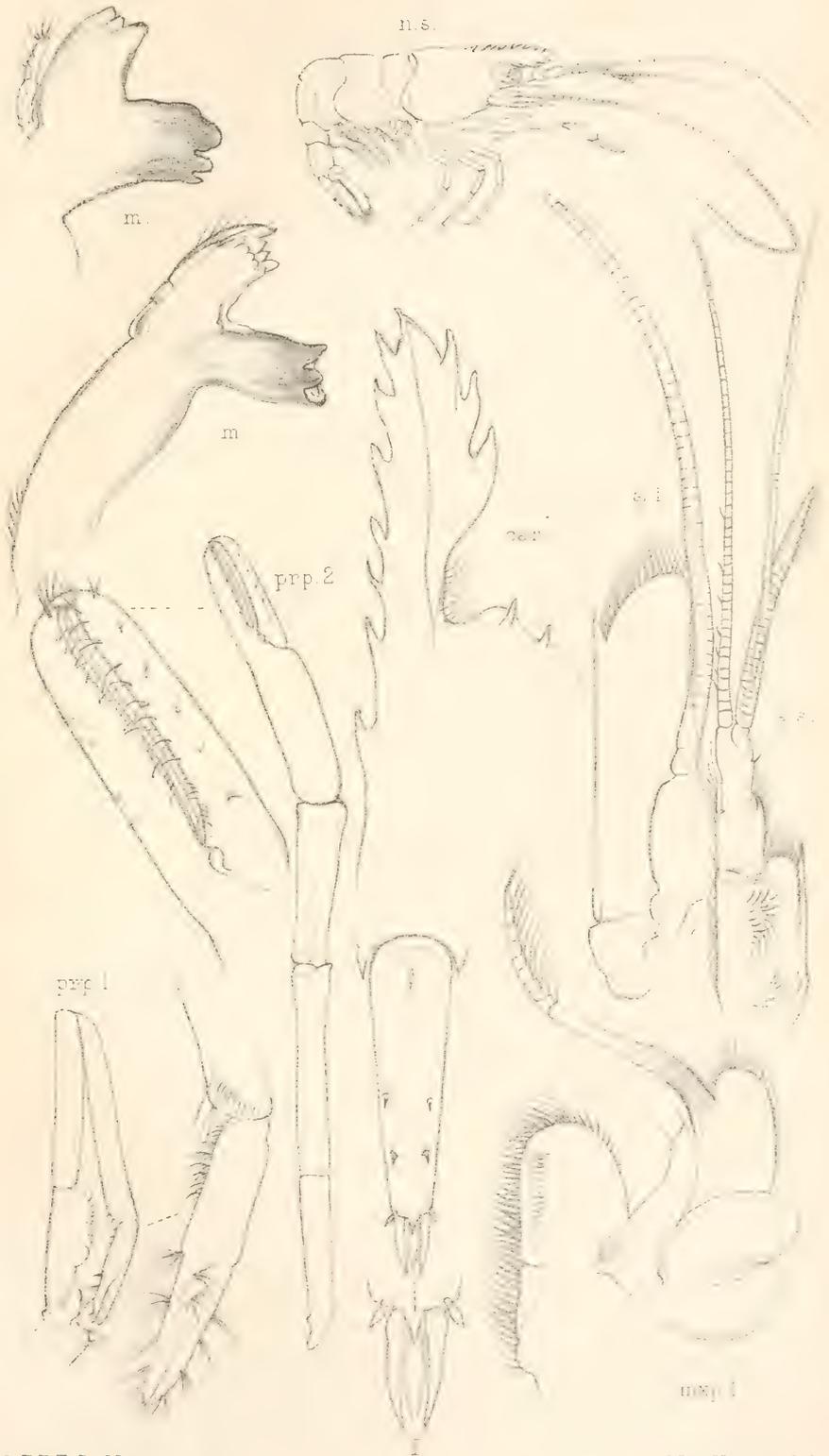
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West, Newman lith.

PLATE XVIII. (Crustacea, Plate LXXXII.)

Leander gilchristi, n. sp.

- n.s. Specimen in lateral view, of the natural size.
- car. Rostrum and frontal margin in lateral view, much enlarged.
- T. Telson in dorsal view, with further enlargement of the apex.
- a.s, a.i. First antenna, two of the flagella incomplete; second antenna, with peduncle and flagellum incomplete.
- m., m. Upper or inner view of the left mandible, and lower or outer view of molar, incisor process, and palp of the right mandible.
- mxp. 1. First maxilliped, on the same scale as the mandibles.
- prp. 1, prp. 2. First peraeopod, with chela and distal end of carpus more highly magnified; last five joints of second peraeopod, with the fingers of the chela more highly magnified, these extra enlargements agreeing with the mouth organs.



Del. T. R. R. Stebbing.

West, Newman lith.

LEANDER GILCHRISTI, n. sp.

PLATE XIX. (Crustacea, Plate LXXXIII.)

Palaemonetes natalensis, n. sp.

n.s. Line indicating length of the specimen from apex of rostrum to apex of telson.

car. Carapace in lateral view, with further enlargement of part of the rostrum.

T. Telson in dorsal view.

a.s., a.i. First antenna, and part of the second, showing distal portion of the scale and basal portion of the flagellum.

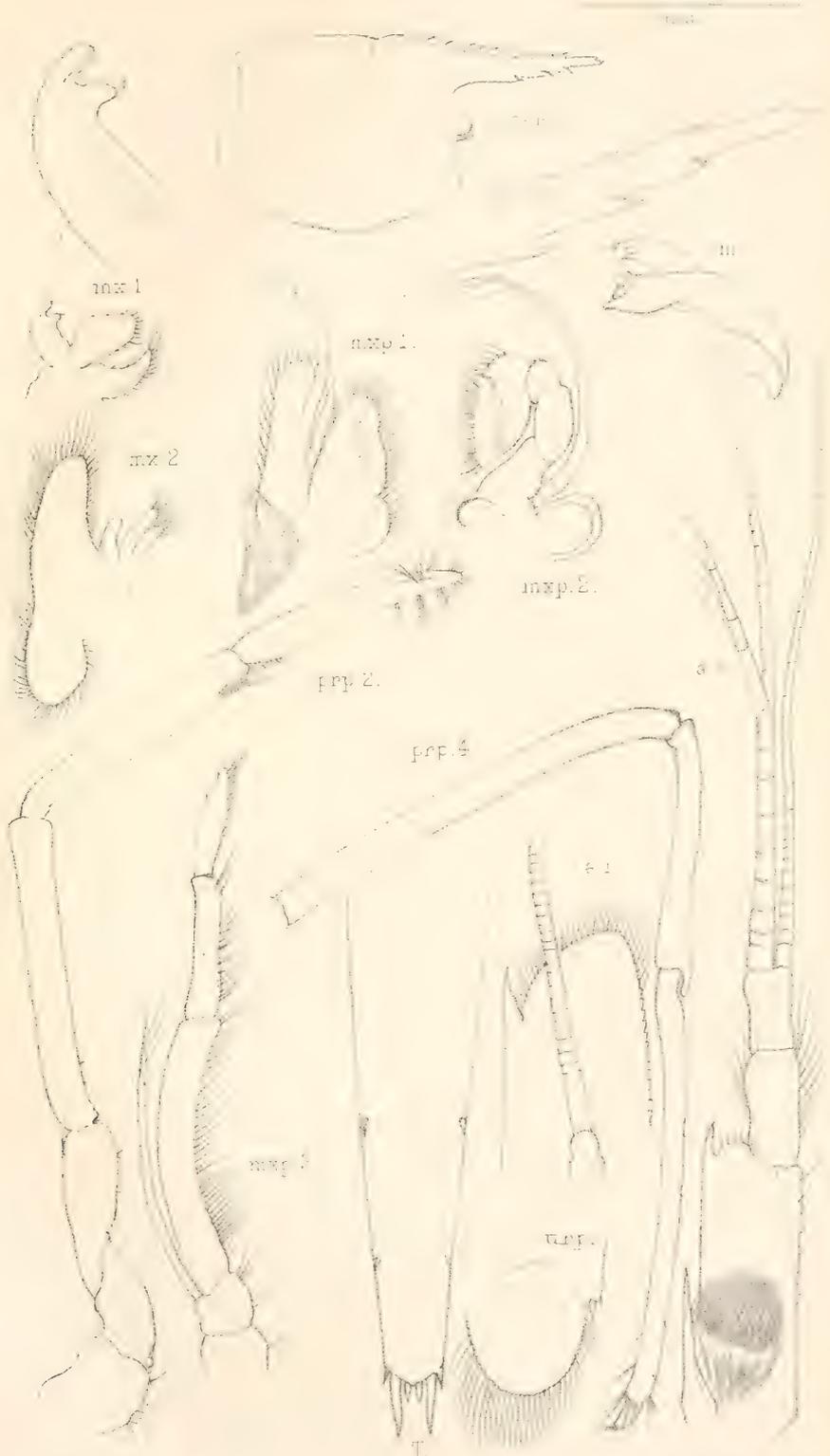
m., mx. 1. Mandible, and first maxilla, with further enlargement of the palp.

mx. 2, mxp. 1, mxp. 2, mxp. 3. Second maxilla, and first, second, and third maxillipeds.

prp. 2, prp. 4. Second peraeopod, and last four joints of the fourth.

urp. Distal part of outer ramus of a uropod.

All figures are drawn to a uniform scale, except the carapace, which is less enlarged, and the separate palp of the first maxilla, which is more enlarged than the rest.



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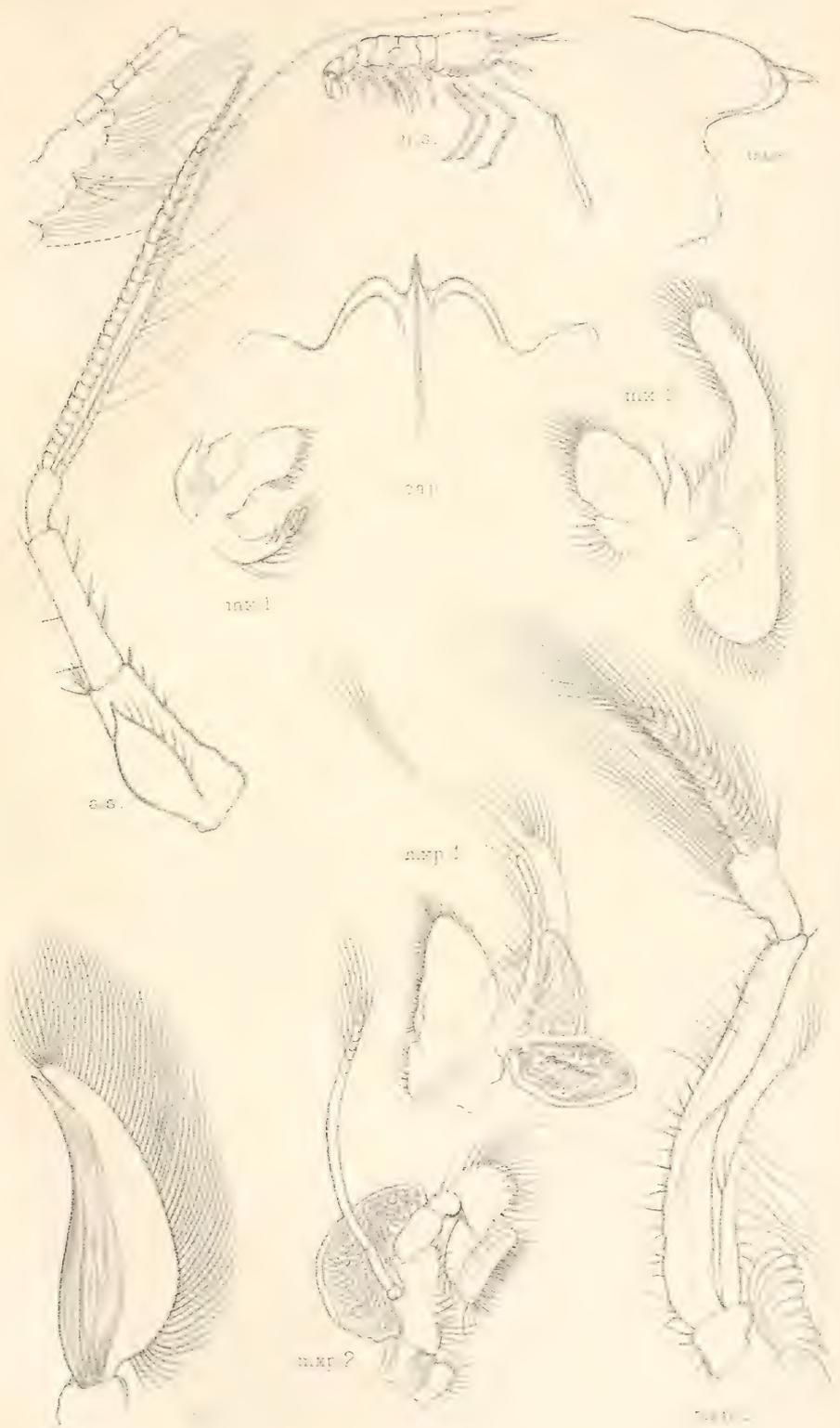
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PLATE XX. (Crustacea, Plate LXXXIV.)

Alpheus notabilis, n. sp.

- n.s. The specimen from the right side, natural size.
- car. Front of carapace in dorsal view and from the right side, magnified.
- a.s. One of the first antennae, with higher magnification of a small portion.
- a.i. Scale of the second antenna.
- mx. 1, mx. 2. First and second maxillae.
- mxp. 1, mxp. 2, mxp. 3. First, second, and third maxillipeds.

With the exception above-mentioned, all the parts in this and the next plate are drawn to a uniform scale.



Del. T.R.R. Stebbing.

West, Newman lith.

PLATE XXI. (Crustacea, Plate LXXXV.)

Alpheus notabilis, n. sp.

l.i. Lower lip.

m. Mandible.

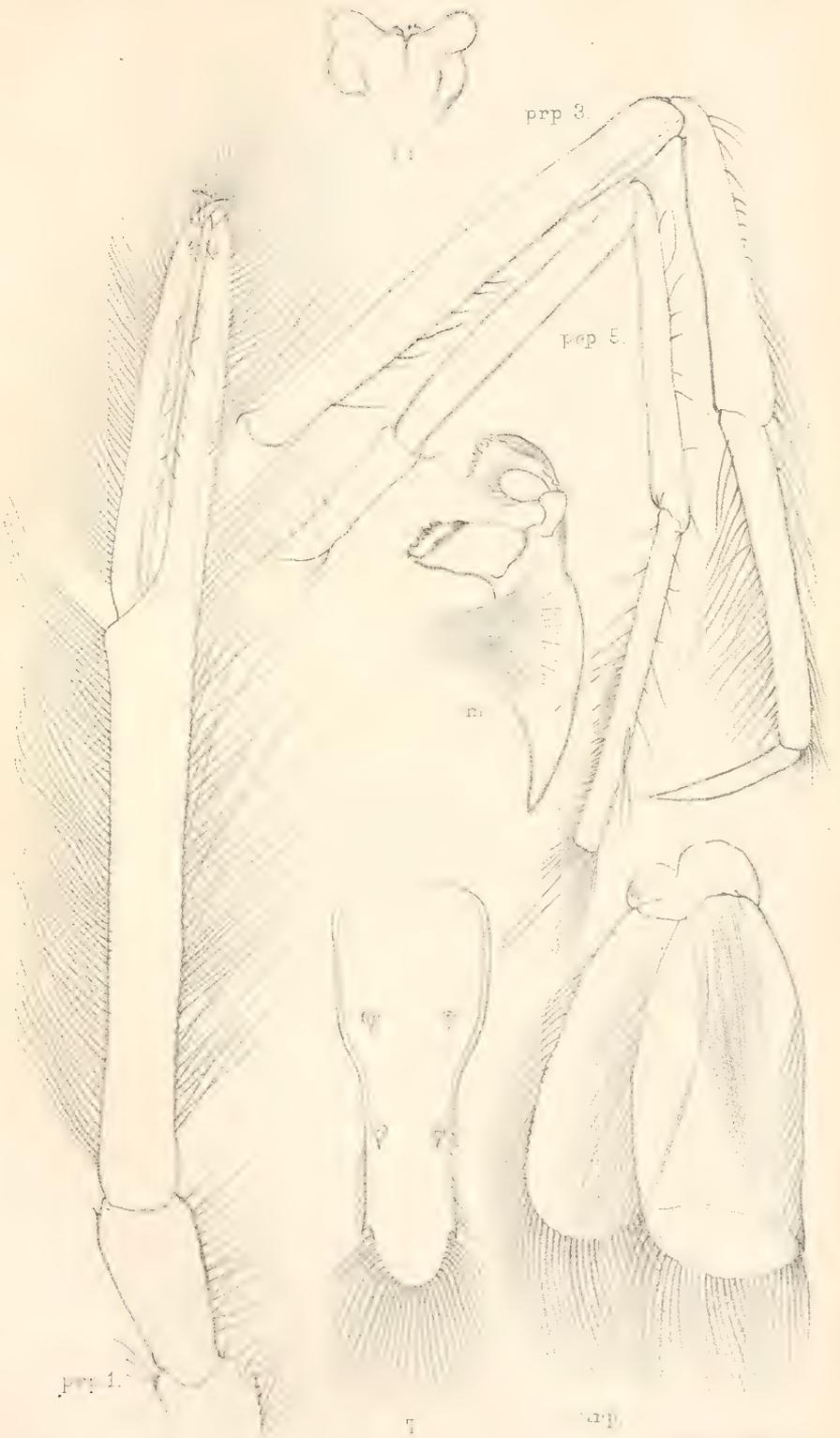
prp. 1. The last three joints of one of the first pair of peraeopods.

prp. 3. The last four joints of the third peraeopod.

prp. 5. The last five joints of the fifth peraeopod.

urp. One of the uropods.

T. The telson.



Del F.P.H. Stebbing.

West, Newman lith.

ALPHEUS NOTABILIS, n.sp.

PLATE XXII. (Crustacea, Plate LXXXVI.)

Alpheus dissodontonotus, n. sp.

car., n.s. Carapace of the specimen in lateral view, leaning slightly to the right, of natural size; with the anterior portion, above, greatly enlarged, and, below, the anterior portion in dorsal view less enlarged.

T. The telson in dorsal view.

a.i. Scale of the second antenna.

m. A mandible from the inner side, with enlargement of the incisor process and the molar.

mx. 1, mx. 2. The first and second maxillae.

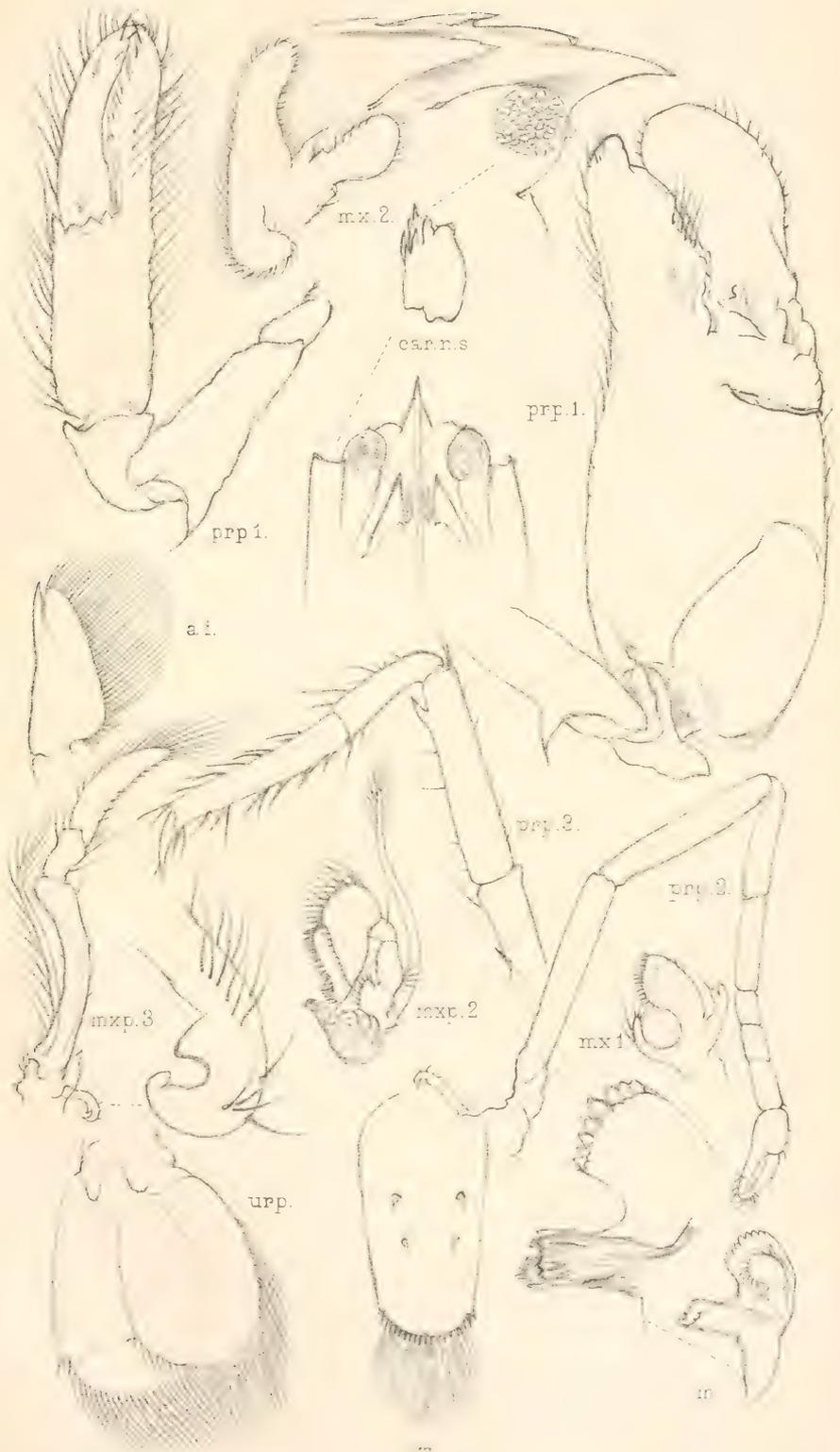
mxp. 2, mxp. 3. The second and third maxillipeds, with terminal part of the third's little epipod greatly enlarged.

prp. 1, prp. 1. The first peraeopods, the figure on the right representing the large left cheliped, that on the left the smaller right cheliped.

prp. 2, prp. 3. The second peraeopod and last five joints of the third.

urp. One of the uropods.

The magnification is uniform for all the figures, except the carapace, which is not magnified, and its anterior portion in lateral view, which agrees with the extra enlargement of the mandibles, and part of the epipod of the third maxilliped more enlarged than any other figure.



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T.

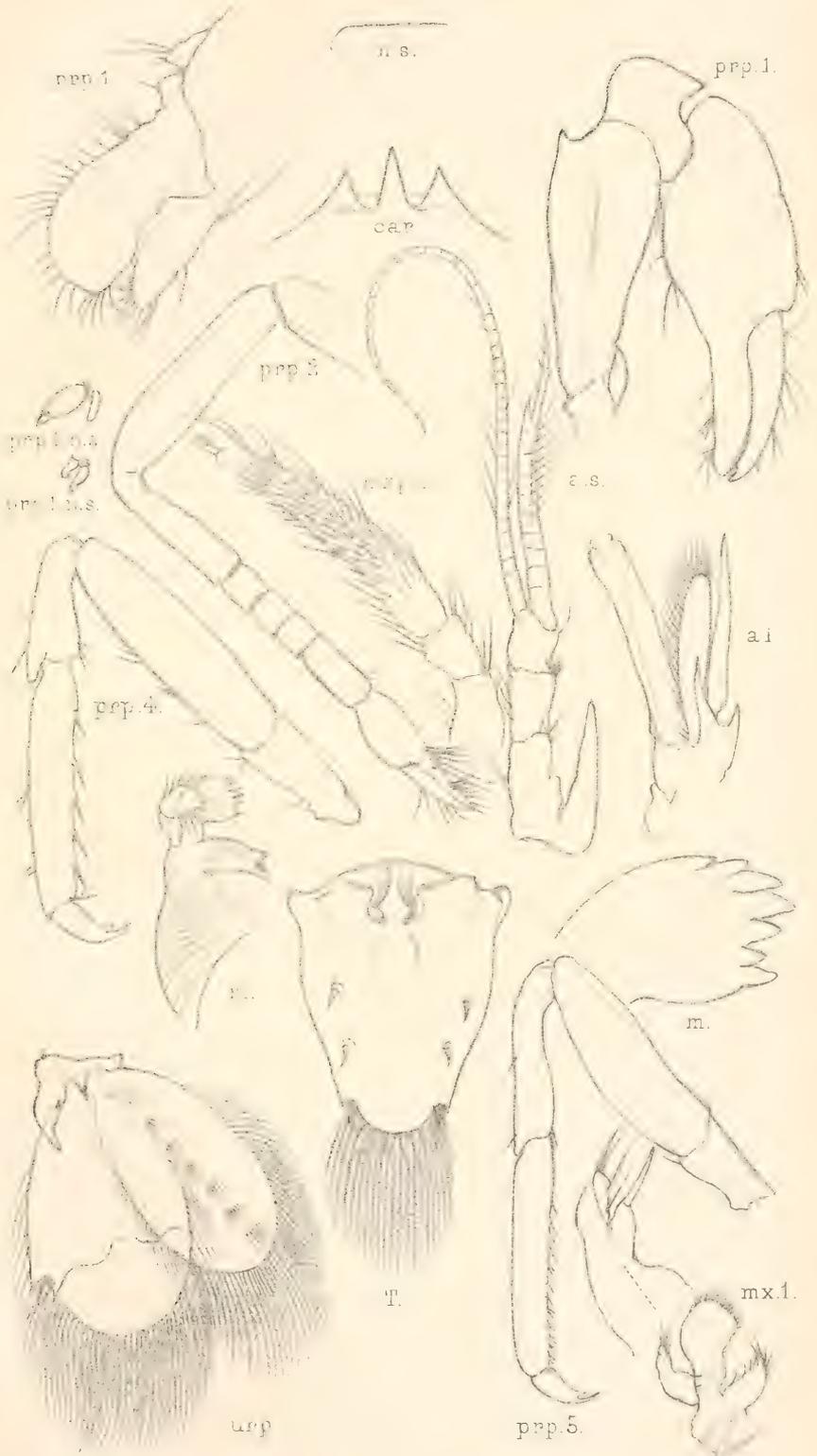
West, Newman lith.

ALPHEUS DISSODONTONOTUS, n.sp.

PLATE XXIII. (Crustacea, Plate LXXXVII.)

Synalpheus anisocheir, n. sp.

- n s. Line indicating natural size of the specimen.
car. Front of carapace.
T. Telson in dorsal view.
a.s., a.i. First antenna, with one of the flagella not quite complete; second antenna without the flagellum.
m., m. One of the mandibles on the left of the plate, on the right its incisor process more highly magnified.
mx. 1. First maxilla, with higher magnification of the palp.
mxp. 3. Two terminal joints of the third maxilliped.
prp. 1, prp. 1, prp. 1, n.s., prp. 1, n.s. The fingers of the larger cheliped, and last four joints of the smaller cheliped, and the last four joints of each represented of the natural size.
prps. 2, 4, 5. Second, fourth, and fifth pereopods without the basal joints.
urp. One of the uropods.



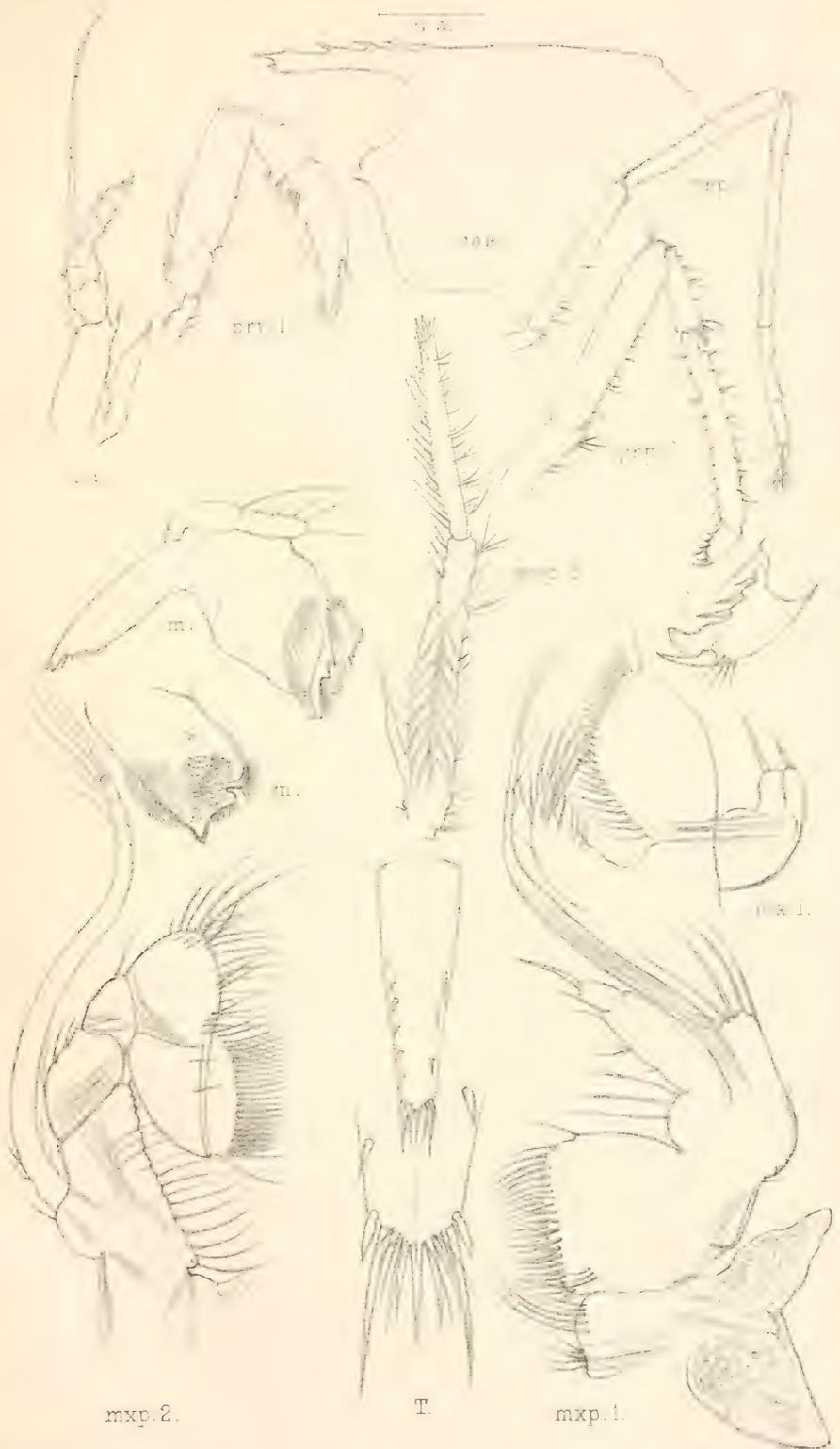
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PLATE XXIV. (Crustacea, Plate LXXXVIII.)

Spirontocaris pax, n. sp.

- n.s. Line indicating total length of the specimen.
car. Partial outline of the carapace, showing the teeth.
T. Telson in dorsal aspect, with further enlargement of the distal part.
a.s. First antenna.
m., m. The molar of one mandible, the cutting plate, molar, and palp of the other.
mx. 1, mxp. 1, mxp. 2. First maxilla, first and second maxillipeds; these and the mandibles are on a uniform scale with the further enlargement of the telson and foot of the third pereopod, the other parts being on a uniform scale of lower magnification.
mxp. 2, prp. 1, prp. 2, prp. 3. The third maxilliped and first three pereopods.



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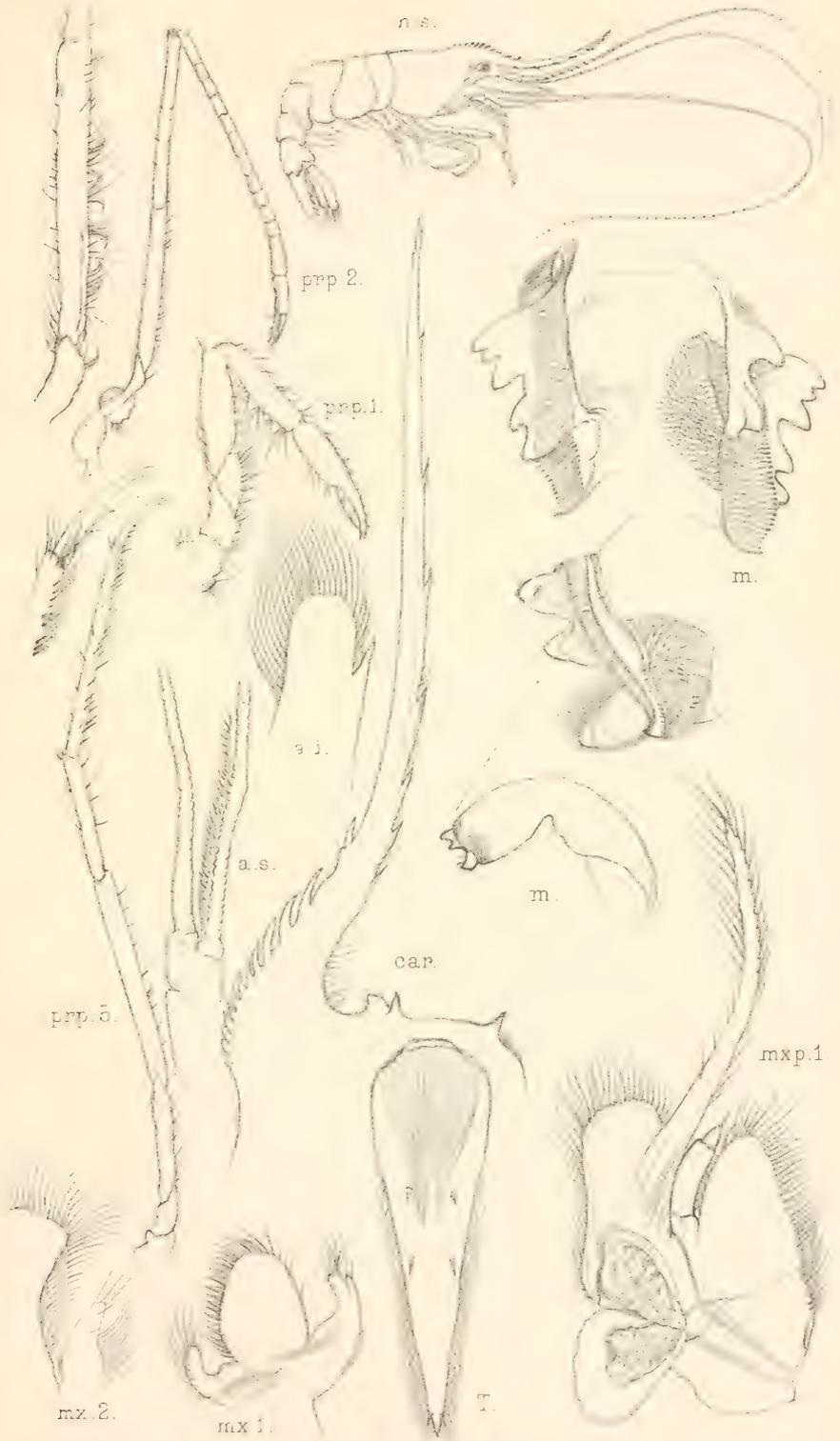
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PLATE XXV. (Crustacea, Plate LXXXIX.)

Echippolysmata tugelae, n. g. et sp.

- n.s. Lateral view of specimen, natural size.
car. Lateral view of rostral and frontal area of carapace, enlarged.
T. Dorsal view of telson enlarged to the same scale.
a.s. Distal part of peduncle and proximal parts of the flagella of the first antenna.
a.i. Distal part of scale of second antenna.
m., mx. 1, mx. 2, mxp. Mandible, part of first maxilla, second maxilla, first maxilliped. These parts are on a higher scale of magnification than the parts already mentioned, and the distal parts of the mandibles are still more highly magnified, the lower figure referring to the mandible figured in its entirety, the other two figures showing the corresponding edges of its companion as seen from opposite sides. The mandibles are illustrated from a separate specimen.
prp. 1, prp. 2, prp. 5. The first, second, and fifth pereopods, uniform in scale with the telson, but the fourth joint of the second, and the finger of the fifth with adjacent part of its sixth joint, further magnified.



Del. T.R.R. Stebbing.

West, Newman lith.

3.—*Contributions to the Crustacean Fauna of South Africa.*—
By K. H. BARNARD, M.A., *Assistant.*

(Plates XXVI.—XXVIII.)

5.—THE AMPHIPODA.

THE collections made by the Cape Government trawler s.s. "Pieter Faure" and by members of the Museum staff have formed the bulk of the material for the following report, which supplements Mr. Stebbing's reports in the "Marine Investigations." Many of the "Pieter Faure" specimens were found by searching through bottles of hitherto unsorted material—sponges, ascidians, hydroids and the like.

The result is a large increase in the fauna-list of South African Amphipoda. The range of many known species is shown to extend to South African waters, and many species are considered to be new to science. In the former category the most interesting are certain species which were known only from the North Atlantic, e.g. *Byblis gaimardii*, *Nicippe tumida* and *Epimeria cornigera*. The South African specimens are not, or only in minute details, distinguishable from the northern specimens. It may, however, be stated that the first two species above mentioned have recently been found off California by the U.S. exploring vessel "Albatross." The Indian Ocean, Australasian and Subantarctic faunal elements are also represented by a number of well-known forms.

The Amphipodan fauna of Table Mountain has been investigated for the first time, and has yielded four interesting Gammarids. In this respect the mountain streams in other districts of South Africa are still quite unknown.

Unfortunately the discussion of several species has had to be postponed owing to lack of material from other regions for direct comparison (e.g. in the genera *Orchomenopsis*, *Paramoera* and *Hyale*). Representatives of the families *Calliopiidae* and *Pleustidae* have also been recognised among the "Pieter Faure" collection, but were too badly preserved or mutilated for generic and specific determination.

Certain species—*Leucothoe miersi*, *Stenothoe crenulata*, *Paramoera*

austrina, *Elasmopus serrula*, *Hyale novae-zealandiae*—have been relegated to synonymy for reasons which, I trust, will be considered sound.

Except where otherwise stated, the specimens were collected in the littoral zone at low-water mark.

The types of all new species are in the South African Museum.

My thanks are again due to Mr. J. H. Orton of the Plymouth Marine Laboratory, Mr. F. W. Edwards of the British Museum, and Mr. H. Watson of Cambridge for tracings of figures otherwise inaccessible to me; and also to Dr. Chilton of Christchurch, N.Z., and Prof. Haswell of Sydney.

Corrigenda.—I may take this opportunity of correcting two unfortunate mistakes in my last paper on South African Isopods (Ann. S.A. Mus. vol. 10, pt. 11, 1914: *Aega urotoma* n. sp. most probably = *A. semicarinata* Miers, 1875, and *Dynamenella kraussi* n. sp. = *D. huttoni* (Thomson), 1879. The latter I have confirmed by a comparison with New Zealand specimens, which I owe to Dr. Chilton's kindness. On Plate XXXVII. C. of the same paper one of the figures of *Jais pubescens* has been inadvertently printed upside down and labelled "mxp" instead of "plp 3."

TRIBE GAMMARIDEA.

FAMILY LYSIANASSIDAE.

1906. *Lysianassidae* Stebbing, Das Tierreich, 21, pp. 3, 717. (References.)
 1908. „ Chevreux, Bull. Mus. Ocean, Monaco, No. 117, p. 1.^a
 1908. „ Holmes, Proc. U.S. Nat. Mus. vol. 35, 1909, p. 492.
 1910. „ Stebbing, Sci. Res. "Thetis," p. 568.
 1910. „ Chevreux, Mem. Soc. Zool. Fi. vol. 23, 1910, p. 135.
 1911. „ id. C.R. Ac. Sci. cliii. p. 1167.

GEN. TRISCHIZOSTOMA Boeck.

1853. *Guerinia* (preocc.) Hope, MS. Costa. Fauna Reg. Napoli., April, 1853, p. 1.
 1861. *Trischizostoma* Boeck, Forh. Skand. Naturf. Möde 8, p. 637.
 1906. „ Stebbing, Das Tierreich, 21, p. 12. (References.)

1908. *Trischizostoma* id. S.A. Crust. pt. 4, p. 59.

1908. „ „ Sexton, Proc. Zool. Soc. Lond. 1908, pt. 2,
p. 370.

TRISCHIZOSTOMA PAUCISPINOSUM n. sp.

(Plate XXVI. Fig. 1.)

Head plus rostrum a little longer than 1st peraeon segment, rostrum triangular, broader than long, apex subacute, curved downwards. Eyes large, occupying the greater part of the lateral portions of the head, reniform, not extending above and not nearly meeting on top of head.

Second peraeon segment a trifle shorter than the first and the following segments. Side-plate 1 small, triangular, almost completely hidden by 2, which is a little deeper than long, 3 also a little deeper than long, larger than 2, 4 a little larger still, almost circular, the anterior, inferior and hind margins forming a nearly even curve, posterior margin excised for 5, which is longer than deep (longest of all the side-plates) and bilobed, 6 a little shorter than 5, 7 large, triangular, deeper than long.

Pleon segment 4 hollowed at base, pleuron of 1st narrowed below and ending in a small acute point at the postero-lateral angle, of 2nd large, inferior margin straight or slightly emarginate, postero-lateral angle acute, inferior margin of 3rd convex, postero-lateral angle acute, the posterior margin sinuous above the angle.

Telson a little longer than broad, slightly tapering, cleft to centre, the apices obtuse.

First antenna reaching to about 6th peraeon segment, 2nd and 3rd joints together equal to half length of 1st, flagellum 20-jointed, 1st joint nearly half as long again as whole of peduncle, its anterior margin densely setose, accessory flagellum 3-jointed, 1st joint $\frac{3}{4}$ length of 1st flagellar joint, lanceolate, with a few widely spaced setae on both margins, 2nd and 3rd joints very slender, 3rd $\frac{1}{3}$ length of 2nd.

Second antenna reaching to about end of 3rd pleon segment, 5th joint twice length of 4th, flagellum at least twice length of peduncle, ca. 40-jointed.

Mandible, trunk distally from palp of more or less even width throughout, cutting edge straight, the angles rounded, palp long, 2nd and 3rd joints subequal, 2nd not or scarcely broader than 3rd, inner margins of both setose.

First maxilla, inner plate apically acute, outer plate with 5 spines, palp minute, obscurely 2-jointed.

Maxilliped, inner plate very narrow, apex obtuse, outer plate ovate, palp slender, 2nd joint longest, 3rd and 4th subequal, but 4th more slender than 3rd, 4th joint with 1-2 very fine apical setules.

The other mouth parts could not be dissected out satisfactorily on account of the state of preservation.

First gnathopod, 2nd joint as long as rest of limb, 6th transversely oval, in shape more like that of *T. nicaeense* than *T. raschi*, reversed in one specimen, not in the other, anterior (in untwisted position) margin a little shorter than palm, which is $1\frac{1}{2}$ times inferior margin, palm very slightly convex, with 5 small spines on margin and 4 larger ones within the margin, 3 unequal spines at junction of palm with hind margin, finger strongly curved, just exceeding palm in length.

Second gnathopod slender, 2nd joint equal to 4th, 5th and 6th joints together, 3rd and 5th subequal, 4th and 6th subequal, 5th cylindrical, not swollen, with dense spreading tufts of setae, 6th oblong, not expanded, longer than broad, also with tufts of setae, finger small.

First and second peraeopods, 2nd joint equal to 3rd and 4th together, 4th with 3 spinules on anterior margin and 1 at apex, 5th and 6th joints subequal, but 6th only half width of 5th, 5th with 5 spinules on anterior margin and 1 at apex, 6th likewise, finger $\frac{1}{4}$ length of 6th.

Third to fifth peraeopods becoming progressively longer, 2nd joint expanded posteriorly, on 3rd peraeopod only a very little longer than broad, on 4th a little longer than broad, on 5th $1\frac{1}{2}$ times as long as broad, but abruptly narrowed near base, hind margin nearly straight with a few indents, 4th joint of 3rd peraeopod with 2 spinules on anterior margin and 1 on apex, of 4th peraeopod with 4 and 1 respectively, of 5th peraeopod with 5 and 1, 5th joint of 3rd peraeopod with 4 and 1, of 4th peraeopod with 6 and 1, of 5th peraeopod with 9 and 1 respectively, the anterior apex of 5th joint on each peraeopod produced into a sharp triangular process, anterior margin of 6th joint of 3rd peraeopod with 5 spinules, of 4th peraeopod with 5, and of 5th peraeopod with 7, inner margin of finger finely serrulate.

First uropod, outer ramus shorter than inner, outer margin with 5-7 deep indents, each with a spinule at its base, outer margin of inner ramus with 1 or 2 such indents near apex, inner margin with 3 spinules near base, whole of inner and outer margins of inner ramus and inner margin of outer ramus in addition finely serrulate.

Second uropod shorter and more slender than 1st, rami subequal,

outer with 6 deep indents on outer margin, inner ramus with 2 such indents on outer margin (1 near middle, the other nearer apex) and 1 in middle of inner margin, both margins of inner ramus and inner margin of outer ramus finely serrulate.

Third uropod, rami subequal, equal to those of 2nd in length, but broader, ovate, more rapidly narrowed distally, 2nd joint on outer ramus indistinguishable, both margins of inner ramus and inner margin of outer ramus finely serrulate.

Length: 16 mm.

Colour: In spirit, pale pinkish, eyes red.

Locality: Lion's Head N. 67° E. distant 25 miles (off Cape Peninsula). 131 fathoms. 2 ♂♂. s.s. "Pieter Faure." 28/3/00. (S.A.M. No. A130.)

The specific name in allusion to the small number of spines on the palm of the 1st gnathopod, compared with the other three species of the genus.

This species resembles *T. nicaeense* Costa in the general shape of the hand of 1st gnathopod, the trunk of the mandible and the rostrum; it resembles *T. raschi* Esm and Boeck in the inner plate of the maxilliped. It is, however, far more closely allied to the other South African species *T. remipes* Stebbing; the characters in which it agrees being: rostrum, trunk of mandible and palp, palp of maxilliped, first and second antennae, second gnathopod, 2nd joint of 3rd-5th peraeopods, telson and uropods. It is distinguished from the latter in having none of the joints of the peraeopods expanded except the 2nd on 3rd-5th peraeopods, in the details of the uropods, as well as in the three characters which separate it from the two northern species, namely: eyes, palm of 1st gnathopod and side-plates.

GEN. STOMACONTION Stebbing.

1888. *Acontiosoma* (part) Stebbing, Challeng. Rep. vol. 29, p. 709.

1899. *Stomacontion* id. Ann. Mag. Nat. Hist. Sci. 7 vol. 4, p. 205.

Chilton (1912, Tr. Roy. Soc. Edinb. vol. 48, pt. 2, p. 463) doubts whether this genus should be separated from *Acontiosoma*. The present species in having, apparently, no palp to the 1st maxilla and a quite rudimentary 4th palpal joint to the maxilliped affords further evidence that the two genera should be reunited.

STOMACONTION CAPENSE n. sp.

(Plate XXVIII. Figs. 27, 28.)

Very like *S. pepinii* (Stebb.), but differing from it, and from

Acontiosstoma marionis Stebb. (including *A. magellanicum* Stebb.), in the shape of the 1st side-plate. This is triangular, not oblong, and narrows below to a somewhat blunt point. The whole surface is finely pubescent, and the inferior and posterior margins of the side-plates are more setulose than in *S. pepinii*. Peduncular joints of 1st antennae progressively shorter, flagellum inserted obliquely, 4-jointed. Second antenna as figured for *S. pepinii*. First maxilla apparently without palp; 4th palpal joint of maxilliped quite rudimentary. Finger of 2nd gnathopod inserted in the middle of the distal margin of 6th joint, *i.e.* the apices of this joint are produced equally above and below the finger. Postero-inferior apex of 2nd joint of 5th peraeopod rectangular, with a small indent just above the apex on the posterior margin. Posterior margins of 2nd joints of 3rd-5th peraeopods strongly setulose.

In other respects agreeing with *S. pepinii*. The specimen is not full-grown, as shown by the new integument forming within the old.

Length: 2.5 mm. in contracted position.

Colour. In spirit, pale pinkish, eyes reddish.

Locality: False Bay. 24 fathoms. 1 immature specimen. s.s. "Pieter Faure." 11/11/02. (S.A.M. No. A3815.)

GEN. EUONYX Norman.

1867. *Euonyx* Norman, Rep. Brit. Ass. vol. 36, pp. 197, 202.
 1888. ,, Stebbing, Challeng. Rep. vol. 29, p. 668.
 1891. ,, G. O. Sars, Crust Norw. vol. 1, p. 116.
 1906. ,, Stebbing, Das Tierreich 21, p. 19.
 1908. ,, Chevreux, Bull. l'Inst. Océan. Monaco. no. 117, p. 1.

EUONYX BISCAYENSIS Chevreux.

1908. *Euonyx biscayensis* Chevreux, l.c. p. 1, fig. 1.

Eyes invisible in the spirit specimen.

Fourth pleon segment with a basal depression, the posterior portion slightly swollen, rounded.

First antenna equal to first two peraeon segments together, 1st joint with anterior margin slightly emarginate, but not apically produced, flagellum 12-jointed, 1st joint equal to peduncle, accessory flagellum 5-jointed, 1st joint equal to the remaining 4 joints.

Second antenna equal to first 3 peraeon segments together, 1st joint dilated below, gland-cone subacute and extending almost to end of

3rd joint, 4th and 5th joints subequal, flagellum longer than peduncle, 16-jointed.

Mandibles resembling those of *E. normani* Stebbing (1888, l.c., pl. 19), accessory cutting-edge in left strap-shaped, apex blunt, spine-row with 2 spinules and several plumose setules.

First maxilla, inner plate with 3 apical plumose, and some simple setae, outer plate with 8 spines (the terminal one apically bidentate, the next apically 4-dentate, the rest laterally denticulate) and several setae, palp not narrowing distally, apex rounded, with 5 spines.

Maxilliped, inner plate with 3 apical stout spines and several ordinary spines and setae, outer plate almost reaching apex of 2nd joint of palp, outer distal margin with ca. 12 spines which become subclavate near the inner angle, inner margin crenulate.

First gnathopod, middle of inner margin of apical projection of 6th joint setose.

Second gnathopod, 6th joint a little more than half the length of anterior margin of the 5th, widening distally, palm slightly convex near base, straight distally, joining the inferior margin at a right angle, which is without a spinule, 7th joint shorter than palm.

First and second pereopods, 5th joint shorter and narrower than 4th, with 3 pairs of spines on posterior margin and an apical group, 6th subequal to 4th, posterior margin with 6 groups of 3 spines each, and a large blunt spine on apex, 7th joint not quite $\frac{1}{3}$ 6th, curved, bluntly denticulate at base.

Third pereopod, 2nd joint expanded, broader than long, posterior margin feebly indented, 4th joint strongly expanded on posterior margin, anterior margin with 5 groups of 3 spines each and a group on apex, 5th shorter than 4th and equal to half its distal width, anterior margin with 2 groups of spines, outer and inner apices each with a group of spines, 6th subequal to anterior margin of 4th, anterior margin with 5 groups of spines and a large pointed spine at apex.

Fourth pereopod similar, but 2nd joint longer than broad, posterior margin nearly straight, faintly indented, greatest width of 4th joint near base and not near apex, inner margin of 6th with only 4 groups of setae.

Fifth pereopod, length of 2nd joint proportionately to width greater than in 4th pereopod, posterior margin convex, the indents rather stronger and more numerous than in 3rd or 4th.

First and second uropods, inner ramus a little longer than outer, inner margins of both spinose.

Third uropod, outer ramus longer than inner, with small 2nd joint,

outer and inner margins of both rami spinulose, inner margin of inner ramus with some plumose setae in addition.

Side-plates and postero-lateral angles of pleon segments 1-3 as in *E. chelatus* Norman (see Sars, l.c. pl. 40, fig. 1).

Telson as in Chevreux's figure but with 2 spinules on each apex.

Length: 17 mm.

Colour: In spirit, yellowish white.

Locality: Cape Point NE. by E. $\frac{1}{4}$ E., distant 38 miles. 755 fathoms, 1 ♀ ♂. s.s. "Pieter Faure." 23/6/03. (S.A.M. No. A129.)

Geogr. Distribution: Gulf of Gascony, 1453 metres (Chevreux).

The main differences between this and the northern form are: the larger size, the number of flagellar joints in 1st and 2nd antennae, the relative lengths of 4th and 5th joints of peduncle of 2nd antennae, the shape of the palp of 1st maxilla and the palm of 2nd gnathopod. As regards the last two features, Chevreux's figures are not as clear as could be desired for purposes of an exact comparison. The other features cannot be deemed of specific value.

PARVALETTIA n. g.

Body not compressed. Side-plates not large, 4th only slightly emarginate behind. Mandible short and broad, cutting-edge obscurely dentate, palp central. Inner plate of maxilliped with 4 apical teeth, outer plate with 2 spine-teeth on inner apex, palp 4-jointed. First gnathopod fairly stout, strongly chelate. Second gnathopod elongate, slender, chelate. Third to fifth pereopods with 2nd joint moderately expanded. Uropod 3 with 2-jointed outer ramus only. Telson ovate, entire.

This genus is near to *Valettia* Stebbing in having a dentate cutting-edge to the mandible, but is distinguished by the chelate 1st and 2nd gnathopods, uniramous 3rd uropod and entire telson. These last two features it possesses in common with *Onesimoides* Stebbing, from which, however, the chelate 1st gnathopod separates it.

Valettiopsis Holmes, 1908, appears to differ very little from *Valettia*.

PARVALETTIA CHELATA n. sp.

(Plate XXVI. Figs. 2-3.)

Body rounded dorsally. Antero-lateral angles of head obtuse. Eyes not discernible. Side-plate 1 oblong, not narrowed below, smaller than 2, 2-4 subequal, subquadrate, inferior margin rounded, 5 twice

as long as deep, bilobed, lobes subequal, 6 smaller than 5, slightly bilobed. Postero-inferior angles of 3rd pleon segment quadrate, entire.

Telson longer than broad, ovate-lanceolate, apically acute, entire, without setae.

First antenna, 1st joint fairly broad, 2nd subequal to 1st, 3rd $\frac{1}{2}$ length of 2nd, flagellum equal to 2nd and 3rd together, slender, 4-jointed, 1st joint longest, accessory flagellum slender, a trifle longer than 1st flagellar joint, 2-jointed, 2nd joint minute.

Second antenna subequal to 1st, ultimate joint $\frac{2}{3}$ length of penultimate, flagellum scarcely equal to ultimate joint, slender, 3-jointed.

Mandibles stout, cutting-edge obscurely 4-dentate, secondary cutting-edge obscure, molar weak, 1st joint of palp half 2nd, 3rd a trifle longer than 1st, tipped with 3 setae.

First maxilla, inner plate not observed, outer plate obliquely truncate, with (?) 5 spines, palp 2-jointed, 1st joint minute, 2nd extending beyond outer plate and tipped with 3 spinules.

Second maxilla, plates about equal in length, inner broader, with 3 apical setae, outer with 4 apical setae.

Maxilliped, inner plate with 4 blunt teeth on apex, outer plate reaching to a little beyond end of 1st joint of palp, inner apex not produced, but bearing 2 ovate spine-teeth, inner margin with 1-2 setules, palp 4-jointed, 1st not as large as 2nd, 4th as long as 3rd, unguiform, curved.

First gnathopod, 2nd joint straight, slightly wider distally, 3rd and 4th subequal, 3rd with 2 apical setae, 4th with 5, 5th triangular, inferior lobe with 6 setae, increasing in length, 6th longer and broader than 5th, inferior apex produced as a triangular thumb nearly equal in length to front margin of 6th, both its margins straight, apex obscurely bifid, inferior margin with a notch at base of thumb bearing 4-5 curving setae, finger matching and fitting closely to thumb, strong, straight, curved only at apex.

Second gnathopod slender, almost unarmed, 2nd joint longest, somewhat fusiform, 3rd and 5th subequal, 4th shorter, 6th equal to 4th and 5th together, apex produced as a straight thumb, nearly half length of front margin, apex upturned, finger straight, as long as and fitting closely to thumb, apically curved.

First and second peraeopods, 4th joint produced halfway along 5th, inner margin of 5th with 3 setae, of 6th with 4 setules, finger with unguis scarcely half length of 6th.

Third peraeopod, 2nd joint not greatly expanded, half as long again as broad, oblong, hind margin straight, slightly serrate, postero-

inferior angle rounded, reaching almost to end of 3rd, 4th produced $\frac{2}{3}$ along 5th.

Fourth peraeopod, 2nd joint similar to that of 3rd peraeopod, serration on hind margin a little stronger, 4th produced $\frac{3}{4}$ along 5th.

Fifth peraeopod, 2nd joint more strongly expanded, broader distally than proximally, hind-margin convex, serrate, postero-inferior angle rounded, reaching to end of 3rd, 4th produced to end of 5th.

First uropod, rami subequal, longer than peduncle, smooth, tapering, slightly curved.

Second uropod, rami subequal to one another and to peduncle, smooth, tapering, slightly curved.

Third uropod, ramus longer than peduncle, lanceolate, 2nd joint distinct, short but stout, upturned, upper margins with a row of closely set setules, a minute tubercle on inner apex of peduncle perhaps represents the inner ramus.

Length: 3 mm.

Colour: In spirit, whitish.

Locality: Sea Point near Cape Town. 26/2/14. (K.H.B.)
1 ovigerous ♀ and 1 juv. (S.A.M. No. A2937.)

GEN. AMARYLLIS Haswell.

1880. *Amaryllis* Haswell, Pr. Linn. Soc. N.S.W. vol. 4, p. 253.
1888. ,, Stebbing, Challeng. Rep. vol. 29, p. 698.
1893. ,, Della Valle, F. Fl. Neapel. vol. 20, p. 781.
1904. *Vijaya* Walker in Herdman's Ceylon Pearl Fish. Rep. 2, pp. 231-241.
1906. *Amaryllis* Stebbing, Das Tierreich 21, pp. 23, 717.
1910. ,, id. Sci. Res. "Thetis," pt. 12, pp. 569, 570.
1911. ,, Chevreux, Bull. l'Inst. Océan. Monaco. No. 204, p. 1.

AMARYLLIS MACROPHALMA Haswell.

1880. *Amaryllis macrophthalmus* Haswell, l.c. p. 253, pl. 8, fig. 3.
1908. ,, ,, Stebbing, S.A. Crust. pt. 4, p. 67.
1909. ,, *macrophthalma* Walker, Tr. Linn. Soc. Lond. 2nd ser., vol. 12, pt. 4, p. 327.
1909. ,, ,, Chilton, Tr. Roy. Soc. Edinb. vol. 48, pt. 2, p. 463.
1910. ,, ,, Stebbing, l.c. p. 569.
1910. ,, *macrophthalmus* id. Gen. Cat. S.A. Crust. p. 448.

Stebbing has already described specimens of this species from Algoa Bay and remarked upon some of the features in which the South African specimens differ from previous descriptions. These same specimens I have re-examined, and on the whole am able to confirm Stebbing's remarks. I make, however, certain further observations on the sexual differences in the uropods, and as regards the peraeopods I find certain small discrepancies.

The peduncle and outer ramus of the 1st and 2nd uropods are covered with fairly numerous spines along the upper margins, inner ramus of 1st uropod with rather fewer spines, inner ramus of 2nd uropod constricted at its distal third, with 1 spine at the constriction and 3 spines nearer base. Third uropod in ♂ as described by Stebbing; in the ♀, however, with only 3 setae on distal part of inner margin of outer ramus and 3 small spinules on distal part of outer margin of inner ramus.

The fringe of setae on 5th and 6th joints (Stebbing, l.c. p. 68, writes "4th and 5th" by a *laps. cal.*) of 1st gnathopod does not seem to be present *normally*; the 5th joint has 5-6 pairs of setae on hind margin and 2-3 on apex, 6th joint has a row of fine, short and closely-set setules along whole hind margin and in addition 6 isolated tufts of setae. The corresponding joints of 2nd gnathopod on the other hand do have a *dense* fringe of setae. There are no sexual differences in either of the gnathopods.

Specimens from Simon's Bay in False Bay agree with the Algoa Bay specimens.

Stebbing has also mentioned a small specimen, presumably from Algoa Bay like the others, with pale eyes, 1st joint of 1st antenna with 2 *acute* spines, telsonic apices with a small tooth, and other variations. Adult specimens from False Bay have the following characters:

Pale eyes, acute teeth on 1st peduncular joint of 1st antenna, flagellum 30-jointed, accessory flagellum 7-jointed, 2nd antenna with flagellum 30-jointed in ♀, in ♂ reaching to end of body, 2nd joint of mandibular palp with 1 apical seta, 1st and 2nd gnathopods and uropods as above described for the dark-eyed form, with the same sexual differences in the uropods, telson as described by Stebbing.

Length: ♂ 10 mm.; largest ovigerous ♀ 13 mm. (light-eyed form).

Localities: Dark-eyed form: Algoa Bay, 4-16 fathoms (Stebbing); Saldanha Bay, 25 fathoms (Chilton, presumably dark-eyed, but this point not mentioned); Table Bay, shore. 1 ♂, 1 ♀. 26/3/96 (Dr. J. D. F. Gilchrist), and ♂ ♂, ♀ ♀, 1897 (Dr. W. F. Purcell); Kalk

Bay (False Bay), shore. ♂♂, ♀♀. 1897. (Dr. W. F. Purcell.); Sea Point, near Cape Town. 15/11/13. (K.H.B.) 1 ♂, ♀♀ and young; Simon's Bay (False Bay). 5 ♀♀, Umhlangakulu River mouth NW. by N. distant 7 miles. 50 fathoms. 1 ♂, 1 ♀. Port Shepstone WNW. distant 2 miles. 24 fathoms. 1 ♀. s.s. "Pieter Faure." 10/3/96, 14/3/01, and 15/3/01. (S.A.M., Nos. A233, 1286, 1287, A2933, A2738, A2810 and A2811 respectively.)

Light-eyed form: Algoa Bay, 4-6 fathoms. 1 juv. (Stebbing); Zwartklip NE. $\frac{1}{4}$ N. distant 1 mile (False Bay). 10 fathoms. 1 ♂, 5 ♀♀; Seal Island SW. $\frac{1}{2}$ S. distant $\frac{3}{4}$ mile (False Bay.) 11 fathoms. 1 ♀; Glendower Beacon N. $\frac{1}{2}$ W. distant 16 miles (off Port Alfred). 66 fathoms. 1 ovigerous ♀. s.s. "Pieter Faure." 17/11/02, 12/11/02, and 10/9/01. (S.A.M. Nos. A136, A2739 and A2740 respectively.)

Thus it seems that the dark- and light-eyed forms exist side by side and are co-extensive in range, although it would be most interesting to have a larger number of localities.

GEN. CYPHOCARIS Boeck.

1871. *Cyphocaris* Boeck, Forh. Vidensk. Selsk. Christian. 1870, p. 103.
 1905. ,, Chevreux, Bull. Mus. Océan. Monaco. No. 24, p. 1.
 1905. ,, id. ibid. No. 27, p. 1.
 1906. ,, Stebbing, Das Tierreich 21, pp. 28, 717.
 1909. ,, Walker, Tr. Linn. Soc. Lond. 2nd Ser. Zool. vol. 12, pt. 4, p. 327.

CYPHOCARIS RICHARDI Chevreux.

1905. *Cyphocaris richardi* Chevreux, l.c. No. 24, p. 1, figs. 1, 2a-g.
 1906. ,, ,, Stebbing, l.c. p. 717.
 1909. ,, ,, Strauss. Wiss. Ergebn. D. Tiefsee Exp. vol. 20, pt. 1, p. 65, pl. 6, fig. 37 and text-figs. 39, 40.
 1910. ,, ,, Stebbing, Gen. Cat. S.A. Crust. p. 449.

The following variations from the typical form as described and figured by Chevreux are noticeable, the chief differences being in the number of teeth on the 2nd joint of 3rd-5th pereopods.

Side-plate 4, inferior margin less angularly convex.

Third pereopod, 2nd joint with postero-inferior angle squarely produced, posterior margin with 10 teeth, very small basally, distally

not as large as in Chevreux's figure, inferior margin without teeth, a very shallow emargination just before postero-inferior angle.

Fourth peraeopod, 2nd joint with 14 teeth on posterior margin, the teeth indistinct basally.

Fifth peraeopod, 2nd joint 4.25 mm. \times 2 mm., basal portion of posterior margin entire, distal portion with 8 teeth, greater part of posterior margin straight, not slightly convex.

Third uropod, the small 2nd joint on outer ramus much shorter.

Length: 28 mm.; posterior margin of 1st peraeon segment to apex of horn: 5 mm.; first and second antennae: 10 mm. and ca. 22 mm. respectively.

Colour: In spirit, yellowish.

Locality: Cape Point NE. $\frac{1}{2}$ N., distant 49 miles. 700-1000 fathoms. 1 ? ♂. s.s. "Pieter Faure." 27/9/03. (S.A.M. No. A119.)

Geogr. Distribution: Azores, 3000 metres (Chevreux); off south point of Africa and at New Amsterdam, 2000-2500 metres (Strauss, "Valdivia").

Chevreux, in discussing the affinities of *C. alicei* Chevr. (l.c. No. 27, p. 6), says: "Il est également difficile d'admettre que le nombre des dents de l'article basal des pattes de la 5^e paire [3rd peraeopods] puisse diminuer au cours de la croissance de l'animal et que ces dents finissent par disparaître tout à fait. En général, c'est plutôt le contraire qui a lieu," and makes this one reason for separating *C. alicei* from *C. challengerii* Stebbing. The present specimen, however, would seem to contradict this; moreover, Walker (1909, l.c. p. 327), in discussing *C. alicei*, says the teeth are present on the process of the 2nd joint of the 3rd peraeopod in the small specimen (3 mm.), but not in the large specimens (15 mm.). Unfortunately no descriptive account has yet been published of the "Valdivia" material. Since numerous specimens were taken by this expedition, it is probable that they will have some bearing on the question of the variation, according to age and sex, of these teeth.

CYPHOCARIS FAUREI n. sp.

(Plate XXVI. Fig. 4.)

Head half length of 1st peraeon segment; eyes pear-shaped, widest below. First segment of peraeon equal to 2nd and 3rd together, slightly swollen in front, but not projecting overhead. Side-plate 1 semi-circular, 2 triangular, deeper than long, anterior margin distally slightly emarginate, 3 subrectangular, as deep as long, 4 obovate,

anterior and inferior margins strongly convex, posterior margin concave on either side of a small projecting tooth situate a little below the middle, 5 subrectangular, longer than deep, similar to that figured by Chevreux for ♂ of *C. alicei* (l.c. p. 3, fig. 2 F), but the groove along the inferior margin less distinct, 6 subrectangular, as deep as long, 7 semicircular.

Pleon segment 4 concave at base, segments 1 and 2 with a low oblique keel running out to the subacute postero-inferior angles, postero-inferior angle of segment 3 a little produced, acute.

Telson equal in length to 4th, 5th and half 6th pleon segments together, long, narrow, tapering, cleft for $\frac{3}{4}$ its length, apices entire, both margins and apices without spinules.

First antenna 12 mm. long, flagellum ca. 32-jointed, 1st joint strongly setose on inner and lower surfaces, each of the other joints with a few setules and one calceolus, accessory flagellum 7-jointed, 1st and 7th joints elongate.

Second antenna ca. 32 mm. long, 4th joint strongly convex on posterior margin (as in *C. alicei* Chevreux), 4th and 5th joints with tufts of setae on anterior margin, flagellum ca. 180-jointed.

Epistome shorter than broad, proximally not so produced as in *C. challengerii* Stebbing, not projecting in front of upper lip.

Lower lips as in *C. challengerii*, with thick fringe of setae on outer and inner margins of the lobes.

Mandibles similar to those of *C. anonyx* Boeck, molar distinct, denticulate, palp nearly twice length of trunk, 1st joint as broad as long, 2nd joint equal to trunk, its greatest width nearly equal to half its length, outer margin slightly concave proximally, distally straight, inner margin strongly angled, 3rd joint half length of 2nd, elongate ovate, apically acute, inner distal margin of 2nd and whole of inner margin of 3rd with fringe of long setae, those at apex of 3rd joint pectinate.

First maxilla, inner plate with ca. 12 plumose spine-setae, diminishing and passing gradually into ordinary setae near base, outer plate with 11 spines, the inner ones denticulate, palp with 1st joint broader than long, 2nd joint widest distally, distal margin subtruncate, with ca. 16 stout spine-teeth, increasing in size from inner to outer margin, and a number of setae.

Second maxilla as in *C. challengerii*, but more strongly setose.

Maxilliped, inner plate with 3 stout spine-teeth and several setae on apex and 1 more elongate spine-tooth just below apex, outer plate with ca. 20 close-set spine-teeth, rather more elongate than in *C. challengerii* or *C. anonyx*, at least twice as long as broad, palp strongly setose.

First gnathopod, 2nd joint equal to the 5 following joints, 5th and 6th subequal in length, but 5th rather broader, 7th but not 6th serrate on hind margin.

Second gnathopod, 2nd joint curved, twice as long as 3rd, 3rd and 5th subequal, 4th and 6th subequal and shorter than 3rd or 5th, inner margin of 6th not serrate, 7th not equal to width of 6th, curved, inner margin not serrate, setae on 5th and 6th joints not clavate.

First peraeopod not quite as long as 2nd gnathopod, 4th and 5th joints subequal, 6th a little longer, with 5 groups of spines on inner and 4 on outer margin, 7th half length of 6th.

Second peraeopod, 5th and 6th joints subequal, 4th a little longer, 7th $\frac{2}{3}$ 6th.

Third peraeopod, 2nd joint produced backwards in a long curved spiniform process reaching to end of 5th joint, hind margin quite entire, 4th joint equal to 5th, 6th a little longer, inner margin of 6th with 6 groups of spines, outer margin with 2 groups.

Fourth peraeopod, 2nd joint twice as long as broad, ovate, posterior margin produced a little beyond insertion of 3rd joint, apex acute, posterior margin evenly convex, with 5 quite small teeth, 4th, 5th and 6th joints increasing slightly in length, 5th with 3, 6th with 6 groups of spines on anterior margin, 7th half length of 6th.

Fifth peraeopod, 2nd joint as in 4th peraeopod, but a trifle larger and broader, posterior margin with 7 small teeth, 4th, 5th and 6th subequal, 5th with 4, 6th with 7 groups of spines on anterior margin, 7th half length of 6th.

First and second uropods, rami narrow lanceolate, subequal, a little shorter than peduncle, which is setose on inner margin, 2 spines on inner margin of inner ramus near base, rest of inner margin of both rami with small closely-set spinules.

Third uropod, outer ramus twice as long as peduncle and reaching telsonic apex, inner ramus a little shorter, both rami ovate lanceolate, inner margins fringed with long plumose setae, 2nd joint of outer ramus with a small spinule on either side of its base.

Length: 30 mm.; *depth* from back to inferior margin of 5th side-plate: 6 mm.

Colour: In spirit, yellowish.

Locality: Cape Point N. 70° E., distant 40 miles. 800 fathoms. 1 ♂. East London NW. $\frac{1}{2}$ N., distant 18 miles. 250-300 fathoms. 1 ♂. s.s. "Pieter Faure." 22/7/03 and 15/4/01. (S.A.M.L., Nos. A120 and A2768.)

The distinguishing characters of this species are to be found in the 1st peraeon segment, the 4th side-plate, the 2nd joints of 3rd to 5th

peraeopods, the telsonic apex, the palp of 1st maxilla, the outer plate of the maxilliped, and the details of the spines and setae on the various appendages.

Named after the Cape Government trawler s.s. "Pieter Faure."

GEN. LYSIANASSA M. Edw.

1820. *Lysianassa* (part) M. Edwards.
 1888. *Lysianax* (part) Stebbing, Challeng. Rep. vol. 29, p. 681.
 1904. ,, Walker in Herdman's Ceylon Pearl Fish. Suppl.
 Rep. 17, p. 242.
 1906. *Lysianassa*, Stebbing, Das Tierreich 21, p. 37.
 1909. ,, Walker, Tr. Linn. Soc. Lond. ser. 2, vol. 12, pt. 4,
 p. 327.
 1910. ,, Chevreux, Mém. Soc. Zool. Fr. vol. 23, p. 158.

LYSIANASSA CUBENSIS (Stebbing).

1897. *Lysianax cubensis* Stebbing, Tr. Linn. Soc. Lond. ser. 2, vol. 7,
 pt. 2, p. 29, pl. 7, B.
 1906. *Lysianassa* ,, id. l.c. p. 38.
 1912. ,, ,, Chilton, Tr. Roy. Soc. Edinb. vol. 48, pt. 2,
 p. 464, pl. 1, fig. 5.

Chilton has recorded this species from Saldanha Bay, and given a figure of the 3rd uropod, remarking that the keeled peduncle is quite characteristic. Compared with Stebbing's figure, the 3rd uropods of the South African specimens are not so short and stumpy; they are about intermediate between Stebbing's figure and Della Valle's figure of those of *L. bispinosa* (Della Valle). In the ♂ the keel is not so pronounced, and the whole uropod is a little longer than in the ♀, the rami are fringed with long setae. In both sexes the outer upper margin of the peduncle, which in Stebbing's specimen was notched, is in the South African specimens entire, as in *L. bispinosa*.

The 1st joint of the 1st antennae sometimes has indications of 1 or 2 teeth on the apex, but these are never prominent; the flagellum is 8-10-jointed, accessory flagellum 5-6-jointed, equal to half or a little more than half the flagellum.

Ultimate joint of 2nd antenna a little longer than penultimate, flagellum 9-12-jointed in ♀.

Teeth on apex of palp of 1st maxilla evanescent in large specimens, in smaller ones 6, as described by Stebbing.

Apex of hind margin of 6th joint of 2nd gnathopod in ♀ produced

as a narrow, subacute, upwardly curved lobe, scabrous and setose, palm transverse, slightly sinuous; in ♂ slightly produced as a blunt, rounded lobe.

Third to fifth peraeopods, hind margin of 2nd joint slightly serrate.

Second uropod, rami more slender than in Stebbing's figure.

The upper posterior angle of 3rd pleon segment as well as the lower posterior angle is rounded. This forms a ready mark of distinction between this species and the other South African species *L. variegata* (Stimpson), which has the upper angle somewhat acute. The telson and the 3rd uropods are also distinguishing features between the two species.

Length: ♂ 13 mm., ovigerous ♀ 14–17 mm.

Colour: Whitish, semipellucid, with a faint pink or pale brown tinge dorsally, sometimes with a brown dorsal patch on peraeon segments 1–3 and 7 and a brown transverse band between pleon segments 1 and 2 and 2 and 3. Eyes black.

Locality: Table Bay. 1897 (Dr. W. F. Purcell). 1913–14 (K.H.B.) ♂♂ and ovigerous ♀♀; Buffel's Bay (False Bay). 28/9/13. (K.H.B.) ovigerous ♀♀; Glendower Beacon N. $\frac{1}{2}$ W., distant 16 miles (near Port Alfred). 66 fathoms. 1 ♀, Cove Rock N. $\frac{3}{4}$ E., distant 5 miles. 43 fathoms. 1 ♀. s.s. "Pieter Faure." 10/9/01 and 1/8/01. (S.A.M. Nos. 1271–72, 1285, A2929–32, A2536, A128 and A2741.)

Geogr. Distribution: Caribbean Sea (Stebbing); Cape Town and Saldanha Bay, 0–25 fathoms (Chilton).

In the character of the 3rd uropods and 1st antennae the South African specimens certainly approach the Mediterranean *L. bispinosa*, and with more material from other localities it might be possible to unite *L. cubensis* with the latter.

GEN. ARISTIAS Boeck.

1871. *Aristias* Boeck, Forh. Selsk. Christian. 1870, p. 106.
 1890 & 95. ,, G. O. Sars, Crust. Norw. vol. 1, pp. 47, 675.
 1893. ,, Della Valle, F. u. Fl. Neapel. vol. 20, p. 843.
 1900. ,, Chevreux, Rés. Camp. Monaco. vol. 16, p. 18.
 1906. ,, Stebbing, Das Tierreich 21, pp. 49, 718.
 1907. ,, Walker, Ann. Mag. Nat. Hist. ser. 7, vol. 17, p. 454.

ARISTIAS SYMBIOTICA n. sp.

Lateral corners of head slightly produced, blunt. Eyes moderately large, oval or nearly circular. Side-plate 1 longer than deep. Postero-

inferior angle of 3rd pleon segment quadrate, hind margin finely serrulate.

Telson as broad as long, cleft for $\frac{2}{3}$ length, lobes slightly dehiscent, each apex with a stout spine set in a notch, outer lateral margins strongly convex.

First antenna, 2nd joint half length of 1st, 3rd $\frac{2}{3}$ 2nd, flagellum nearly equal to peduncle, setose, ca. 8-jointed in ♂, 6 in ♀, accessory flagellum 2-jointed, the 2nd small.

Second antenna not as long as 1st, 4th and 5th peduncular joints subequal, flagellum $1\frac{1}{2}$ times last peduncular joint, 5-jointed in ♂, 4 in ♀.

Mandible with the molar prominent but not very acuminate, like that of *A. antarcticus* Walker.

The other mouth-parts normal.

First gnathopod, 2nd joint slightly contracted in the middle, 6th joint a little longer but narrower than 5th, its inferior margin minutely spinulose, with a short spine in the middle and 2-3 at the apex.

Second gnathopod, 6th joint shorter and very slightly narrower than 5th, both joints setose.

First and second peraeopods normal.

Third to fifth peraeopods, hind margin of 2nd joint slightly convex, with 3-4 slight serrations in 3rd and 4th peraeopods, 6 in 5th.

First to third uropods with a short spine at end of peduncles, all the rami minutely spinulose on both margins, both rami of 3rd lanceolate, inner ramus longer than 1st joint of outer ramus, 2nd joint half length of 1st.

Length: ♂ 4 mm.; ♀ 3 mm.

Colour: In spirit, reddish pink.

Locality: Cape Hangklip NE. $\frac{1}{4}$ E., distant 27 miles (False Bay). 105 fathoms. 1 ♂, several ovigerous ♀ ♀ and immature specimens. s.s. "Pieter Faure." 26/2/02. (S.A.M. No. A3816.)

All the species of this genus seem to lead a semiparasitic existence either in the branchial cavity of Ascidians (*A. neglectus*) or in sponges (*A. topsenti* Chevreux). Bonnier records his *A. commensalis* as living in association with a sponge and an Asteroid. The present species was found associated with an Ophiuroid occupying cavities and galleries in a sponge covering the gastropod *Tritonium murrayi* (Smith).

GEN. ICHNOPUS Costa.

1853. *Ichnopus* Costa, Rend. Soc. Borbon. n. s., vol. 2, p. 169.

1857. ,, id. Mem. Ac. Napoli. vol. 1, p. 188.

1890. *Ichnopus* G. O. Sars, Crust. Norw. vol. 1, p. 39.
 1893. „ (part) Della Valle, F. Fl. Neapel. vol. 20, p. 800.
 1895. „ Chevreux, Mem. Soc. Zool. Fr. vol. 8, p. 425.
 1906. „ Stebbing, Das Tierreich 21, p. 52.
 1909. „ Walker, Tr. Linn. Soc. Lond. 2nd ser., zool., vol. 12,
 pt. 4, p. 328.

ICHNOPUS TAURUS Costa.

1851. *Ichnopus taurus* Costa, l.c. p. 172.
 1861. „ *spinicornis* Boeck, Forh. Skand. Naturf. Möde 8,
 p. 645.
 1866. „ *affinis* Heller, Denk. Ak. Wien. vol. 26, 2, p. 19, pl. 2,
 figs. 19-25.
 1866. „ *calceolatus* id. ibid., p. 20, pl. 2, figs. 26-28.
 1871. „ *minutus* Boeck, Forh. Selsk. Christian. 1870, p. 99.
 1890. „ *spinicornis* G. O. Sars, l.c. p. 40, pl. 15.
 1893. „ *taurus* Della Valle, l.c. p. 801, pl. 3, fig. 1, pl. 27,
 figs. 1-22.
 1906. „ *spinicornis* and *taurus* Stebbing, l.c. pp. 52-53.
 1909. „ *serricus* Walker, l.c. p. 328, pl. 43, fig. 1.

The single ♂ specimen agrees in every respect with the figures given by Sars for *I. spinicornis* Boeck (l.c. p. 40, pl. 15) and by Della Valle for *I. taurus* Costa (l.c. p. 801, pl. 3, fig. 1, pl. 27, figs. 1-22) except in the following points: the cutting-edge of mandibles is straight and has a small tooth at each end; the palp of 1st maxilla widens distally and has 6 little projecting teeth; 2nd joint of 3rd peraeopod resembles that figured by Walker for *I. serricus*; apices of telson project a little beyond the stout spine at the end of outer margin and bear in addition a minute seta set in a small indent; accessory flagellum has 7 joints. The finger of gnathopod 1 expanded and spinose as in *I. taurus*.

There seems little doubt that *I. taurus* and *spinicornis* are conspecific. The discovery of the northern form *spinicornis* in the Java Sea is confirmatory. Sars' figures of the 2nd joint of the 3rd peraeopod give the impression of being intermediate between that of *taurus* and that of *serricus*.

Length: 16 mm.

Colour: In spirit, yellowish, eyes pale brown.

Locality: Great Fish Point Lighthouse NW., distant 9 miles (near Port Alfred). 51 fathoms. 1 ♂. s.s. "Pieter Faure." 3/9/01. (S.A.M. No. A138.)

Geogr. Distribution: North Atlantic; Norway, 20-50 fathoms (Sars,

spinicornis); Mediterranean (Della Valle, *taurus*); Java, 3° S. 107° E. (Stebbing, *spinicornis*); Seychelles, 0-85 fathoms (Walker, *serricrus*).

GEN. SOCARNOPSIS Chevreux.

1910. *Socarnopsis* Chevreux, Mem. Soc. Zool. Fr. vol. 23 (1910), p. 164.

The *Ichnopus schmardae* Della Valle (non Heller), as Stebbing and Chevreux have pointed out, cannot be retained in the genus *Ichnopus*, but must be transferred to the present genus. Chevreux has enumerated the differences between *schmardae* and his own *crenulata*.

SOCARNOPSIS CRENULATA CHEVREUX.

1910. *Socarnopsis crenulata* Chevreux, l.c. p. 165, text-fig. 2 and pl. 7, figs. 1-13 (♂ ♀).

Chevreux's ♀ measured 5.5 mm., whereas the South African ♂ specimen measures double that size, so that it is not surprising to find a few minor points of difference.

First antenna, flagellum 20-jointed, 1st joint as long as peduncle with ca. 18 transverse rows of setae, accessory flagellum 7-jointed, 1st joint equal to the following 4 joints.

Maxilliped, inner apical angle of inner plate projecting, tooth-like, surrounded by several rather stout setae.

First and second gnathopods, 6th joint slightly more setiferous than in Chevreux's figures. The finger of the 2nd gnathopod has a small tooth at apex of interior margin as in 1st gnathopod.

Third peraeopod, anterior margin of 2nd joint with 16 spinules, anterior margin of 6th joint with 6 pairs of spinules.

Fourth peraeopod, anterior margin of 2nd joint with 11 spinules, the basal portion being unarmed.

Fifth peraeopod similarly with 14 spinules, chiefly at the distal end.

First and second uropods, peduncle and rami each with a row of spines along upper margins.

Third uropod, outer ramus with distinct 2nd joint and a small spinule on inner apex of 1st joint.

Length: 11 mm.

Colour: In spirit, yellowish, eyes pale brown.

Locality: Glendower Beacon N. $\frac{1}{2}$ W., distant 16 miles (near Port Alfred). 66 fathoms. 1 ♂. s.s. "Pieter Faure." 10/9/01. (S.A.M. No. A135.)

Geogr. Distribution: Mediterranean, Hyères, Corsica, coast of Tunis, 6–170 metres.

GEN. HIPPOMEDON Boeck.

1871. *Hippomedon* Boeck, Forh. Selsk. Christian. 1870, p. 102.
 1906. „ Stebbing, Das Tierreich 21, pp. 58, 719.

HIPPOMEDON LONGIMANUS (Stebbing).

1888. *Platamon longimanus* Stebbing, Challeng. Rep. vol. 29, p. 643,
 pl. 13.
 1906. *Hippomedon* „ id. l.c. p. 60.
 1910. „ „ id. Gen. Cat. S.A. Crust. p. 449.

Stebbing has recorded a specimen from off the Cape Peninsula without further remark than that the eyes were nonapparent. A smaller and presumably young specimen of the same species from off Cape Point shows the following peculiarities:

The dorsal keel on the 4th pleon segment does not end acutely, the 1st joint of the 1st antenna is not produced, second antenna not very much longer than first, flagellum 15-jointed, inner plate of 1st maxilla with 4 setae (as in *H. geelongi* Stebbing), but inner margin not setose, palp not hirsute, with 12 short apical spine-teeth, inner plate of 2nd maxilla not setose along inner margin and not basally widened, maxilliped with inner plates not remarkably broad and 3rd joint of palp broadly oval, palm of 2nd gnathopod not concave, apex of telson more rounded.

The first, second and last of these characters are found also in Stebbing's Cape specimen, the mouth parts of which, however, I have not dissected.

Three other specimens from the Natal coast, also apparently immature, are more typical in having the 2nd antenna much longer than the 1st, inner plate of 1st maxilla with 2 setae and the telsonic apices fairly narrow. On the other hand, they resemble the Cape Point specimen in having no acute keel on 4th pleon segment, palm of 2nd gnathopod not concave, inner plate of 2nd maxilla and inner plate of maxilliped not broad, and 3rd joint of palp of maxilliped broadly oval. The postero-inferior angles of 3rd pleon segment are quite short, shorter even than in the Challenger specimen, whereas in the other two Cape specimens the process is longer than in the Challenger specimen.

Length: 9 mm. (Cape), 8 mm. (Natal).

Colour: In spirit, yellowish white.

Locality: Cape Point NE. by E., distant 36 miles. 650 fathoms. 1 (? juv.); Umhloti River mouth N. by W. $\frac{1}{2}$ W., distant 8 miles (Natal). 40 fathoms. 3 (? juv.). s.s. "Pieter Faure." 15/7/03 and 18/12/00. (S.A.M. Nos. A2845 and A2846).

Geogr. Distribution: Cape Finisterre, 1125 fathoms (Stebbing); Table Mt. E. distant 41 miles, 245 fathoms (Stebbing).

GEN. URISTES Dana.

1849. *Uristes* Dana, Amer. J. Sci. ser. 2, vol. 8, p. 136.
 1852. „ id. Pr. Amer. Ac. vol. 2, p. 209.
 1862. „ Bate, Cat. Amph. Brit. Mus. p. 89.
 1888. „ Stebbing, Challeng. Rep. vol. 29, p. 263.
 1889. „ id. Ann. Mag. Nat. Hist, ser. 7, vol. 4, p. 211.
 1891. *Pseudotryphosa* G. O. Sars, Crust. Norw. vol. 1, p. 83.
 1893. *Tryphosella* (part) Bonnier, Bull. Sci. Fr. Belg. vol. 24, p.
 1893. *Uristes* Della Valle, F. Fl. Neapel. vol. 20, p. 836.
 1906. „ Stebbing, Das Tierreich 21, p. 63.

URISTES NATALENSIS n. sp.

Head equal to 3rd peraeon segment, antero-lateral angles acute, eyes indistinct.

Peraeon segments 1 and 2 subequal, shorter than 3rd. Side-plate 1 widening slightly distally, antero-inferior angle broadly rounded, postero-inferior angle quadrate, a small indent carrying a seta on inferior margin at posterior corner, side-plates 2-4 increasing gradually in length, overlapping, the inferior margin of 2nd and 3rd likewise with an indent and seta at posterior corner, side-plate 5 broader than deep, bilobed, anterior lobe deeper than posterior, 6th and 7th side-plates quadrate, subequal, 6th scarcely bilobed.

Pleon well developed with large pleura, postero-inferior angle of 1st rounded, of 2nd quadrate with a small point, of 3rd quadrate with small squarely-upturned apex; 4th pleon segment somewhat depressed basally, apically neither carinate nor produced.

Telson oblong with deep and rather wide cleft, apices acute with 1 spine and 3-4 small setules, side margin with 1 spine near base and another just beyond the middle.

First antenna equal to head plus first 2 or 3 peraeon segments, 1st joint twice length of 2nd and 3rd together, 3rd very short, flagellum twice length of peduncle, 20-jointed, calceoliferous, 1st joint very large and equal to 1st peduncular joint, with ca. 18 transverse rows of setae, accessory flagellum 6-jointed, 1st equal to 2nd and 3rd together.

Second antenna in ♂ equal to $\frac{3}{4}$ total length, 4th and 5th joints subequal, flagellum with 1st joint not large.

Epistome not projecting.

Mandible, molar well developed, palp affixed above it, 3rd joint almost equal to 2nd.

First maxilla, inner plate with 2 plumose setae on apex and fine setules along inner margin, outer plate with 11 spines, palp large widest across the straight distal margin which bears 12-13 short, stout, blunt and closely-set spine-teeth and 1-2 setae.

Second maxilla, plates subequal in width, inner a little shorter than outer, the oblique apex with numerous spines, inner margin setulose.

Maxilliped, apex of inner plate with 2 teeth and several spines, inner margin with ca. 8 stout setae, outer plate reaching a little beyond apex of 2nd joint of palp, inner margin with ca. 14 short, stout, blunt and closely-set spine-teeth, increasing in length distally, palp with 4th joint nearly equal to 3rd.

First gnathopod, 2nd joint equals 4th, 5th and 6th together, 3rd shorter than 4th, 4th and 6th subequal, 5th longer, 6th oblong, palm oblique, with 1 rather strong seta at very ill-defined junction with inferior margin, setae on both margins and palm fairly numerous, finger not quite half length of 6th but longer than palm, without a tooth on inner margin.

Second gnathopod slender, 2nd joint equals 4th, 5th and 6th together, 3rd rather more than half length of 2nd and equal to 5th, 5th not expanded at inferior apex, scabrous, 6th equal to half length of inner margin of 5th, ovate, scarcely any palm, finger minute, inferior margin of 4th and both margins of 5th and 6th densely setose.

First and second peraeopods, 2nd joint equal to 3rd and 4th together, 5th shorter than 4th, 6th subequal to 4th, finger more than half length of 6th, with secondary margins at apex, posterior margin 4th, 5th and 6th joints with long setae, none of the joints expanded.

Third peraeopod, 2nd joint broadly pear-shaped, narrowing distally, about as broad as long, anterior margin with 15 spines, posterior margin with slight indents, 3rd short, 4th not much expanded or produced, 5th subequal to 4th, anterior margin with 3 groups of spinules, 6th longer, anterior margin with 4 pairs of unequal spines, finger $\frac{2}{3}$ length of 6th, without secondary margins.

Fourth peraeopod, 2nd joint oblong, half as long again as broad, anterior margin distally with 12 spines, posterior margin straight, with slight indents, other joints as in 3rd peraeopod but longer.

Fifth peraeopod, 2nd joint oblong, half as long again as broad,

anterior margin slightly sinuous, distally with 10 spines, posterior margin convex, with indents.

First uropod, rami and peduncle subequal, inner ramus slightly the shorter, 2-3 spines on upper margin of peduncle near apex.

Second uropod, rami and peduncle subequal, the latter with 6 spines on upper margin.

Third uropod, extending beyond 2nd, peduncle with short, stout spine near apex, rami longer than peduncle, subequal, lanceolate, inner margin of both with plumose setae, outer ramus with long tapering 2nd joint indistinctly defined from 1st.

Length: ♂ 14 mm.

Colour: In spirit, pale yellowish or dull pinkish.

Locality: Port Shepstone WNW., distant 2½ miles (Natal). 24 fathoms. 1 ♂; Glendower Beacon N. ½ W., distant 16 miles (near Port Alfred). 66 fathoms. 1 ♀. s.s. "Pieter Faure." 15/3/01 and 10/9/01. (S.A.M. Nos. A131 and A134.)

Allied to *U. gigas* Dana, but without the carinate and apically produced 4th pleon segment of that species.

FAMILY STEGOCEPHALIDAE.

1852. *Stegocephalinae* Dana, Amer. J. Sci. ser. 2, vol. 14, p. 310.

1882. *Stegocephalidae* G. O. Sars, Forh. Selsk. Christian. no. 18, p. 23.

1886. *Lysianassina* (part) Gerstaecker in Bronn's Tierreich vol. 5, pt. 2, p. 499.

1888. *Stegocephalidae* Stebbing, Challeng. Rep. vol. 29, p. 727.

1891. ,, G. O. Sars, Crust. Norw. vol. 1, p. 196.

1893. *Gammaridi* (part) Della Valle, F. Fl. Neapel. vol. 20, p. 620.

1906. *Stegocephalidae* Stebbing, Das Tierreich 21, p. 88.

1906. ,, Chevreux, Exp. Antarct. Franç. Amphip. p. 22.

GEN. STEGOCEPHALOIDES G. O. Sars.

1891. *Stegocephaloïdes* G. O. Sars, l.c. p. 201.

1893. ,, (part) Della Valle, l.c. p. 629.

1906. ,, Stebbing, l.c. p. 91.

1909. ,, Strauss, Wiss. Ergebn. D. Tiefsee-Exp. vol. 20, pt. 1, p. 72, text-figs. 44-46.

In the last-mentioned work Strauss has discussed the anatomy of the eye of "*S. valdiviae* n. sp." No specific diagnosis however was given, nor has any been published since; the name "*valdiviae*" there-

fore remains a *nomen nudum*. The species is said to be widely distributed in the South Atlantic and Indian Oceans, from 0-2000 fathoms; it is dark brown in colour, and measures 10 mm. It may be the same as *Stegocephalus globulus* Walker (1909, Tr. Linn. Soc. Lond. 2nd ser., zool., vol. 12, pt. 4, p. 329, pl. 42A) from the Indian Ocean, which measures 12 mm. and has the head completely hidden under the very tumid 1st peraeon segment and the large 1st side-plate; or it may possibly be the following species.

STEGOCEPHALOIDES AUSTRALIS n. sp.

(Plate XXVIII. Fig. 29.)

Head nearly hidden under the tumid 1st peraeon segment, which is equal to the 2nd and 3rd together. Eyes wanting. Antero-lateral angles not prominent. Side-plate 1 triangular, as deep as its segment and deeper than long, its basal margin longer than either of the others, postero-inferior angle acute, 4 deeper than its segment and deeper than long, posterior and inferior margins differentiated by a slight angle, postero-inferior angle rounded (cf. Sars' figure of *S. christianiensis* Boeck, l.c. pl. 70, fig. 2), postero-inferior angle of 5 subacute, 6 slightly larger, not smaller, than 7, subquadrate, a little deeper than long, postero-inferior angle rounded, 7 deeper than long, postero-inferior angle rounded. Postero-inferior angle of 3rd pleon segment rounded.

Telson ovate, tapering, nearly half as long again as basal width, cleft to a little beyond centre.

First antenna, 1st joint equals 2nd and 3rd combined, flagellum with 1st joint equal to 1st peduncular joint or to 2nd and 3rd flagellum joints combined, 8-jointed, accessory flagellum half length of 1st flagellal joint, 1 jointed with 2 apical unequal setae.

Second antenna slender and a little shorter than 1st antenna, 2nd joint shortest, 4th longer than 3rd, flagellum 8-jointed, scarcely longer than 4th peduncular joint.

Upper lip very asymmetrically bilobed.

Lower lip lobes gradually tapering, with incurved apical triangular tooth.

Mandibles, cutting-edge with 11 teeth in both mandibles, the teeth largest anteriorly, secondary cutting-edge in left with ca. 25 smaller teeth.

First maxilla, inner plate with plumose setae all along upper oblique margin, outer plate with 8 denticulate spines, palp not reaching apex of outer plate, with 4 apical serrulate setae.

Second maxilla, inner plate broad and rounded with plumose setae on inner margin, outer plate much narrower and half as long again, bearing on its apex 8 apically hooked setae, which are rather more than half as long as the outer plate.

Maxilliped, inner apical angles of inner and outer plates nearly right angles, that of inner plate with 3-4 long setae, that of outer plate with a little tuft of setules, distal margin of outer plate rather irregular, reaching to or even a trifle beyond apex of 2nd joint of palp, inner margin not serrate.

First gnathopod, 2nd joint equal to rest of limb, both margins, especially the hinder, with long simple setae, 6th joint longer than 5th, ovate, tapering, inferior margin very slightly concave and thickly set with long setae, otherwise as figured for *S. globulus* Walker.

Second gnathopod, 2nd joint narrow, almost as long as rest of limb, slightly curved, 6th joint half as long again as 5th, narrower both relatively and absolutely than 6th joint of first gnathopod.

First peraeopod, 2nd joint subequal to 4th and 5th combined, 4th a little longer than 5th and apically produced on anterior margin to half way along 5th, 2 setae on its apex, hind margin of 5th with 5 pairs of spines, 6th half as long again as 5th, hind margin with 7 pairs of spinules, 7th $\frac{1}{4}$ 6th.

Second peraeopod, 4th joint $1\frac{1}{4}$ times 5th, but produced on anterior margin only $\frac{1}{3}$ length of 5th, 5th and 6th subequal, hind margin of 5th with 6 pairs of spines, of 6th with 5 pairs of spinules.

Third peraeopod, 2nd joint equal to 4th-7th joints combined, narrow, straight, 4th longer than 5th and produced for $\frac{1}{3}$ along anterior margin of 5th, its apex with 2 setae, anterior margin of 4th with 6 pairs of spines, of 5th with 4 spines and an apical tuft, of 6th with 6 pairs of spinules, 6th longer than 4th, 7th $\frac{1}{3}$ 6th.

Fourth peraeopod similar to third, 2nd joint a little stouter, but still narrow, linear and not expanded.

Fifth peraeopod, 2nd joint (exclusive of apical projection) equal to 3rd-5th joints combined, broadly expanded on hind margin with the rounded apical projection reaching to apex of 4th joint, hind margin feebly serrate, 4th longer than 5th, hind apical projection reaching half way along 5th, 5th with 6 groups of spines on anterior margin, 6th equal to 4th and 5th combined, slender, anterior margin with ca. 12 groups of spines, 7th nearly $\frac{1}{2}$ 6th.

First uropod, upper (outer) and inner margins of peduncle with short, equidistant spines, rami shorter than peduncle, equal, unarmed.

Second uropod, peduncle equal to rami of 1st uropod, margins spinose, rami a little shorter than peduncle, equal, unarmed.

Third uropod, peduncle equal to half the length of 2nd uropod, margins unarmed, rami longer than peduncle, inner a little shorter than outer, both unarmed.

Length: 8 mm.; depth at 4th side-plate, 3.5 mm.

Colour: In spirit, pale brown.

Locality: Cape Point E. by N., distant 29 miles. 250 fathoms. 21 (♂♂ and ovigerous ♀♀); Cape Point N. 81° E., distant 32 miles. 460 fathoms. 4. s.s. "Pieter Faure." 27/8/03 and 20/8/03. (S.A.M. Nos. A143 and A144.)

STEGOCEPHALOIDES ATTINGENS n. sp.

(Plate XXVI. Fig. 5.)

Very close to *S. auratus* (G. O. Sars), but differing in the following respects: postero-lateral angles of pleon segment 3 not serrate; side-plate 4 more evenly curved with the inferior margin shorter; side-plate 6 evenly narrowed; accessory flagellum of 1st antenna scarcely half, sometimes only $\frac{1}{3}$, length of 1st flagellar joint; peraeopod 5 with 2nd joint less strongly serrate on hind margin, apex less acute, 6th scarcely less than 4th and 5th together.

Length: 8 mm.; depth across side-plate 4, 3 mm.

Colour: In spirit, pale pinkish or yellowish.

Locality: Cape Point NE., distant 40 miles. 560-700 fathoms. 9 (some ovigerous ♀♀); Cape Point NE. by E., distant 36 miles. 650 fathoms. 1 ♂. 3 ovigerous ♀♀. s.s. "Pieter Faure." 17/9/03 and 15/7/03. (S.A.M. Nos. A2766 and A2782.)

Differs from the preceding species in having the tooth at apex of the lobe of lower lip linear (as in Sars' figure of *Stegocephalus inflatus* l.c. pl. 69) instead of triangular; as well as in the more obvious features of the 4th side-plate and 2nd joint of the 5th peraeopod.

GEN. PARANDANIA Stebbing.

1899. *Parandania* Stebbing, Ann. Mag. Nat. Hist. ser. 7, vol. 4, p. 206.

1906. „ id. Das Tierreich 21, p. 95.

PARANDANIA BOECKI Stebbing.

1888. *Andania boeckii* Stebbing, Challeng. Rep. vol. 29, p. 735, pl. 36.

1893. *Stegocephalus boeckii* Della Valle, F. Fl. Neapel. vol. 20, p. 628, pl. 59, fig. 36.

1899. *Parandania* „ Stebbing, l.c. p. 206.

Stebbing has remarked on the large size to which South African specimens grow, in comparison with specimens of the same species from other localities. Thus a ♂ specimen of this species from "Fresh" (error = False) Bay measures, according to Stebbing, 17 mm.

Another specimen from the "Pieter Faure" collection (Cape St. Blaize N. 42° E., distant 11 miles. 10/6/98. S.A.M. No. A151) surpasses this, attaining a length of 21 mm. It is an ovigerous ♀, and agrees with Stebbing's ♂ specimen, although both specimens have the rami of 3rd uropod much broader and the apices more rounded than in Sars' figures.

AMPELISCA DIADEMA (Costa).

1853. *Araneops diadema* Costa, Rend. Soc. Bourb. n.s., vol. 2, p. 171.
 1862. *Ampelisca gaimardii* (part) Bate, Cat. Amphip. Brit. Mus., p. 91.
 1867. ,, *diadema* Costa, Ann. Mus. Napoli. vol. 4, p. 45.
 1871. ,, *assimilis* Boeck, Forh. Selsk. Christian. 1870, p. 222.
 1891. ,, ,, G. O. Sars, Crust. Norw. vol. 1, p. 168, pl. 58,
 fig. 2.
 1893. ,, *diadema* Della Valle, F. u. Fl. Neapel. vol. 20, p. 479,
 pl. 4, fig. 2, pl. 37, figs. 19, 20, 22-28,
 30-38, pl. 38, figs. 2, 7, 8, 11, 12, 14,
 15, pl. 40, figs. 39, 40, pl. 41, fig. 23,
 pl. 44, figs. 4, 8, 9, 11, pl. 45, figs. 17,
 18, pl. 46, figs. 4-6, pl. 47, fig. 29,
 pl. 48, fig. 19.
 1906. ,, ,, Stebbing, l.c. p. 107.
 1910. ,, ,, Chevreux, Mém. Soc. Zool. Fr. vol. 23,
 p. 181.

Agrees with the descriptions and figures of Sars and Della Valle, except for the following differences: postero-inferior angle of 3rd pleon segment in ♂ as figured for ♀ by Sars, in ♀ somewhat more quadrate; telson in ♀ with only 3 marginal setae (in ♂ broken); flagellum of 1st antenna 35-jointed in ♂, 20 in ♀; ventral hooks on peraeon segment 7 very large and prominent, those on segments 5 and 6 small.

Length: 8 mm.

Colour: In spirit, pale pinkish.

Locality: Kalk Bay (False Bay). 1897. (Dr. W. F. Purcell).
 1 specimen at low tide; Port Shepstone WNW., distant 2½ miles

(Natal). 24 fathoms. 1 ♂, 2 ♀ ♀. s.s. "Pieter Faure." 15/3/01.
(S.A.M. Nos. 1295 and A158.)

Geogr. Distribution: Mediterranean (Costa, Della Valle, Chevreux); west and south coasts of Norway (Sars); west coast of France (Chevreux); Great Britain (Norman).

AMPELISCA MIOPS n. sp.

(Plate XXVI. Fig. 6.)

Head longer than first two peraeon segments together, transversely truncate. Eyes, one on each side situate on the margin below the antero-lateral angle, cornea thickened, conspicuous but not large, with (faded) red pigment behind it. Side-plate 1 concealing base of 2nd antenna, 1-3 each with a tooth at postero-inferior angle, inferior margin not strongly convex, 4 with postero-inferior angle rounded, depth scarcely $1\frac{1}{2}$ times the greatest length. Posterior margin of 3rd pleon segment sinuate above the acute moderately produced postero-inferior angle (cf. *A. eschrichti* Kröyer). Keel on 4th pleon segment ending acutely, but not greatly raised above 5th segment.

Telson with bifid apices, the inner point projecting a good way beyond the outer, 2 unequal setules in the notch, 1-3 fine setules down the middle of the dorsal surface.

First antenna $\frac{1}{3}$ length of body, 2nd joint twice length of 1st, flagellum a little longer than peduncle, ca. 24-jointed.

Second antenna lost.

Upper lip broader than long, the rounded distal margin with a small shallow notch, setulose.

Lower lip, lobes short and broad, apices rounded truncate.

Mandibles, cutting-edge 5-dentate, secondary cutting-edge 4-dentate in left, 3 in right, spine-row with 5 spines in left, 4 in right, 2nd joint of palp almost linear, but slightly enlarged in basal half, 3rd joint half length of 2nd.

First maxilla, inner plate with 2 apical setae, outer plate with 11 spines, palp large, apex truncate, cut into 3 teeth and armed with 4 spines and several setae.

Second maxilla, outer plate narrower than inner, distally rather broader than proximally.

Maxilliped, inner plate with 1 apical spine and several plumose setae, outer plate reaching to end of the long 3rd joint of palp, inner margin with 11 ovate spines, passing distally into ordinary plumose setae, 4th joint not produced apically beyond insertion of 5th joint.

First gnathopod, 6th joint $\frac{2}{3}$ length of 5th, both joints linear, densely setose but without special armature.

Second gnathopod similar, but longer and more slender.

First peraeopod, 4th joint linear, not expanded or produced, 6th twice length of 5th and not quite half 4th, finger longer than 5th and 6th together.

Second peraeopod similar, but 4th joint slightly expanded (elongate-ovate), not produced, strongly setose.

Third peraeopod, hind margin of 2nd joint with a strong lobe-like expansion, anterior apex of 4th and 5th each with one long spine-seta, posterior apex of 5th with 2 long unequal spines, anterior margin of 5th with regularly spaced setae, posterior margin with 4 short stout spines, 5th a little longer than 3rd and 4th together, 6th shorter than 5th but longer than 4th.

Fourth peraeopod, posterior margin of 2nd joint evenly curved, 5th as in 3rd peraeopod, but anterior margin with 6 large and several smaller spines, anterior apex with 3 spines, posterior apex with 3 long and 2 short spines, 6th as in 3rd peraeopod.

Fifth peraeopod, 2nd joint evenly expanding distally, distal margin nearly transversely truncate, posterior apical angle rounded, reaching to end of 3rd, which is twice length of 4th, 4th not expanded, but anterior apex shortly produced, 5th subequal to 4th, anterior apex very shortly produced, 6th nearly equal to 3rd and 4th together, oval, twice as long as broad, with 2 short spines on anterior apex, 7th equal in length to width of 6th, ovate, tapering rather rapidly to a fine point.

First uropod, peduncle and rami subequal, upper margin of peduncle spinose.

Second uropod stouter, peduncle longer than rami, upper margin with 3 pairs of spines, apex with a group of 3 spines, outer ramus a little shorter than inner, inner margin with 4 spines and a long spine near the apex, inner ramus with both margins spinose.

Third uropods, peduncle with 1 spine on middle of inner margin, rami subequal, lanceolate, outer with both margins setose, the setae on inner margin springing from rather deep inlets, inner ramus broader, inner margin with small spinules and a tuft of setae on apex.

Length : 12 mm.

Colour : In spirit, yellowish.

Locality : Umhloti River mouth N. by W. $\frac{1}{2}$ W., distant $8\frac{1}{2}$ miles. 40 fathoms. 1 (♀) ♀. s.s. "Pieter Faure." 18/12/00. (S.A.M. No. A2762.)

The single pair of eyes, 3rd pleon segment and telson serve to distinguish this species.

AMPELISCA PALMATA n. sp.

(Plate XXVIII. Figs. 30, 31.)

Head equal to first three peraeon segments together, nearly transversely truncate. Corneal lens distinct, small, the lower near the antero-lateral angle. Side-plate 1 large, nearly concealing base of 2nd antenna, inferior margin of 1-3 moderately convex, the tooth at postero-inferior angle large. Pleon segment 3 $\frac{1}{2}$ with postero-inferior angle quadrate, scarcely produced, segment 4 with a low keel not strongly raised above segment 5, apex subacute, no indent at base.

Telson with 3 apical and 4 marginal spines in ♀ (A2760); in the other ♀ ♀ (A2747) the marginal spines are extremely reduced or even absent; in the ♂ only the apical spines present.

First antenna extending well beyond peduncle of 2nd antenna, its peduncle reaching end of penultimate joint of peduncle of 2nd antenna, 2nd joint longer than 1st, flagellum much longer than peduncle, ca. 26-jointed.

Second antenna reaching to end of 2nd pleon segment, ultimate and penultimate joints equal, flagellum longer than peduncle, ca. 34-jointed.

Mandible, 2nd joint of palp oval, 2 or 3 times as long as broad, 3rd joint slender, $\frac{2}{3}$ length of 2nd.

Maxilliped, outer plate with 10 narrow-lanceolate spine-teeth on inner margin, 3rd joint of palp broadly oval, but not extended beyond insertion of 4th.

First gnathopod, 6th joint a little longer and broader than 5th, palm well defined, a little oblique, shorter than hind margin, with setae and several large spines decreasing in size towards hinge, finger matching palm, inner margin spinose.

Second gnathopod, 5th joint $\frac{3}{5}$ length of 6th, both narrow linear.

First and second peraeopods, 4th joint not apically produced, 7th longer than 5th and 6th together.

Third peraeopod, front margin of 2nd joint irregularly setose and spinose, posterior apex of 5th with 1 spine nearly as long as, and 1 half as long as 6th, both spines apically serrate, anterior apex with 2 setae (1 very long), posterior margin of 6th with 5 spines, anterior margin with 5 spinules on proximal half, the distal half with setae becoming longer towards the apex, which is prominently produced beyond the insertion of the 7th.

Fourth peraeopod, anterior margin of 5th joint irregularly spinulose, posterior apex with several long serrate spines, anterior margin of 6th spinose, apex with long setae, hind margin with 2 spines on distal half.

Fifth peraeopod, 2nd joint obliquely truncate, inferior angle rounded and reaching to end of 3rd, 3rd longer than 4th, anterior apex bevelled off, with 5 spinules, 4th narrowly produced half way along the anterior margin of 5th, 5th longer than 4th, 6th equal to 4th and 5th together, 7th equal to 6th, tapering gradually.

First uropod, rami subequal, longer than peduncle, margins of peduncle sparsely spinose, inner ramus closely spinose, outer unarmed.

Second uropod, rami subequal, shorter than peduncle, both margins of peduncle and both rami spinose.

Third uropod, peduncle with 2 spines on inner margin, rami elongate-lanceolate, outer quite slender, confronted margins feebly setose.

Length: 14 mm. and 10 mm.

Colour: In spirit, pale pinkish.

Locality: Umhloti River mouth NW. $\frac{1}{2}$ W., distant 15 miles (Natal). 100 fathoms. 1 ovigerous ♀ and 1 young; Beacon E. of East London N. $\frac{1}{4}$ E., distant 10 miles. 52 fathoms. ♂♂ and ovigerous ♀♀. s.s. "Pieter Faure." 19/12/00 and 12/7/01. (S.A.M. Nos. A2760 and A2747.)

This species is very near *A. spinipes* Boeck, but differs in the 3rd and 4th pleon segments and the 1st gnathopod.

AMPELISCA NATALENSIS n. sp.

(Plate XXVI. Fig. 7.)

Except for the serrate outer ramus of 3rd uropods these specimens are very near to the figures of *A. serraticaudata* Chevreux. Della Valle in 1893 unites *serraticaudata* with *rubella* Costa, and in 1900 Chevreux (Rés. Camp. Monaco vol. 16, p. 44) adopts this synonymy. But Chevreux's figure of the 2nd joint of 5th peraeopod of his species is utterly different from Della Valle's figure of that of *rubella*. There is also a difference in the eyes, the corneal lens being apparently present in *serraticaudata*, but absent in *rubella*.

As there still remains some doubt, therefore, with regard to Chevreux's species, I consider it best to institute a new one for the present specimens.

Corneal lens distinct, small, the lower in the antero-inferior angles of head, 4th pleon segment slightly indented basally, keel rising gradually, its upper margin straight, posterior end rectangular, postero-inferior angle of 3rd pleon segment with a slightly produced point.

Telson not long, only 1 seta on each apex, which is slightly bifid, the inner point projecting, surface without setae.

First antenna reaching well beyond peduncle of 2nd antenna, peduncle not reaching to end of penultimate peduncular joint of 2nd antenna.

Mandibular palp with 2nd joint strongly laminar, twice as long as broad.

Maxilliped with all the spine-setae on inner margin of outer plate linear.

First gnathopod, 6th joint oval, a little shorter than 5th.

First and second peraeopods, 7th joint a trifle longer than 5th and 6th together.

Fifth peraeopod, 3rd joint equal to 4th and 5th together, 6th equal to 3rd, ovate, 7th shorter than 6th; 2nd joint very distinctive, very obliquely bevelled off from postero-inferior angle, which reaches end of 3rd, this oblique portion of the margin slightly concave.

Third uropod, peduncle with 1-2 spines on inner margin, outer ramus narrow, inner lanceolate, some long setae on the opposed margins.

Length: 8 and 10 mm. respectively.

Colour: In spirit, whitish or pinkish.

Locality: Umhloti River mouth NW. $\frac{1}{2}$ W., distant 15 miles (Natal). 100 fathoms. 2 specimens; Port Shepstone WNW., distant $2\frac{1}{2}$ miles (Natal). 24 fathoms. 1 specimen. s.s. "Pieter Faure." 19/12/00 and 15/3/01. (S.A.M. Nos. A2763 and A2954.)

Owing to insufficient or badly preserved material it is impossible to assign names to the following:

AMPELISCA sp. ? No. 1.

Three specimens from the s.s. "Pieter Faure" collection (Umhloti River mouth N. by W. $\frac{1}{2}$ W., distant 8 miles (Natal). 40 fathoms. 18/12/00). The absence of ovigerous ♀ ♀ leaves it uncertain whether these are mature or not.

While agreeing in general with *A. brevicornis*, the head has a gibbous profile, the postero-inferior angle of 3rd pleon segment resembles that of *A. californica* Holmes, and the crest on the 4th pleon segment is like that figured for the ♀ of *A. gibba* by G. O. Sars.

Peduncle of 2nd antennae fringed above with little tufts of setae.

Second joint of mandibular palp thrice as long as wide, 3rd joint not quite as long and more slender:

Peraeopods 1, 2 and 5, like those of *A. brevicornis*.

The rami of third uropod broadly ovate, $2\frac{1}{2}$ times as long as wide, apices rounded (cf. those of *A. pacifica* Holmes).

Length: 10 mm. (S.A.M. No. A159.)

AMPELISCA sp. ? No. 2.

This specimen (Beacon E. of East London N. $\frac{1}{4}$ E., distant 10 miles. 52 fathoms. s.s. "Pieter Faure." 12/7/01.) differs from *A. brevicornis* only in the non-produced 4th joint of 1st peraeopod, the quadrate postero-inferior angle of 3rd pleon segment, with a slight notch and shortly produced point, and the broadly ovate rami of 3rd uropod, with apex of inner ramus hook-like and incurved. Mandibular palp with 2nd joint linear, 3rd equal to 2nd.

Length: 8 mm. (S.A.M. No. A2748.)

It bears some resemblance to *A. californica* Holmes.

GEN. BYBLIS Boeck.

1871. *Byblis* Boeck, Forh. Selsk. Christian. 1870, p. 228.

1906. ,, Stebbing, Das Tierreich, 21, p. 111.

1908. ,, id., S. African Crust. pt. 4, p. 71.

BYBLIS GAIMARDII Kröyer.

1846. *Ampelisca gaimardii* Kröyer, Voy. Nord. Crust. pl. 23, figs. 1a-y.

1871. *Byblis* ,, Boeck, l.c. p. 228.

1891. ,, ,, G. O. Sars, Crust. Norw. vol. 1, p. 183,
pl. 64.

1893. ,, ,, Della Valle, F. u. Fl. Neapel, vol. 20,
p. 472, pl. 57, figs. 39-41.

1906. ,, ,, Stebbing, l.c. p. 113.

1908. ,, ,, Pearse, Proc. U.S. Nat. Mus. vol. 34,
p. 518.

These specimens resemble the description and figures of Sars except in the following points: 2nd joint of mandibular palp of nearly same width throughout, the basal half being only slightly wider, 3rd joint not half as long as 2nd; outer plate of maxilliped with only 9 broadly lanceolate (instead of 14 narrow lanceolate) spines; 6th joint of 1st and 2nd peraeopods proportionately longer, being almost twice as long as 5th, 7th longer than 5th but shorter than 6th; transverse rows of spines on 5th joint of 3rd and 4th peraeopods fewer and containing fewer spines in each; postero-inferior angle of 2nd joint of 5th peraeo-

pod not so well marked, 5th not quite equal to 3rd plus 4th and proportionately stouter, with more robust spines.

Length: 8-10 mm.

Colour: In spirit, uniform pinkish.

Locality: Beacon E. of East London N. $\frac{1}{4}$ E., distant 10 miles. 52 fathoms. 3 ♂♂, 1 ovigerous ♀; Umhloti River mouth NW. $\frac{1}{2}$ W., distant 15 miles (Natal). 100 fathoms. 1 (immature) ♂. s.s. "Pieter Faure." 12/7/01 and 19/12/00. (S.A.M. Nos. A2750 and A2751.)

Geogr. Distribution: Arctic Ocean, North Atlantic, Norway (Krøyer, Sars, etc.); California, 46-57 fathoms (Pearse). Sars regards its occurrence in the Mediterranean (Heller, Costa) as very doubtful.

TRIODOS n. g.

Head with postero-antennal corners distinct, though not prominent. One pair of eyes. Side-plate 4 obliquely truncate below posterior angle (as in *Ampelisca*). Pleon with tufts of setae as in *Haploops*. Mandibular palp with 3rd joint elongate. Peraeopods 3 and 4 with 2nd joint very wide, anterior margin evenly curved, 5th joint without transverse rows of spines, 7th joint as in *Ampelisca*. Peraeopod 5 with 2nd joint distally expanded, the plumose setae extending round posterior angle but not reaching junction with 3rd, 3rd not shorter than 4th, 5th equal to 3rd and 4th together, 6th narrow, 7th spiniform. Third uropod with rami foliaceous, extending beyond 1st and 2nd uropods. Telson of moderate size, deeply cleft.

This genus combines in a remarkable manner the characters of the three hitherto recognised genera of *Ampeliscidae*, whence the name, signifying a "meeting of three ways."

TRIODOS INSIGNIS n. sp.

(Plate XXVI. Figs. 8-10.)

Head projecting slightly over base of 1st antenna, 1 pair of very small corneal lenses in upper angles of head. Side-plate 1 strongly convex below, not concealing base of 2nd antenna, inferior margin of side-plates 2-4 not very convex. Pleon somewhat compressed, segment 4 with a triangular keel on its posterior half bearing a tuft of setae behind, segment 5 with a tall upstanding keel on its posterior half also bearing a tuft of setae behind, postero-inferior angle of 3rd segment rounded.

Telson a little longer than broad, ovate, cleft nearly to base, apex with 2 setae.

First antenna shorter than peduncle of 2nd antenna, 2nd joint a little longer than 1st, flagellum longer than peduncle, 12-jointed.

Second antenna nearly as long as body, ultimate and penultimate joints subequal, flagellum ca. 28-jointed.

Lower lip, lobes broad, apically rounded.

Mandibles, cutting-edge 4-dentate, secondary cutting-edge in left 3-dentate, in right represented by a simple spiniform process, spine-row with 5 serrate spines, 2nd joint of palp linear though slightly tapering distally, 3rd slender and a little longer than 2nd.

First maxilla, inner plate with 1 subapical seta, outer plate with 9 spines, 2nd joint of palp with 4 teeth and 4 spines.

Second maxilla, plates subequal in width, apices rounded, outer plate rather broader distally than proximally.

Maxilliped, outer plate rather narrow, inner margin with 6 ovate spines, palp rather slender, 3rd joint externally a little lobed but scarcely produced, 4th spiniform.

First gnathopod, 6th joint shorter than 5th, linear, slightly tapering distally, inferior margin with very distinctly biserrate setae, 7th half length of 6th.

Second gnathopod, 6th joint half length of 5th, 7th half 6th, slender and furnished mostly with simple setae.

First and second peraeopods, 4th joint not apically produced, 7th a little longer than 5th and 6th combined, the 2nd but not the 1st peraeopod densely setose.

Third peraeoped, 2nd joint broader than long, anterior margin evenly convex, with plumose setae, 5th a little longer than 4th, posterior apex with 5 short and 2 long spines, no transverse rows of spines, 6th scarcely longer than 5th with only 3-4 setae on distal anterior margin, 7th stout, recurved, with 2 teeth on outer margin.

Fourth peraeopod similar to 3rd, but 2nd joint a little longer than broad, posterior apex of 5th with 7 short and 2 long spines.

Fifth peraeopod, anterior margin of 2nd joint slightly concave, posterior margin strongly expanded and obliquely truncate, plumose setae not quite extending as far as junction with 3rd joint, apex of 2nd reaching end of 3rd, which is a little longer than 4th, anterior apex of 4th slightly produced, 5th oval, as long as 3rd and 4th together and twice as long as broad, 6th narrow and a little shorter than 5th, 7th slender, spiniform.

First uropod, rami subequal, longer than peduncle, tapering to fine points and strongly curved, unarmed.

Second uropod, rami subequal and equal to peduncle, reaching half way along rami of 3rd uropod, sparsely spinose.

Third uropod, rami subequal, longer than peduncle, foliaceous, ovate, outer margins of both setose.

Length: 8 mm.

Colour: In spirit, whitish.

Locality: Umhloti River mouth NW. $\frac{1}{2}$ W., distant 15 miles (Natal). 100 fathoms, 2 (?) ♀ ♀. s.s. "Pieter Faure." 19/12/00. (S.A.M. No. A2761.)

FAMILY HAUSTORIIDAE.

1882. *Pontoporeidae* G. O. Sars, Forh. Selsk. Christian. no. 18, p. 22.
 1888. " Stebbing, Challeng. Rep. vol. 29, p. 804.
 1891. " G. O. Sars, Crust. Norw. vol. 1, p. 121.
 1904. *Argissidae* Walker in Herdman's Ceyl. Pearl Fish. Suppl. Rep. 17, p. 246.
 1906. *Haustoriidae* Stebbing, Das Tierreich, 21, pp. 118, 722.

I fail to see any imperative need for the creation of the family *Argissidae* for the two genera *Argissa* and *Platyischnopus*; the differences between these two genera being as great as the differences between them and the other genera of *Haustoriidae*.

GEN. PLATYISCHNOPUS Stebbing.

1888. *Platyischnopus* Stebbing, Challeng. Rep. vol. 29, p. 830.
 1893. *Platyischnopus* Della Valle, F. u. Fl. Neapel. vol. 20, p. 784.
 1897. *Platyischnopus* Chilton, Ann. Mag. Nat. Hist. ser. 6, vol. 19, p. 1, pl. 5.
 1904. " Walker in Herdman's Ceyl. Pearl Fish. Suppl. Rep. 17, p. 247.
 1906. " Stebbing, Das Tierreich, 21, pp. 122, 722.

PLATYISCHNOPUS MIRABILIS Stebbing.

1888. *Platyischnopus mirabilis* Stebbing, l.c. p. 830, pl. 58.
 1893. " " Della Valle, l.c. p. 785, pl. 60, fig. 36.
 1914. " " Stebbing, Ann. S. Afr. Mus. vol. 15, pt. 1, p. 32.

The s.s. "Pieter Faure" collected a specimen of this species at Saldanha Bay. 10 fathoms. 19/3/02. (Stebbing.)

Geogr. Distribution: Port Jackson, 2-10 fathoms (Stebbing); Bahia (Stebbing).

GEN. UROTHOE Dana.

1852. *Urothoe* Dana, Amer. J. Sci. ser. 2, vol. 14, p. 311.
 1853. *Egidia* Costa, Rend. Soc. Borbon. n.s. vol. 2, p. 170.
 1891. *Urothoe* Stebbing, Tr. Zool. Soc. Lond. vol. 13, pt. 1, p. 1
 (references).
 1904. „ Walker in Herdman's Ceyl. Pearl Fish. Suppl. Rep.
 17, p. 245.
 1905. „ Reibisch. Wiss. Meeresunters. Abt. Kiel. vol. 8, p. 163.
 1906. „ Stebbing, Das Tierreich, 21, pp. 128, 722.

UROTHOE PULCHELLA (Costa).

1853. *Egidia pulchella* Costa, l.c. p. 172.
 1891. *Urothoe* „ Stebbing, l.c. p. 11, pl. 4a.
 1893. „ *irrostrata* (part) Della Valle, F. u. Fl. Neapel. vol. 20,
 p. 664, pl. 5, figs. 3, 8, pl. 36,
 figs. 1-18, pl. 60, figs. 11, 12.
 1910. „ *pulchella* Chevreux, Mém. Soc. Zool. Fr. vol. 23, p. 187.

I have some little hesitation in assigning these specimens to this particular species, having had no specimens of this (or of any of the other) species for comparison. They seem, however, to be in close agreement.

The convex palm of 6th joint of 2nd gnathopod of ♂ is not very prominent, and the distal margin of the 5th joint is semicircularly excavate between the subacute inferior apex and the insertion of the 6th joint. Third pereopod lacks plumose setae, and its finger tapers gradually and is doubtfully serrulate. Rami of 1st uropod armed with 3 spines.

Length: ♂ 6mm.; ♀ 4 mm.

Colour: In spirit, pale reddish-brown, eyes rather darker.

Locality: Cape St. Blaize N. 10° W., distant 33 miles. 60 fathoms.
 1 ♂, 3 ♀ ♀. s.s. "Pieter Faure." 13/7/98. (S.A.M. No. A3809.)

Geogr. Distribution: Naples (Costa, Della Valle); W. coast France (Stebbing and Chevreux); Algeria, 0-65 metres (Chevreux); Channel Islands (Hornell); Canary Islands and Dakar (Chevreux).

FAMILY AMPHILOCHIDAE.

1871. Subf. *Amphilochinae* Boeck, Forh. Selsk. Christian. 1870, p. 129.
 1882. *Amphilochidae* G. O. Sars, id. no. 18, p. 23.
 1888. „ Stebbing, Challeng. Rep. vol. 29, p. 743.

1891. *Amphilochidae* G. O. Sars, Crust. Norw. vol. 1, p. 212.
 1906. „ Stebbing, Das Tierreich, 21, pp. 148, 723.
 1910. „ id. Sci. Res. "Thetis," pt. 12, p. 577.

GEN. GITANOPSIS G. O. Sars.

1891. *Gitanopsis* G. O. Sars, l.c. p. 223.
 1893. „ Della Valle, F. u. Fl. Neapel. vol. 20, p. 598.
 1906. „ Stebbing, l.c. p. 153.
 1912. „ Chevreux, Bull. Mus. d'Hist. Nat. Paris. 1912, no. 4,
 p. 211.

GITANOPSIS PUSILLA n. sp.

(Plate XXVI. Figs. 11, 12.)

Body smooth, somewhat iridescent. Rostrum curved, reaching to end of 1st joint of 1st antenna. Antero-lateral angles of head rounded, eyes oval. Side-plate 1 very small, half depth of and partly concealed by 2nd, side-plates 2-4 increasing slightly in depth, 4 longer than 3, inferior margin of 2-4 with a few slight indents, 5-7 about equal, bilobed. Pleon without dorsal teeth, postero-inferior angle of 3rd segment quadrate.

Telson short, nearly half the length of peduncle of uropod 3, pyriform, apically rounded.

First antenna equal to head plus first 2 peraeon segments, 2nd joint longer than 1st, 3rd shorter than 1st, flagellum 9-jointed, equal to peduncle, with sensory filaments, accessory flagellum very minute, 1-jointed.

Second antenna a little longer than 1st, ultimate and penultimate peduncular joints subequal, flagellum a little shorter than peduncle, 11-jointed.

Upper lip with apex angularly excised.

Lower lip, notch on inner margin of lobes small and inconspicuous, apex with a small knob-like tubercle and several setules.

Mandibles, cutting-edge 9 dentate, secondary cutting-edge in left multidenticulate, spine-row with 11 spines, palp slender, 2nd joint half as long again as 1st, 3rd a little longer than 2nd, tapering to an acute nonsetose point.

First maxilla, inner plate apically blunt, with 1 seta set in a small indent, outer plate with 14 spines, palp 2-jointed, 2nd joint half as long again as 1st, apex with 4 (?) spines.

Second maxilla, outer plate longer but much narrower than inner,

4 setae on apex of outer plate, 10 on apical and inner margins of inner plate.

Maxilliped, inner plate reaching to middle, outer plate just beyond end of 1st joint of palp, inner margin outer plate with 3 setules, apex with 1 elongate incurved spine, palp stout, 4th joint unguiform.

First gnathopod, 2nd joint with a small lobe on anterior apex, 5th triangular, cup-shaped, process reaching half way along inferior margin of 6th, apically setose, 6th distally nearly as wide as long, palm transverse, gently convex, minutely denticulate with spinules at regular intervals, 2 spines at defining angle, finger matching palm, inner margin minutely denticulate, with a small tooth at inner apex.

Second gnathopod similar but larger than 1st, process of 5th joint nearly reaching end of inferior margin of 6th, apex setose with a row of setae on margin next to 6th joint.

First and second peraeopods similar to one another, a little stouter than Sars' figures of the northern species, finger with a tooth at inner apex.

Third peraeopod, 2nd joint oblong, twice as long as broad, fore and hind margins straight, postero-inferior angle rounded, joints stouter than in 1st and 2nd peraeopods, spinules on anterior margin stronger.

Fourth peraeopod similar to 3rd, but 2nd joint not twice as long as broad, more oval, fore and hind margins slightly convex.

Fifth peraeopod, 2nd joint half as long again as broad.

First uropod longest, reaching to end of 3rd uropod, rami subequal, not as long as peduncle, narrow, apices acute, margins spinulose.

Second uropod, outer ramus scarcely more than half length of inner, which is subequal to peduncle, margins spinulose.

Third uropod, outer ramus shorter than inner, which is a little shorter than peduncle, margins very feebly spinulose.

Length: 2-3.5 mm.

Colour: Uniform black, dark brown, or claret, or anterior half of body dark, the posterior half white or very pale yellowish, some specimens pale claret with 2 deeper transverse bands on each of peraeon segments 1-6 and 5 longitudinal stripes from peraeon segment 7 to end of pleon; 4th-6th pleon segments, telson, uropods and all the limbs always lighter than the rest. Eyes black.

Locality: Buffels Bay and St. James (False Bay). 28/9/13 and 15/2/14. (K.H.B.) ♂♂ and ovigerous ♀♀ (the latter in far greater numbers); Sea Point near Cape Town. 15/11/13 and 14/12/13. (K.H.B.) ♂♂ and ovigerous ♀♀. (S.A.M. Nos. A2517, A2920, A2918 and A2919 respectively.)

The very short telson serves to distinguish this species from all the others, not only in the genus but also in the family.

GEN. PELTOCOXA Catta.

1875. *Peltocoxa* Catta, Rev. Sci. Nat. vol. 4, p. 161.

1893. ,, (part) Della Valle, F. u. Fl. Neapel. vol. 20, p. 647.

1906. ,, Stebbing, Das Tierreich, 21, pp. 159, 723.

PELTOCOXA AUSTRALIS n. sp.

(Plate XXVI. Fig. 13.)

Body smooth, firm and rather strongly indurated. Rostrum very small. Antero-lateral angles of head rounded. Eyes round oval. Side-plates 1 and 2 very small, concealed by 3, 3 and 4 very large, adjacent margins closely fitting, inferior margin of 5 concave, 6 and 7 small, ovoid, not hidden. First and second peraeon segments short, together equal to 3rd, 2nd a trifle shorter than 1st.

Pleon smooth, 4th segment longest, with a rather high dorsal crest extending whole length of segment and rounded at fore and hind ends, postero-inferior angles of segments 1-3 rounded.

Telson boat-shaped, short, reaching only as far as apex of peduncle of 3rd uropod.

First antenna short, very stout, 1st a little longer than broad, equal to 2nd and 3rd together, 2nd and 3rd broader than long, flagellum as long as 2nd joint, 4-jointed, 1st joint very stout, with long sensory filaments, 2nd-4th minute, with fine setules, accessory flagellum not recognised with certainty.

Second antenna a little longer than 1st, ultimate joint a little shorter than penultimate, flagellum shorter than peduncle, 4-jointed, tapering, 4th joint ending in a long fine seta.

Upper lip subtriangular with a large apical notch.

Lower lip, lobes tapering to subacute apex, inner margin not notched.

Mandibles, cutting-edge and secondary cutting-edge finely denticulate, molar very large and well developed, palp apparently absent.

First maxilla, inner plate with 1 setule in an apical indent, outer plate with 10 (?) spines, palp 2-jointed, the joints subequal, apex with 4 setae.

Second maxilla, both plates narrow and subequal, apex with 3 spine-setae.

Maxilliped, inner plate reaching to end of 1st joint of palp, apex

subacute, without setae or teeth, outer plate reaching to end of 2nd joint of palp, apex with 1 incurved spine, inner margin very minutely crenulate, 2nd joint palp with a tuft of setae on inner apex, 3rd joint distinctly narrower than 2nd and nearly twice as long, inner apex slightly produced beyond insertion of the narrow, unguiform 4th joint, a subapical group of setules on inner margin of 3rd joint.

First gnathopod subchelate, 2nd joint not lobed on anterior apex, 5th joint produced below into a narrow process, apically subacute and bearing 4 long spines, 6th ovate, broader across junction of palm with inferior margin, which junction is ill defined and non-angular, but bearing a small spine, palm with numerous denticles and 2 short spines, between which margin is convex, as is also the case between the upper spine and the hinge, finger curved, inner margin with 11 strong pointed, outstanding teeth.

Second gnathopod similar to 1st but a little larger, 6th joint expanding a little distally, palm evenly convex, its junction with inferior margin a little more angular, but still not well-defined, studded with minute tubercles.

First and second peraeopods slender, very sparsely spinose, finger without apical tubercle.

Third peraeopod slender, similar to 1st and 2nd, 2nd joint not enlarged.

Fourth and fifth peraeopods stouter, 2nd joint expanded oblong, hind margin straight, entire, postero-inferior angle rounded, 4th produced on hind margin to middle (4th peraeopod) or end (5th peraeopod) of 5th joint, finger without a tubercle.

First uropod reaching beyond 2nd and 3rd, rami subequal, as long as peduncle.

Second uropod, outer ramus $\frac{3}{4}$ length of inner.

Third uropod, outer ramus equal to peduncle and $\frac{2}{3}$ inner ramus, not reaching apex of inner ramus of 2nd uropod, apex of peduncle acutely produced. Upper margin of all the rami of all 3 uropods finely serrulate.

Length: 2 mm.

Colour: Uniform dark claret, 4th-6th pleon segments, telson, uropods and limbs whitish.

Locality: Sea Point, near Cape Town. 15/11/13. (K.H.B.) 4 specimens. (S.A.M. No. A2921.)

The short telson and subchelate 1st gnathopod distinguish this species from the two northern ones.

FAMILY LEUCOTHOIDAE.

1852. *Leucothoinae* Dana, Amer. J. Sci. ser. 2 vol. 14, p. 311.
 1856. *Leucothoides* Bate and Westwood, Rep. Brit. Ass. Meet. 25,
 p. 21.
 1865. *Leucothoina* Lilljeborg, Nor. Act. Soc. Upsal. ser. 3, vol. 6,
 no. 1, p. 18.
 1882. *Leucothoidae* G. O. Sars, Fort. Selsk. Christian. no. 18, p. 27.
 1888. „ Stebbing, Challeng. Rep. vol. 29, p. 771.
 1892. „ G. O. Sars, Crust. Norw. vol. 1, p. 281.
 1906. „ Stebbing, Das Tierreich, 21, p. 161.
 1910. „ id. Sci. Res. "Thetis," pt. 12, pp. 580, 636.
 1910. „ id. Gen. Cat. S. A. Crust. p. 452.

GEN. LEUCOTHOE Leach.

1793. *Gammarellus* (part) Herbst, Naturgesch. Krabb. Krebs. vol. 2,
 p. 106.
 1813/14. *Leucothoe* Leach, Edinb. Encycl. vol. 7, pp. 403, 432.
 1816. *Lycesta* Savigny, Mem. Ass. s. Vert. vol. 1, p. 109.
 1904. *Leucothoe* Walker in Herdman, Ceylon Pearl. Fish. Suppl. Rep.
 17, p. 258.
 1906. „ Stebbing, l.c. pp. 163, 724. (Synonymy)
 1908. „ Chevreux, Bull. l'Inst. oc. Monaco, no. 117, p. 11.
 1912. „ Chilton, Tr. Roy. Soc. Edinb. vol. 48, pt. 2, p. 478.

LEUCOTHOE SPINICARPA (Abildg.).

1789. *Gammarus spinicarpus* Abildgaard in C. F. Müller, Zool. Dan.
 ed. 3, vol. 3, p. 66, pl. 119, figs. 1-4.
 1804. *Cancer articulatus* Montagu, Tr. Linn. Soc. Lond. vol. 7, p. 70,
 pl. 6, fig. 6.
 1880. *Leucothoe commensalis* Haswell, Proc. Linn. Soc. N.S.W. vol. 4,
 p. 261, pl. 10, fig. 3.
 1888. „ *antarctica* Pfeffer, Jahrb. Hamb. Aust. vol. 5, p. 128,
 pl. 2, fig. 4.
 1888. „ *miersi* Stebbing, Challeng. Rep. vol. 29, p. 772, pl. 46.
 1892. „ *spinicarpa* G. O. Sars, Crust. Norw. vol. 1, p. 253,
 pl. 100, pl. 101, fig. 1.
 1893. „ „ Della Valle, F. u. Fl. Neapel vol. 20,
 p. 652, pl. 6, fig. 4, pl. 19, figs. 1-20.
 1904. „ „ Walker, l.c. p. 258.

1906. *Leucothoe spinicarpa* + *miersi* + *commensalis* Stebbing, l.c.
pp. 165, 166.
1907. " " Walker, Nat. Antarct. Exp. vol. 3, p. 18.
1909. " " id. Tr. Linn. Soc. Lond. vol. 12, pt. 4,
p. 331.
1910. " " Kunkel, Tr. Conn. Ac. Sci. vol. 16, p. 12,
fig. 3.
1910. " " Chevreux, Mém. Soc. Zool. Fr. vol. 23,
p. 194.
1910. " *commensalis* Stebbing, Sci. Res. "Thetis," pt. 12, pp.
580, 636.
1910. " *miersi* id. Gen. Cat. S. A. Crust. p. 453.
1912. " *spinicarpa* Chilton, l.c. p. 478.
1912. " " Pearse, Proc. U.S. Nat. Mus. vol. 43 [1913],
p. 370.

After an examination of 4 South African specimens and their comparison with Plymouth specimens of *L. spinicarpa* (Abildg.), I have come to the conclusion that *L. miersi* Stebb. must be added to the synonymy of the former species already given by Chilton.

Although in the South African specimens the 3rd joint of the mandibular palp is somewhat shorter than in Plymouth specimens and Sars' figure (l.c. pl. 100), it is not so extremely short as in the Challenger specimen. It is in fact somewhat variable even among the 4 South African specimens. The other character by which *miersi* is distinguished from the typical *spinicarpa*, namely, the relative lengths of the ultimate and penultimate peduncular joints of the 2nd antenna, is also somewhat variable; in the South African specimens the ultimate joint varies in length from little more than $\frac{1}{2}$ to $\frac{3}{4}$ the length of the penultimate. Also the strength of the denticulations on palm of 2nd gnathopod varies.

Length: 12 mm. (an ovigerous ♀ from St. James: 4 mm.).

Colour: The single specimen collected by myself at low-tide was unfortunately not observed amongst numerous other amphipods until the colours had faded.

Locality: Sandy Point N. $\frac{1}{3}$ E., distant 10 miles (near Cape Morgan). 95 fathoms. 1 juv.; Port Shepstone WNW., distant $2\frac{1}{2}$ miles (Natal). 24 fathoms. 1 ovigerous ♀; Hood Point Lighthouse N. by W. $\frac{1}{2}$ W. distant 11 miles (near East London). 49 fathoms. 1 ♂. s.s. "Pieter Faure." 14/8/01, 15/3/01, and 15/7/01 respectively. Sea Point (near Cape Town). 29/11/13. 1 juv. (K.H.B.); St. James (False Bay). 15/2/14. 1 ovigerous ♀ (K.H.B.); Durban, July, 1915. 2 ♂♂ (H. W.

Second antenna nearly as long as 1st, slender, ultimate peduncular joint shorter than penultimate, flagellum half as long as ultimate peduncular joint, 4-jointed.

Mandibular palp rather long, slender, 3rd joint a little longer than 1st, not quite half length of 2nd.

The other mouth parts without particular features.

First gnathopod, interior margin of the process of 5th joint quite smooth, 6th joint slightly tapering distally, inner margin finely denticulate, finger more than $\frac{1}{3}$, in ♂ nearly $\frac{1}{2}$, length of 6th.

Second gnathopod, 5th joint ending obtusely, 6th elongate-oval (similar to that of *L. liljeborgii* Boeck), palm convex, denticulate only on its distal half, palm and hind margin in the largest specimen feebly differentiated, finger strongly curved.

Third to fifth pereopods, posterior margin of 2nd joint entire, or very obscurely serrate, other joints moderately spinose, anterior margin of 6th joint with a very regular and even row of spinules.

First and second uropods feebly spinose; third uropods lost.

Length: ♂ from Cape St. Francis 9 mm., ♂ from Glendower Beacon 14 mm.; ovigerous ♀ 8 mm.

Colour: In spirit, yellowish or pale pinkish, eyes light red-brown; in life, flesh-pink, eyes crimson.

Locality: Cape St. Francis NE., distant 29 miles. 75 fathoms. 1 ♂, 2 ♀ ♀ (1 ovigerous); Glendower Beacon N. $\frac{1}{2}$ W., distant 16 miles. 66 fathoms. 1 ♂. s.s. "Pieter Faure." 19/2/02 and 10/9/01. Buffalo Bay (False Bay). 1/3/15. (K.H.B.). 1 ♂, 1 ovigerous ♀. (S.A.M. Nos. A164, A2764, and A3294.

Geogr. Distribution: Mediterranean (Lessona, Della Valle, Chevreux).

The depth of the sinus on postero-inferior angle of 3rd pleon segment varies somewhat; it is strongest in the two male specimens, and in one of the females is very feebly developed.

LEUCOTHOE DOLICHOCERAS n. sp.

(Plate XXVI. Fig. 14.)

Antero-lateral angles of head rounded. Eyes not distinguishable. Side-plate 1 slightly widened below, 2, 3, and 4 deeper than long, 4 deepest at the blunt antero-inferior angle, thence sloping evenly and without any angle backwards and upwards to emargination. Postero-inferior angles of 2nd and 3rd pleon segments acutely produced, 3rd with deep sinus above.

Telson twice as long as broad, oval, apex broadly rounded.

First antenna reaching to third pleon segment, slender, 2nd joint a

little shorter than 1st, 3rd short, flagellum longer than peduncle, ca. 34-jointed, accessory flagellum minute.

Second antenna reaching to middle of 2nd peduncular joint of 1st antenna, ultimate peduncular joint shorter than penultimate, thin and somewhat laminate, flagellum shorter than ultimate peduncular joint, ca. 10-jointed, but joints very indistinct.

Mandibular palp rather short and stout, 3rd joint a little longer than 1st and shorter than 2nd.

The other mouth parts without particular features.

First gnathopod, inner margin of process of fifth joint not serrulate, 6th joint same width throughout, inner margin finely denticulate, finger $\frac{1}{3}$ length of 6th.

Second gnathopod, 5th joint ending subacutely, 6th elongate-oval, palm defined by a blunt angle, with 3 large blunt-pointed tubercles and a small one near hinge, the 2 large ones nearest hinge close together, between them and the other large tubercle a narrow and rather deep gap, between the last large tubercle and the angle of palm some small irregular denticles, finger equal to palm with a rather deep semicircular incision at base, bounded by a denticle.

Peraeopods not very slender, almost totally devoid of spines.

First and second uropods also almost spineless; third uropods lost.

Length : 12 mm.

Colour : In spirit, pale pinkish.

Locality : Cape St. Francis NE., distant 29 miles. 75 fathoms. 2 ♂ ♂ ; Sandy Point (near Cape Morgan) NE. by N., distant 6 miles. 51 fathoms. 1 juv. ♂ ; s.s. "Pieter Faure." 19/2/02 and 14/8/01. (S.A.M. Nos. A167 and A3399.)

The distinctive marks of this species are the length of the first antennae, whence the specific name, and the 2nd gnathopod.

FAMILY STENOTHOIDAE.

1871. *Stenothoïnae* Boeck. Forh. Selsk. Christian. 1870, p. 138.
 1888. *Stenothoidae* Stebbing, Challeng. Rep. vol. 29, p. 747.
 1892. ,, G. O. Sars, Crust. Norw. vol. 1, p. 234.
 1900. ,, Chevreux, Rés. Camp. Monaco, vol. 16, p. 55.
 1901. ,, id. Bull. Soc. Rouen, vol. 36, p. 233.
 1906. ,, Stebbing, Das Tierreich, 21, pp. 192, 725.
 1907. ,, Walker, Nat. Antaret. Exp. vol. 3, p. 18.
 1910. ,, Stebbing, Gen. Cat. S. A. Crust. p. 453.

GEN. STENOTHOE Dana.

1852. *Stenothoe* Dana, Amer. J. Sci. ser. 2, vol. 14, p. 311.
 1904. „ Walker in Herdman's Ceylon Pearl Fish. Suppl. Rep.
 17, p. 261.
 1906. „ Stebbing, l.c. pp. 192, 725.
 1907. „ Chevreux, Bull. Mus. d'Hist. Nat. 1907, no. 6, p. 412.
 1908. „ id. Bull. l'Inst. océan. Monaco, no. 113, p. 1.
 1908. „ id. *ibid.* no. 129, p. 1.
 1908. „ id. *Mém. Soc. Zool. Fr.* vol. 20, p. 471.
 1911. „ id. *ibid.* vol. 23, p. 197.

STENOTHOE DOLICHOPOUS n. sp.

(Plate XXVI. Figs. 15-17.)

Body compressed, especially posteriorly. Rostrum half length of head, antero-lateral angles of head subacute, eyes large, projecting, horizontally oval. Side-plate 1 oblong, postero-inferior angle produced downward in a triangular lobe, almost completely concealed under side-plate 2, side-plates 2 and 3 oblong, deeper than long, inferior margin straight, antero- and postero-inferior angles rounded, side-plate 4 subrectangular, nearly twice as long as deep, inferior margin and angles as in side-plates 2 and 3, posterior margin straight not excavate. Pleon segment 3 with postero-lateral angles rounded with a very minute projection. Pleon segments 5 and 6 very short.

Telson nearly twice as long as broad, oval, lateral margins with one blunt spine near base, one larger one in middle and one equally large near apex.

First antenna at least as long as total length, 2nd joint shorter than 1st, 3rd joint very short and indistinctly separated from flagellum, which is ca. 33-jointed, longer than peduncle, no accessory flagellum.

Second antenna subequal to 1st, ultimate peduncular joint slightly shorter than penultimate, flagellum equal to the last two peduncular joints together, ca. 24-jointed.

Mouth-parts normal, without particular features; outer plate of first maxilla with 6 apical spines; in the mandible there are 3-4 setae on the small protuberance where the palp should be, and 4 spines in the spine-row; maxilliped elongate and slender, 4th joint equal to 2nd, 5th nearly equal to 4th, 3rd short.

First gnathopod very elongate, 4th joint subequal to 3rd, forming a broadly rounded lobe, scarcely produced, 5th subequal to 2nd, 6th shorter, narrowly linear, palm oblique and defined by 2 spines, finger matching palm.

Second gnathopod anterior apex of 2nd and 3rd joints forming rounded lobes. 6th joint twice as long as broad, no inferior margin, palm slightly sinuous, setose, with a conical tooth a little beyond the middle, a larger one nearer the hinge, followed by a large triangular, anteriorly crenate and setose tooth just before the hinge; finger nearly as long as palm, inner margin with 3 emarginations, the two distal ones setose.

First and second peraeopods, 2nd joint linear; 4th longer than 5th but shorter than 6th.

Third peraeopod similar but posterior apex of 2nd joint slightly expanded as a rounded lobe, 4th subequal to 6th.

Fourth and fifth peraeopods, 2nd joint expanded, oval, otherwise similar to third peraeopod, 7th joint on all the peraeopods stout.

All the uropods slender.

First uropod, peduncle longer than rami, of which outer is longer than inner, peduncle and both margins of rami spinulose.

Second uropod, peduncle and ramus subequal, outer ramus shorter, peduncle and rami spinulose.

Third uropod, ramus shorter than peduncle, 2nd joint half length of first, peduncle with 4 stout spines, 1st joint of ramus with 2 marginal and 1 apical spines.

Length : 6 mm.

Colour : In spirit, pale pinkish.

Locality : Sandy Point. N. $\frac{1}{4}$ E., distant 10 miles (near Cape Morgan). 95 fathoms. 1 ♂. s.s. "Pieter Faure." 14/8/01. (S.A.M. No. A214.)

The specific name in allusion to the elongate 1st gnathopods, which are somewhat similar to those of *Metopa norvegica* (Lilj.).

STENOTHOE GALLENSIS Walker.

1904. *Stenothoe gallensis* Walker in Herdman's Ceylon Pearl Fish. Suppl. Rep. 17, p. 261, pl. 3, figs. 19.
 1906. ,, ,, Stebbing, Das Tierreich, 21, p. 725.
 1907. ,, *crenulata* Chevreux, Bull. Mus. d'Hist. Nat. 1907, no. 6, p. 412, and Mém. Soc. Zool. Fr. vol. 20, p. 471, text-figs. 1-3.
 1909. ,, *gallensis* Walker, Tr. Linn. Soc. Lond. vol. 12, pt. 4, p. 331.

Since Walker in 1909 corrected his original statement and declares that the 2nd joint of the 3rd peraeopod is as narrow as that of peraeopods 1 and 2, the only outstanding difference between his species and *crenulata* Chevreux vanishes.

With regard to the present specimens, in spite of the absence of an adult ♂, I have no hesitation in assigning them to this species. The flagellar joints of the antennae are a little fewer in number (15 in both antennae), but otherwise the agreement is exact, down to the ornamentation on the 2nd joint of the ramus of the 3rd uropod.

This last character and the much less strongly expanded 4th joint of pereopods 3-5, as well as the hand and finger of the 2nd gnathopod in the ♀, will serve to distinguish this species clearly from *S. adhaerens* Stebbing.

In *S. crenulata* Chevreux has described the mandibles as having in the place of the palp a small setiferous tubercle. The same peculiarity is found in the present specimens, but the tubercle is sharper pointed than in Chevreux's figure and bears a seta at its base.

Length: Ovigerous ♀ 3 mm.

Colour: Whitish, eyes rather indistinct.

Locality: Durban. July, 1915. (H. W. Bell-Marley.) 1 ovigerous ♀ and 3 juv. (S.A.M. No. A3846.)

Geogr. Distribution: Ceylon (Walker); Gambier Archipelago, 0-25 metres (Chevreux: *crenulata*); Seychelles, 36 fathoms, and Zanzibar (Walker).

S. spinimana Chevreux (Mem. Soc. Zool. Fr. vol. 23, 1910, p. 197, text-fig. 7 and pl. 12, figs. 1-12), from Algeria appears closely allied to this species.

FAMILY PHLIANTIDAE.

1899. *Phliadidae* Stebbing, Tr. Linn. Soc. Lond. ser. 2, Zool. vol. 7, p. 414.
 1906. „ Chevreux, Bull. Soc. Zool. Fr. vol. 31, p. 87.
 1906. *Phliantidae* Stebbing, Das Tierreich, 21, pp. 200, 726.
 1909. „ Chilton, Tr. N. Zeal. Inst. vol. 41, p. 61.
 1910. „ Kunkel, Tr. Conn. Ac. Sci. vol. 16, p. 19.
 1910. *Phliasidae* Chevreux, Mém. Soc. Zool. Fr. vol. 23, p. 201.

PLIOPLATEIA n. g.

Fifth and sixth pleon segments very short and indistinct, telson transverse, entire; 1st antenna larger than second, neither very short; 1st maxilla with inner plate, 6-7 spines on outer plate and a very small but distinct palp; 2nd maxilla with inner and outer plates fused at base; palp of maxilliped long, 4-jointed; 1st and 2nd gnathopods similar, subchelate; the three posterior pereopods stouter and longer than the anterior two, 2nd joints not expanded; rami of 1st and 2nd

pleopods but not those of 3rd pleopods well developed, peduncles not expanded; 3rd uropod represented only by the lobe-like peduncle.

This genus differs from the other genera of the family in having long antennae, a palp on 1st maxilla and the peduncles of pleopods not expanded.

PLIOPATEIA TRIQUETRA n. sp.

(Plate XXVI. Figs. 18-24.)

Body about as broad as deep. Head short, rostrum upturned, with a smaller tooth on either side. Eye round. A small tooth on the anterior margin in front of eye, inferior margin keeled, ending in a small tooth at the antero-latero angle.

Peraeon segment 1 equal to head, segments 1-7 each surmounted by a dorsal keel, strongest on 1st, where it is deeply bifid, on the other segments it occupies only the posterior portions, a flat horizontal, backwardly directed prominence on each segment just above the junctions with the side-plates. Side-plates not contiguous, 1st nearly as deep as its segment, subtriangular, widening below and projecting forwards to antero-lateral angle of head, 2nd, 3rd, and 4th oblong, not quite twice as deep as long and not as deep as segments, antero-inferior angles of 1st to 4th rounded, inferior margin notched posteriorly, postero-inferior angles subacute, 5th longer than deep, strongly notched, anterior and posterior lobes acute, 6th and 7th similar to 5th but successively smaller.

Pleon not strongly flexed, 1st and 2nd segments with a dorsal tooth on posterior margin as large as that on 7th peraeon segment, a small subdorsal tooth on either side, 3rd segment smooth, unarmed except for the very obscure subdorsal teeth, 4th quite smooth, subequal to 3rd, postero-inferior angles of 1st to 3rd segments obtusely rounded.

Telson transverse, twice as wide as long, apical margin straight, postero-lateral angles rounded.

First antenna reaching to about 6th peraeon segment, 1st joint $\frac{2}{3}$ 2nd, upper apex of both 1st and 2nd joint projecting as an acute tooth, lower margin of 1st with one subapical tooth, 3rd joint $\frac{1}{2}$ 2nd, narrow and unarmed, flagellum longer than peduncle, 15 jointed.

Second antenna reaching to middle of flagellum of 1st antenna, 3rd joint short, 4th as long as broad, upper apex of both produced but not prominently so, 5th equal to 3rd and 4th together, narrow and unarmed, flagellum longer than peduncle, 11-jointed.

Upper lip entire.

Lower lip, lobes broad, apically truncate, inner lobes absent.

Mandibles, cutting-edge 4 dentate, secondary cutting-edge in left with 8 fine teeth, absent altogether in right, molar not prominent, palp absent.

First maxilla, inner plate very small, without setae, outer plate with 6-7 spines, palp very small, with 1-2 apical setae.

Second maxilla, plates fused at base, apically distinct, the outer longer and broader than inner, with ca. 7 setae on apex, and 3 on outer distal margin, inner plate apically subacute with 1 long spine and 3 setules on inner margin.

Maxilliped, inner apical angle of inner plate with 1 spinule and 1 setule, outer plates with very few setules, 4th joint of palp as long as 2nd and 3rd together, curved, with 1 apical seta and crenulate inner margin.

First and second gnathopods similar, 2nd joint longest, 3rd and 4th joints subequal, 5th longer than 6th in 1st gnathopod, subequal in 2nd, 6th joint widening distally, palm nearly transverse, nearly as long as inferior margin, defined by 2 spines and sparsely setose.

First and second peraeopods, 2nd joint longest, linear, 3rd and 5th subequal, 4th longer, anterior apex somewhat produced, subacute, 6th a little longer than 4th, 7th half 6th, with 1 spine-seta on inner margin near apex, hind-margin of 4th to 6th joints with short thick pubescence.

Third to fifth peraeopods, 2nd joint not expanded, postero-inferior apex with an acute triangular tooth, 3rd joint shortest, 4th subequal to 2nd, hind margin distally expanded, apex subacute, distal margin sinuous, 5th a little shorter than 4th, 6th longest, 7th a little more than half 6th, stout and curved, with a spine seta near apex, hind margin of 4th to 6th joints with short thick pubescence. All the peraeopods are sparsely setose.

Marsupial plates very large, oval, twice as long as broad, with thick fringe of plumose setae.

First and second pleopods, peduncle subrectangular, not produced, inner apical angle with 4 curved spines, rami well developed, with plumose setae.

Third pleopod, peduncle as in 1st and 2nd pleopods, rami rudimentary, short and oval, without setae.

First uropod, peduncle stout, equal to inner ramus which is longer than outer, a short blunt spine on apex of outer ramus and one just before the apex of inner ramus.

Second uropod, peduncle stout, longer than rami, which are subequal.

Third uropod represented only by an oval lobe-like peduncle, without spines or setae.

Length : 7 mm.

Colour : In spirit yellowish.

Locality : Great Fish Point Lighthouse N. by W., distant 9 miles. 49 fathoms. 1 nonovigerous ♀. s.s. "Pieter Faure." 4/9/01. (S.A.M. A174.)

The resemblance of the head, 1st peraeon segment and side-plates, and to a less extent the rest of the peraeon and pleon, to *Lepechinella chrysotheras* Stebb. is rather curious.

TEMNOPHLIAS n. g.

Lateral portions of peraeon segments not contiguous; telson entire, pyriform, longer than broad; antennae short; lobes of 2nd maxilla fused basally; palp of maxilliped 2-jointed; 1st and 2nd gnathopods similar, simple; 2nd and 3rd peraeopods chelate in ♂; peduncle of all the pleopods strongly produced; all the uropods uniramous (a small fixed rudiment of a second ramus in 1st and 2nd), in 3rd uropod peduncle and ramus fused.

Generic name composed of *τεμνω*, to cut, and *Phlias*, the original genus of the family, in allusion to the discontinuous peraeon segments and side-plates.

TEMNOPHLIAS CAPENSIS n. sp.

(Plate XXVI. Figs. 25-35.)

Body broad, oval. Head free, not sunk within 1st peraeon segment, rostrum triangular, reaching to level of antero-lateral angles which are rounded, margin between rostrum and these angles deeply concave. Eyes shortly oval, situate in the antero-lateral angles.

Peraeon smooth, glabrous, the lateral portions of the segments not contiguous. Side-plates subrectangular, inferior margin slightly emarginate.

Pleon segments 4 to 6 flexed under peraeon, segment 2 in the ♂ with a pair of submedian tubercles on anterior portion, another larger pair near posterior margin curving forwards, posterior margin slightly produced backwards as a rounded lobe overlapping segment 3, no tubercles in ♀.

Telson pyriform, longer than broad, lateral margins rather concave in ♂, apex subacute, lateral margins and upper apical surface setose.

First antenna, 1st joint stout, a trifle broader than long, 2nd subquadrate, upper (outer) apex of 1st and 2nd joints subacutely produced, 3rd shorter, cylindrical, flagellum equal to 2nd joint, obscurely 2-3 jointed, lower (inner) apex of 1st joint bevelled off and furnished with

long setae, 2nd minute, with apical setae; in ♀ similar, but 1st and 2nd joints not apically produced.

Second antenna a little longer than 1st, the two basal joints small, penultimate joint subacutely produced on inner (lower) apex, ultimate joint longer than penultimate, cylindrical, flagellum not as long as ultimate peduncular joint, 2-jointed, 2nd joint minute, both apically setose.

Upper lip with truncate distal margin, slightly notched or excavate, lateral angles rounded.

Lower lip, inner lobes absent, outer lobes apically rounded.

Mandibles, cutting-edge, 6-dentate, secondary cutting-edge in left 4-dentate, apparently absent in right, spine-row with 3 spines in left, 2 in right, molar represented by a stout, pellucid spine tipped with a seta as long as itself, no trace of palp.

First maxilla, outer plate with 4 stout, minutely denticulate spines, no inner plate or palp.

Second maxilla, plates fused proximally but slightly separated distally, outer plate with 4 apical setae.

Maxilliped, inner plate apically truncate, with 3 teeth, outer plate reaching to middle of apical joint of palp, outer margin convex, inner margin straight with a few fine setules, palp of 2 joints only, 2nd longer than first; inner margin being indented in middle and the setae disposed in 2 groups show that this joint is really two joints fused, though there is no trace of a suture.

First gnathopod simple, 2nd joint with a blunt lobe on anterior margin subapically, anterior margin of 3rd apically produced, 4th triangular, smaller than 3rd or 5th, 5th not strongly lobed inferiorly, 6th tapering, inner margin entire, setose, a short stout spine on inner apex, unguis curved.

Second gnathopod similar to 1st but stouter and with anterior margin of 2nd joint expanded keel-like and ending before apex of joint, anterior margin straight.

In ♀ 1st and 2nd gnathopods similar to those of ♂.

Peraeopods gradually increasing in length posteriorly. First peraeopod somewhat similar to 2nd gnathopod, but 4th joint expanded anteriorly, 5th likewise expanded, transverse, posterior margin of 4th and 5th setose, anterior margin of 2nd keeled.

Second peraeopod similar to 1st but in ♂ 6th joint broader, oval-oblong, inner apex ("palm") strongly excised forming a rounded notch, apex of inferior margin projecting shortly, finger with unguis reaching this lobe and making the limb almost chelate; in ♀ simple, resembling 1st peraeopod.

Third peraeopod resembling 2nd (chelate in ♂, simple in ♀) but the keel on posterior (upper) margin of 2nd joint, indented in middle, more strongly so in ♂ than ♀, a seta in the indent, the whole margin of keel minutely crenulate, 4th to 6th joints rather densely setose in ♂.

Fourth and fifth peraeopods similar to 1st, keel on 2nd joint crenulate and emarginate in middle, 4th to 6th joints densely setose in ♂.

Branchial lamellae narrow, apically rounded, margins not setose.

Marsupial lamellae oval, apically rounded, setose.

First to third pleopods in both sexes decreasing in size posteriorly, but not at all degenerate, peduncles with inner apices produced as narrow lobes (longest in the 1st pleopod) bearing 4 hooked spines.

First uropod, peduncle straight, cylindrical, ramus shorter than peduncle, narrow, apex with a short blunt spine, upper outer margin very finely and regularly pectinate, inner apex of peduncle with a short blunt tubercle probably representing the inner ramus.

Second uropod in ♂ reaching as far as 1st, peduncle stout, upper margin concave, a blunt lobe at upper outer basal angle, another at lower apex and another at upper inner apex, this latter bearing a tubercle (representing the inner ramus), ramus short and very stout, apically rounded, upper margin of peduncle and ramus with a few setae; in ♀ not quite as long as 1st uropod and not stouter, only the lobe on inner apex present, ramus as in 1st uropod with marginal pectinations and apical spines.

Third uropod reaching just beyond other uropods in ♂, not quite as far in ♀, rapidly tapering to an acute apex, limits of peduncle and ramus observable on the margins, but no trace of a transverse suture, margins setulose, 1 apical seta.

Length: (Pleon flattened out) ♂ 7 mm., ♀ 4 mm.; *breadth*: (including side-plates) ♂ 3 mm., ♀ 2 mm.

Colour: Pale salmon or buff with numerous circular pink spots, each with a pale centre and a darker circumference, on head, side-plates, lateral portions of peraeon segments, pleon and basal joints of limbs, the largest being the submedian row on the peraeon, and of these the two on the 4th segment are the most conspicuous. Eyes black.

Locality: St. James and Kalk Bay (False Bay). July, 1896. 2 nonovigerous ♀♀ (Dr. W. F. Purcell) and 11/8/12. ♂♂ and ♀♀ with ova and embryos (K.H.B.). On underside of boulders at low-tide. (S.A.M. Nos. 8828, A114 and A2893).

Locality: Cape Point NE. by E., distant 36 miles. 650 fathoms. 1 nonovigerous ♀. s.s. "Pieter Faure." 15/7/03. (S.A.M. No. A2792.)

Geogr. Distribution: Norway, 60–300 fathoms (Bruzelius, Boeck, Sars); Shetlands (Sp. Bate); Skye (Norman); Monterey Bay, California, 56 fathoms (Holmes).

FAMILY OEDICEROTIDAE.

1865. *Oedicerina* Lilljeborg, Nov. Act. Soc. Upsal. ser. 3, vol. 6, no. 1, p. 18.
 1871. *Oedicerinae* Boeck, Forh. Selsk. Christian. 1870, p. 160.
 1883. *Oediceridae* Schneider, Tromsø Mus. Aarsh. vol. 6 (p. 1).
 1888. ,, Stebbing, Challeng. Rep. vol. 29, p. 835.
 1892. ,, G. O. Sars, Crust. Norw. vol. 1, p. 286.
 1893. *Oediceridi* Della Valle, F. u. Fl. Neapel, vol. 20, p. 531.
 1906. *Oedicerotidae* Stebbing, Das Tierreich, 21, pp. 235, 726.
 1910. *Oedicerosidae* Chevreux, Mém. Soc. Zool. Fr. vol. 23, 1910, p. 205.

For additional genera see also: 1906. Chevreux, Bull. Soc. Zool. Fr. vol. 31, p. 76; and 1911. Stappers, Duc d'Orleans Camp. Arct. 1907, p. 40.

GEN. OEDICEROIDES Stebbing.

1888. *Oediceroides* Stebbing, l.c. p. 843.
 1892. ,, G. O. Sars, l.c. p. 287.
 1896. ,, Bonnier, Ann. Univ. Lyon. vol. 26, p. 640.
 1906. ,, Stebbing, l.c. p. 267.
 1906. ,, Walker, Ann. Mag. Nat. Hist. vol. 18, p. 15.
 1907. ,, id. Nat. Ant. Exp. vol. 3, p. 22.
 1910. ,, Stebbing, Sci. Res. "Thetis," pt. 12, p. 589.
 1911. ,, Chevreux, Ann. Mus. Nac. Buenos Aires, ser. 3, vol. 14, p. 403.

With the exception of *O. proximus* Bonnier from the Bay of Biscay, the genus has hitherto been recorded only from the southern oceans.

OEDICEROIDES CINDERELLA Stebbing.

1888. *Oediceroides cinderella* Stebbing, l.c. p. 850, pls. 62, 63.
 1893. *Halimodon* ,, Della Valle, l.c. p. 540, pl. 58, figs 43–45.
 1906. *Oediceroides* ,, Stebbing, l.c. p. 269.

Eyes apparently absent. First maxilla with 5 plumose setae on inner plate, in one of the specimens examined a wide gap between the

basal 3 and the distal 2 setae. First antenna with a row of 7 stout spines, besides several setae, on anterior margin of 1st joint, each spine arising from a small indent, flagellum subequal to peduncle, 17-jointed. Second antenna with peduncle rather longer than first antenna, ultimate joint shorter than penultimate, flagellum 80-90-jointed. First and second uropods with outer basal surface of peduncle setose, upper and inner margins spinose, basal half of outer and inner margins of both rami spinose. Third uropod similar but shorter than 2nd. Telson with apical margin straight, postero-lateral angles rounded, as in *O. lahillei* Chevreux.

Length: 17—25 mm.

Colour: In spirit, pinkish or yellowish.

Locality: Cape Point E. $\frac{3}{4}$ N., distant 38 miles. 630 fathoms. 1 ? ♂; 36° 49' S. 21° 14' E. 560 fathoms. 4 ♂♂, 1 ovigerous ♀. s.s. "Pieter Faure." 9/9/03 and 18/7/06. (S.A.M. Nos. A115 and A116.)

Geogr. Distribution: Falkland Islands, 1035 fathoms (Stebbing).

The Cape specimens differ from the typical form only in the small details above mentioned. There are no traces of the eyes or any pigment in any of the specimens; and in this respect the specimens approximate to *O. proximus*, unless the method of preservation, 6 years in formalin and then alcohol, is responsible for this feature. The number of setae on inner plate of first maxilla is also nearer *O. proximus* than *O. cinderella*. In all other points, however, the present specimens are inseparable from the latter species.

GEN. BATHYMEDON G. O. Sars.

1871. *Halimедon* (part) Boeck, Forh. Selsk. Christian. 1870, p. 169.

1892. *Bathymedon* G. O. Sars, Crust. Norw. vol. 1, p. 332.

1906. „ Stebbing, Das Tierreich 21, p. 255.

BATHYMEDON PALPALIS n. sp.

(Plate XXVII. Figs. 1-3.)

Rostrum very small. Eyes and apparently all pigment absent. Peraeon and pleon segments dorsally rounded. Side-plate 1 strongly produced forward, narrower in ♂ than in the (supposed) ♀, antero-inferior angle rounded, 2 and 3 oblong, subequal, 4 as deep as preceding but rather longer, whole posterior margin emarginate, 5 bilobed, lobes subequal, 6 subquadrate, 7 shallow. Postero-inferior angles of pleon segments 1-3 rounded.

Telson a little longer than broad, slightly tapering, shallowly notched, apices rounded, each with 1 short stout spine.

First antenna, 1st joint longer and stouter than 2nd, with 1 strong spine on lower apex, 2nd joint with 4 spinules on upper margin and 2 spinules on upper apex, 3rd joint $\frac{1}{2}$ length of 2nd, flagellum equal to 2nd and 3rd peduncular joints together, 14-jointed.

Second antenna, ultimate joint longer than penultimate, flagellum in ♂ specimen very long, ca. 70-jointed.

Upper and lower lips as figured by Sars for *B. longimanus* (Boeck).

Mandibles stout, cutting-edge thick, apex obtuse, nondentate, secondary cutting-edge represented by a stout spiniform process, apically bifid in left, obtuse in right, spine-row with 3 spines in left, 5 in right, molar denticulate and setose, palp very stout, especially 2nd joint, which is scarcely curved but strongly angular on inner basal margin, 3rd joint not as long as 2nd, more slender than either 1st or 2nd joints.

First maxilla, inner plate with 3 apical setae and some very fine setules on inner margin, outer plate with 9 spines, some of them tending to be bifid, palp with 2nd joint widest in middle, inner distal margin with ca. 8 setae, 4 apical setae, outer distal margin with 2 groups of 3 setae each.

Second maxilla, inner plate broader than outer, both setose.

Maxilliped, inner plate extending just beyond apex of 2nd joint (not of palp), inner apical angle with 1 spine, apical margin setose, outer plate not quite reaching end of 2nd joint of palp, inner margin with setae and strong spines, 2nd joint of palp not strongly expanded distally, 4th joint as long as 3rd.

First gnathopod, 5th joint produced into a lobe bearing several setae and 2 apical spines, 6th joint ovate, almost as long and as broad as 5th, palm convex, not very oblique, subequal to inferior margin, palmar spine present in one specimen only, finger just overlapping palm.

Second gnathopod, 5th joint produced into a lobe but not so strongly as in 1st gnathopod, with numerous setae and 2 long apical spines, 6th joint shorter but a little broader than 5th, similar to that of 1st gnathopod.

First and second peraeopods, 4th and especially 5th joints rather strongly setose and spinose, 4th longer than 5th or 6th, which are subequal, finger in 1st peraeopod not quite as long as, in 2nd a little longer than, 6th, not strongly tapering, ending in a minute curved unguis.

Third and fourth peraeopods, 2nd joint not expanded, oblong, tapering slightly, anterior margin in 3rd peraeopod slightly concave,

in 4th straight, setose, hind margin smooth, 4th joint (in 4th peraeopod) longer than 5th but shorter than 6th, hind margin strongly spinose, finger as long as 6th (5th-7th joints in 3rd peraeopod lost.)

Fifth peraeopod, 2nd joint $2\frac{1}{2}$ times as wide proximally as distally, hind margin nearly straight, very faintly serrulate, 3rd-7th joints lost.

First and second uropods, rami narrow, finely pointed, outer a little longer than inner, feebly spinose.

Third uropod lost.

Length: 9 mm.

Colour: In spirit, whitish.

Locality: Cape Point N.E. by E., distant 36 miles. 650 fathoms. 3 mutilated specimens (one of them a ♂, other two uncertain). s.s. "Pieter Faure." 15/7/03. (S.A.M. No. A2794.)

Specific name referring to the mandibular palp, which forms one of the distinguishing features of the species. The other features are: the absence of eyes, the shape and size of the 5th and 6th joints of the 1st and 2nd gnathopods, the 2nd joint of the 3rd and 4th peraeopods, and the telson.

(?) GEN. HALICREION Boeck.

1871. *Halicreion* Boeck, Forh. Selsk. Christian. 1870, p. 173.

1876. „ id. Skand. Arkt. Amphip. vol. 2, p. 294.

1892. „ G.O. Sars. Crust. Norw. vol. 1, p. 321.

1906. „ Stebbing, Das Tierreich, 21, p. 247.

Since in the single specimen the 3rd uropods have been broken off, it remains uncertain whether the species is rightly assigned to this genus. The process of the 5th joint of the 2nd gnathopod is certainly like that of *H. aequicornis* as figured by Sars, but the telson is reminiscent more of *Westwoodilla*.

(?) HALICREION OVALITELSON n. sp.

(Plate XXVII. Fig. 4.)

Rostrum long, acuminate, reaching to or a trifle beyond end of 1st joint of 1st antenna, slightly curved downwards. Eyes absent. Antero-lateral angles of head rounded. Peraeon and pleon dorsally rounded. Side-plates fairly large, 1st well expanded below, 2nd, 3rd, and 4th rounded below, 4th deeper than 3rd, 5th bilobed, lobes subequal, but anterior lobe not setose below, 6th subquadrate, a little deeper than long, 7th twice as long as deep, postero-inferior angle rounded. Postero-inferior angles of pleon segments 1-3 rounded.

Telson suboval, longer than broad, the rounded apex with 2 small submedian spines and a small lobe between them, 2 spines on rounded lateral angles.

First antenna shorter than second, 1st joint equal to 2nd and 3rd together, flagellum longer than peduncle, 32-jointed, not calceoliferous.

Second antenna, ultimate and penultimate joints subequal, flagellum ca. 84-jointed, not calceoliferous.

Upper lip rounded, broader than long, distal margin nearly straight, setulose.

Lower lip, outer lobes ovate, setose, inner lobes well-marked, rounded.

Mandibles, cutting-edge straight with one tooth at one end and two at the other, secondary cutting-edge in left 4-dentate, in right represented by a stout spiniform deeply bifid process, spine-row with 5 spines, palp long, 2nd joint nearly straight, 3rd joint equal to 2nd.

First maxilla, inner plate with 2 apical setae and some very fine setules on inner margin, outer plate with 9 spines, 2nd joint of palp apically subacute, 4 setae on outer margin and numerous setae on inner distal margin.

Second maxilla, outer and inner plates subequal in width.

Maxilliped as figured by Sars for *H. longicaudatus* Boeck.

First gnathopod, 5th joint produced in a fairly broad lobe, not quite reaching end of inferior margin of 6th, spinose, 6th joint ovate, palm setose, longer than inferior margin, defined by a stout palmar spine, finger as long as palm.

Second gnathopod similar, but 5th joint with a longer and narrower process, 6th joint more elongate (twice as long as wide), palm longer than inferior margin, but not so much as in 1st gnathopod, defined by a palmar spine.

First and second peraeopods, none of the joints expanded, 5th joint shorter than 4th or 6th which are subequal, 6th joint rather narrower than 4th or 5th, all with long setae, 7th as long as or a little longer than 6th.

Third peraeopod, 2nd joint somewhat pear-shaped, broader proximally, front margin straight, both front and hind margin setose, distal joints lost.

Fourth peraeopod, 2nd joint not so pear-shaped, front margin convex, 4th joint longer than 6th, somewhat expanded on hind margin, 6th joint longer than 5th, 7th joint equal to 4th.

Fifth peraeopod, 2nd joint strongly expanded, twice as wide proximally as distally, hind margin faintly crenulate, setose, distal joints lost.

First and second uropods, outer ramus slightly shorter than inner, peduncle and rami feebly spinulose.

Third uropod lost.

Length: 11 mm.

Colour: In spirit, pale pinkish.

Locality: Cape Point N. 81° E., distant 32 miles. 400 fathoms. 1 mutilated nonovigerous ♀. s.s. "Pieter Faure." 20/8/03. (S.A.M. No. A2772.)

FAMILY LILJEBORGIIDAE.

1899. *Liljeborgiidae* Stebbing, Ann. Mag. Nat. Hist. ser. 7, vol. 4, p. 211.
 1910. ,, id. Gen. Cat. S.A. Crust. p. 453.

GEN. LILJEBORGIA Bate.

1862. *Liljeborgia* Bate, Cat. Amphip. Brit. Mus. p. 118.
 1910. ,, Stebbing, l.c. p. 454.

LILJEBORGIA PROXIMA Chevreux.

1907. *Liljeborgia proxima* Chevreux, Bull. Mus. d'Hist. Nat. Paris, 1907, no. 6, p. 413.
 1907. ,, ,, id. Mém. Soc. Zool. Fr. vol. 20, p. 475, figs. 4, 5.

Stebbing (1910, Sci. Res. "Thetis," pt. 12, p. 588) has pointed out that the presence of dorsal teeth, albeit very small, the great length of the finger of the 5th peraeopod and the small size distinguish Chevreux's species from *L. aequabilis* Stebbing. Stebbing and Chevreux have specially mentioned two identical characters which distinguish their respective species from *L. brevicornis* Bruz., namely: the absence of a tooth at postero-inferior angle of 1st side-plate, and the equality of the apical lobes of the telson. There are other characters in common between the two species, such as the postero-inferior angle of the 3rd pleon segment, the posterior margins of the 2nd joints of the 3rd-5th peraeopods.

The present specimen corresponds with Chevreux's description, although unfortunately the distal joints of the 5th peraeopods have been lost.

In my opinion *proxima* should become a synonym of *aequabilis*. The size, especially in females, is not so important, as may be seen in

Paramoera capensis (*infra*), where ovigerous females vary from 5–12 mm.

Length: 6 mm.

Colour: In spirit, whitish, 5th and 6th peraeon segments crimson, mouth-parts rose, eyes light brown.

Locality: Fish Hoek Bay (False Bay). 5 fathoms. 1 specimen. s.s. "Pieter Faure." 24/12/02. (S.A.M. No. A3807.)

Geogr. Distribution: Gambier Archipelago, 20 metres (Chevreux).

FAMILY TIRONIDAE.

1871. *Syrrhoinae* Boeck, Forh. Selsk. Christian. 1870, p. 146.
 1888. *Syrrhoidae* Stebbing, Challeng. Rep. vol. 29, p. 787.
 1893. ,, G. O. Sars, Crust. Norw. vol. 1, p. 388.
 1906. *Tironidae* Stebbing, Das Tierreich, 21, p. 273.
 1908. ,, Chevreux, Bull. Inst. océan. Monaco, no. 129, p. 7.
 1910. ,, Stebbing, Gen. Cat. S.A. Crust. p. 454.
 1911. ,, Chevreux, Bull. Inst. océan. Monaco, no. 204, p. 3.
 1912. ,, id. Bull. Mus. d'Hist. Nat. 1912, no. 4, p. 213.

GEN. BRUZELIA Boeck.

1871. *Bruzelia* Boeck, l.c. p. 149.
 1876. ,, id. Skand. Arkt. Amphip. vol. 2, p. 477.
 1893. ,, G. O. Sars, l.c. p. 394.
 1893. ,, Della Valle, F. Fl. Neapel. vol. 20, p. 667.
 1906. ,, Stebbing, l.c. p. 274.
 1910. ,, id. Sci. Res. "Thetis," pt. 12, p. 590.

BRUZELIA DIODON n. sp.

Body stout, not very much indurated. Head with long, downwardly curved rostrum, which is parallel-sided and truncate at the apex, antero-lateral angles subquadrate, eyes absent. Peraeon rounded, not carinate except on 7th segment which ends in a tooth. Side-plates 1–4 equal in depth, antero-inferior angles of 1 and 2 rounded, of 3 acute, of 4 rounded, inferior margin of 4 straight, postero-inferior angle of 4 subacute, 5 and 6 with posterior lobes deeper than anterior, 7 small and semicircular. Pleon segments feebly carinate, keel on 1st strongest and ending in a tooth, inferior margin of 1st rounded below, postero-inferior angle of 2nd quadrate with a small tooth, of 3rd acutely produced and somewhat recurved.

Telson tapering as in *B. typica* Boeck, apex entire.

First antenna reaching to end of peduncle of 2nd antenna, 1st joint stout, 2nd not quite as long as 1st, 3rd not quite $\frac{1}{2}$ 1st but more than $\frac{1}{2}$ 2nd, flagellum equal to 2nd and 3rd joints together, 8-jointed, accessory flagellum 1-jointed, reaching to middle of 2nd flagellar joint, apex setose.

Second antenna, inferior apex of 2nd joint reaching to middle of 3rd joint, 4th joint longer than 5th, flagellum equal to 3rd and 4th joints together, 6-jointed.

Upper lip rounded as in *B. australis* Stebbing.

Lower lip, outer lobes distinct from mandibular processes as in *B. australis*.

Mandible, 3rd joint of palp shorter than 1st.

First maxilla, inner plate with 10 setae, outer plate with 11 spines, apex of 2nd joint of palp with 5 spinules and a smaller one on outer distal margin.

First and second gnathopods, palm defined by one simple spine and one denticulate spine (as in other species).

First and second peraeopods without particular features.

Third to fifth peraeopods, 2nd joint narrow oblong as in *B. typica*, hind margin serrate but not so strongly as in *B. australis*, postero-inferior angle in all three peraeopods rounded.

First uropod, outer ramus $\frac{3}{4}$ length of inner, upper margins of both rami very finely serrulate, that of outer ramus in addition with 3 small spinules.

Second uropod, outer ramus a little more than $\frac{1}{2}$ length of inner, margins unarmed.

Third uropod, rami subequal, but inner ramus broader, margins unarmed.

Length : 7 mm.

Colour : In spirit, whitish.

Locality : Cape Point N.E. by E., distant 36 miles. 650 fathoms. 1 ♀. s.s. "Pieter Faure." 15/7/03. (S.A.M. No. A2793.)

The specific name refers to the teeth on 7th peraeon and 1st pleon segments.

This is the fourth species of the genus. It appears that a strongly carinate dorsum is correlated with an acuminate rostrum, and a feebly carinate dorsum with a blunt rostrum. The two North Atlantic species, *B. tuberculata* G. O. Sars and *B. typica* Boeck, respectively show these characters. *B. australis* Stebbing from New South Wales corresponds with the first, while the South African species corresponds with the second form.

FAMILY PARAMPHITHOIDAE.

1871. *Epimerinae* Boeck, Forh. Selsk. Christian. 1870, p. 183.
 1888. *Epimeridae* Stebbing, Challeng. Rep. vol. 29, p. 876.
 1893. „ G. O. Sars, Crust. Norw. vol. 1, p. 362.
 1906. „ Walker, Ann. Mag. Nat. Hist. ser. 7, vol. 18, p. 17.
 1906. *Paramphithoidae* Stebbing, Das Tierreich, 21, p. 320.
 1908. „ id. Journ. Linn. Soc. Lond. Zool., vol. 30,
 p. 191.
 1912. „ Chevreux, Bull. Mus. Paris, no. 4, p. 215.

GEN. EPIMERIA Costa.

1793. *Gammarellus* (part) Herbst. Naturgesch. Krabb. Krebs. vol. 2,
 p. 106.
 1851. *Epimeria* Costa in Hope, Cat. Crost. Ital. p. 46.
 1888. „ Stebbing, l.c. p. 877.
 1893. „ G. O. Sars, l.c. p. 363.
 1906. „ Walker, l.c. p. 16.
 1906. „ Stebbing, l.c. pp. 321, 728.
 1912. „ Chevreux, l.c. p. 215.

EPIMERIA CORNIGERA (Fabr.).

1779. *Gammarus corniger* Fabricius, Reise Norweg. p. 383.
 1871. *Epimeria cornigera* Boeck, l.c. p. 185.
 1893. „ „ G. O. Sars, l.c. p. 364, pl. 128.
 1893. *Acanthonotosoma cornigerum* (part) Della Valle, F. u. Fl. Neapel.
 vol. 20, p. 676, pl. 59, fig. 85.
 1906. *Epimeria cornigera* Stebbing, l.c. p. 323 (synonymy).
 1911. „ „ Sexton, J. Mar. Biol. Ass. n.s. vol. 9, pt. 2,
 p. 210.

The South African specimen differs from Stebbing's description and Sars' figures only in having the ultimate joint of peduncle of 2nd antenna shorter than penultimate and the side-plates 1-3 obtuse (as in Sars' figure of *E. tuberculata*, l.c. pl. 129, fig. 2).

Length: 18 mm.

Colour: In spirit, pale pinkish.

Locality: Buffalo River NW. $\frac{1}{2}$ W., distant 19 miles (off East London). 300 fathoms. . s.s. "Pieter Faure." 16/4/01. (S.A.M. No. A218.)

Geogr. Distribution: Norway, 50-150 fathoms (Sars); Great

Britain (Bate); France (Chevreux); Mediterranean (Costa); Bay of Biscay, 75-246 fathoms (Sexton).

EPIMERIA SEMIARMATA n. sp.

(Plate XXVII. Fig. 5.)

Integument indurated. Rostrum reaching to end of 2nd peduncular joint of 1st antenna. Eyes large, roundish-oval. Side-plates 1-3 subacute, 4 depth not greater than greatest length, inferior margin crescentic, 5 pentagonal, not produced, 6 rectangular, 7 semicircular, but deeper than long. Peraeon broadly rounded, not carinate. Pleon segments rounded, a faint carina on 3rd ending in a shortly produced acute tooth (obsolete in the largest specimen), 4th depressed basally, posteriorly with a low rounded hump, postero-lateral angle of 1st rounded, of 2nd acutely but shortly produced, of 3rd rather more produced (as in *E. parasitica*), no subdorsal carinae or accessory teeth.

Telson oblong, longer than broad, apex rounded with a shallow triangular incision.

First antenna, 1st joint longer than 2nd and 3rd together, flagellum half length of body, ca. 26-jointed.

Second antenna, ultimate joint of peduncle shorter than penultimate, flagellum $\frac{2}{3}$ length of body, ca. 36-jointed.

Mandible, 2nd and 3rd joints of palp subequal, 2nd only sparsely setose.

Maxilliped, apex of outer plate with 8 spine-teeth.

Upper and lower lips, first and second maxillae as in Sars' figures of *E. conigera*.

First and second gnathopods similar, 5th joint with 3 bunches of setae on inner margin and one on apex, 6th shorter than 5th, palm very oblique, straight, denticulate but otherwise scarcely defined, finger longer than palm, inner margin serrate.

First and second peraeopods, 4th and 6th joints subequal, 5th a trifle shorter, 6th with 2 pairs of spines on hind margin, 7th $\frac{3}{4}$ length of 6th, inner margin entire.

Third peraeopod, 2nd joint not expanded, of nearly the same width throughout, posterior apex rounded, with 3 indents each with a seta, 4th shorter than 5th, which is shorter than 6th, 7th as in 1st and 2nd peraeopods.

Fourth peraeopod, 2nd joint similar but rather broader, and broader basally than apically, posterior apex as in 3rd peraeopod, 4th-6th joints also similar, 7th $\frac{2}{3}$ length of 6th.

Fifth peraeopod, 2nd joint pear-shaped, posterior apex scarcely

prominent, subquadrate, without indents, 4th shorter than 5th which is little shorter than 6th, 7th $\frac{1}{2}$ length 6th.

Uropods without particular features, rami subequal except on 2nd uropod, where the outer is shorter than the inner.

Length: 13 mm. (ovigerous ♀).

Colour: In spirit, pale pinkish.

Locality: Cape Point N. 81° E., distant 32 miles. 460 fathoms. 3; Cape Point N.E., distant 40 miles. 560–700 fathoms. 1 ovigerous ♀ and 3 immature. s.s. "Pieter Faure." 20/8/03 and 17/9/03. (S.A.M. Nos. A219 and A2765.)

The specific name refers to the fact that the 5th side-plate is unarmed, as in *E. inermis* Walker, but the 4th is of the normal crescentic shape.

EPIMERIA LONGISPINOSA n. sp.

(Plate XXVII. Fig. 6.)

Integument indurated. Surface of the whole body, including telson, is seen under a high-power lens to be reticulated in a honey-comb pattern. Rostrum reaching to end of 2nd peduncular joint of 1st antenna. Eyes round. Side-plates 1–3 subacute, 4 deeper than long, lower margin emarginate but not strongly so, 5 strongly produced into a narrow spiniform process reaching to end of 1st pleon segment, 6 oblong, with small boss on lower margin, 7 semicircular. Peraeon not carinate. Pleon segment 1 feebly carinate but not ending in a tooth, 2–4 carinate and ending in a prominent finely pointed tooth, 4 with a notch in middle, postero-lateral angles of 2 and 3 quadrate, no accessory teeth or subdorsal carinae.

Telson oblong, apically subtruncate with shallow, almost semi-circular incision.

First antenna a little more than $\frac{1}{4}$ total length, 1st joint longer than 2nd and 3rd together, flagellum ca. 27-jointed, accessory flagellum small but distinct.

Second antenna longer than first, ultimate joint of peduncle a little shorter than penultimate, flagellum ca. 32-jointed.

Mandible, 3rd joint of palp a little longer than 2nd.

Maxilliped, apex of outer plate with 10 spine-teeth.

Upper and lower lips, first and second maxillae normal.

First and second gnathopods similar, 5th joint longer than 6th, numerous setae on inner margin (chiefly arranged in 3 groups) and at apex, palm nearly transverse, distinct, convex, denticulate, finger about as long as palm, inner margin serrate.

First peraeopod, 4th joint a little longer than 5th or 6th, which are subequal, inner margin of 5th with 2 groups of 4 spines each, of 6th with three pairs, apical spines on both 5th and 6th, 7th stout, not much more than $\frac{1}{2}$ 6th, not serrate.

Second peraeopod similar but 5th a little shorter than 6th, with 3 groups of spines on inner margin.

Third peraeopod, 2nd joint not expanded, hind margin slightly sinuous, posterior apex rounded with 3-4 indents, each with a seta, 4th longer than 5th, 6th longer than 4th, 7th stout, $\frac{1}{2}$ length of 6th.

Fourth peraeopod, 2nd joint similar to 3rd but broader basally and narrowing evenly, posterior apex with 4-5 indents, 5th longer than 4th, 6th longer than 5th, 7th stout, scarcely $\frac{1}{2}$ length of 6th.

Fifth peraeopod, 2nd joint pear-shaped, narrowing very rapidly, posterior apex produced in a small oval lobe to half way along 3rd, without indents, 4th and 5th subequal, 6th longer, 7th $\frac{1}{2}$ 6th.

Uropods without special features, outer ramus of 2nd shorter than inner.

Length: Up to 11 mm.

Colour: In spirit, pale pinkish.

Locality: Cape Point E. by N., distant 29 miles. 250-300 fathoms. 11 specimens of various sizes. s.s. "Pieter Faure." 27/8/03. (S.A.M. No. A220.)

FAMILY ATYLIDAE.

1832. *Atylidae* G. O. Sars, Fort. Selsk. Christian. no. 18, p. 26.
 1906. ,, Stebbing, Das Tierreich, 21, p. 327.
 1910. ,, id. Gen. Cat. S. A. Crust. p. 455.

GEN. NOTOTROPIS Costa.

1853. *Nototropis* Costa, Rend. Soc. Borb. n.s. vol. 2, pp. 170, 173.
 1906. ,, Stebbing, l.c. pp. 329, 728.
 1910. ,, id. l.c. p. 455.

NOTOTROPIS GRANULOSA (Walker).

1904. *Paratylus granulosa* Walker in Herdman's Ceylon Pearl Fish.
 Suppl. Rep. 17, p. 265.
 1906. *Nototropis* ,, Stebbing, l.c. p. 728.

The single specimen I have assigned to Walker's species, although the granules are not at all well marked.

Moreover, although Walker states that his species closely resembles *N. vedlomensis* (Bate and Westw.), he does not specifically mention the branchial lamellae. The South African specimen is indistinguishable from *vedlomensis* except in respect to this latter point: the branchial lamellae namely are pleated. I rather suspect that a re-examination of Ceylon specimens of *granulosa* would reveal the presence of pleated lamellae and confirm the specific identity of the Ceylon and Natal specimens and their distinctness from the European *vedlomensis*.

Length: 7 mm.

Colour: In spirit, pale yellowish.

Locality: Umkomaas River mouth, NW. by W. $\frac{1}{2}$ W., distant 5 miles (Natal). 40 fathoms. 1 nonovigerous ♀. s.s. "Pieter Faure." 31/12/00. (S.A.M. No. A223.)

FAMILY EUSIRIDAE.

1888. *Eusiridae* Stebbing, Challeng. Rep. vol. 29, p. 953.
 1893. " G. O. Sars, Crust. Norw. vol. 1, p. 414.
 1900. " Chevreux, Res. Camp. Monaco, vol. 16, p. 65.
 1906. " Stebbing, Das Tierreich, 21, pp. 338, 728.
 1907. " Walker, Nat. Antart. Exp. vol. 3, pp. 4, 30.
 1908. " Chevreux, Bull. l'Inst. océan. Monaco, no. 121, p. 1.
 1910. " Sexton, Proc. Zool. Soc. Lond. 1910, pt. 4, p. 848.

GEN. EUSIROIDES Stebbing.

1888. *Eusiroides* Stebbing, l.c. p. 969.
 1893. " G. O. Sars, l.c. p. 414.
 1893. " Della Valle, F. u. Fl. Neapel. vol. 20, p. 671.
 1906. " Stebbing, l.c. p. 345.
 1909. " Walker, Tr. Linn. Soc. Lond. 2nd ser. Zool. vol. 12, pt. 4, p. 333.

EUSIROIDES MONOCULOIDES (Haswell).

1880. *Atylus monoculoides* Haswell, Proc. Linn. Soc. N.S.W. vol. 4, p. 327, pl. 18, fig. 4.
 1888. *Eusiroides caesaris* Stebbing, l.c. p. 970, pl. 88.
 1888. " *pompeii* id. ibid. p. 974, pl. 89.
 1893. " *monoculoides* Della Valle, l.c. p. 674.
 1906. " " Stebbing, l.c. p. 345.

1907. *Eusiroides monoculoides* Chevreux, Mém. Soc. Zool. Fr. vol. 20, p. 478.
 1910. „ „ Stebbing, Sci. Res. "Thetis," pt. 12, p. 595.

These specimens present no peculiar features, except that the pleon segments are without a dorsal median tooth; the telsonic apex and the palms of the 1st and 2nd gnathopods resemble in some specimens Stebbing's figures of *E. caesaris*, in others those of *E. pompeii*. The calceoli on the antennae are less numerous, and on the large Sea Point specimen absent altogether.

Length: 14 mm., specimen from Sea Point 24 mm.

Colour: In spirit, pale pinkish, eyes claret. A specimen picked up on the beach at Sea Point was very nearly dead, and was when found salmon in colour with a large bright red subcircular medio-dorsal patch on each of peraeon segments 4 to 7 and pleon segments 1 to 3, surrounded by a lighter ring. In spirit this coloration faded to a uniform white, the eyes dark brown.

Locality: Umhlangakulu River mouth NW. by N., distant 7 miles (Natal). 50 fathoms. 3. 14/3/01; Sandy Point N. $\frac{1}{4}$ E., distant 10 miles (near Cape Morgan). 93 fathoms. 3. 14/8/01; Glendower Beacon N. $\frac{1}{2}$ W., distant 16 miles. 66 fathoms. 4 ♂♂, 1 ovigerous ♀. 10/9/01; Port Shepstone WNW., distant 2 miles (Natal). 24 fathoms. 2. 15/3/01; and Cape St. Francis NE., distant 29 miles. 75 fathoms. 2. 19/2/02. s.s. "Pieter Faure." Sea Point, near Cape Town. 19/6/14. 1. Washed up on beach after storm. (K.H.B.) (S.A.M. Nos. A228 to A232 and A2908 respectively.)

Geogr. Distribution: Port Jackson, low-water mark (Haswell); off Melbourne, 33 fathoms (Stebbing: *E. caesaris*); Heard Island, 75 fathoms (Stebbing: *E. pompeii*); Tuamotu Archipelago, 1 metre (Chevreux); New South Wales (Stebbing).

In 1909 (Subant. Is. N.Z., p. 622) this species was transferred by Chilton to *Bovallia* in the family *Pontogeneiidae*. Without disagreeing with Chilton's conclusions I think it best to keep the present South African specimens under the genus *Eusiroides*.

CLEONARDOPSIS n.g.

Very near to *Cleonardo* Stebbing, but differing in the following features: Body carinate, side-plate 6 hardly bilobed, side-plate 7 not deeper behind than in front, pleon segments narrowed and rounded below, upper lip broader than long, 5th joint of 1st and 2nd gnathopods

large, subequal in length and broader than 6th, peraeopods not very slender, telson not very elongate, cleft for less than half its length.

The institution of a new genus for the present species seems justified in view of the fact that the 4 new species of *Cleonardo* described by Chevreux (Bull. l'Inst. oc. Mon. no. 121, p. 1) all agree in possessing the same generic characters as the original species, *C. longipes* Stebbing. The telson is somewhat similar to that of *Rozinante* Stebb., but in this genus the 5th joint of the gnathopods is not lobed.

CLEONARDOPSIS CARINATA n. sp.

(Plate XXVII. Figs. 7-9.)

Body carinate, keel very low on the 5 anterior peraeon segments, on peraeon segments 6 and 7 and pleon segments 1 and 2 increasing in height posteriorly and ending in an acute tooth, on pleon segment 3 highest in the middle, thence descending to posterior end where there is an acute, forwardly directed, curved tooth, pleon segment 4 smooth, not depressed.

Head with very short depressed rostrum, antero-lateral angles truncate, eyes not apparent. Side-plate 1 not produced forwards, short, 2-4 increasing in length, inferior margin straight, antero- and postero-inferior angles rounded, side-plate 4 moderately emarginate, 5 bilobed, posterior lobe rather deeper and apex subacute, 6 sub-rectangular, antero-inferior angle bevelled off, deeper than long, 7 trapezoidal, longer than deep, not deeper behind than in front.

Pleon segments narrowed and rounded below, postero-lateral angles of 2nd and 3rd quadrate, with slightly produced acute point in 2nd, well produced in 3rd.

Telson short, not reaching beyond $\frac{1}{4}$ length of rami of uropod 3, somewhat pyriform, cleft $\frac{1}{3}$ its length, apices obtuse, non-dehiscent, unarmed.

First antenna reaching to 2nd pleon segment, 2nd joint $\frac{2}{3}$ length of 1st, 3rd joint not $\frac{1}{2}$ length of 2nd, flagellum longer than peduncle, ca. 70-jointed, accessory flagellum small, 1-jointed, $\frac{3}{4}$ length of 1st flagellar joint.

Second antenna in ♂ as long as first antenna, in ♀ extending to middle of peduncle of first antenna, ultimate joint shorter than penultimate, flagellum longer than peduncle in ♂, nearly equal in ♀, ca. 60-jointed in ♂, ca. 20-jointed in ♀. Flagella of both antennae calceoliferous.

Upper lip broader than long, distal margin rounded, entire.

Lower lip more resembling that of *Cleonardo newillei* Chevreux

than that of *C. longipes* Stebbing, but the mandibular process narrower and more acute.

Mandible, cutting-edge tridentate in the one (? left), 6-dentate in the other (? right), secondary cutting-edge 3- and 4-dentate respectively, spine-row with 6 spines, molar prominent, denticulate, palp long and slender, 3rd joint equal to 1st and 2nd together.

First maxilla, inner plate rounded, with 3-4 setae, outer plate with 11 spines, palp longer and not much narrower than outer plate, 2nd joint not distally widened, apex with 7-8 spines and 2-3 fine setules, outer distal margin with two widely spaced setae.

Second maxilla, inner plate only a little broader than outer, apices of both plates rounded, setose.

Maxilliped, apex of inner plate with 3 short blunt spines, outer plate reaching to middle of 2nd joint of palp, outer margin and apex setose, inner margin straight, unarmed, but with a row of fine setae some little way within the margin, 4th joint equal to 3rd.

First gnathopod, 2nd joint distally expanded, club-shaped, hind margin with a row of close-set spines, 5th joint large, triangular, inferiorly lobed and bearing stout setae, 6th joint as long as 5th but a little narrower, ovate, palm very oblique, undefined, with 9 spines and 5 groups of setae, 1 long and 2 short in each group, 7th joint long, nearly reaching base of 6th.

Second gnathopod similar, but 2nd joint more prominently club-shaped, and 5th joint more strongly lobed.

First pereopod, 2nd joint slightly expanded distally, hind margin with spines as in the gnathopods, 4th joint $\frac{2}{3}$ length of 2nd, 5th nearly $\frac{1}{2}$ length of 2nd, 6th subequal to 4th, its inner apex with a group of short spines, outer apex with 2 simple setae and 1 long plumose seta, 7th joint rather more than $\frac{1}{2}$ length of 6th, rather stout, curved.

Second pereopod similar, but 2nd joint not so much expanded, and spines on hind margin weaker.

Third pereopod longer than the other pereopods, 2nd joint 3 times as long as broad, front distal margin very finely setulose, with 5 widely spaced spines, hind margin with a few fine setae, 4th joint longer than 5th, both with very fine pubescence on front margin, 6th joint longer than 4th, subequal to 2nd, inner margin with 8 groups (usually pairs) of small spines, 7th joint $\frac{1}{2}$ length of 6th, curved.

Fourth pereopod, 2nd joint twice as long as broad, front distal margin with 2 spines, hind margin as in third pereopod.

Fifth pereopod a little shorter than fourth, 2nd joint half as long again as broad, front margin with a few setae only, hind margin convex, with very shallow serrations, each bearing a setule.

RHACHOTROPIS PALPORUM Stebbing.

1908. *Rhachotropis palporum* Stebbing, Journ. Linn. Soc. Lond. Zool. vol. 30. p. 194, pl. 28.

The male differs from Stebbing's specimen as follows: The grooves between the head and 1st peraeon segment and between the 1st and 2nd peraeon segments are deeper, side-plates 5 and 6 rather more deeply bilobed, 7 not so acute posteriorly, the teeth on pleon segments less strong, and on pleon segments 2 and 3 the dorsal tooth is larger than the others, 3rd joint of the palp of maxillipeds more oval.

Length: 12 mm.

Colour: In spirit pale yellowish.

Locality: Cape Point NE. by E. $\frac{1}{3}$ E., distant 38 miles. 755 fathoms. 1 ♂. 23/6/03; Cape Point E. by N., distant 29 miles. 250-300 fathoms. 1 ♀. 27/8/03. s.s. "Pieter Faure." (S.A.M. Nos. A224 and A2773).

Geogr. Distribution: 59° 36' N. 7° W. 400 metres (Stebbing).

RHACHOTROPIS GRIMALDII Chevreux.

1887. *Tritopsis grimaldii* Chevreux, Bull. Soc. Zool. Fr. vol. 12, p. 571 (♀).
 1888. *Rhachotropis* ,, Stebbing, Challeng. Rep. vol. 29, p. 1641.
 1896. *Rachotropis elegans* Bonnier, Ann. Univ. Lyon. vol. 26, p. 658, pl. 39, fig. 4 (♂).
 1900. ,, *grimaldii* Chevereux, Rés. Camp. Monaco, vol. 16, p. 68, pl. 9, fig. 1 (♀).
 1906. *Rhachotropis* ,, + *elegans* Stebbing, Das Tierreich, 21, pp. 351, 729.

Rostrum not extending to half 1st joint of 1st antenna, antero-lateral angles of head obtusely projecting. Eyes not visible. Peraeon not carinate, but posterior portion of each segment slightly swollen, the 7th segment in ♂ with a small median tooth. Side-plate 1 produced forwards as far as antero-lateral angle of head, apex rounded, side-plates 2-4 quadrangular, anterior margin of 4 rounded, posterior margin slightly emarginate, 5 and 6 bilobed, hind lobe the deeper, 7 half as long again as deep, deepest anteriorly, thence narrowing, postero-lateral angle quadrate, the teeth and serrations on the posterior angles of all the side-plates very obscure. Pleon segments 1-3 tricarinate, the subdorsal carinae obscure, all the carinae ending in acute but scarcely upturned teeth, the median one on 2nd segment being

the strongest, 4th segment with median carina, which is rounded in profile, highest in the middle and stronger in ♂ than in ♀, posterior margins of 2nd and 3rd segments rounded and serrated, more so in the 3rd than the 2nd, postero-lateral margins of 4th and 5th segments each with a tooth.

Telson reaching to end of uropods, gradually tapering, apices acute, contiguous, cleft not quite as far as centre.

First antenna to end of peraeon in ♂, to about 4th peraeon segment in ♀, 1st and 2nd joints subequal, lower apex of 1st ending in ♀ in 2 teeth, both joints in ♂ with 9 bunches of setae on lower margin, 3rd joint half length of 2nd, flagellum scarcely as long as peduncle, ca. 24-jointed in ♂, 8-jointed in ♀, accessory flagellum extremely minute and indistinct.

Second antenna longer than first antennae, reaching in ♂ to end of 3rd pleon segment, in ♀ nearly to end of peraeon, ultimate joint of peduncle in ♂ a little longer than penultimate, in ♀ scarcely as long, upper margin of penultimate joint in ♂ with ca. 18 bunches of setae, flagellum longer than peduncle, ca. 40-jointed in ♂, 16-jointed in ♀.

Upper and lower lips normal, but outer lobes of lower lip more truncate apically.

Mandible, cutting-edge straight, entire, with 1 tooth at one end and 2 at the other, secondary cutting-edge in left 7-dentate, in right very feeble, serrulate, spine-row with 6-7 spines, 3rd joint of palp only a trifle shorter than 2nd.

The other mouth-parts without particular features.

First and second gnathopods, palm defined by 2 blunt tubercles, each surmounted by a spine bearing a cilium near its apex.

Third to fifth peraeopods, hind margin of 2nd joint entire, that of 5th peraeopod serrate, posterior apical angle rounded, in the 4th peraeopod 6th joint longer than 4th, 5th and 7th subequal, shorter than 4th.

Uropods, peduncle of 1st and 2nd spinose on inner margin, inner apex of peduncle of 3rd produced into an acute tooth furnished with a spine, outer ramus of each uropod slightly shorter than inner, inner margin of inner ramus of 1st and 2nd uropods and both margins of both rami of 3rd uropod spinulose.

Length: 13 mm.

Colour: In spirit, pale yellowish or pinkish.

Locality: Cape Point E. by N., distant 29 miles. 250-300 fathoms. 2 ♂♂, 7 ♀♀; Cape Point N. 81° E., distant 32 miles. 460 fathoms. 10 ♀♀; Cape Natal N. by E., distant 24 miles. 440 fathoms.

1 ovigerous ♀. s.s. "Pieter Faure." 27/8/03, 20/8/03 and 4/4/01. (S.A.M. Nos. A221, A222 and A240 respectively).

Geogr. Distribution: Cape Finisterre, 363-510 metres (Chevreux: *grimaldii*); Bay of Biscay, 950 metres (Bonnier: *elegans*).

There can be little doubt that these specimens are assignable to Chevreux's species, and that *elegans* is the ♂ of *grimaldii*. The presence of a small tooth on the 7th peraeon segment in the ♂ and the fact that the teeth on the pleon are not upturned are not enough to separate the Cape specimens from the North Atlantic ones.

RHACHOTROPIS PAENGLABER n. sp.

(Plate XXVII. Fig. 10.)

Rostrum reaching half way along 1st joint of 1st antenna. Eyes absent. Antero-lateral angles of head obtuse.

Peraeon not keeled. Side-plates as in the previous species, but 7th not so long proportionately to its depth and not narrowed so much posteriorly. Pleon segment 1 with very obscure median keel on posterior margin, segment 2 with 3 keels ending in small acute teeth, segment 3 with 3 keels not ending in teeth, segment 4 tricarinate, the median keel ending in a tooth, the subdorsal keels not reaching the posterior margin. Postero-lateral angles of segment 3 rounded and serrate, the margin above also serrate.

Telson narrow, of nearly even width throughout, apices acute, not quite contiguous, cleft for $\frac{1}{3}$ its length.

First and second antennae subequal, extending in ♂ to end of 3rd pleon segment, in ♀ to end of peraeon, peduncle with calceoli and groups of setae, flagella of both antennae ca. 17-jointed in ♂, ca. 10-jointed in ♀, accessory flagellum of 1st antenna minute but distinct.

Mouth parts normal; mandible with the cutting-edge as in *R. grimaldii*, and 3rd joint of palp a little longer than 2nd.

First and second gnathopods, palm defined by a well-marked obtuse projection bearing 6-8 spines, lobe of 5th narrow.

Third to 5th peraeopods, 2nd joint with entire hind-margin, in peraeopod 5 very faintly serrate and setulose, postero-inferior angle quadrate (as figured by Chevreux for *R. proxima*), distal joints of the peraeopods lost.

Length: 10 mm.

Colour: In spirit, pale pinkish.

Locality: Cape Point E. by N., distant 29 miles. 250-300 fathoms. 3 ♂♂, 16 ♀♀; Cape Point N. 81° E., distant 32 miles. 400 fathoms.

1 ♂. s.s. "Pieter Faure." 27/8/03 and 20/8/03. (S.A.M. Nos. A2769 and A2770.)

Specific name in allusion to the comparative absence of teeth on the pleon.

RHACHOTROPIS ANOMALA n. sp.

Rostrum subacute, extending as far as the subacute antero-lateral angles of head. Eyes absent.

Peraeon smooth. Side-plate 1 not strongly produced forward, antero-inferior angle acute, side-plate 5 produced backward but not narrowed, ending quadrately. Pleon with only a single dorsal carina, ending in a small tooth on 2nd and 4th segments only. Postero-lateral angle of 3rd rounded, quite smooth.

Telson reaching to end of 3rd uropod, tapering but slightly until near apex, cleft extremely short, apices acute, non-dehiscent.

Both first and second antennae lost.

Mouth-parts normal; mandible with the cutting-edge as in *R. grimaldii*, secondary cutting-edge 6-dentate in left, feeble and tridentate in right, 3rd joint of palp longer than 1st and 2nd combined.

First gnathopod, palm running into hind margin without break, but defined by two spines (1 large and 1 small) on the margin and a transverse row of 7 spines increasing in length towards the margin, palm setose.

Second gnathopod lost.

All the joints of the peraeopods lost except the 2nd joints; in the 5th peraeopod this is narrow-oblong, not at all expanded, postero-inferior angle acute but not produced, hind margin entire and glabrous.

Uropods, outer ramus of 2nd uropod shorter than inner, rami of 1st and 3rd uropods subequal, peduncles and rami smooth, except inner margin of inner ramus of 3rd, which has a few short spinules, inner apex of peduncle of 3rd acutely but shortly produced.

Length: 10 mm.

Colour: In spirit, pale yellowish.

Locality: Cape Point NE. by E., distant 36 miles. 650 fathoms. 1 nonovigerous ♀. s.s. "Pieter Faure." 15/7/03. (S.A.M. No. A2795.)

Although the single specimen is somewhat mutilated, it shows quite well characters distinct enough on which to found a new species.

The species seems to approximate to *R. gracilis* Bonnier in the dorsal carination, the telson and the postero-lateral margin of the

teeth on the telson: there are 3-4 teeth on each lobe instead of 2 as in the other forms.

Now specimens from Table Bay, which I have examined, agree with the descriptions of *Paramoera austrina* but show according to age from 2-8 apical teeth on the lobes of the telson; in one large ♂ there are even 11 teeth on each lobe. Chilton does not give the length of his specimens, but I cannot doubt that they are exactly similar to my Table Bay specimens.

Moreover, if the multidentate telson be compared with Bate's figure of *Atylus capensis* (presumably copied from Dana) the conclusion is unavoidable that we are dealing with the same form. In other respects the specimens conform to Bate's (Dana's) somewhat meagre description. Differences in the relative lengths of upper and lower antennae are unimportant.

Stebbing's *A. assimilis* is a typical young specimen of *P. capensis*; the length of the rami of 3rd uropod increase with age and become more serrate. Similarly I think *A. magellanica* is a young form of this species.

The question remains: Is *P. austrina* (Bate) and its synonyms as given by Stebbing and Chilton (with the exception of *A. assimilis*) to be included under *P. capensis* (Dana)? Dana's name of course has the priority. The series of Cape specimens shows that the number of telsonic teeth increases with age from 2 to 8 (or even more); females begin to bear ova when only 6 mm. long and when the telson has only 3 or 4 teeth. On the other hand, *P. austrina* (Bate), *P. australis* Miers and *Stebbingia gregaria* Pfeffer have all been described from specimens about 17 mm. in length and still having only *bidentate* telsonic lobes.

This seems to me to warrant the separation, if not perhaps as a species, then as a well-marked variety, of Bate's *austrina* from the typical *capensis* of Dana. With *austrina* go the other synonyms as suggested by Stebbing and Chilton, with the exception of Haswell's *megalophthalma*. This I would separate as another variety characterised by a strong rostrum ($\frac{1}{2}$ - $\frac{2}{5}$ length of 1st joint of 1st antenna), and rounded, entire telsonic apices.

Walker's *P. magellanica* (Nat. Antarct. Exp. vol. 3, p. 33, pl. 12, fig. 20, 1907) does not appear to be specifically the same, in my opinion.

For the sake of comparison I give a detailed description of the Cape specimens.

Body smooth, pleon segments 1-3 not scabrous. Rostrum represented only by a small point. Eyes large, oval-oblong, nearly meeting on the top of the head, larger in ♀ than ♂. Side-plates 1-4 rounded

below, 4 rather strongly emarginate, 5 and 6 with hind-lobe deeper than anterior. Postero-inferior angle of pleon segment 1 rounded, of 2 quadrate with a small point, posterior margin above straight, of 3 rounded-quadrate with small acute point, above which the posterior margin bulges rather strongly.

Telson cleft for $\frac{2}{3}$ – $\frac{3}{4}$ of its length, outer margins slightly sinuous, inner margins straight and contiguous, apices of lobes sloping away externally from inner apical angle, cut into 5–8 teeth in the adult, fewer in young specimens (one large ♂ has 11 teeth), the intervening notches either with or without very fine short setules.

First antenna extending in ♂ to end of peraeon, in ♀ to end of 5th or 6th peraeon segment, 1st joint longest and stoutest, 3rd $\frac{1}{2}$ 2nd, flagellum ca. 50-jointed in ♂, in ♀ ca. 40-jointed, every alternate joint broader distally and bearing in ♂ 3, in ♀ 2 linear sensory filaments or calceoli (only 1 near the end of the flagellum), accessory flagellum distinct, 1-jointed.

Second antenna either equal to or a trifle longer than 1st antenna, ultimate peduncular joint a little longer than penultimate, flagellum ca. 65-jointed in ♂, in ♀ ca. 45-jointed, shortly setose but not calceoliferous.

Lower lip, inner lobes obsolete.

Mandibles, cutting-edge 7-dentate, the 2 anterior teeth longer than the rest, secondary cutting-edge 5-dentate in left, feeble and tridentate in right, spine-row with 9 spines, palp long, 3rd joint scarcely as long as 2nd.

First maxilla, inner plate with ca. 20 setae, outer plate with 10 spines, palp with 9 teeth and several seta on apex of 2nd joint.

Second maxilla and maxilliped as figured by Stebbing for *Atyloides australis* (Miers). (Challeng. Rep. vol 29, pl. 75.)

First gnathopod, 5th a little shorter than 6th, 6th wider than 5th, ovate, palm oblique, as long as hind margin, defined by a transverse row of 3 setae, finger serrate on inner margin.

Second gnathopod, 5th distinctly shorter than 6th, 6th oblong, wider than 5th, and a little wider distally than proximally, palm more transverse than in 1st gnathopod, shorter than hind margin, defined by a row of 3 setae, hind margin with bunches of setae, finger serrate on inner margin.

First and second peraeopods, 4th and 5th joints subequal, 6th longer than either, its hind margin with 7 pairs of spines, outer margin with 4 pairs of spinules, finger broad basally, rather strongly curved, with a seta at inner apex.

Third to fifth peraeopods, 5th peraeopod longer, 2nd joint in all

oval, postero-inferior angle rounded, anterior margin with groups of spinules, posterior margin finely serrulate, 4th longer than 5th, 6th longer than 4th, anterior margin of 6th with 7 groups of 3 unequal spines, hind margin with 6 pairs of spines.

First and second uropods, outer ramus very slightly shorter in 1st, distinctly shorter in 2nd, peduncle and rami with marginal spines, apices of rami with 5 stout unequal spines.

Third uropod, the distal half of the rami projecting beyond the end of 1st and 2nd uropods, rami subequal, nearly twice length of peduncle, lanceolate, apically acute, margins closely serrate, spinulose and setose, outer margin of the outer ramus with less numerous (only ca. 9) and more widely spaced serrations, with stout spines in the notches; in the young the rami are scarcely $1\frac{1}{2}$ times length of peduncle, and the margins are smooth with only a few marginal spinules (as in Stebbing's figure of *Atyloides assimilis*, Challeng. Rep. vol. 29, pl. 77).

Length: ♂ up to 15 mm., ovigerous ♀♀ from 5–12 mm.

Colour: Whitish with crimson markings, these either few in number, pale and irregularly scattered, or forming bands on the anterior peraeon segments, or a median dorsal stripe, sometimes so numerous as to cover the whole body with a complete network; sometimes uniform pale crimson-red; eyes dark maroon.

Locality: Table Bay (Sea Point, near Cape Town). Dr. W. F. Purcell, Dr. J. D. F. Gilchrist, K.H.B.); Dassen Island, West Coast (R. M. Lightfoot); Hout Bay, Cape Peninsula (K.H.B.); False Bay (Buffels Bay and St. James, K.H.B.); East London (R. M. Lightfoot); Port Elizabeth (W. F. FitzSimons and Mrs. Paterson). ♂♂, ovigerous ♀♀ and young. (S.A.M. Nos. 1282, A2798, A2910, A2923, A2866, A2531, A2915, A2914, and A3034.)

Geogr. Distribution: Cape of Good Hope (Dana); off Cape of Good Hope (Stebbing: *A. assimilis*); Straits of Magellan, 55 fathoms (Stebbing: *A. magellanica*); Auckland Islands and South Orkneys (Chilton: *A. magellanica*); South Africa, 25 fathoms (Chilton: *P. austrina* var.); Falkland Islands (Stebbing: *A. magellanicus*). If *P. austrina* and *megalophthalma* be included under *capensis*, the distribution will extend to Australia, New Zealand and the Subantarctic Islands, Kerguelen, South Georgia, etc.

FAMILY GAMMARIDAE.

1813/14. *Gammaridae* (part) Leach, Edinb. Encycl. vol. 7, p. 432.

1906. „ Stebbing, Das Tierreich, 21, pp. 364, 729 (references).

1907. *Gammaridae* id. J. Linn. Soc. Lond. Zool. vol. 30, p. 160.
 1908. „ id. Ann. S.A. Mus. vol. 6, pt. 1, p. 81.
 1908. „ Chevreux, Trav. Soc. Imp. St. Pétersb. vol. 37, pt. 2, p. 91.
 1909. „ id. Arch. Zool. vol. 2, p. 28.
 1910. „ Stebbing, Gen. Cat. S.A. Crust. p. 456.
 1911. „ Chevreux, Mém. Soc. Zool. Fr. vol. 23, p. 211.
 1912. „ Marcus, Zool. Anz. vol. 39, p. 296.

GEN. ERIOPISA Stebbing.

1890. *Eriopisa* Stebbing, Ann. Mag. Nat. Hist. ser. 6, vol. 5, p. 193.
 1890. *Eriopsis* Wrzesniowski, Z. wiss. Zool. vol. 50, p. 632.
 1894. *Eriopisa* G. O. Sars, Crust. Norw. vol. 1, p. 514.
 1901. „ Chevreux, Mém. Soc. Zool. Fr. vol. 14, p. 403.
 1906. „ Stebbing, Das Tierreich, 21, p. 411, 732.

The following species is very near to *E. seychellensis* Chevreux 1901, but differs in having the 3rd joint of the mandibular palp shorter than the 2nd, the apex of 5th joint of 2nd gnathopod rather more angular and the more expanded 2nd joint of 5th peraeopod. Both species are distinguished from the northern species *E. elongata* (Bruz.) by the short and slender 2nd joint of the outer ramus of the 3rd uropod.

ERIOPIISA CAPENSIS n. sp.

(Plate XXVII. Figs. 16-19.)

Head equal to first two peraeon segments together, rostrum small, antero-lateral angles rounded, eyes absent. Side-plate 1 as deep as the following ones, but much narrower, antero-inferior angle produced forwards as a narrow acute process reaching half way along inferior margin of head, 2 and 3 rotundo-quadrate, 4 rotund, deeper than long, not quite as deep as 2 and 3, 5 and 6 feebly bilobed, the anterior lobe deeper than the posterior, 7 longer than deep, deepest in front, posterior angle rounded.

Pleuro-segments 1-3 with postero-inferior angles rounded and not serrate.

Telson cleft almost to base, lobes widely dehiscent, apices subacute, with 3-4 unequal spines, usually a spinule on outer margin just beyond the middle.

First antenna about half the length of body, 1st joint rather stout, 2nd subequal in length but more slender, 3rd scarcely half as long,

flagellum longer than peduncle, 17-18-jointed, accessory flagellum scarcely equal to 1st flagellar joint, 2-jointed, the 2nd joint minute.

Second antenna a little more than half 1st, peduncle longer than that of 1st, ultimate and penultimate joints subequal, flagellum equal to ultimate peduncular joint, 5-jointed, 1st joint much the longest.

Upper lip with rounded, entire distal margin.

Lower lip, inner lobes well developed, outer lobes apically truncate, mandibular processes well developed, subacute.

Mandibles stout, cutting-edges tridentate, secondary cutting-edge in left strong and 4-dentate, in right feeble and bidentate, spine-row with 2-3 spines, molar prominent, palp very slender, 3rd joint shorter than 2nd, tipped with 2 long and 1 short setae, no marginal setae on any of the joints.

First maxilla, inner plate with 3 apical setae (2 long, 1 short), inner margin nonsetose, outer plate with 9-10 spines, palp with 2nd joint longer than 1st apex, with 2 teeth and ca. 8 setae.

Second maxilla, plates equal in length, but inner narrower, and without setae on its inner margin.

Maxilliped, inner plate apically truncate, with ca. 5 obscure denticles and some simple setae, a more prominent denticle and a stout spinule on inner apical angle, inner margin nonsetose, outer plate oval, reaching to just beyond middle of 2nd joint of palp, inner margin with spine-setae, palp slender, 2nd joint twice length of 3rd, which is longer than 1st, 4th together with its terminal unguis equal to 1st.

First gnathopod, 5th joint oblong, not distally widened, inferior margin setose, 6th longer and wider than 5th, oval, palm very oblique, nearly 3 times as long as inferior margin, scarcely any defining angle, setose, a spine at $\frac{2}{3}$ distance from hinge and a row of setae at junction with hind margin, finger equal to palm.

Second gnathopod similar to 1st, but 5th joint strongly produced downwards as a triangular process, wider than 6th, and setose on inferior-distal margin, 6th joint as in 1st gnathopod, but inferior margin relatively to palm a little longer.

First and second peraeopods not very slender, 2nd joint longest, 4th longer than 5th or 6th, which are subequal, 7th passing gradually into slender unguis, both together not quite equal to 6th.

Third peraeopod, 2nd joint not expanded, hind margin with scattered setules only, not apically produced, 4th and 6th subequal, 5th longer, hind apex of 6th with several strong and long setae, 7th half length of 6th, with a fine setule on inner apex, unguis slender, straight.

Fourth peraeopod longer than 3rd or 5th, 4th and 5th joints subequal, 6 shorter, otherwise similar to 3rd peraeopod.

Fifth pereopod subequal to 3rd, 2nd joint oval, not apically produced, hind margin serrate and setose, 4th and 5th joints subequal, 6th a trifle longer.

First and second uropods, rami of 1st uropod subequal, of 2nd outer a trifle shorter than inner, apices obtuse, spinose, inner apical angle of peduncle of 1st with one strong spine, of 2nd with several spines.

Third uropod elongate, peduncle extending as far back as apices of 1st and 2nd uropods, outer ramus at least thrice as long as peduncle, 2-jointed, 2nd joint small, not $\frac{1}{4}$ length of 1st, no sexual difference in length of 2nd joint, margins with 2-3 groups of long spines, apices of both joints spinose, inner ramus $\frac{1}{3}$ length of 1st joint of outer, apex obtuse, spinose.

Length: 9 mm.

Colour: In spirit, brownish.

Locality: Lion's Head SE. $\frac{1}{2}$ E., distant 42 miles (off Cape Peninsula). 156 fathoms. 3 ♂♂, 3 ovigerous ♀♀. ss. "Pieter Faure." 13/3/00. (S.A.M. No. A194.)

GEN. MELITA Leach.

1813/14. *Melita* Leach, Edinb. Encycl. vol. 7, p. 403.

1875. *Paramoera* (part) Miers, Ann. Mag. Nat. Hist. ser. 4, vol. 16, p. 75.

1906. *Melita* Stebbing, Das Tierreich, 21, pp. 421, 732.

1908. ,, Chevreux, Bull. de l'Inst. océan. Monaco, no. 122, p. 6.

1909. ,, Chilton, Subantaret. Is. N. Zeal. vol. 2, p. 630.

1910. ,, Stebbing, Sci. Res. "Thetis," pt. 12, p. 596.

1910. ,, Kunkel, Tr. Com. Ac. vol. 16, p. 31.

1911. ,, Chevreux, Mém. Soc. Zool. Fr. vol. 23, p. 213.

MELITA FRESNELII (Audouin).

(Plate XXVIII. Fig. 32.)

826. *Gammarus fresnelii* Audouin in Deser. Égypte, vol. 1, 4, p. 93, Crust. pl. 11, fig. 3.

1845. ,, *anisochir* Kröyer, Naturh. Tidsskr. ser. 2, vol. 1, p. 317, pl. 2, figs. 1a-p.

1852. *Melita pilosus* Dana, Proc. Amer. Ac. vol. 2, p. 212.

1855. ,, *validus* id. U.S. Expl. Exp. vol. 13, 2, p. 966, pl. 66, fig. 6.

1855. ,, *setipes* id. ibid. p. 967, pl. 66, fig. 7.

1864. *Melita exilii* Fr. Müller, Für Darwin, p. 6, fig.
 1879. „ *australis* Haswell, Proc. Linn. Soc. N.S.W. vol. 4, p. 264,
 pl. 9, figs. 6, 7.
 1890. „ *cotesi* Giles, J. Asiat. Soc. Bengal, vol. 59, p. 64, pl. 2,
 fig. 1.
 1904. „ *anisochir* Walker in Herdman's Ceylon Pearl Fish. Suppl.
 Rep. 17, p. 270, pl. 4, fig. 28.
 1906. „ *fresnelii* Stebbing, l.c. p. 423 (synonymy and references).
 1909. „ „ Walker, Tr. Linn. Soc. Lond. Zool. vol. 12, pt. 4,
 p. 334.
 1910. „ „ Stebbing, l.c. p. 596.
 1910. „ „ Kunkel, l.c. p. 31, fig. 11.
 1912. „ „ Pearse, Proc. U.S. Nat. Mus. vol. 43 [1913],
 p. 371.

In these specimens the dorsal teeth on the pleon vary slightly from Stebbing's description in *Das Tierreich*. The median tooth on all the segments is very minute or even absent, on segments 1 and 2 there are 3 subdorsal teeth on either side, on segment 3 two teeth, of which the lower one is the larger and apically bifid, on either side, on segment 4 only 2 large teeth, on segment 5 two small ones.

The eye tends to become oval in the adult.

Twelve of the ♂♂ are "left handed" and eight "right handed."

Length: 8 mm.

Colour: Pale straw coloured, speckled with brown, a small dark brown median dorsal spot on peraeon segments 2-7 and pleon segment 1, side-plates and pleura also speckled and spotted with dark brown, antennae, peraeopods and uropods spotted and banded with orange, large hand of ♂ blotched with orange and brown, proximal part of finger orange, apex of finger and thumb white, eyes brown.

Locality: Morewood Cove NW. by N. $\frac{3}{4}$ N., distant 3 miles (Natal). 27 fathoms. 20 ♂♂ 15 ♀♀, some ovigerous, and 7 juv.; Umhloti River mouth NNW., distant 1 mile (Natal). 27 fathoms. 1 ♀. s.s. "Pieter Faure." 19/12/00 and 21/12/00. Durban, July 1915. (H. W. Bell-Marley). 4 ♂♂, 5 ♀♀, 2 juv. (S.A.M. Nos. A 193, A3817, and A3845.)

Geogr. Distribution: Egypt (Audouin); Singapore, 10 feet (Dana); Rio Janeiro, shore (Dana); Port Jackson (Haswell); Andaman Isles (Giles); Ceylon (Walker); Seychelles, 22-36 fathoms (Walker); Wasin, B.E.A., 10 fathoms (Walker); Suakim, 5 fathoms (Walker); New South Wales, 52 fathoms (Stebbing); Bermuda, 0-12 feet (Kunkel); Gulf of Mexico, 2-30 fathoms (Pearse).

MELITA INAEQUISTYLIS (Dana).

1852. *Amphitoe* (*Melita*) *inaequistylis* and *tenuicornis* Dana, Proc. Amer. Ac. vol. 2, pp. 214 and 215.
- 1853 and 1855. *Melita tenuicornis* id. U.S. Expl. Exp. vol. 13, 2, p. 963, pl. 66, figs. 5a-m.
1862. *Moera* ,, Bate, Cat. Amphip. Brit. Mus. p. 195, pl. 35, fig. 6.
1876. *Paramoera* ,, Miers, Cat. Crust. N. Zeal. p. 127, pl. 3, fig. 8 (♀).
1893. *Melita palmata* (part) Della Valle, F. u. Fl. Neapel. vol. 20, p. 714.
1904. *Maera tenuicornis* Walker in Herdman's Ceylon Pearl Fish. Suppl. Rep. 17, p. 273, pl. 5, fig. 33.
1904. *Melita zeylanica* Stebbing, Spolia Zeylanica, vol. 2, pt. 5, p. 22, pl. 5.
1906. ,, *inaequistylis* id. Das Tierreich, 21, pp. 429, 732.
1906. ,, *tenuicornis* Chilton, Tr. N.Z. Inst. vol. 38, p. 271.
1909. ,, *inaequistylis* id. Subant. Is. N. Zeal. p. 630.
1911. ,, ,, id. Tr. N.Z. Inst. vol. 43, p. 564.
1914. ,, ,, Stebbing, Proc. Zool. Soc. Lond. 1914, p. 366.

Side-plate 5 in ♀ not hooked.

Pleon segment 4 in ♂ with 1 medio-dorsal acute tooth on hind margin, segment 5 with 2 subdorsal teeth on either side (no medio-dorsal tooth); ♀ sometimes without a tooth on segment 4 and with only 1 subdorsal tooth on either side on segment 5. Postero-inferior angle and posterior and inferior margins of 3rd pleon segment as figured by Walker.

Telson, inner margin slightly concave, apices acute, outer margin with 2 subapical spines, inner margin with 3 (2 large, 1 small) subapical spines, 1 smaller one a little beyond middle of inner margin.

First antenna, 2nd joint longer than 1st, 3rd $\frac{1}{3}$ 2nd, flagellum a little longer than peduncle, ca. 40-jointed, accessory flagellum 5-jointed.

Second antenna, gland-cone acute, reaching half way along 3rd, ultimate and penultimate joints subequal, flagellum scarcely equal to last 2 peduncular joints together, ca. 14-jointed.

Mandibular palp, 1st joint at least $\frac{1}{2}$ 2nd, 2nd and 3rd subequal.

Maxilliped, 3rd joint of palp expanded, obovate.

First gnathopod in ♂ as in Della Valle's figure of that of *M. palmata* (Montagu); in ♀ 6th joint without the process on front

apex, the defining angle of palm rounded and somewhat produced, palm transverse, finger and unguis tapering evenly.

Second gnathopod in ♂ also as in Della Valle's figure of that of *M. palmata* but far more setose along palm and hind margin and on inner surface, finger stout, apex subacute and resting in a small pit; in ♀ not so large as in ♂, palm a little oblique, with a small defining tooth, finely crenulate, finger not closing on to inner surface, apically acute.

First and second pereopods slender, 2nd joint longest, 4th a trifle longer than either 5th or 6th, which latter are subequal, inner margin of 5th with 5 spinules, of 6th with 6 pairs of spinules, finger and unguis short and stout.

Third to fifth pereopods much stouter than 1st and 2nd pereopods, 2nd joint expanded, oval, hind margin straight with very faint serrations, postero-inferior angles rounded, reaching to middle of 3rd joint, 4th joint longer than 5th, 6th longer than 4th, moderately spinose, 3rd pereopod shorter than 4th or 5th.

First and second uropods, peduncle with spine at apex, rami subequal.

Third uropod long, outer ramus spinose, with a distinct though very small second joint, inner ramus ovate, apically acute, inner margin with 3 spines.

Length: ♂ 18 mm. (to end of 3rd uropod), ♀ 10 mm.

Colour: Greyish, each segment with one or two transverse bands of purplish grey, peduncles of antennae purplish, pereopods ringed with the same colour.

Locality: St. James (False Bay) and Table Bay. 1897. (Dr. W.F. Purcell); Sea Point, near Cape Town. 19/3/14. (K.H.B.); Port Elizabeth. Nov. 1914. (F.W. FitzSimons); East London. July, 1914. (R.M. Lightfoot). ♂♂ and ovigerous ♀♀. (S.A.M. Nos. 1273, 1291, A2892, A2900, A2905, A3056, and A2907).

Geogr. Distribution: New Zealand (Dana, Thomson, Miers, Chilton); Ceylon (Walker); Ceylon (Stebbing, *M. zeylanica*); Auckland, Chatham, and Keradec Islands (Chilton); Falkland Islands (Stebbing).

For the present *inaequistylis* may be kept separate from *palmata* on account of the shape of the 2nd gnathopods in ♂, but there is no doubt that eventually it must be merged into the latter. The teeth on the pleon of the South African specimens agree exactly with Stebbing's description of *palmata*.

GEN. MAERA Leach.

- 1813-14. *Maera* Leach, Edinb. Encycl. vol. 7, p. 403.
 1900. „ Chevreux, Rés. Camp. Monaco, vol. 16, p. 84.
 1904. „ Walker in Herdman's Ceylon Pearl Fish Suppl.
 Rep. 17, p. 271.
 1906. „ Stebbing, Das Tierreich, 21, pp. 433, 732, 741 (refer-
 ences).
 1907. „ von der Brügggen, Ann. St. Petersburg. Mus. vol. 11, p. 17.
 1908. „ Calman, Ann. N.Y. Ac. vol. 11, p. 269.
 1908. „ Pearse, Proc. U.S. Nat. Mus. vol. 34, p. 29.
 1908. „ Holmes, ibid. vol. 35, p. 539.
 1910. „ Kunkel, Tr. Conn. Ac. vol. 16, p. 44.
 1910. „ Stebbing, Sci. Res. "Thetis," pt. 12, p. 599.
 1910. „ id. Gen. Cat. S.A. Crust. p. 457.
 1912. „ Chilton, Tr. Roy. Soc. Edinb. vol. 48, pt. 2, p. 501.

MAERA INAEQUIPES (Costa).

1847. *Amphithoe truncatipes* (Spinola in MS.) White, Crust. Brit. Mus.
 p. 87 (nom. nud.).
 1851. „ *inaequipes* Costa in Hope, Cat. Crust. Ital. p. 45.
 1857. *Gammarus scissimanus* id. Mem. Acc. Napoli. vol. 1, p. 221,
 pl. 3, fig. 7.
 1866. *Maera scissimana* and *integrimana* Heller, Denk. Ak. Wien.
 vol. 26, pt. 2, p. 40, pl. 3, figs. 24, 25.
 1888. *Maera truncatipes* Barrois, Cat. Crust. Açores. p. 35, text-fig.
 1893. *Maera* „ (part) Della Valle, F. u. Fl. Neapel. vol. 20,
 p. 725, pl. 1, fig. 2, pl. 22, figs. 26-40.
 1904. „ *scissimana* Walker, l.c. p. 273, pl. 5, fig. 32.
 1906. „ *inaequipes* Stebbing, l.c. p. 435.
 1909. „ „ Walker, Tr. Linn. Soc. Lond. vol. 12, pt. 4,
 p. 334.
 1910. „ „ Kunkel, l.c. p. 44, fig. 16.
 1910. „ „ Stebbing, Sci. Res. "Thetis," pt. 12, p. 599.
 1910. „ „ Chevreux, Mém. Soc. Zool. Fr. vol. 23, p. 218.

Agreeing with Stebbing's description except in the following points
 1st antenna with flagellum of 17-19 joints, accessory flagellum 10-
 jointed, flagellum of 2nd antenna 9-jointed, subequal to ultimate ped-
 uncular joint which is shorter than penultimate, gland-cone not reaching
 beyond apex of antepenultimate; 5th joint of 1st gnathopod with a
 notch near apex on anterior margin; hands of 2nd gnathopods equal,

palm with a slight central notch, denticulate between notch and hinge, very faintly denticulate between notch and the strong defining tooth; hind margins of 2nd joint of peraeopods 3-5 faintly serrulate near distal end only; apices of telson tridentate, outer one smaller than the other two, which are subequal, a spine in the notch between each tooth.

Length: 13 mm.

Colour: In spirit, pale yellowish or pinkish, eyes red-brown.

Locality: Table Bay. 1897. 2 ♂♂, 1 juv. (Dr. W. F. Purcell); Woodstock beach (Cape Town). 6/4/08. 2 ♂♂. (E. P. Phillips and R. M. Lightfoot); Cape Morgan N. $\frac{1}{2}$ W., distant 10 miles. 77 fathoms. 1 ovigerous ♀; and Hood Point. N. by W. $\frac{1}{2}$ W., distant 11 miles. 49 fathoms. 1 ovigerous ♀. s.s. "Pieter Faure." 26/7/01 and 15/7/01. (S.A.M. Nos. 1292, A191, A189 and A2873 respectively.)

Geogr. Distribution: Mediterranean (Costa, Della Valle, Chevreux); Azores (Barrois); Ceylon (Walker); Seychelles, Red Sea and Wasin, Brit. E. Africa, 10 fathoms (Walker); New South Wales (Stebbing); Bermuda (Kunkel).

MAERA HIRONDELLEI Chevreux.

1900. *Maera hironellei* Chevreux, Rés. Camp. Monaco, vol. 16, p. 84, pl. 11, figs. 1a-j.
 1906. " " Stebbing, l.c. p. 732.
 1910. " " Chevreux, Mém. Soc. Zool. Fr. vol. 23, p. 218.

The South African specimens agree so well with Chevreux's species that the few differences which are present cannot be regarded otherwise than as local variations and also perhaps as due to age. Chevreux expresses a doubt as to whether his ♂♂ were adult, but does not say whether the ♀♀ were ovigerous.

The 5th joint of 1st gnathopod indented on anterior margin just before the acute apex.

The hand of 2nd gnathopod is broader in proportion to its length than in Chevreux's specimen, the two teeth at defining angle of palm stronger. Chevreux in the enlarged figures of the 2nd gnathopod (figs. 1g and 1j) shows these 2 teeth, but in the text speaks of only one. The insertions of the bundles of setae along the distal portion of the inferior margin of hand rather deep, causing a distinctly serrate appearance.

The mandibular palp is of normal length (cf. Sars' figure of *M. othonis*, Crust. Norw. vol. 1, pl. 182, fig. 1), the 3rd joint a little shorter than 2nd.

Flagellum of 1st antenna ca. 25-jointed, accessory flagellum 9-jointed; flagellum of 2nd antenna ca. 11-jointed, subequal to ultimate peduncular joint which is shorter than penultimate, gland-cone not so long as in Chevreux's specimens.

Eyes fairly large, reniform; side-plate 1 with antero-inferior angle produced acutely forward; postero-lateral angle of 3rd pleon segment somewhat produced, acute, margins not serrate; telsonic lobes rather more ovate than in Chevreux's figure.

Length: 15 mm.

Colour: In spirit, pale pinkish.

Locality: Paternoster Point SE. $\frac{1}{4}$ E., distant 9 miles (off Saldanha Bay). 80 fathoms. 2 ♂♂, 1 ovigerous ♀. s.s. "Pieter Faure." 17/3/02. (S.A.M. No. A187.)

Geogr. Distribution: Azores, 130 metres (Chevreux); Ile Djerba, Algiers, low-tide (Chevreux).

It appears to me to be very doubtful if Chevreux's species is really distinct from *inaequipes*. But since in the South African material the specimens which I assign to *hirondellei* are distinguishable from those I take to be *inaequipes* by the two teeth defining the palm of the 2nd gnathopods and the more produced postero-inferior angle of 3rd pleon segment, I keep them separate here.

MAERA MASTERSII (Haswell).

1879. *Megamoera mastersii* Haswell, Proc. Linn. Soc. N.S.W. vol. 4, p. 265, pl. 11, fig. 1.

1884. ,, *thomsoni* Miers, Rep. Voy. "Alert," p. 318, pl. 34, fig. B.

1906. *Maera masterii* Stebbing, Das Tierreich, 21, p. 439.

1911. *Moera* ,, Chilton, Tr. N.Z. Inst. vol. 43 [1910], p. 564.
(Non-Chilton, 1912, Tr. Roy. Soc. Edinb. vol. 48, pt. 2, p. 501.)

The palm of the right 2nd gnathopod has a defining tooth, a tooth near the hinge and between those another tooth, all three being fairly strong and acute. Between the defining tooth and the middle tooth there is a very small tooth. The left 2nd gnathopod is weak, palm ill defined and without teeth. The telson as in Haswell's description.

Length: 8 mm.

Colour: In spirit, uniform dull purplish-brown.

Locality: Mozambique (Conducia Bay). Nov. 1912. 1 ♂. (K.H.B.). (S.A.M. No. A2471.)

Geogr. Distribution: Port Jackson, Australia (Haswell); Torres Strait (Miers); Kermadec Islands (Chilton).

MAERA HAMIGERA (Haswell).

(Plate XXVII. Figs. 11–12.)

1879. *Moera hamigera* Haswell, Proc. Linn. Soc. N.S.W. vol. 4, p. 333, pl. 21, fig. 1.
 1885. *Megamoera suensis* var. id. ibid. vol. 10, p. 103, pl. 15, figs. 1–4.
 1906. *Maera hamigera* Stebbing, Das Tierreich, 21, p. 437.
 1909. „ „ Walker, Tr. Linn. Soc. Lond. ser. 2, vol. 12, pt. 4, p. 335, pl. 43, fig. 5.
 1910. „ „ Stebbing, Sci. Res. “Thetis,” pt. 12, p. 600.

Side-plate 1 with a notch at postero-inferior angle. Posterior margin of 3rd pleon segment with 5–6 somewhat widely spaced serrations.

Telsonic apices deeply notched, 3 strong spines in the notch, the middle spine nearly as long as the lobe, the other $2\frac{1}{4}$ as long, inner margin with 2–3 spiniferous notches.

First antenna, 1st joint with spine on lower apex, 2nd longer than 1st, flagellum ca. 40-jointed, accessory flagellum 5-jointed. Second antenna, ultimate joint shorter than penultimate, flagellum ca. 15-jointed.

Third joint of mandibular palpa trifle shorter than 2nd.

First gnathopod, 4th joint apically acute, palm ill defined, microscopically denticulate, set with spines and setae.

Second gnathopods dissimilar on the two sides, the right larger than the left, in ♂ 4th joint apically acute, hind margin of 6th longer than palm, with one or two setiferous notches near the defining tooth, palm concave between this and the 4–5 denticles near hinge, but with a small tooth in the centre of the concavity, a submarginal row of 4–5 stout spines, finger fitting within defining tooth, rather strongly curved and tapering evenly. In a larger specimen, which is otherwise indistinguishable and seems to be the adult form, there are 4 teeth defining the palm, arranged transversely, the largest being on the outside and a little in advance of the others, the tooth in the centre of the concave portion of the palm is larger and nearer the other teeth, so that the convex portion of palm bears 6 teeth which are well defined and acute; finger fitting into the concavity, very stout, scimitar-shaped, widening distally and ending abruptly with a small incurved blunt tooth, inner margin convex except at extreme base.

In the left gnathopod the hand is much weaker and more setose, defining angle of palm rounded, with 3-4 spines, first part of palm concave, second part convex with a small tooth and 2 pairs of spines; in the large specimen the palm is more uniformly straight but armed with spines and setae.

In ♀ right and left 2nd gnathopods equal in size, the hand being similar to that of the young ♂, elongate-oval, tapering distally, palm and hind margin subequal and continuous, without defining tooth, but with a submarginal spine, palm with 2 denticles near the hinge, both flanked by minute subsidiary denticles, some small denticles between first tooth and junction with hind margin, finger tapering, nearly reaching the defining spine.

Hind margin of 2nd joint of 3rd-5th peraeopods serrate.

All the peraeopods with a straight stout spine-seta on inner apex of 7th joint extending as far as the end of the curved unguis, most noticeable in the posterior three peraeopods.

Length: ♂ 14 and 18 mm.; ♀ 8 mm.

Colour: In spirit, yellowish-white, eyes pale brown.

Locality: Glendower Beacon N. $\frac{1}{2}$ W., distant 16 miles (near Port Alfred). 66 fathoms. 3 juv. ♂♂; Cape Natal W. $\frac{3}{4}$ N. distant 12 miles, 85 fathoms. 1 ♂ (the large specimen mentioned above). s.s. "Pieter Faure." 10/9/01 and 17/12/00; Dyer's Island. April, 1915. (J. Drury.) 2 ♀♀ (1 ovigerous). (S.A.M. Nos. A188, A192 and A3390.)

Geogr. Distribution: Port Jackson and Port Stephens, Australia (Haswell); Red Sea (Walker); New South Wales, 54-59 fathoms (Stebbing).

GEN. ELASMOPUS Costa.

1853. *Elasmopus* Costa, Rend. Soc. Bourb. n. s. vol. 2, pp. 170, 175.
 1906. ,, Stebbing, Das Tierreich, 21, pp. 441, 732.
 1908. ,, Chevreux, Mém. Soc. Zool. Fr. vol. 20, p. 483.
 1910. ,, Stebbing, Gen. Cat. S.A. Crust. p. 457.

ELASMOPUS PECTENICRUS Bate.

(Plate XXVIII. Fig. 33.)

1862. *Moera pecteniscrus* Bate, Cat. Amph. Brit. Mus. p. 192, pl. 34,
 fig. 8 (on plate spelt *pectiniscrus*).
 1904. *Elasmopus serrula* Walker in Herdman's Ceylon Pearl Fish.
 Suppl. Rep. 17, p. 277, pl. 8, fig. 37.
 1906. ,, *brasiliensis* (part) Stebbing, l.c. p. 443.
 1909. ,, *serrula* Walker, Tr. Linn. Soc. Lond. vol. 12, pt. 4,
 p. 336.

In 1906 Stebbing doubtfully included this species with Dana's *brasiliensis*. Bate's figures of his own species are very different from those which he gives of Dana's species (presumably copied from Dana's work) as regards the two features which distinguish the species, namely: the 2nd gnathopod of the male and the 2nd joint of the 4th peraeopod. Dana makes no mention of a tooth on the palm of the former and figures the 2nd joint of the 4th peraeopod as uniformly oval. Chevreux (1910, Mém. Soc. Zool. Fr. vol. 23, p. 222, text-fig. 22 and pl. 15, figs. 14-20) follows Dana in the first point and in the second figures the joint in question rather narrower than Dana, but nevertheless not at all similar to that of *pectenicrus*.

These two characters leave no doubt that *pectenicrus* should be retained as a species distinct from *brasiliensis*.

As regards Walker's *serrula*, young specimens from the same gathering as the adults are in perfect agreement with his description and figures; the "flat-topped teeth of peculiar form" becoming at the last (probably) moult longer, more numerous and closely set, and the hind margin becoming distally concave.

The following description, applying to the South African specimens, will supplement that of Bate.

Body smooth. Eyes fairly large, oval. Postero-inferior angle of 3rd pleon segment quadrate, with a very minute point, herein differing from Bate's figure. Telson as figured by Walker for *serrula*.

First antenna reaching to 4th peraeon segment, 1st and 2nd joints subequal, 3rd a little shorter, flagellum not quite as long as peduncle, ca. 20-jointed, accessory flagellum 3-jointed.

Second antenna reaching base of flagellum of 1st antenna, 4th and 5th joints subequal, flagellum longer than 5th joint, ca. 10-jointed.

Mouth-parts without particular features.

First gnathopod, as in *E. rapax* Costa, anterior margins of 5th and 6th joints with several transverse rows of setae in ♂.

Second gnathopod in ♂ as figured for *serrula*; in ♀ and young ♂ the 6th joint is elongate-oval, the palm as long as the hind margin and defined by a spine (but no tooth or projection), the palm bears a few spinules and the setae are simple and less numerous, inner margin of finger serrate.

Third peraeopod, 2nd joint narrowing slightly distally, hind margin nearly straight, obscurely serrate.

Fourth peraeopod, 2nd joint strongly narrowed and concave distally, postero-inferior angle rounded, lower part of hind margin with numerous, closely-set, spiniform teeth in the adult ♂, in young ♂ as figured for *serrula*; in ♀ the 2nd joint narrows distally as in the

adult ♂, but the lower part of hind margin is straight, the teeth are as in the young ♂, but sharper and more closely set.

Fifth peraeopod, hind margin of 2nd joint strongly convex, serrate.

Seventh joint of all the peraeopods with 2-3 spine-setae at inner apex.

Third uropods as figured for *serrula*.

Length: ♂ 9 mm.; ♀ 6 mm.

Colour: White, with a somewhat irregularly reticulated transverse violet band on the head and each of the peraeon and pleon segments, in the median line on the peraeon and pleon there is a lozenge-shaped patch of the white ground colour surrounded by a border of violet, at the hinder end of which is a deep violet spot, side-plates and 2nd joints of 3rd to 5th peraeopods with a broad violet stripe, antennae ringed with violet, eyes black.

Locality: Buffels Bay (False Bay). 28/9/13. (K.H.B.) 1 juv. ♂; Durban, Natal. March and July, 1915. (H. W. Bell-Marley.) ♂♂, ovigerous ♀, and juv. (S.A.M. Nos. A2535, A3376, and A3844.)

Geogr. Distribution: New Guinea (Bate); Ceylon (Walker); Zanzibar (Walker); Suez (Walker).

ELASMOPUS BOECKII (Haswell).

(Plate XXVII. Figs. 13, 14.)

1879. *Megamoera boeckii* Haswell, Proc. Linn. Soc. N.S.W. vol. 4, p. 336, pl. 21, fig. 6.

1899. *Elasmopus* ,, Stebbing, Tr. Linn. Soc. Lond. ser. 2, vol. 7, p. 426.

1906. ,, ,, id. Das Tierreich, 21, p. 445.

Haswell's description is very brief, and his figure of the 2nd gnathopod is not at all clear, so that it is very doubtful if the present specimen is correctly assigned to his species. Moreover, it is thrice as long as the original one, which was most probably immature.

Eyes elongate oval, vertical. Peraeon and pleon without serrations or setae. Side-plate 1 fairly produced forwards, inferior margins of 1-4 not serrate, 5 not as deep as 4. Postero-inferior angle of 3rd pleon segment quadrate with a very minute point, posterior margin straight, entire.

Telson cleft for $\frac{2}{3}$ of its length, lobes deliscent, apices excavate between two teeth, a small tooth at base of excavation, whence arise also 2 unequal stout spines.

First antenna reaching to end of peraeon, 2nd joint a little longer than 1st, 3rd $\frac{1}{4}$ 2nd, flagellum shorter than peduncle, ca. 25-jointed, accessory flagellum 4-jointed, equal to the first 4-5 flagellar joints.

Second antenna reaching to middle of flagellum of 1st, gland-cone inconspicuous, 3rd $\frac{1}{2}$ 4th, 5th a little shorter than 4th, flagellum ca. 13-jointed, equal to 4th joint.

Mandibles short and stout, as figured by Walker and Scott for *E. sokotrae* (Nat. Hist. Sokotra, 1903, pl. 14 B, fig. 1a), cutting-edge obtuse, but with 1 blunt tooth, secondary cutting-edge blunt, obscurely 4-dentate in left, tridentate in right, spine-row with ca. 6 spines, palp slender, 1st joint $\frac{1}{2}$ 2nd, 3rd a little longer than 1st, cylindrical not falcate, sparsely setose.

First maxilla, inner plate fairly stout, with 3 apical plumose setae.

Maxilliped, outer apical angle of inner plate shortly produced.

First gnathopod ♀, 4th joint apically rounded, 5th densely setose on sides and especially on lower margin, 6th as long as but narrower than 5th, not particularly setose, palm oblique, continuous with hind margin, finger matching palm.

Second gnathopod ♀ much larger, 4th joint apically acute, 5th rounded below, setose, 6th large, elongate-ovate, palm oblique, not as long as hind margin, slightly concave with 4 strong teeth, the first defining the palm, the 4th near the hinge and bearing one or two small accessory teeth, a small tooth between the 1st and 2nd teeth, finger fitting within defining tooth, slender, evenly curved.

First and second peraeopods not very spinose or setose, hind margin of 6th with 7 groups of 2-3 spines each.

Third and fifth peraeopods (4th missing), 2nd joint well expanded, hind margin straight in 3rd, gently convex in 5th peraeopod, with a few widely-spaced serrations, rounded postero-inferior angle reaching to end of 3rd, 4th and 5th moderately expanded.

First uropod with marginal spines on inner ramus only.

Third uropod not extending far beyond 1st, rami subequal, thrice as long as peduncle, apices truncate, both margins spinose.

Length : 12 mm.

Colour : In spirit, whitish, eyes brown.

Locality : Port Elizabeth. Nov. 1914. (F. W. FitzSimons.) 1 ♀ with embryos. (S.A.M. No. A3058.)

ELASMOPUS LEVIS, n. sp.

(Plate XXVII. Fig. 15.)

1910. *Maera bruzelii* Stebbing, Gen. Cat. S.A. Crust. p. 457 (non Stebbing, 1888).

1912. „ *mastersi* Chilton, Tr. Roy. Soc. Edinb. vol. 48, pt. 2, p. 501 (non Haswell, 1879).

An examination of the specimens, referred by Stebbing in 1910 to *Maera bruzelii*, and others from the same locality as the former, has convinced me that they represent a new species, or at least a very distinct littoral variety.

Though at first sight they appear to resemble very closely *M. bruzelii*, yet they differ in a number of characters :

Side-plate 1 not nearly so much produced forwards, inferior margin only very faintly serrate and only on posterior half, side-plate 2 not serrate; postero-inferior angle of 3rd pleon segment rather more produced than in Stebbing's figure of *M. bruzelii* (corresponding with his description), but posterior margin *not serrate*; 2nd joint of mandibular palp not bent; inner plate of 1st maxilla with 3 apical plumose setae; inner plate of maxilliped with outer distal angle sharply produced; palm of 2nd gnathopod irregularly dentate, most of the teeth bearing spines, one tooth near hinge and another near defining angle rather larger than the rest.

The 3rd-5th peraeopods are very much stouter than in any species of *Maera*, and from *M. bruzelii* in particular they differ in having very much broader 4th and 5th joints.

First uropod with marginal spines on inner ramus only.

Telsonic apices either rounded off subacutely, or with a minute setuliferous notch on the apex and a similar one subapically on either side, the inner one being further from the apex than the outer.

Further details are as follows: None of the peraeon or pleon segments dorsally dentate or setiferous; eyes subrotund, 1st joint of 1st antenna rather shorter than 2nd, with a stout spine on lower apex, flagellum ca. 50-jointed, accessory flagellum 9-jointed, equal to 2nd peduncular joint; gland-cone of 2nd antenna reaching almost to end of 3rd joint, ultimate joint a little shorter than penultimate, flagellum shorter than peduncle, ca. 30-jointed; 3rd joint of mandibular palp subequal to 2nd, straight and sparsely setose.

First gnathopod very similar to that of *M. bruzelii*, palm minutely serrulate. Both gnathopods in the ♀ similar to those of the ♂, but the 2nd is not so large.

First and second peraeopods not strongly spinose or setose, hind margin of 6th with 6 pairs of diverging spines.

Third to fifth peraeopods, hind margin of 2nd joint straight in peraeopods 3 and 4, slightly convex in 5, serrate in all, rounded postero-inferior angle reaching nearly to end of 3rd, 4th strongly expanded, 5th also expanded, but less strongly.

Third uropods, rami subequal, narrow lanceolate, apices tapering to

subacute points bearing 2-3 minute setules, inner margin of inner, and outer margin of outer ramus with 3 small spines.

Length: Up to 17 mm.

Colour: Uniform pink, rarely claret, eyes black.

Locality: Sea Point, near Cape Town. 29/11/13. (K.H.B.) ♂♂ and ovigerous ♀♀ amongst the roots of *Ecklonia* growing on rocks at low water; Woodstock beach, Cape Town. 19/6/14. (K.H.B.) (S.A.M. Nos. A2889 and A2890.)

The specimens from Saldanha Bay, referred by Chilton to *Maera mastersii*, seem to belong to this species. Chilton notes their resemblance to an *Elasmopus*.

GEN. GAMMARUS Fabricius.

1775. *Gammarus* (part) Fabricius, Syst. Ent. p. 418.

1906. ,, Stebbing, Das Tierreich, 21, pp. 460, 733.

1909. ,, G. Smith, Tr. Linn. Soc. Lond. ser. 2, vol. 11, pt. 4, p. 76.

1910. ,, Kunkel, Tr. Conn. Ac. vol. 16, p. 59.

1912. ,, Sexton, Proc. Zool. Soc. Lond. 1912, p. 657.

1913. ,, Pearse, Proc. U.S. Nat. Mus. vol. 45, p. 571.

The only *Gammarus* hitherto recorded from South Africa is the European and Indian *G. pulex*. Krauss mentions that it was found in *brackish* water, and on this account Stebbing (Gen. Cat. S.A. Crust. p. 456) regards the correctness of the identification as very doubtful. No mention of the occurrence of the genus in South Africa has since been made.

The following 4 species are all found within the Cape Peninsula, and the differentiation is probably the result of long isolation. Up to the present no specimens have been collected in other districts (if we except Krauss' specimens), but it is probable that they will be when a proper search is instituted.

The 4 South African species fall into two sharply marked divisions:

1. With the 4th side-plate with a posterior produced angle and the margin above concave, as in the Northern species; and
2. With the 4th side-plate subrectangular and *similar to the preceding side-plates*. This latter form of side-plate 4 is unknown among the representatives from the Northern hemisphere, but it is noteworthy that among the Australasian species of the genus there is one belonging to the second group, namely, *G. ripensis* Smith 1909, from Tasmania.

Key to the South African species described below :

1. 4th side-plate normal, *i. e.* different from the preceding side-plates, palm of gnathopods slightly oblique.

- i. Eyes small, feebly pigmented *G. capensis* n. sp.
- ii. Eyes large, deeply pigmented *G. nigroculus* n. sp.

2. 4th side-plate rectangular, similar to the preceding side-plates, palm of gnathopods transverse.

- i. White, 1st peraeopod not modified
in ♂, 2nd antenna in ♂ very stout *G. crassicornis* n. sp.

- ii. Brown, 1st peraeopod modified in adult ♂, 2nd antenna in adult ♂ with an ear-like lobe on 3rd peduncular joint *G. auricularius*, n. sp.

GAMMARUS CAPENSIS n. sp.

(Plate XXVII. Figs. 20-22.)

Head nearly as long as first 2 peraeon segments together. Antero-lateral angles rounded. Eyes very small, circular, with whitish pigment, glistening, in spirit becoming invisible. Peraeon segments 5-7 frequently with a few short setules on posterior margins. Side-plates 1-3 as deep as their segments, 4 a little deeper and broader than the preceding ones, inferior margins of 1-4 convex and setose, antero-inferior angle of 4 rounded, postero-lateral angle sharp, anterior lobe of 5 not as deep as 4.

Pleon segments 1-3 with a fringe of fine setae on posterior dorsal margin, 4-6 with longer and more numerous setae, 6 in addition with 2-3 spines on either side near the base of the telson, postero-inferior angles of 1-3 quadrate, inferior margin of 2 with 3 spines and a few marginal setae, of 3 with 4 spines and a few marginal setae (the spines and setae not arranged in transverse rows), posterior margin of 3 with slight setuliferous indents.

Telson as long as broad, cleft almost to base, lobes dehiscent only at apex, each lobe subquadrangular, apically obliquely truncate, with 2 apical bundles of long setae and 1 spine on outer apical angle, 1 bundle of setae in middle of the distal half and another on outer margin a little more than one-third from base.

First antenna reaching to end of 3rd pleon segment, its peduncle to end of penultimate peduncular joint of 2nd antenna, 1st and 2nd

joints subequal, 3rd $\frac{1}{3}$ length of 2nd, flagellum more than twice as long as peduncle, 48-76 jointed, accessory flagellum 6-8-jointed.

Second antenna about half length of 1st, 1st joint stout, as long as 3rd, 2nd half as long as broad, gland-cone scarcely reaching $\frac{1}{4}$ length of 3rd, 4th and 5th subequal, flagellum shorter than peduncle, 20-30 jointed.

The duct opens at the apex of the gland-cone, but through a small subapical conical papilla on the lower surface.

Upper and lower lips normal.

Mandibles, cutting-edge 4-dentate, secondary cutting-edge in left lamellar, 4-dentate, in right tubercular with 4-5 prongs, some of them denticulate, spine-row in left with 10, in right with 4 spines, 2nd joint of palp thrice 1st, 3rd a trifle longer than 2nd.

First maxilla, inner plate with 8-10 feebly plumose setae, outer with 9 serrate spines, 2nd joint of palp in left with 10 + 4 slender apical spines, in right with 6 teeth and 1 stout and 1 slender spine on outer apical angle.

Second maxilla normal.

Maxilliped, inner plate with 3 apical spines and several setae, inner margin of outer plate with blunt spines passing distally into longer and plumose setae, apex reaching almost half way along 2nd joint of palp, 3rd joint of palp half 2nd, 4th $\frac{2}{3}$ 3rd and much more slender, inner margin of 2nd and 3rd thickly fringed with setae.

First and second gnathopods similar to one another, but 2nd rather larger, 5th joint triangular, 6th oval-oblong, scarcely broader distally than proximally, palm rather oblique, slightly convex, defined by 1-3 spines in 1st and 3-4 spines in 2nd gnathopod, finger matching palm. In ♀ similar but smaller than in ♂.

First and second peraeopods slender, 2nd joint a little longer than 4th, 6th a little longer than 5th, hind margins of 5th and 6th with respectively 4 and 6 groups of spines and setae, hind margin of 7th with 4 spine-setae.

Third to fifth peraeopods, 2nd joint oval, anterior margin spinose and setose, hind margin gently convex, serrulate and setose, postero-inferior angle rounded, reaching to middle of 3rd, 4th a little shorter than 6th, 5th equal to 2nd, 6th a little shorter than 5th, anterior margin of 5th and 6th spinose, of 7th with 11-13 spine-setae, 4th to 6th joints densely setose, especially in 5th peraeopod, and more so in ♂ than ♀.

Branchial lamellae simple.

First uropod, peduncle with 6 spines on inner and 9 on outer upper margin, rami subequal, a little shorter than peduncle, inner with

5 marginal spines and bundles of setae, outer with 5 pairs of marginal spines, both with 3-5 unequal apical spines.

Second uropod shorter, outer ramus shorter than inner, with 4 single marginal spines.

Third uropod extending far beyond 1st and 2nd uropods, peduncle with 4 spines on upper apical margin, outer ramus 3 times length of peduncle, 3 pairs of spines along outer margin, 5 pairs along inner, both margins densely setose, 3-4 apical spines, 2nd joint small, with a terminal spine, inner ramus $\frac{2}{3}$ length of peduncle, with 6-7 apical spines.

Length: ♂ 25 mm., ♀ 15-18 mm.

Colour: Pale pinkish, eyes pale red, somewhat glistening; in spirit, whitish, eyes chalky-white, or more frequently becoming almost invisible.

Locality: In the streams on Table Mountain, Muizenberg Mountain, and probably throughout the Cape Peninsula, but not apparently descending below 300 feet. (K.H.B.) ♂♂, ovigerous ♀♀ and young. (S.A.M. Nos. A2258, A2552, A2960, A2968, A3033, etc.)

Ab.—Two large ♂ specimens, 25 mm. long, caught in the Platteklip Stream (near the "Breakfast Rock"), correspond with the above in all points except the antero-inferior angle of side-plate 4, which is quadrate with a short sharp point similar to that of the postero-lateral angle. I have never found any more specimens resembling these two and regard them merely as an aberration of *capensis*. (S.A.M. No. A195.)

Var. a.—A form hitherto only found on Muizenberg and Kalk Bay Mountains and at Buffels Bay, near Cape Point, is distinguished by having the 1st joint of 1st antenna distinctly stouter than the 2nd and the whole 2nd antenna much stouter than 1st. In the ♂ this is especially noticeable, and the 2nd antenna is as long as or sometimes even a little longer than the first. The telson is somewhat shorter (Plate XXVII. Fig. 22). The pleon is in some specimens less, but as a rule very much more densely setose than in the typical *capensis*. (S.A.M. Nos. A2272, A2961, A3084, and A3374.)

Var. β.—A very similar form lives on the Cape Flats (Newlands and Wynberg. Dr. W. F. Purcell, S.A.M. Nos. 10017, 10021), but differs in having the 6th joint of gnathopods 1 and 2 distinctly wider distally than proximally. The specimens are smaller than the average of *capensis*, but as there are only 2 and neither is an ovigerous ♀ it is impossible to say whether they are adult. I regard these also, for the present at least, as a variety of *capensis*.

GAMMARUS NIGROCOLUS n. sp.

(Plate XXVII. Fig. 23.)

Head not equal to first 2 peraeon segments, antero-lateral lobe rounded. Eyes moderate, oval, set close to the margin of the lobe. Side-plates 1-4 as deep as their segments, inferior margin of 1-3 rounded, setose but less so than in *capensis*, of 4 sparsely setose, antero-inferior angle rounded, postero-lateral angle subacute.

Pleon segments 1-3 with a few short setae, 4-5 with more numerous and longer setae on posterior margin, 6 with a submedian group of 4 setae and 1 spine on either side near base of telson, postero-inferior angle of 3 quadrate, without produced point, posterior margin with a few slight setiferous indents, inferior margin of 1-3 sparsely setose, the setae not arranged in transverse rows.

Telson as long as broad, cleft nearly to base, lobes dehiscant only at apex, tapering slightly, apices rounded, margins and apices setose, 1 large spine on upper surface just beyond middle of outer margin.

First antenna reaching to end of peraeon, the peduncle to middle of ultimate peduncular joint of 2nd antenna, 2nd joint $\frac{2}{3}$ 1st, 3rd $\frac{1}{2}$ 2nd, flagellum at least twice as long as peduncle, accessory flagellum 4-jointed.

Second antenna a little stouter than and about half the length of 1st, gland-cone acute, reaching nearly to end of 3rd joint, 4th and 5th subequal, flagellum equal to peduncle, ca. 17-jointed.

Mandibles, cutting-edge 5-dentate in left, in right 4-dentate, secondary cutting-edge 3 dentate in left, in right a 4-pronged tubercle, spine-row with ca. 5 spines, 2nd joint of palp scarcely $2\frac{1}{2}$ times as long as broad, 3rd equal to 2nd, elongate-diamond shaped, thrice as long as broad.

First and second gnathopods similar but 1st a little shorter and stouter, 6th joint not half as long again as 5th, equal in width to 5th, oblong, not distally widened, palm slightly oblique, gently convex, defined by 2 spines, finger matching palm.

First and second peraeopods nearly as spinose as in *capensis*, but much less setose, especially 2nd and 4th joints, hind margin of 5th with 5 spines, of 6th with 6 groups of 1 spine and 2 setae each, 7th with 3 spine-setae on inner margin.

Third to fifth peraeopods, 2nd joint oval, anterior margin spinose but not setose, hind margin serrulate and setose, convex in 3rd peraeopod, straight in distal half in 4th and 5th peraeopods, postero-inferior angle rounded, reaching to middle of 3rd in 3rd peraeopod, to end of

3rd in 4th and 5th peraeopods, 7th with 4-5 spine-setae on anterior margin; all 3 peraeopods spinose but scarcely at all setose.

First uropod, rami subequal and a little shorter than peduncle, 3 marginal pairs of spines and 5 unequal apical spines on both rami, inner ramus nonsetose.

Second uropod, outer ramus shorter, both rami with 3 marginal and four apical spines, inner ramus nonsetose.

Third uropod, only distal half of outer ramus extending beyond ends of uropods 1 and 2, peduncle with 3 unequal spines at outer, 4 at inner apical angle, outer ramus nearly three times length of peduncle, outer margin with 4 groups of 3-4 spines, inner margin with 2 groups, setae not numerous, 2nd joint small, tipped with 1 spine and 2 setae, inner ramus $\frac{1}{3}$ outer ramus, tipped with 2 spines and 2 setae.

Length: 10 mm.

Colour: Greyish, eyes black.

Locality: Devil's Peak, Newlands (Dr. W. F. Purcell); top of Table Mountain (sed ?); Platteklip Gorge, altitude 1000 feet (K.H.B.); Kirstenbosch, altitude 250 feet (K.H.B.); streams above Oranjezicht, Cape Town, altitude 400-500 feet (K.H.B.). (S.A.M. Nos. 1270, A2966, A3032, A3038, and A3059-62 respectively.)

A few males have the 2nd antennae stout compared with the 1st antennae and a stronger and longer fringe of setae on the anterior margins of the 3rd-5th peraeopods (in those respects somewhat approaching *G. capensis* var. *a*).

GAMMARUS CRASSICORNIS n. sp.

(Plate XXVII. Figs. 24, 25.)

Head not quite equal to first 2 peraeon segments. Antero-lateral lobes rounded truncate. Eyes very small, with whitish pigment, glistening, invisible in spirit specimens. Side-plates 1-3 as deep as their segments, all three rectangular and deeper than long, inferior margin convex and setose, 4 similar to the preceding, without any postero-lateral angle, posterior margin only very slightly emarginate. Pleon segments 1-6 with a few setae on posterior margin, setae most numerous on segments 4 and 5, no spines on 6th near insertion of telson, postero-inferior angle of 3rd rounded quadrate.

Telson scarcely more than half as long as basal width, cleft nearly to base, lobes dehiscent, apices rounded-truncate, with 6 long setae, 2 very fine setules on middle of lateral margin.

First antenna reaching to 5th or 6th peraeon segment, 2nd joint

$\frac{2}{3}$ 1st and more slender, 3rd $\frac{1}{2}$ 2nd, flagellum longer than peduncle, ca. 23-jointed in ♂, ca. 19 in ♀, accessory flagellum 4-jointed in ♂, 3 in ♀.

Second antenna in adult ♂ reaching to about the middle of flagellum of 1st antenna, very stout, 2nd joint very short, gland-cone not prominent, with subapical papilla, 3rd swollen, as wide as long, 4th nearly twice as long as 3rd, slightly stouter, 5th $\frac{1}{3}$ length and $\frac{1}{2}$ width of 4th, to which it is bent at right angles, flagellum longer than 5th peduncular joint, ca. 10-jointed; in ♀ normal, of about the same thickness as 1st antenna, 4th joint $\frac{2}{3}$ 5th, flagellum nearly equal to 4th and 5th together, ca. 10-jointed. Only in fully adult ♂♂ does the 2nd antenna become swollen; in immature ♂♂ it resembles that of the ♀.

Mandibles, cutting-edge narrow, bidentate, secondary cutting-edge tridentate, palp narrow, 2nd joint 4 times as long as wide, 3rd equal to 2nd but more slender, apex setose.

First and second gnathopods, 2nd joint widening gradually from narrow base, 5th triangular, 6th longer than 5th and a little wider, oblong, of same width throughout, palm transverse, slightly convex, setose, defining angle blunt, with 2 spines, hind margin just proximal to defining angle, slightly concave, finger not overlapping palm, tapering rapidly; 2nd gnathopod larger than 1st, neither very setose: in ♀ similar to ♂ but relatively shorter and stouter.

First and second peraeopods sparsely setose, hind margin of 5th joint with 3 spines, of 6th with 2 pairs of spines, of 7th with 1 spine-seta.

Third to fifth peraeopods not very setose, 2nd joint not strongly expanded, oblong, postero-inferior angle rounded, reaching to middle of 3rd, hind margin setose but very feebly serrate, anterior margin of 6th joint with 2 (3rd peraeopod) or 3 (4th and 5th peraeopods) pairs of spines, of 7th with 1 spine-seta.

First uropod, upper margin of peduncle with 6 spines, rami subequal, with marginal setae (not spines) and apical spines.

Second uropod, peduncle with 3-4 spines on upper margin, outer ramus shorter than inner, both with apical but not marginal spines.

Third uropod not extending far beyond ends of 1st and 2nd uropods, peduncle with 5-7 apical spines, outer ramus only half as long again as peduncle, margins with 2 groups of spines and setae, apex with 3 unequal spines, 2nd joint obsolete, inner ramus $\frac{1}{4}$ length of outer, with 4 apical spines.

Length: ♂ 8 mm., ovigerous ♀♀ 4.5-7 mm.

Colour: Whitish, eyes pink.

Locality: Table Mountain, at top of Kasteel's Poort, Grotto

Ravine, and Platteklip Gorge; in small streams or moss damped by trickling water (perennial). 25/4/14, 21/6/14, and 1/8/15. (K.H.B.) ♂♂, ovigerous ♀♀ and young. (S.A.M. Nos. A3031, A3034, and A3864.)

GAMMARUS AURICULARIUS, n. sp.

(Plate XXVII. Figs. 26–28.)

Head not equal to first 2 peraeon segments. Antero-lateral lobes rounded truncate. Eyes small, circular, glistening white, invisible in spirit specimens. Side-plates 1–4 as deep as their segments, inferior margins convex, setose, 4 similar to and not much wider than 3, no postero-lateral angle, hind margin very slightly emarginate. Pleon segments 4 and 5 and to a lesser extent also 3 setose on hind margins, postero-inferior angle of 3 rounded-quadrangle, inferior margins of 1–3 sparsely setose.

Telson $\frac{2}{3}$ as long as basal width, lobes dehiscent, apices rounded, setose.

First antenna reaching to 5th peraeon segment, peduncle reaching just beyond apex of penultimate peduncular joint of 2nd antenna, 2nd joint $\frac{3}{4}$ 1st, 3rd $\frac{1}{2}$ 2nd, flagellum longer than peduncle, ca. 25-jointed in ♂, 20 in ♀, accessory flagellum 3-jointed.

Second antenna reaching to middle of flagellum of 1st antenna, gland-cone not prominent, with subapical papilla, 3rd and 4th joints stout, 3rd in *fully adult* ♂ with a large oval ear-like lobe on outer apex, extending to middle of 4th, 4th and 5th subequal but 5th more slender, flagellum equal to 3rd–5th joints together, ca. 14-jointed; in ♀ 3rd joint normal, 3rd and 4th normal in width, flagellum 8-jointed.

Mandibles, cutting-edge 4-dentate, accessory cutting-edge 4-dentate in left, bidentate in right, palp slender, 3rd joint not equal to 2nd.

First and second gnathopods, 2nd joint of nearly equal width throughout, 6th longer than 5th, oblong, scarcely wider distally, palm transverse, convex, defining angle blunt, with 3 spines, finger matching palm; 2nd gnathopod the larger; in ♀ similar but smaller.

First peraeopod in adult ♂ shorter than 2nd, 4th joint slightly expanded on hind margin, wider distally than proximally, 5th with a subacute lobe at base of hind margin, bearing 1 spine, margin thence to apex sinuous with a central rounded prominence, setose, 6th longer than 4th, slightly curved, hind margin setose but not spinose, 7th with 1 spine-seta near apex of hind margin; in ♀ normal as in 2nd peraeopod.

1898. *Polycheria, Polycharia* Calman, Ann. N.Y. Ac. vol. 11, pp. 261, 268, 288.
 1905. „ Walker in Gardiner's Fauna Mald. Lacc. Arch. vol. 2, p. 926.
 1906. „ Stebbing, l.c. pp. 519, 735.

POLYCHERIA ANTARCTICA (Stebbing).

1875. *Dexamine antarctica* Stebbing, Ann. Mag. Nat. Hist. ser. 4, vol. 15, p. 184, pl. 15a, fig. 1.
 1878. *Atylus antarcticus* id. ibid. ser. 5, vol. 2, p. 370.
 1879. *Polycheria tenuipes* Haswell, l.c. p. 345, pl. 22, fig. 8.
 1879. „ *brevicornis* id. ibid. p. 346.
 1882. „ *obtusa* G. M. Thomson, l.c. p. 233, pl. 17, fig. 3.
 1888. *Tritaeta antarctica* Stebbing, l.c. p. 941.
 1888. „ *kerqueleni* id. ibid. p. 941, pl. 83.
 1893. *Polycheria antarctica* Della Valle, l.c. p. 580, pl. 58, figs. 83, 84.
 1898. „ *osborni* Calman, l.c. p. 268, pl. 32, fig. 2.
 1904. *Tritaeta antarctica*, Walker in Herdman's Ceylon Pearl Fish. Rep. pt. 2, p. 266, pl. 4, fig. 25.
 1905. *Polycheria atolli* id. l.c. p. 926, pl. 88, figs. 1-5.
 1906. „ *tenuipes* Stebbing, l.c. p. 520.
 1906. „ *antarctica* id. ibid. p. 520, figs. 90, 91.
 1907. „ „ Walker, Nat. Antarect. Exp. vol. 3, p. 34.
 1909. „ *atolli* id. Tr. Linn. Soc. Lond. vol. 12, pt. 4, p. 337.
 1912. „ *antarctica* Chilton, Tr. Roy. Soc. Edinb. vol. 48, pt. 2, p. 502.

Chilton has given reasons for uniting all the above "species" under the one name; and has detailed the points of resemblance and difference found in a single specimen from South Africa.

In order to facilitate comparison and show the range of variation, the characteristics of other South African specimens are here set out. Two specimens from near Saldanha Bay, but from deeper water than Chilton's specimen, may be cited first:

Size of eye, proportionately to head, as figured by Stebbing for *T. kerqueleni*.

Teeth on 4th and 6th pleon segments well marked.

Telson reaching just beyond middle of rami of 3rd uropod, outer margin with only one small spinule at middle and two between this and apex.

Side-plate 4 short, blunt, not acutely produced.

First maxilla with palp strongly enlarged distally, not tapering as in Stebbing's figure of *T. kergueleni*.

Second maxilla with inner margin of inner plate well fringed with plumose setae.

Maxilliped with outer plate equal to palp, the distal half of its inner margin with 7 spinules, the basal half bare.

Sixth joint of 1st and 2nd gnathopods as figured by Stebbing, but that of 2nd rather narrower.

Sixth joint of 1st-5th pereopods parallel-sided, not distally expanded.

Outer ramus of 2nd uropod half length of inner ramus, both unarmed.

Third uropod with subequal unarmed rami.

Specimens from St. James show the following peculiarities:—Seven specimens collected on 29/4/12 have no trace of the teeth on the 4th and 6th pleon segments, whereas many others collected on 15/2/14 have well-marked teeth; eyes variable in size; telson reaching to middle of rami of 3rd uropod, apices acute but frequently stout and appearing almost unguiform, 2-4 spines on lateral margins; side-plate 4 sometimes produced in a rounded lobe, never acute: palp of 1st maxilla slightly wider distally than proximally, 1st joint very obscure; inner margin of inner plate of 2nd maxilla well fringed with plumose setae; inner margin of outer plate of maxilliped with 8-11 spines; gnathopods and pereopods as in the two Saldanha Bay specimens (*supra*); rami of 1st and 2nd uropods unarmed, outer ramus of 2nd uropod half length of inner ramus; rami of 3rd uropod subequal, 3-4 spines on outer margin of outer ramus.

Length: 5 mm.; one ♂ from St. James 6.5 mm.

Colour: In spirit, dull greyish, eye maroon; in life, cream-coloured, eye brownish, specimens taken out of a blood-red coloured compound Ascidian (*Goodsiria placenta*) were salmon-red with crimson eyes.

Locality: Paternoster Point SE. $\frac{3}{4}$ E., distant 9 miles (off Saldanha Bay). 80 fathoms. 2 specimens. s.s. "Pieter Faure." 17/3/02; St. James (False Bay). 29/4/12 and 15/2/14. Several ♂♂ and immature specimens lying on their backs in holes made in encrusting sponges (*Halichondria*) at low-tide. (K.H.B.); Buffels Bay (False Bay). 1/3/15. (K.H.B.) 3 ♂♂. (S.A.M. Nos. A2791, A2103, A2916 and A3295 respectively.)

Also in the compound Ascidian *Gynandrocarpa domuncula* on the backs of the crab *Pseudodromia latens* Stimpson and the compound Ascidian *Goodsiria placenta*.

Geogr. Distribution: 77° 30' S. 175° E. 300 fathoms (Stebbing:

D. antarctica); Port Jackson, 2 fathoms (Haswell: *P. tenuipes* and *brevicornis*); Paterson Inlet, N.Z., 10 fathoms (Thomson: *P. obtusa*); Kerguelen Island, 28 and 127 fathoms (Stebbing: *T. kergueleni*); Puget Sound (Calman: *P. osborni*); Ceylon (Walker: *T. antarctica*); Maldives (Walker: *P. atolli*); McMurdo Sound (Walker: *P. antarctica*); Seychelles and Wasin, B.E.A., 10 fathoms (Walker: *P. atolli*); South Orkneys; South Georgia, and Saldanha Bay, 25 fathoms (Chilton).

GEN. GUERNEA Chevreux.

1868. *Helleria* Norman, Ann. Mag. Nat. Hist. ser. 4, vol. 2, p. 418.
(non Ebner 1868.)
1887. *Guernea* Chevreux, Bull. Soc. Zool. Fr., vol. 12, p. 302.
1887. *Prianassus* Hansen, Vid. Meddel. ser. 4, vol. 9, p. 82.
1890. *Guernea* Stebbing, Ann. Mag. Nat. Hist. ser. 6, vol. 5, p. 192.
1893. „ Della Valle, F. u. Fl. Neapel. vol. 20, p. 570.
1904. „ Walker in Herdman's Ceylon Pearl Fish. Suppl. Rep.
17, p. 266.
1906. „ Stebbing, Das Tierreich, 21, p. 521.

GUERNEA LAEVIS Chevreux.

1887. *Guernea laevis* Chevreux, l.c. p. 328.
1904. „ „ Walker, l.c. p. 267, pl. 4, fig. 26.
- ?1906. „ *coalita* Stebbing, l.c. pp. 521, 735.

The division between pleon segments 3 and 4 not strongly marked, segments 5 and 6 fused and evenly rounded, with a dorsal median groove between two keels, neither the 4th segment nor the keels serrate.

Side-plate 1 shallower than the other side-plates, narrowed below to subacute apex, 2-4 subequal in depth, rounded below, 2 straight, 3 and 4 slightly curved backwards, hind margins concave, posterior lobe of 5 equal in depth to 4, anterior lobe $\frac{2}{3}$ depth of posterior lobe, 7 slightly larger than 6. Pleon segment 3 with postero-inferior angles rounded.

Telson ovate, cleft nearly to base, apices subacute, each with a setule.

First antenna, 1st joint oblong, twice length of 2nd, 3rd half length of 2nd, flagellum not quite equal to 1st joint, 4-jointed.

Second antenna, 1st-3rd joints short and broad, 4th nearly twice length of 1st-3rd together and rather broader, the inferior margin

convex and setose, 5th nearly equal to width of 3rd, but narrower than 4th, flagellum equal to 5th joint, 3-jointed, 2nd and 3rd joints minute.

Lower lip, outer lobes apically subacute, with a small incurved apical point, inner lobes well-developed, mandibular process obsolete.

Mandibles stout, triangular, strongly calcified, cutting-edge blunt, secondary cutting-edge a small but stout lamella, acute in the one mandible and bifid in the other, no spine-row, molar blunt.

First maxilla, inner plate apically obtuse, inner apex with 1 seta, outer plate with ca. 7 spines, palp stout, 2nd joint slightly longer than 1st and tipped with 3 setae.

Second maxilla, plates fused at base, inner plate not much broader than outer, slightly curved outwards, apex rounded, with 5 setae on apex and distal inner margin, outer plate a good deal longer than inner, curved inwards, apex rounded and setose, 1 seta on distal outer margin.

Maxilliped, outer plate reaching to end of 2nd joint of palp, inner margin with stout spine-setae, 4th joint of palp very small.

First gnathopod, 5th joint not quite as long as 6th, inferior margin with 4 setae, 6th distinctly longer than wide, palm transverse, slightly convex, defined by 3 spines, finger equal to palm, with accessory tooth at base of unguis.

Second gnathopod similar but more slender, 2nd joint not constricted proximally, 5th not longer than 6th.

First and second peraeopods, 4th joint longer than 6th which is longer than 5th, hind margin of 5th with 6 long spines, increasing in length distally, 6th with 4 spinules on distal hind margin.

Third peraeopod, 2nd joint rhomboidal, anterior margin more expanded distally, proximally straight and setulose, distally rounded, smooth, hind margin with the angular projection in the middle, apically subacute, margin above straight, margin below concave, 4th ovate, shorter than 6th which is slender, finger also slender.

Fourth peraeopod, 2nd joint expanded, a little longer than broad, hind margin evenly rounded, 4th with stout plumose setae, finger and unguis slightly curved.

Fifth peraeopod, 2nd joint longer than broad, widest proximally, distally narrowing, 4th and 5th joints with stout plumose setae, 6th slender, unarmed, finger and unguis straight.

First and second uropods, outer ramus longer than inner, with 3 marginal spines in 1st uropod, apices of rami of both uropods with 1 large and 2 small spines.

Third uropod, rami rather broader than in 1st and 2nd uropods, subequal, unarmed.

Length: 2.5 mm.

Colour: Dull yellowish, peraeon segments 6 and 7 and pleon segment 1 bright orange.

Locality: Sea Point, near Cape Town. 26/2/14. (K.H.B.) ♀ ♀, some ovigerous. (S.A.M. No. A2936.)

Geogr. Distribution: Brittany (Chevreux); Ceylon (Walker).

The differences between these and Walker's Ceylon specimens are to be found in the 1st side-plates, 2nd and 4th joints of peraeopod 3 and the plumose setae on peraeopods 4 and 5.

Walker does not specially mention the 2nd maxilla, but says the mouth-parts "seem to agree with Della Valle's figures." In the South African specimens the 2nd maxilla is very different from Della Valle's figure, the inner plate being relatively smaller.

These small differences, however, are scarcely important enough to separate the Ceylon and South African specimens.

FAMILY TALITRIDAE.

1813/14. *Orchestidae* Leach, Edinb. Encycl. vol. 7, p. 432.

1857. Subfam. *Talitritini* Costa, Mem. Acc. Napoli, vol. 1, p. 173.

1906. *Talitridae* Stebbing, Das Tierreich, 21, pp. 523, 735.

1910. ,, id. Gen. Cat. S.A. Crust. p. 458.

1910. ,, Kunkel, Tr. Conn. Ac. Sci. vol. 16, p. 61.

Among the representatives of this family in South Africa is *Orchestia bottae*, recorded by Krauss and retained in the General Catalogue by Stebbing. It is almost certain that Krauss was wrong in his identification, but as I have not been able to see his specimens I cannot throw any further light on this species. From the habitat given by Krauss, "in algae on the coast," one would suspect it to be a species of *Hyale*. (See *Parorchestia dassenensis* infra.)

GEN. TALORCHESTIA Dana.

1853. Subgen. *Talorchestia* Dana, Amer. J. Sci. ser. 2, vol. 14, p. 310.

1906 *Talorchestia* Stebbing, l.c. pp. 543, 735 (references).

1914. ,, Tattersall, Rec. Ind. Mus. vol. 8, pt. 5, p. 449.

Bate's South African species *T. africana* still remains rather doubtful owing to the elusiveness of the male. H. W. Bell-Marley, Esq., of Durban, has so far been unable to find this sex, though he has forwarded several females to Mr. Stebbing and to this Museum.

TALORCHESTIA CAPENSIS (Dana).

1853. *Orchestia capensis* Dana, U.S. Expl. Exp. vol. 13, 2, p. 866,
pl. 58, figs 3a, b.
1862. " " Bate, Cat. Amphip. Brit. Mus. p. 23, pl. 4,
fig. 2.
1893. " " Della Valle, F. u. Fl. Neapel, vol. 20, p. 506,
pl. 57, fig. 69.
1906. " " Stebbing l.c. p. 537.
1910. " " id. Gen. Cat. S.A. Crust. p. 458.

The female of this species has hitherto remained undescribed.

Female. First antenna, 1st joint widest and longest, 3rd not much larger than 1st flagellar joint, flagellum shorter than peduncle, 5-jointed, both peduncle and flagellum very sparsely spinose.

Second antenna, ultimate peduncular joint not twice as long as penultimate, flagellum not as long as peduncle, 13-jointed, peduncle and flagellum very sparsely spinose.

First gnathopod simple, although the inner apical angle of 6th joint is distinct, finger a little shorter than width of 6th, stout, unguis half length of finger.

Second gnathopod, 2nd joint not strongly expanded on anterior margin, apical process of 6th rounded, but not at all curved upwards.

The following details apply to both sexes:

First maxilla, inner plate with 2 plumose setae, outer plate with 9 spines. Remaining mouth-parts as described below for *T. quadrispinosa*.

Second peraeopod, 7th joint oblong, with a sudden constriction near apex, inner margin proximal to the constriction bisinuate and slightly concave, unguis $\frac{1}{3}$ length of finger.

Third and fourth peraeopods, hind margin of 2nd joint with slight setiferous indents.

Fifth peraeopod, hind margin of 2nd joint slightly crenulate and bearing on distal portion long setae.

First and second uropods, rami subequal, much shorter than peduncle in 1st, a little longer than peduncle in 2nd uropod.

Third uropod, ramus and peduncle subequal.

Telson rounded, with small apical incision, strongly spinose.

In the male the finger of the 2nd gnathopod has a semicircular incision at base of inner margin for the reception of the tubercle on palm.

In a specimen 15 mm. long the palm of 2nd gnathopod has only a very slight indication of the concavity characteristic of the adult ♂;

in one 18 mm. long there is a small but deep notch just proximal to the tooth near the hinge.

Length : ♂ 22 mm., ♀ 18 mm.

Colour : Whitish, eyes black.

Locality : Lambert's Bay, Clanwilliam Div. February, 1898. (R. Pattison.) 1 ♂, 2 ♀ ♀ ; Kommetje (Atlantic coast, Cape Peninsula). 1897. (Dr. W. F. Purcell.) ♂ ♂ ; Atlantic Coast, near Cape of Good Hope. 29/9/13. (K.H.B.) ♂ ♂ , ♀ ♀ and young. (S.A.M. Nos. 10018, A235, and A2532 respectively.)

TALORCHESTIA QUADRISPINOSA n. sp.

(Plate XXVII. Figs. 29-32.)

1836. *Orchestia fischerii* Guérin, Iconogr. ou Regne Anim. pl. 26, fig. 3, and 1843. Explication des Planches, p. 22. (non M. Edwards. ? 1828 and 1830.)

1910. *Orchestoidea* ,, Stebbing, Gen. Cat. S.A. Crust. p. 459. (non M. Edwards.)

Bearing a strong superficial likeness to *Orchestoidea fischerii* (M. Edw.)

Body broadly rounded, not compressed. Eyes subrotund, their distance apart dorsally equal to or less than their greatest diameter. Anterior lobe of 5th side-plate as deep as 4th side-plate, length of 5th not greater than that of two peraeon segments.

Pleon segments 1 and 2 each with 2 (not 3 as in M. Edwards' species) medio-dorsal upstanding spines in adult ♂, obscure in immature males, segment 3 with 2 very obscure tubercles, pleon unarmed in ♀, segments 4 and 5 not scabrous (as they are in *O. fischerii* M. Edw.), postero-inferior angle of 3 quadrate, acutely but slightly produced.

Telson about as broad as long, apex with a very shallow emargination in the adult only, in immature specimens apex subacute, upper surface with numerous spines.

First antenna, 1st and 2nd joints subequal, 3rd a little longer, flagellum equal to 3rd joint, 6-jointed in ♂, 5 in ♀, reaching just beyond end of penultimate peduncular joint of 2nd antenna.

Second antenna, ultimate joint equal to penultimate plus antepenultimate, which are subequal, all three joints spinose, penultimate with 2 transverse rows of spines on dorsal surface as well as an apical

circlet, flagellum barely as long as peduncle, ca. 21-jointed in ♂, ca. 17 in ♀.

Upper lip, distal margin strongly convex and setose.

Lower lip, lobes short, broad, apically truncate, inner apical angle rounded, setose.

Mandible, cutting-edge with 2 large and 5 small teeth, secondary cutting-edge in left 5-dentate, in right 3-dentate, spine-row with ca. 5 spines.

First maxilla, inner plate with 3 plumose setae, outer plate with 9 spines.

Second maxilla, inner plate shorter and narrower than outer, more pointed apically, with a large stout plumose seta at junction of inner and apical margins.

Maxilliped, inner plate with 3 blunt teeth on truncate apex, outer plate not extending very much beyond inner plate (to middle of 2nd joint of palp), 4th joint of palp quite obsolete.

First gnathopod in ♂, 4th joint without apical process, 5th longer than 6th, with pellucid apical lobe, 6th not widening much distally, subchelate, inner apex with a rounded lobe, finger (excluding unguis) reaching to end of this lobe, with 2 setules on its inner apex, unguis unusually long, as long as finger; in ♀, 2nd joint wider than in ♂, 5th without apical lobe, 6th simple, slightly tapering, finger and unguis as in ♂.

Second gnathopod in ♂, 6th joint large, cordiform, hind margin short, bearing spines at equal distances apart, a very small defining tubercle, first portion of palm evenly convex and bearing spines as on the hind margin, the distal portion of palm concave, smooth, with a strong triangular tooth, spinuliferous at its apex, situate near the hinge, finger as long as palm, curved, inner margin slightly emarginate at the base; in ♀, 2nd joint rather strongly expanded on anterior margin (half as long again as broad), 4th in the Dassen Island specimens apically produced downwards as a narrow subacute lobe, 5th broader proximally than distally and equal to 6th joint including its apical process, which is rounded and slightly curved upwards, finger and curved unguis very short.

Second peraeopod, 7th joint sharply constricted, but its appearance is better described as having a tubercle in middle of inner margin, unguis long but not equal to 7th.

Third peraeopod, 2nd joint expanded, rather broader than long, hind margin evenly convex, setuliferous, 7th slender, unguis not equal to 7th.

Fourth peraeopod in ♂ very long, 2nd joint enormously expanded,

not regularly oval but widest proximally, where it extends upwards as a rounded lobe, narrowing gradually distally to almost normal width, postero-inferior angle rounded, not extending beyond middle of 3rd, hind margin setuliferous, 4th and 5th joints not expanded, 6th longer than 5th and equal to anterior margin of 2nd, slender, curved; 7th slender, unguis $\frac{1}{3}$ length of 7th; in ♀ not remarkably long, 2nd expanded, oval a little longer than broad; hind margin evenly convex, setuliferous; 6th equal to 2nd, slender, straight.

Fifth peraeopod in ♂ reaching only to the end of 5th joint of peraeopod 4, 2nd joint strongly expanded, upper posterior angle subquadrate, not produced upwards, width greatest distally, postero-inferior angle rounded, inferior margin transverse, hind and inferior margins crenulate and spinulose, 4th and 5th joints not expanded, 6th equal to 2nd, straight; in ♀ nearly as long as peraeopod 4, 2nd joint expanded similarly to that of peraeopod 4, but as broad as long, with a subquadrate upper posterior angle, margin crenulate and setulose.

First and second uropods, rami shorter than peduncle, outer a little longer than inner in 1st uropod, rami in 2nd subequal, margins of peduncle and both rami spinose.

Third uropod, ramus a little longer than peduncle, with marginal and apical spines.

Length : 22 mm.

Colour : Whitish, eyes dark brown.

Locality : Dassen Island, West and East Coasts of Cape Peninsula. (Dr. W. F. Purcell, R. M. Lightfoot, and K.H.B.) ♂♂, ♀♀ and young. (S.A.M. Nos. 1256, 1283, A2514, and A2875.)

(Plate XXVII. Fig. 32.)

A curious form of 2nd gnathopod is found in 2 small ♂♂ from Dassen Island. They measure 10 mm. and show no trace of the dorsal spines on the pleon or of the expanded 2nd joint of 4th peraeopod. The 1st gnathopod is as described above. The 2nd gnathopod has the 2nd joint cylindrical and stout but not expanded as in ♀, 4th rounded below, 5th shorter than wide, 6th twice as long as 5th, wider at base and increasing in width distally, where width nearly equals the length, palm transverse, rather strongly emarginate, the emarginate portion either straight or slightly convex, armed with a few spinules, defining lobe rounded, semipellucid, finger straight, reaching to base of defining lobe, unguis indistinguishable.

The exact nature of these specimens it is difficult to determine. The series is not very extensive, and all the Dassen Island specimens

were collected at the same time of year, so that we have no idea of the possible seasonal changes in the two sexes. The hand of the 2nd gnathopods (ordinary form) attains its distinctive shape much sooner than in *T. capensis*. Hermaphroditism may be the cause of the present "abnormal" form. A similar specimen with a 2nd gnathopod approaching the ♀ form was found among the specimens of *Parorchestia tenuis* (Dana). (See below.)

TALORCHESTIA AUSTRALIS n. sp.

(Plate XXVII. Figs. 33, 34.)

Body not very broad. Eyes round, their distance apart equal to their diameter. Side-plates not very deep, 2 without a strongly produced lobe on upper posterior angle, 5 almost as deep as 4, its lobes subequal in depth, its length equal to $1\frac{1}{2}$ segments.

Pleon unarmed, postero-inferior angle of segment 3 quadrate, not produced.

Telson with apical incision, spinose.

First antenna reaching in ♂ to middle, in ♀ to end of penultimate peduncular joint of 2nd antenna, 1st joint a little broader than long, 2nd and 3rd much more slender, 2nd $1\frac{1}{2}$ times as long as 1st, 3rd a little shorter than 2nd, flagellum equal to last two peduncular joints together, 6-jointed in ♂, 4 in ♀.

Second antenna reaching in ♂ to end of 3rd, in ♀ to end of 2nd, peraeon segment, penultimate joint stout, longer than ultimate, flagellum equal to penultimate joint, 15-jointed in ♂, 13 in ♀. Both antennae feebly spinose.

First maxilla, inner plates with 2 plumose setae, outer plate with 9 spines. Remaining mouth-parts as in *T. quadrispinosa*.

First gnathopod in ♂, 5th joint triangular, with a prominent apical lobe, 6th shorter than 5th, oblong inner apex produced as a subacute lobe, palm concave, finger reaching to end of lobe, unguis as long as finger, extending beyond lobe; in ♀ 6th joint simple, shorter than 5th, 5th and 6th both with a long stout spine, as well as smaller spines, on inner distal margin, finger and unguis as in ♂.

Second gnathopod in ♂, 6th joint suboblong, greatest width across the defining angle, palm nearly transverse, slightly convex, passing into the slightly shorter hind margin without any prominent angle or tooth, furnished with spines arranged mostly in pairs, finger matching palm, evenly curved; in ♀ 2nd joint not expanded on front margin, 4th with a not very produced apical lobe, 5th broadly lobed, 6th as long as 5th, apical projection rounded, scarcely upturned.

Second peraeopod, 7th joint with a small tubercle in middle of inner margin, unguis scarcely half length of 7th.

Third to fifth peraeopods, 2nd joint expanded, its hind margin in peraeopod 4 nearly straight, in 5 slightly convex, distal part of hind margin and inferior angle slightly serrulate and spinulose.

First and second uropods, rami respectively shorter and subequal to peduncle.

Third uropod, ramus subequal to peduncle.

Length : ♂ 17 mm., ♀ 13 mm.

Colour : Whitish, eyes dark brown.

Locality : West and East coasts of the Cape Peninsula. (Dr. W. F. Purcell and R. M. Lightfoot.) ♂♂, ♀♀ and young. (S.A.M. Nos. 1527-9, 1284, A2460.)

This species is very like *T. brito* Stebbing from the North Devon coast, but possesses certain well-marked features of its own. The 6th joint of the first gnathopod in ♂ has a narrower process and distal margin is more strongly concave, the palm of the second gnathopod in ♂ is more transverse, 2nd antenna in ♂ stouter and telson more deeply incised and more spinose than in *T. brito*.

TALORCHESTIA ANCHEIDOS n. sp.

(Plate XXVII. Figs. 35, 36.)

Closely allied to the last species. Body not very broad. Eyes subrotund, their distance apart *less* than their diameter. Side-plates not very deep, 2nd with a strongly produced rounded lobe on upper posterior angle, 5th as deep as 4th, lobes subequal in depth. Posterior angle of pleon segment 3 very slightly produced, posterior margin slightly concave.

Telson with apical incision, spinose.

First antenna reaching to end of penultimate peduncular joint of 2nd antenna, 3rd joint in ♂ longer than 2nd (but not equal to 1st plus 2nd), in ♀ equal to 2nd, flagellum nearly equal to 2nd plus 3rd, 6-jointed in ♂, 4-jointed in ♀.

Second antenna reaching nearly to end of 3rd peraeon segment in ♂, 2nd in ♀, ultimate joint longer than penultimate, flagellum equal to last two peduncular joints together, 17-jointed in ♂, 13-jointed in ♀.

Mouth-parts as in *T. quadrispinosa*.

First gnathopod in ♂, 4th joint not expanded, 5th strongly expanded, the lobe broad and rounded, distal margin only slightly concave, 6th shorter than 5th, also strongly expanded, distal margin

nearly straight, finger and unguis not reaching apex of lobe (cf. *T. novae-hollandiae* Stebb.), numerous scattered spines on the joints; in ♀ 6th joint simple, shorter than 5th, both spinose, but without any specially large spines.

Second gnathopod in ♂, 2nd joint very similar to that of *T. australis* but oval, greatest width just before the middle, whence tapering to hinge, palm and hind margin forming an almost even curve without defining tooth or process, palm convex, spinose, finger strongly curved, a little longer than palm and overlapping the margin at the end; in ♀ 2nd joint expanded on front margin, twice as long as wide, 4th not lobed, 5th not very strongly lobed, 6th a little shorter than 5th, apical projection bluntly rounded.

Second pereopod, 7th joint with inner margin sinuous, not constricted.

Third to fifth pereopods, 2nd joint moderately expanded, its hind margin in 3rd and 4th pereopods with minute setuliferous serrations, in 5th regularly crenulate and setulose.

First uropod, outer ramus with apical spines only.

Length: ♂ 12·5 mm., ♀ 10 mm.

Colour: Whitish, eyes dark brown.

Locality: West and East coasts of the Cape Peninsula. (Dr. W. F. Purcell and R. M. Lightfoot.) ♂♂ and ♀♀. (S.A.M. Nos. 1260-2.)

This species possesses a 1st gnathopod in ♂ like that of *T. novae-hollandiae* Stebb. together with a 2nd gnathopod similar to that of *T. brito* Stebb. It is distinguished from *T. australis* by the greater proximity of the eyes, the 2nd side-plate, the 2nd gnathopod in ♂ and the finger of 2nd pereopod. The females of this species and *australis* can be distinguished by the 2nd side-plate, the 2nd joint of 2nd gnathopod and absence of large spines on 5th and 6th joints of 1st gnathopod.

The name is compounded of $\alpha\gamma\chi$, near, and $\epsilon\iota\delta\sigma$ an appearance.

GEN. TALITRIATOR Methuen.

1913. *Talitriator* Methuen, Proc. Zool. Soc. Lond. 1913, pt. 1, p. 109.

In his generic diagnosis Methuen says: "Like *Talitrus* except for the fifth side-plate. . . ." This refers presumably to the difference in the size of the lobes, the anterior lobe being much bigger than the posterior in *Talitriator*, but only a little bigger in *Talitrus* (cf. Sars' figure of *T. locusta* in Crust. Norw. vol. 1, pl. 9).

Now Sayce (Proc. Roy. Soc. Viet. vol. 22, pt. 1, p. 29, pls. 11, 12, 1909) has given detailed descriptions and figures of the two Australian

species *Talitrus sylvaticus* Haswell and *T. kershawi* Sayce, both of which possess a 5th side-plate of the same character as *Talitriator*. In addition they have the palp of maxilliped 4-jointed, telson longer than broad, a triangularly expanded 5th joint in 1st gnathopod, and the 1st antenna only slightly shorter than the peduncle of 2nd antenna.

It seems therefore expedient to transfer the two Australian species to the present genus, which may be defined as follows:

Like *Talitrus*, but with anterior lobe of 5th side-plate much larger than the posterior lobe, 1st antenna only slightly shorter than peduncle of 2nd antenna, palp of maxilliped 4-jointed, 1st gnathopod not so long as 2nd gnathopod and not stronger, 5th joint of 1st gnathopod distally expanded, 2nd joint of 3rd peraeopod moderately or scarcely at all expanded, telson longer than broad. Genotype: *T. eastwoodae* Methuen. Includes also *T. sylvaticus* (Haswell) and *T. kershawi* (Sayce).

There is, however, one feature which separates *T. eastwoodae* from both *Talitrus* and also the two Australian species and to which Methuen has not drawn attention: namely, the subacute projection on the upper posterior angle of the 2nd side-plate.

TALITRIATOR EASTWOODAE Methuen.

1913. *Taliatriator eastwoodae* Methuen, l.c. p. 110, pls. 10, 11.

I have examined 4 specimens from the original locality in the Transvaal, kindly presented to the South African Museum by Hon. P. A. Methuen and labelled by him as "Types." I find that the postero-inferior angles of pleon segments 2 and 3 are not quite so produced as in Methuen's figure (pl. 11, fig. 12), in fact there is no produced point on the 2nd at all in two of the specimens. The 2nd antenna reaches to the end of the 3rd peraeon segment.

There is also in the Museum a considerable number of specimens from the Cape Peninsula and other districts, all of which I consider to be specifically the same as *eastwoodae*. I have also come to the conclusion that Methuen's specimens were probably not quite mature. Needless to say the specimens show a certain amount of variability, not, however, very great. The size of the adults also varies a little.

The largest specimens measure 16 mm., and in these the 2nd antenna reaches to the 4th-6th peraeon segment, its flagellum 24-28-jointed, that of 1st antenna 6-8-jointed, 5th and 6th joints of 1st gnathopod more elongate than in the Type specimens, the process of the 6th joint of 2nd gnathopod longer and more pointed and curved upwards, the upper margin being concave.

Between these large specimens and the Transvaal specimens (and Cape specimens of the same size as these latter) there is every gradation in the length of the 2nd antennae and number of flagellar joints, and the length of 5th and 6th joints of 1st gnathopod and 6th joint of 2nd gnathopod.

Length : 16 mm.

Colour : Brown, peraeon and pleon segments banded transversely with reddish, eyes black; in spirit all the colour, except that of the eyes, fades to whitish.

Locality : Widely distributed. In the Cape Peninsula it is to be found abundantly in the damp earth and moss near streams and waterfalls, ranging from near sea-level up to the top of Table Mountain, 3500 feet. Also : Stellenbosch; Sir Lowry's Pass; Ceres; Wellington; Clanwilliam Division; Swellendam; George; Knysna; Alexandra Division; Port St. John's, Pietermaritzburg, Howick, and Durban, Natal. (Dr. W. F. Purcell, R. M. Lightfoot, K.H.B.) ♂ ♂, ♀ ♀ and young.

Methuen records it "from streams," The Woodbush, N. Transvaal, and speaks of it as a "fresh-water" Amphipod. So far as my own experience in the Cape Peninsula and at Stellenbosch goes it does not occur actually in the streams; I should describe it as truly terrestrial.

The gaps in the distribution will no doubt be filled up as soon as the Union has been more thoroughly searched for the smaller invertebrates.

GEN. CHILTONIA Stebbing.

1899. *Chiltonia* Stebbing, Tr. Linn. Soc. Lond. ser. 2, vol. 7, pt. 8, p. 408.
 1901. *Hyalella* Sayce, Proc. Roy. Soc. Vict. n.s. vol. 13, pt. 2, p. 226.
 1902. *Chiltonia* id. ibid. n.s. vol. 15, pt. 1, p. 47.
 1906. ,, Stebbing, Das Tierreich, 21, pp. 555, 735.
 1908. ,, G. Smith, Proc. Roy. Soc. (B), vol. 80, p. 472.
 1909. ,, id. Naturalist in Tasmania, p. 136.
 1909. ,, Chilton, Subant. Is. N.Z. p. 644.

Although the following species disagrees with the definition of this genus in having the 1st and 2nd gnathopods alike in both sexes, the 2nd not enlarged, it seems best to widen the definition of the genus rather than institute a new one.

CHILTONIA CAPENSIS n. sp.

(Plate XXVII. Figs. 38-40.)

Body rather stout, shiny. Eyes rather large, oval, distance apart

less than their shorter diameter. Side-plates 1-4 increasing in depth, 4 largest, much deeper than 5. Postero-inferior angle of 3rd pleon segment quadrate, scarcely produced.

Telson entire, subrectangular, distal margin straight, 2-3 minute setules at the rounded postero-lateral angles.

First antenna, 1st joint stout, 2nd and 3rd subequal, flagellum in ♂ 7-, in ♀ 6-jointed.

Second antenna subequal to 1st, ultimate joint a trifle longer than penultimate. Flagellum in ♂ 7-, in ♀ 6-jointed.

Upper lip, distal margin evenly rounded.

Mandibles, cutting-edge 4-5-dentate, secondary cutting-edge 3-4-dentate.

First maxilla, outer plate with 9-10 spines, slightly notched on outer margin where palp should be, but no trace of a palp, inner plate with 2 plumose setae.

Maxilliped, the 2 outermost teeth on apex of inner plate large, 4th joint of palp small, conical, ending in a long seta.

First and second gnathopods similar to one another and alike in both sexes, 2nd and 3rd joints not in the least expanded, 5th distally fringed with 6-8 setae, 6th nearly twice as long as broad, inferior margin slightly concave, palm transverse, convex, setulose, defining angle rounded.

First and second peraeopods, inferior margins of 5th and 6th joints with 4 and 5 spinules respectively, 6th with 1 apical spine in addition, 7th without constriction, tubercle or setule.

Third and fourth peraeopods, 2nd joint oval, hind margin with very faint serrations, anterior margin of 6th with 3 pairs of spinules and 1 apical one, hind margin smooth.

Fifth peraeopod, 2nd joint very strongly expanded, as broad as long, hind margin serrulate, 6th as in 3rd and 4th peraeopods.

None of the peraeopods are strongly spinose, but all are rather stout, 1st, 2nd, 4th and 5th are subequal and longer than 3rd.

First and second uropods, rami shorter than peduncle, with apical spines only, except the inner ramus of 2nd, which has 1 marginal spine.

Third uropod, short, ovate, 1-jointed, with 1 apical seta.

Length: ♂ 4.5 mm., ♀ 3-4 mm.

Colour: Greenish, eyes black.

Locality: Salt River, Cape Town. October, 1898. (Dr. W. F. Purcell.) 9 ovigerous ♀♀ "in brackish pool"; Milnerton, near Cape Town. 25/10/13. (K.H.B.) ♂♂ and ovigerous ♀♀. In brack water, among green weeds. (S.A.M. Nos. A2885 and A2886.)

GEN. PARORCHESTIA Stebbing.

1899. *Parorchestia* Stebbing, Tr. Linn. Soc. Lond. ser. 2, vol. 7, pt. 8, p. 402.
 1906. „ id. Das Tierreich, 21, pp. 557, 735.
 1909. „ Chilton, Subant. Is. N.Z. p. 636.

PARORCHESTIA TENUIS (Dana).

- 1853 and 55. *Orchestia tenuis* Dana, U.S. Expl. Exp. vol. 13, 2, p. 872, pl. 59, fig. 1.
 1862. „ „ Bate, Cat. Amphip. Brit. Mus. p. 29, pl. 4, fig. 10.
 1881. „ *sylvicola* Thomson, Tr. N.Z. Inst. vol. 13, p. 212, pl. 7, fig. 4 (non Dana).
 1884. *Allorchestes recens* id. ibid. vol. 16, p. 235, pl. 13, figs. 2-5.
 1893. *Orchestia gammarellus* (part) Della Valle, F. u. Fl. Neapel, vol. 20, p. 501.
 1899. *Parorchestia tenuis* Stebbing, Tr. Linn. Soc. Lond. l.c. p. 402.
 1906. „ „ id. l.c. p. 557.
 1909. „ „ Chilton, Subant. Isl. N.Z. p. 642.

Body fairly compressed. Eyes rather large, equal to half the upper margin of head, circular, almost meeting on the top of the head. Side-plate 1 smaller than and partly concealed by 2, side-plates 2-4 of same depth as their segments, with a posterior point above which hind margin is excavate, inferior margins of 1-4 minutely spinulose, 5 nearly but not quite as deep as 4. Postero-inferior angle of 1st pleon segment quadrate with a very small point, of 2nd and 3rd quadrate, somewhat produced in an acute point, hind margin concave above the point, perfectly smooth.

Telson rather short, triangular, a very faint apical notch, the only setae present are 3 on each apex set just within the margin.

First antenna not quite reaching apex of peduncle of 2nd antenna, 1st, 2nd and 3rd joints subequal, flagellum equal to peduncle, ♂ 7-, ♀ 4-jointed.

Second antenna $\frac{1}{2}$ length of body, ultimate joint longer than penultimate, flagellum equal to peduncle, ♂ 14-, ♀ 7-jointed.

First gnathopod ♂ exactly resembling Thomson's figure of his *Allorchestes recens* (= *Parorchestia tenuis* (Dana)).

Second gnathopod ♂ also in close agreement with that of *P. tenuis*. The defining angle is a little more prominent than in Thomson's figure, but is not at all tooth-like, and carries one fairly stout spine.

First and second gnathopods ♀ also resembling Thomson's figures

of *A. recens*, 4th and 5th joints with the scabrous lobes small in 1st, but large in 2nd gnathopod.

First and second pereopods feebly spinulose, 4th and 6th joints with spinules on both margins, 5th spinulose only on hind margin, finger with a very minute setule on inner apex.

Third to fifth pereopods, 2nd joint oval, hind margin with very slight setiferous serrations, 4th and 6th joints spinulose on both margins, finger with a very minute setule.

First and second uropods with marginal spines on inner ramus only.

Third uropod, peduncle with 3-4 apical spines, ramus nearly as long but only half as wide, tipped with 5 setae.

Length: ♂ 9 mm., ♀ 5-6 mm.

Colour: In spirit, whitish, eyes dark brown.

Locality: Salt River, near Cape Town. October, 1898. (Dr. W. F. Purcell.) 5 ♂♂, 3 ovigerous ♀♀ "in brackish pool"; East London. July, 1914. (R. M. Lightfoot.) 3 ♂♂, 2 ovigerous ♀♀ "found amongst a number of *Talorchestia* on the beach." (S.A.M. Nos. 10030 and A3053.)

Geogr. Distribution: New Zealand (Dana, Thomson, Chilton); Campbell Island (Chilton).

Thus it will be seen that the only differences between the South African and the New Zealand specimens lie in the shorter 3rd joint of the 1st antenna, the larger eyes, and the more prominent defining angle of the hand of 2nd gnathopod.

As mentioned above under *Talorchestia quadrispinosa*, there is one specimen 5 mm. long from Salt River which has a normal ♂ 1st gnathopod, but a 2nd gnathopod resembling that of the ♀. It is, however, stouter than in the ♀, the 6th joint especially being much broader than in the ♀.

PARORCHESTIA DASSENENSIS n. sp.

(Plate XXVIII. Figs. 1, 2.)

? 1843. *Orchestia bottae* Krauss, Südafr. Crust. p. 60. (non M. Edwards 1840.)

Male. Body fairly compressed, back rounded. Eyes fairly large, round, their distance apart greater than their diameter. Side-plate 1 smaller than and partly concealed by 2, side-plates 2-4 shallower than their segments and longer than deep, upper half of posterior margin above posterior angle excavate, 5 as deep as 4. Postero-inferior angle of pleon segments 1-3 quadrate, with a very shortly produced point, posterior margin quite smooth.

Telson with a very small apical notch, lateral margins very slightly concave, 2 apical spines on each apex.

First antenna reaching nearly to apex of peduncle of 2nd antenna, 3rd joint a trifle shorter than 2nd, 1st a little shorter than 3rd, flagellum not quite as long as peduncle, 7-jointed.

Second antenna not half length of body, ultimate and penultimate joints subequal, flagellum a little longer than peduncle, 16-jointed.

First gnathopod ♂, 4th joint with a rounded pellucid lobe, 5th prominently lobed, 6th shorter and narrower than 5th, at least $2\frac{1}{2}$ times as long as greatest width, widening slightly towards lower apex where it is scabrous and pellucid and produced beyond the short transverse palm as a short rounded lobe, palm with a few setae, finger matching palm.

Second gnathopod ♂, inner anterior margin of 2nd joint with a well-marked, straight, apically rounded keel, outer front apex has a smaller lobe, 3rd with a strong pellucid lobe on anterior margin, 6th ovate, widest in the middle, palm oblique, spinose, with a fairly deep but small notch near hinge, and a shallow one near the undefined junction of palm and hind margin, finger overlapping palm and tapering to a fine point, inner margin sinuous.

First and second peraeopods not strongly spinose or setose, 4th-6th joints spinose on both margins, finger with a very minute setule.

Third to fifth peraeopods, 2nd joint increasingly expanded, hind margin nearly straight, with setiferous serrations, strongest on 5th peraeopod, postero-inferior angles rounded, in 5th peraeopod reaching to end of 3rd joint, 4th to 6th joints spinulose on both margins, finger with minute setule, all three peraeopods more slender than in the previous species.

First uropod with marginal spines only on inner ramus.

Second uropod with marginal spines on both rami.

Third uropod, peduncle with 2-3 apical spines, ramus a trifle longer than peduncle, slender, with 3-4 apical setae.

Length: 12 mm.

Colour: In spirit, whitish, eyes black.

Locality: Dassen Island, West Coast. April, 1897. (R. M. Light-foot.) 2 ♂♂; Hout Bay, Cape Peninsula. 29/12/14. (S. H. Haughton.) 2 ♂♂. (S.A.M. Nos. A3054 and A3067.)

The specimens which Krauss assigned to *Orchestia bottae* M. Edw. may perhaps be referable to this species, though I have not seen Krauss' specimens. The description of the 2nd gnathopod of *O. bottae* as given by Stebbing in Das Tierreich applies very well to that of the present species.

GEN. HYALE Rathke.

1837. *Hyale* Rathke, Mém. prés. Ac. St. Petersb. vol. 3, p. 377.
 1849. *Nicaea* Nicolet in Gay's Hist. Chile, vol. 3, p. 237.
 1888. *Hyale* Stebbing, Challeng. Rep. vol. 29, p. 171, etc.
 1890. „ G. O. Sars, Crust. Norw. vol. 1, p. 26.
 1906. „ Stebbing, Das Tierreich, 21, pp. 559, 735 (references).
 1907. „ Chevreux, Bull. Mus. d'Hist. Nat. Paris, 1907, no. 6, p. 414.
 1908. „ Walker, Ann. Mag. Nat. Hist. ser. 8, vol. 2, p. 37.
 1910. „ Kunkel, Tr. Conn. Ac. Sci. vol. 16, p. 72.
 1911. „ Chevreux, Mém. Soc. Zool. Fr. vol. 23, p. 238.

HYALE MAROUBRAE Stebbing.

1899. *Hyale maroubrae* Stebbing, Tr. Linn. Soc. Lond. ser. 2, vol. 7,
 pt. 8, p. 405, pl. 32c.
 1906. „ „ id. l.c. p. 563.

First gnathopod ♂, 2nd joint with very slight lobe on anterior apex, 3rd not lobed at all.

Second gnathopod ♂, distal expansion on 2nd joint with 5 spiniferous indents, 3rd joint also lobed.

Third uropod, ramus shorter than peduncle.

In other respects agreeing with Stebbing's description. The female, hitherto unknown, has the gnathopods as follows: 1st gnathopod, 2nd joint slightly lobed on anterior apex, the lobe bearing one setule, 3rd and 4th not lobed, lobe of 5th not extending beyond 4th, setiferous, 6th twice as long as broad, palm transverse, convex, defined by a spine, margin setose, hind margin with 1 group of setae, finger matching palm; 2nd gnathopod, similar but a trifle larger.

Length: ♂ 5 mm., ♀ 4.5 mm.

Colour: Claret, eyes black.

Locality: Sea Point, near Cape Town. 26/2/14. (K.H.B.). 6 ♂ ♂, 1 ovigerous ♀; Buffel's Bay (False Bay). 28/9/13. (K.H.B.). 1 ♂. (S.A.M. Nos. A2883 and A2884.)

Geogr. Distribution: Sydney, New South Wales (Stebbing).

HYALE SALDANHA Chilton.

(Plate XXVII. Fig. 37.)

1912. *Hyale saldanha* Chilton, Tr. Roy. Soc. Edinb. vol. 48, pt. 2,
 p. 509, pl. 2, figs. 24-29.

This very common species occurs in several colour varieties according to the local habitat and the colour of the weeds among which it is

found. The ground-colour is slaty, slaty-brown, purplish, claret, sienna, brownish-green or green, either uniform or speckled and irrorated. A row of small whitish spots just above the junctions of the epimera and segments and frequently other smaller whitish spots, chiefly on the anterior epimera. Sometimes a fawn or yellowish medio-dorsal stripe runs from the head to the end of the pleon, or there is one light irregular patch on the 2nd peraeon segment and another on the 5th. In other specimens the ground-colour is whitish, becoming yellowish dorsally, each peraeon segment (with its side-plate) and each pleon segment with a broad dark brownish-black transverse band. Eyes dark brownish-black. The antennae and posterior limbs of the same colour as the ground-colour, the gnathopods pale.

It reaches a length of 13 mm. in the ♂ and 12 mm. in the ♀.

The lobes on the 2nd and 3rd joints of the 1st and 2nd gnathopods (of both sexes) are frequently more strongly developed than in Chilton's figures.

Besides Table Bay, other localities are: Buffel's Bay and Kalk Bay on the East side of the Cape Peninsula.

The "Scotia" obtained it at Saldanha Bay in 25 fathoms.

HYALE GRANDICORNIS (Kröyer).

1845. *Orchestia grandicornis* Köyer, Naturh. Tidsskr. ser. 2, vol. 1, p. 292, pl. 1, figs. 2a-n.
1849. *Nicaea lucasi* Nicolet in Gay's Hist. Chile, vol. 3, p. 238.
1852. *Allorchestes verticillata* + *peruviana* Dana, Proc. Amer. Ac. vol. 2, pp. 205, 206.
1862. ,, *verticillatus* Bate, Cat. Amph. Brit. Mus. p. 43, pl. 7, fig. 1.
1879. *Nicaea novaezealandiae* Thomson, Tr. N.Z. Inst. vol. 11, p. 235, pl. 10B, figs. 1a-f.
1893. *Hyale prevostii* (part) Della Valle, F. u. Fl. Neapel. vol. 20, pp. 519, 520.
1906. ,, *grandicornis* + *novaezealandiae* Stebbing, Das Tierreich, 21, pp. 566, 567.
1909. ,, *novaezealandiae* Chilton, Subant. Is. N. Zeal. p. 643.
1912. ,, *grandicornis* id. Tr. Roy. Soc. Edinb. vol. 48, pt. 2, p. 508.

Stebbing and Chilton have mentioned the nearness of *novaezealandiae* to *grandicornis*. A comparison of the South African form leaves no other course but to unite them. None of the characters

given by Stebbing in 1906, by which Thomson's species can be distinguished from Köyer's, appear to be constantly correlated. The degree of approximation of the lobe of the 5th joint of 1st gnathopod ♂ to the apex varies, as does also the expansion of the 2nd joint of the 2nd gnathopod and the seta on finger of peraeopods 1-5.

The most constantly correlated characters (and even these are not always found together in the same specimen) appear to be: the solitary spines on 4th joint of peraeopods 3-5, marginal spines on both rami of 1st uropod and the 3rd pleon segment with the postero-inferior angle slightly produced. But solitary spines on 4th joint of peraeopods 3-5 may occur with spines on only the inner ramus and a quadrate postero-inferior angle to pleon segment 3. Other combinations of these supposedly distinguishing characters also occur.

The following points about the South African species may be mentioned: Neither the 2nd nor 3rd joints of 1st gnathopod are lobed, lobe of 5th projecting a little beyond 4th, furnished with short spines and longer setae; 2nd joint of 2nd gnathopod with a straight-edged apically quadrate keel on anterior margin but no projecting rounded lobe, 3rd with a small lobe, hind margin of 4th joint of peraeopods 3-5 with 4 spines either solitary or each set in a bunch of setae, anterior margin of 6th with 4 (peraeopod 3) or 5 (peraeopods 4 and 5) spines, all of the same size and not apically serrulate, each set in a group of setae; setule on inner apex of finger varying from very delicate to fairly strong; hind margin of 2nd joint of peraeopods 3-5 with slight setuliferous indent, posterior margin in peraeopod 5 rather deeply excavate between the rounded postero-inferior angle and 3rd joint.

Length: Up to 17 mm. ♂, 14 mm. ♀.

Colour: Dark reddish or greenish brown, with squarish dorsal lighter spots.

Locality: Table Bay (Cape Town). (Dr. W. F. Purcell, K.H.B.); False Bay (Buffel's Bay) and St. James. (K.H.B.); East London. (R. M. Lightfoot.) ♂♂, ovigerous ♀♀ and young; Port Elizabeth. February, 1915. (Mrs. Paterson.) (S.A.M. Nos. 1263, A2516, A3051, A3052, and A3282.)

Geogr. Distribution: Valparaiso (Kröyer: *O. grandicornis*, Dana: *A. verticillata*); Otago, N.Z., Macquarie Is. and the Snares (Thomson and Chilton: *N. novaezealandiae*); Gough Island (Chilton: *H. grandicornis*).

Most of the East London specimens belong to the form *novaezealandiae*, but examples of this form occur also among the Cape Peninsula specimens, which are mostly *grandicornis*, and *vice versa*. Specimens which are intermediate and combine the characters of the

two forms are found chiefly in the Cape series, but would probably also be found at East London if a larger series was collected.

HYALE DIASTOMA n. sp.

(Plate XXVIII. Fig. 3.)

♂. Body somewhat iridescent, dorsally rounded. Eyes moderate, subcircular. Side-plate 1 not greatly widened below. Postero-inferior angle of 3rd pleon segment quadrate, not produced, posterior margin with 3-4 very slight serrations. Telson, lobes oblong, apically rounded-truncate.

First antenna reaching beyond peduncle of 2nd antenna, 2nd and 3rd joints subequal, flagellum 12-jointed, with not very dense whorls of short setae.

Second antenna stout, nearly half length of body, ultimate joint longer than penultimate, flagellum 14-jointed, with dense whorls of long setae (denser and longer on lower surface).

First gnathopod ♂, 2nd joint proximally narrow, distally greatly widening but front apex only feebly lobed, 3rd not lobed, inferior margin of 4th straight, lobe of 5th not apical and not extending beyond 4th, setose along whole margin, 6th oblong, inferior margin distally setose, palm a little oblique, defined by 2 spines, setose, finger matching palm.

Second gnathopod ♂, 2nd joint with a well-developed rounded lobe on front apex, 3rd not lobed, 6th shortly oblong, palm nearly transverse, sinuous—*i.e.*, concave near hinge and defining angle, convex in middle, defining angle shortly produced, with 2 spines, finger stout, curved, inner margin sinuous like the palm, concave proximally and distally, convex in middle, so that when finger is closed a more or less circular loop-hole is left at base of finger.

First to fifth peraeopods, finger distinctly denticulate, seta on inner apex stout, hind margin of 6th joint of peraeopods 4 and 5 smooth, inner margin without serrate spines, hind margin of 2nd joint in peraeopods 3 and 4 smooth, in peraeopod 5 with a few widely spaced setuliferous indents.

First uropod, 1 marginal spine on outer ramus near apex and 1 near apex and 1 in middle on inner ramus.

Third uropod, peduncle and ramus subequal.

Length: 7 mm.

Colour: Claret, eyes black.

Locality: Sea Point, near Cape Town. 13/4/14. (K.H.B.) 4 ♂♂. The ♀ has not yet been recognised. (S.A.M. No. A3039.)

HYALE INYACKA n. sp.

(Plate XXVIII. Fig. 4.)

Body not very shiny, dorsally rounded. Eyes elongate-oblong. Side-plates not deep, 1 widened below. Postero-inferior angle of 3rd pleon segment quadrate, not produced, posterior margin with 4-5 widely spaced and very slight serrations. Telson, lobes oblong, apically truncate.

First antenna reaching well beyond peduncle of 2nd antenna, 1st joint equal to 2nd and 3rd together, flagellum longer than peduncle, 13-jointed.

Second antenna equal to half length of body, ultimate and penultimate joints subequal, flagellum longer than peduncle, 24-jointed.

First gnathopod ♂, 2nd joint scarcely expanded on front apex, 3rd not expanded, lobe of 5th broad and apical, setose along whole margin, 6th wider distally than proximally, palm a little oblique, setose, 2 defining spines, hind margin with a group of setae shortly before apex.

Second gnathopod ♂, 2nd joint with a narrow apical expansion, 3rd not lobed, 6th oval, palm oblique, convex, spinose, equal to hind margin and defined by a small blunt projection bearing 1 spine, finger matching palm.

In ♀ gnathopods similar to one another and to 1st gnathopod of ♂, but 2nd joint in both gnathopods with a narrow apical lobe.

First and second peraeopods, hind margin of 6th joint with 3 groups of 1 spine and 2 setae each, apex with 1 short spine and 2-3 setae, finger with short stout spine (not seta) on inner apex (if finger and unguis be counted together the spine is in middle of inner margin).

Third to fifth peraeopods, hind margin of 2nd joint setulose and serrate, faintly on 3rd and 4th peraeopods, more strongly on 5th, hind margin of 4th with 3 solitary small spines, anterior margin of 6th with 4 pairs of spinules and a fairly stout but not very prominent apical spine, hind margin of 6th smooth in 3rd peraeopod, with 4 (4th peraeopod) or 3 (5th peraeopod) groups of 3 unequal spines and an apical tuft of setae, finger with fairly stout seta, inner margin quite smooth.

First uropod with marginal spines on both rami.

Third uropod, ramus shorter than peduncle.

Length : 9 mm.

Colour : Pale pinkish, eyes black.

Locality : Inyack Island, Delagoa Bay. October, 1912. (K.H.B.)

2 ♂♂, 1 nonovigerous ♀. (S.A.M. No. A2470.) In weed at low-water.

Very like the northern *H. prevostii* (M. Edw.), but distinguished by the serrate hind margin of 2nd joint of peraeopods 3-5 and the more numerous spines on hind margin of 6th joint of peraeopods 4 and 5. Chevreux (1900, Rés. Camp. Monaco, vol. 16, pl. 1, fig. 3*f*) has figured the 5th peraeopod of an Azores specimen of *H. prevostii* with a serrate hind margin to the 2nd joint and a smooth hind margin to the 6th joint. Della Valle and Sars figure both joints with smooth hind margins.

HYALE HIRTIPALMA (Dana).

1852. *Allorchestes hirtipalma* Dana, Pr. Amer. Ac. vol. 2, p. 205.
 1853/55. " " id. U.S. Expl. Exp. vol. 13, 2, p. 888, pl. 60,
 fig. 4.
 1862. " *inca* Bate, Cat. Amphip. Brit. Mus. p. 40, pl. 6, fig. 7.
 1879. *Nicaea fimbriata* Thomson, Tr. N.Z. Inst. vol. 11, p. 236, pl. 10*B*,
 fig. 2.
 1888. *Allorchestes georgianus* Pfeffer, Jahrb. Wiss. Anst. Hamb. vol. 5,
 p. 77, pl. 1, figs. 1*a-n*, 4.
 1906. *Hyale hirtipalma* Stebbing, Das Tierreich, 21, p. 564.
 1909. " " Chilton, Subantaret. Is. N. Zeal. vol. 2, p. 643.
 1913. " " id. Mitt. Naturh. Mus. Hamb. vol. 30, p. 55.

Chilton includes in the synonymy also *H. villosa* Smith 1876, and *H. trigonochir* Walker 1908. These form the two extremes; in the former the 6th joint of the 1st gnathopod does not widen to the palm, in the latter it widens so much that the palm is at least twice the length of the hind margin.

As Chilton (1909) remarks, this character is indeed variable, but appears to be not so much individual as local. Among the Cape specimens those from Kalk Bay (False Bay) belong to the form *villosa*, whereas those from Buffel's Bay (also in False Bay) and from Cape Town in Table Bay have the 6th joint distinctly though not strongly widened. Amongst the specimens from each locality there can be detected no variation, except that due to age as mentioned by Stebbing (1906).

On the other hand, the variation in the brushes of setules on the lower margin of the flagella of the 2nd antennae appears to be more individual. In many cases the flagella are practically destitute of these brushes.

The 6th joint of the 2nd gnathopod of ♂ is not always as elongate as represented in Dana's figure, but the proportion of palm to hind margin is the same.

First and second gnathopods in both sexes with the 2nd joint but not the 3rd apically expanded into a rounded lobe.

Length: Up to 10 mm.

Colour: Pale pinkish, brownish or greenish, eyes black.

Locality: Kalk Bay. (Dr. W. F. Purcell.) 7 ♂♂ and ♀♀; Buffel's Bay (False Bay). 29/9/13. (K.H.B.) ♂♂, ovigerous ♀♀ and juv.; Sea Point, near Cape Town. 13/4/14. (K.H.B.) ♂♂ and ovigerous ♀♀. (S.A.M. Nos. 1269, A3047 and A3049.)

Geogr. Distribution: Chile (Dana); Peru (Bate); New Zealand (Thomson, Chilton); South Georgia (Pfeffer); Auckland Islands (Walker, Chilton); Kerguelen (Smith: *H. villosa*).

HYALE MACRODACTYLA Stebbing.

1899. *Hyale macrodactylus* Stebbing, Tr. Linn. Soc. Lond. ser. 2, vol. 7, pt. 8, p. 404, pl. 31D.

1906. „ „ Stebbing, Das Tierreich, 21, p. 564, fig. 96.

The form described in 1901 by Chevreux (Mém. Soc. Zool. Fr. vol. 14, p. 397, figs. 13, 14) from Seychelles seems quite distinct enough from Stebbing's form to merit a separate specific name. Chevreux himself was half inclined to this view. I propose the name *H. Chevreuxi*.

The Cape specimens agree well with Stebbing's descriptions and figures except that they reach a rather larger size and there is sometimes a very short, but appreciable and well marked, hind margin to the 6th joint of the 2nd gnathopod of ♂. The finger also is rather variable and is scarcely as long as in Stebbing's specimens.

There is a short upstanding seta on both lobes of the telson.

Length: Up to 8 mm., ovigerous ♀ 5 mm.

Colour: Pale pinkish or brownish.

Locality: Kalk Bay. (Dr. W. F. Purcell.) ♂♂ and ♀♀; Buffel's Bay (False Bay). (K.H.B.) ♂♂, ovigerous ♀♀ and juv.; Sea Point, near Cape Town. (K.H.B.) ♂♂ and ovigerous ♀♀. (S.A.M. Nos. 1628, A3042-5.)

Geogr. Distribution: St. Thomas, Danish W. Indies; Rio Janeiro (Stebbing).

FAMILY AORIDAE.

1899. *Aoridae* Stebbing, Ann. Mag. Nat. Hist. ser. 7, vol. 4, p. 211.
 1906. „ id. Das Tierreich, 21, pp. 585, 736.
 1909. „ Chevreux, Bull. de l'Inst. oc. Monaco, no. 150, p. 5.
 1910. „ Stebbing, Sci. Res. "Thetis," pt. 12, p. 605.
 1912. „ Pearse, Proc. U.S. Nat. Mus. vol. 43, p. 372.

GEN. AORA Kröyer.

1845. *Aora* Kröyer, Naturh. Tidsskr. ser. 2, vol. 1, p. 328.
 1888. „ Stebbing, Challeng. Rep. vol. 29, p. 1072 (Synonymy).
 1906. „ id. l.c. p. 587.
 1910. „ id. Gen. Cat. S.A. Crust. p. 459.

AORA TYPICA Kröyer.

1845. *Aora typica* Kröyer, l.c. p. 328, pl. 3, figs. 3a-l.
 1906. „ „ Stebbing, l.c. p. 587, fig. 101 (Synonymy).
 1907. „ „ Chevreux, Mém. Soc. Zool. Fr. vol. 20, p. 510.
 1908. „ „ Stebbing, S.A. Crust. pt. 4, p. 84.
 1909. „ „ Chilton, Subantarct. Is. N. Zeal. vol. 2, p. 645.
 1910. „ „ Chevreux, Mém. Soc. Zool. Fr. vol. 23, p. 242.
 1911. „ „ Chilton, Tr. N.Z. Inst. vol. 43 [1910], p. 565.

The ♂ and ♀ specimens from South Africa referred to by Stebbing (l.c. 1908, p. 84) are very near to the form described by Stebbing in 1888 as *A. kergueleni*. The 1st gnathopod in ♂ has no setae on 2nd joint, nor tooth on anterior margin, 4th joint projects beyond end of 5th, inferior margin of 5th and 6th and apex of 6th with long setae, finger $\frac{2}{3}$ length of 6th, inner margin feebly serrate. Fifth peraeopods lost. Rami of 3rd uropod subequal and a little longer than peduncle. Telson broader than long.

Littoral specimens from Table Bay are similar. The spine on inner apex of 6th joint of 1st gnathopod of ♂ appears to be usually absent. Fifth and 6th joints of 2nd gnathopod of ♂ rather narrower than in Stebbing's figure of *A. kergueleni*, nearly 3 times as long as wide. Peraeopod 3 with 2nd joint tapering distally, hind margin straight or slightly concave, infero-posterior angle with 1 spine; 2nd joint of 4th peraeopod similar but rather more pyriform; 2nd joint of 5th peraeopod broadly oval, nearly as broad as long, hind margin convex, postero-inferior angle with 1 spine.

The peculiar feature of these specimens is the length of the rami of the 3rd uropod, which are equal to or even in some cases a little shorter

than the peduncle; both rami have several apical setae but no marginal spines.

Length: ♂ 7 mm., ♀ 7.5 mm.

Colour: Whitish, speckled dorsally with grey in the following manner: anterior half of the segments with 2 submedian spots, posterior half with 1 median spot; these spots are square so that they form a chequered pattern; a roundish medio-dorsal dark brown spot on peraeon segments 6 and 7 and pleon segments 1-3, those on the pleon segments largest and sometimes alone present; two specimens are white with transverse brown-grey bands, in the one on head, peraeon segment 6 and pleon segment 1, in the other on head, peraeon segments and pleon segment 1.

Locality: False Bay (Seal Island, SSE., distant $2\frac{1}{2}$ miles). 10 fathoms. 30/10/02. 1 ovigerous ♀. s.s. "Pieter Faure," Buffel's Bay. 28/9/13. ♂♂, ♀♀. (K.H.B.); Table Bay (Sea Point, near Cape Town). 1913/14. ♂♂, ovigerous ♀♀. (K.H.B.); Durban. July, 1915. 1 ♂. (H. W. Bell-Marley.) (S.A.M. Nos. A2871, A2538, A2896, A3850, etc.)

Geogr. Distribution: N. Atlantic (Kröyer, Sars, etc.); Algeria (Chevreux); Azores (Chevreux); S. America (Nicolet); Australia (Haswell); New Zealand (Thomson); Kerguelen Is. (Stebbing); Gambier Archipelago (Chevreux); Auckland Is. (Chilton); Kermadec Is. (Chilton).

A smaller form 4-5 mm. (♂♂ and ovigeous ♀♀) is found with the other form at Sea Point and is distinguished by having a large square dark grey spot on 1st and 2nd pleon segments, instead of the smaller roundish spots. The inner ramus of the 3rd uropod has only 1 or 2 setae.

GEN. LEMBOS Bate.

1857. *Lembos* (part) Bate, Ann. Mag. Nat. Hist. ser. 2, vol. 19, p. 142.
 1906. ,, Stebbing, Das Tierreich, 21, pp. 594-737.
 1909. ,, Walker, Tr. Linn. Soc. Lond. vol. 12, pt. 4, p. 338.
 1910. ,, Stebbing, Gen. Cat. S.A. Crust. p. 460.
 1911. ,, Chevreux, Mém. Soc. Zool. Fr. vol. 23, p. 243.

LEMBOS HYPACANTHUS n. sp.

(Plate XXVIII. Figs. 5-6.)

Body not compressed. Lateral lobes of head not strongly produced, subacute. Eyes oval. Peraeon segments 3-7 in ♂ each with a strong

straight, forwardly directed medio-ventral spine, the spines becoming smaller posteriorly, on 7th segment nearly obsolete. Side-plate 1 acutely produced forward in both sexes, 2 larger than 3.

Pleon segment 3 with postero-inferior angle rounded quadrate.

Telson as broad as long, with 2-3 setae in each subapical notch.

First antenna longer than 2nd, 2nd joint a trifle longer and much more slender than 1st, 3rd half the 2nd, flagellum 12-jointed, accessory flagellum equal to first 2 flagellar joints, 3-jointed, 3rd joint very minute.

Second antenna, gland-cone not very prominent, penultimate and ultimate joints subequal, flagellum a little shorter than ultimate joint, 5-6-jointed.

Mouth-parts similar to those of *L. kerqueleni* Stebbing.

First gnathopod in ♂, 2nd joint stout, 5th setose on fore and hind margins, 6th equal to 5th (*i.e.*, along anterior margin) and equally broad, oblong, palm a little oblique, with a stout spine at the defining angle and immediately distal to this a spiniform process, a small tooth near the hinge, hind-margin and especially the fore margin setose, finger curved, overlapping the spine, serrate on inner margin; anterior margin of 5th and 6th joints with a number of small circular marks, from each of which arises a seta. In ♀ not so stout, hind margin of 5th setose, 6th longer than 5th, oblong, palm transverse, convex, with a strong spine at defining angle, fore and hind margins sparsely setose.

Second gnathopod in ♂ smaller than 1st gnathopod, 2nd joint nearly linear, the distal anterior apex produced as a recurved hook, 5th more elongate than in 1st gnathopod, 6th equal to but narrower than 5th, narrow-oblong, very slightly tapering, palm transverse, with a small spine at defining angle, fore and hind margins of 5th and 6th setose, the setae on fore margin arising from little circular marks as in 1st gnathopod, finger overlapping palm, serrate on inner margin. In ♀ similar to ♂, but 2nd joint without hook-like projection, 5th shorter and broader proportionately than 6th, both joints apically setose on both margins, both not so strongly as in ♂.

First and second peraeopods not specially setose, 2nd-4th joints glandular.

Third to fifth peraeopods, 2nd joint oval, about twice as long as broad, 6th joint with 4-5 pairs of spines on anterior margin.

First uropod, peduncle with stout apical spine, inner ramus longer than peduncle, outer ramus shorter, both with marginal and apical spines.

Second uropod, rami a little longer than peduncle, outer ramus shorter than inner.

Third uropod, rami subequal, scarcely longer than peduncle.

Length: ♂ 4 mm., ♀ 5.5 mm.

Colour: Whitish with grey transverse speckled bands. Eyes black.

Locality: Sea Point, near Cape Town. 26/2/14. (K.H.B.) 1 ♂, 5 ovigerous ♀♀ and 5 immature; St. James (False Bay). 15/2/14. (K.H.B.) 2 ♂♂, 13 ovigerous ♀♀. (S.A.M. Nos. A2898 and A2958.)

In possessing ventral spines this species approximates to the Mediterranean species *L. spiniventris* (Della Valle), although perhaps this feature is present in other species but has been overlooked.

The 6th joint of the 1st gnathopod in ♂ is somewhat similar to that of *L. kergueleni*, but the 2nd joint of 2nd gnathopod is not expanded as in the latter species.

From the other Cape species *L. hirsutipes* Stebb. it is easily distinguished by the 1st gnathopod in both sexes, the hook-like prominence on 2nd joint of 2nd gnathopod of ♂, and the absence of setae on the 2nd pereopod of ♂.

GEN. LEMBOIDES Stebbing.

1895. *Lemboides* Stebbing, Ann. Mag. Nat. Hist. ser. 6, vol. 16, p. 209.

1906. ,, id. l.c. p. 600.

1910. ,, id. Gen. Cat. S.A. Crust. p. 460.

LEMBOIDES ACANTHIGER n. sp.

(Plate XXVIII. Figs. 7, 8.)

The single specimen corresponds fairly well with Haswell's description of his *Microdeutopus australis* (Proc. Linn. Soc. N.S.W. vol. 4, p. 271, pl. 11, fig. 5), except in two points, namely: the second gnathopod has the palm of the 6th joint concave, the angle which it makes with the inferior margin blunt, not produced, and furnished with 1 spine; the presence of a large forwardly curved spine on ventral surface of pereon segments 3 and 4, a small one on segments 5-7, and a small backwardly directed tubercle on segment 1.

Other features of the present specimen are:

First antenna, 3rd peduncular joint $\frac{1}{4}$ 2nd, accessory flagellum equal to 3rd peduncular joint and longer than 1st flagellar joint, 4-jointed, 1st-3rd joints increasing in size, 4th joint $\frac{1}{2}$ 3rd.

Mouth-parts, mandibular lobes of lower lip are acute and much

longer, mandible with 5 spines in spine row, palp with 3rd joint subequal to 2nd, in its distal half rather suddenly contracted, apex acute, distal half of inner margin setiferous, outer plate of maxilliped reaching to end of 2nd joint of palp.

First gnathopod, 6th joint with submarginal groups of setae, inferior margin with 2-3 faint serrations, finger longer than in Haswell's figure, inner margin smooth.

First and second peraeopods, finger $\frac{2}{3}$ length of 6th joint.

Postero-lateral angles of 3rd pleon segment quadrate.

Length : 7 mm.

Colour : In spirit, pale pinkish.

Locality : Umvoti River mouth N. by W. $\frac{1}{4}$ W., distant 15 miles (Natal). 56 fathoms. 1 ♂. s.s. "Pieter Faure." 8/1/01. (S.A.M. No. A176.)

Were it not for the presence of the ventral spines, I should not hesitate to identify this specimen with *Lemboides australis* (Haswell). Thinking that these spines might have been overlooked, I applied to Prof. Haswell, who kindly looked through the Crustacea in the Macleay Museum, Sydney, but failed to find either the type or any specimens of the species in question. Dr. E. A. Briggs also obliged me by examining the collection in the Australian Museum, without any better result. So that one must regard the type of Haswell's *Microdeutopus australis* as in all probability lost, and institute a new species for the South African form.

LEMBOIDES CRENATIPALMA n. sp.

(Plate XXVIII. Figs. 9, 10.)

Head equal to 1st peraeon segment in ♂, to first 2 segments in ♀. Eyes oval, situate in the acutely produced antero-lateral angles. Side-plates 1-3 increasing in size and depth, 1 and 2 narrowed below and directed forwards, 3 widened below, the antero-inferior angle produced forwards subacutely, 4 not so long and not quite as deep as 3, rectangular, postero- and antero-inferior angles rounded, anterior lobe of 5 scarcely more than half as deep as 4, posterior lobe half as deep as anterior lobe, 6 bilobed, 7 semicircular, both shallow. In ♀ side-plates similar but not so deep, 2 not narrowed below, and anterior lobe of 5 nearly as deep as 4. Postero-inferior angle of 3rd pleon segment rounded.

Telson, lateral processes obtuse with a small point, within this a spine, apex rounded.

First antenna, 1st and 3rd joints subequal, 2nd longer, flagellum

subequal to peduncle, ca. 17-jointed, accessory flagellum a trifle longer than 1st flagellar joint, 3-jointed, 2nd longer than 1st, 3rd minute.

Second antenna subequal to 1st antenna, ultimate and penultimate joints subequal, flagellum about as long as peduncle, ca. 21-jointed.

Upper lip broader than long, distal margin convex, entire.

Lower lip, inner lobes large, mandibular process narrow, subacute.

Mandible, cutting-edge tridentate, each of the teeth more or less bifid, secondary cutting-edge bidentate, one or both the teeth bifid, spine-row with 7 spines in the left, 10 in the right, molar rounded, denticulate, palp nearly twice length of trunk, 3rd joint shorter than 2nd, wider distally than proximally, 2nd with a few setae, 3rd with numerous setae on apex.

First maxilla, inner plate with 2 unequal apical setae, outer plate with 10 spines.

Second maxilla, inner plate shorter and narrower than outer, apices of both rounded.

Maxilliped, inner plate with 3 spines on distal margin, outer plate extending $\frac{2}{3}$ along 2nd joint of palp, 4th joint of palp ending in a spine nearly as long as itself.

First gnathopod, in ♂ 2nd joint rhomboidal, very broad, inferior margin with 5 transverse rows (including the apical one) of very long setae, 3rd joint more than twice as broad as long, 4th apically acute, 5th a little longer and broader than 2nd, ovoid, inferior margin with groups of setae, 6th not as long and not quite so broad as 5th, palm transverse, straight, crenulate, inferior margin convex, crenulate and ending in a blunt, lobe-like projection, finger reaching a good way beyond this lobe, inner margin denticulate; in ♀ 2nd joint linear, 4th apically truncate, 5th equal to 2nd, obovate, strongly setose, 6th a little smaller than 5th, ovate, palm and inferior margin forming an even and strongly convex curve, the palm very minutely denticulate and defined by a stout spine set just within the margin, finger overlapping palm, inner margin denticulate.

Second gnathopod, in ♂ almost as large as first gnathopod, 2nd joint exceedingly large, width near base almost equal to length, non-setose, 4th with inferior apex ending in a blunt tooth, beyond which the apical margin is produced on the inside into a more prominent tooth, 5th as long as but not nearly as wide as 2nd, inferior margin setose, 6th shorter and narrower than 5th, inferior margin concave, setose, ending in a long, stout, subacute tooth, denticulate on its inner side, palm very short, transverse, with a short, stout, blunt spine at the base of the large tooth, finger much overlapping, inner margin denticulate; in ♀ similar to first gnathopod, but rather longer, 5th

widening distally more strongly, so that the joint is triangular in shape, 6th longer than 5th, oblong, inferior margin less convex, more strongly setose, palm shorter, but denticulate and defined by 1 spine, as in first gnathopod, finger also similar.

In the adult ♂ the 1st and 2nd gnathopods are carried folded transversely across the body, as is the case in *Aora typica* Kröyer.

First and second peraeopods, 2nd joint not expanded, 4th and 6th subequal, 5th shorter, 7th $\frac{1}{2}$ length of 6th, only a few scattered setae on the joints.

Third peraeopod, 2nd joint twice as long as broad, 5th scarcely more than $\frac{1}{2}$ length of 6th, 7th $\frac{1}{3}$ length of 6th, 6th with 3 spines on anterior margin and 2 on apex.

Fourth and fifth peraeopods much longer than 3rd, 2nd joint longest, not strongly expanded (1 : 2.5), 6th longer than 4th and twice 5th, sparsely spinose, 7th not $\frac{1}{2}$ length of 6th.

First and second uropods, outer ramus shorter than inner; third uropod, rami subequal; both margins and apices of rami of all 3 uropods spinose.

Length: 12 mm.

Colour: In spirit, pale yellowish, eyes reddish.

Locality: Baboon Point ENE., distant 13 miles (off Saldanha Bay). 32 fathoms. ♂♂, ♀♀ (some ovigerous) and juv. ss. "Pieter Faure." 17/3/02. (S.A.M. No. A209.)

FAMILY PHOTIDAE.

- 1872 and 76. *Photidae* (part) Boeck, Skand. Arkt. Amphip. vol. 1, p. 74, and vol. 2, p. 546.
 1906. *Photidae* Stebbing, Das Tierreich, 21, pp. 603, 737 (references).
 1910. „ id. Sci. Res. "Thetis," pt. 12, p. 608 (references).
 1910. „ id. Gen. Cat. S.A. Crust. p. 460.

GEN. PHOTIS Kröyer.

1842. *Photis* Kröyer, Naturh. Tidsskr. vol. 4, p. 155.
 1862. *Eiscladus* Bate & Westwood, Brit. Sess. Crust. vol. 1, p. 411.
 1876. *Photis* Boeck, l.c. vol. 2, p. 553.
 1888. „ Stebbing, Challenger Rep. vol. 29, p. 1063
 1893. „ Della Valle, F. u. Fl. Neapel. vol. 20, p. 394.
 1894. „ G. O. Sars, Crust. Norw. vol. 1, p. 568.
 1906. „ Stebbing, l.c. pp. 605, 738.
 1910. „ id. Sci. Res. "Thetis" pt. 12, p. 608.

PHOTIS LONGICAUDATA (Bate & Westw.).

(Plate XXVIII. Fig. 26.)

1862. *Eiscladus longicaudatus* Bate & Westwood, Brit. Sess. Crust
vol. 1, p. 412, fig.
1893. *Photis reinhardi* (part) Della Valle, F. u. Fl. Neapel. vol. 20,
p. 395, pl. 3, fig. 3, pl. 10, figs. 1-19.
1894. „ *longicaudata* G. O. Sars, Crust Norw. vol. 1, p. 571,
pl. 203, fig. 1.
1904. „ „ Walker in Herdman's Ceylon Pearl Fish.
Suppl. Rep. 17, p. 286, pl. 6, fig. 43.
1906. „ „ Stebbing, Das Tierreich, 21, p. 608
(synonymy).
1909. „ „ Walker, Tr. Linn. Soc. Lond. vol. 12, pt. 4,
p. 339.
1910. „ „ Chevreux, Mém. Soc. Zool. Fr. vol. 23,
p. 249.

The South African form is very close to that from Ceylon, the chief difference being in the hand of the 2nd gnathopod of the ♂; the tooth near the hinge, which is so prominent in Walker's figure of the Ceylon specimens, is here absent; but on the contrary the small tooth at the apex of the excavation, small in Walker's figure, is here a large nodular projection.

For comparison, the following description of the present specimens is given.

Ocular lobes reaching to the middle of the 1st joint of 1st antenna; eyes large, round-oval. Side-plate 1 expanded below, longer than deep. Postero-inferior angle of 3rd pleon segment rounded. Telson small, short, apically rounded, without setae.

First antenna, 1st joint stout, shorter than 2nd and subequal to 3rd, flagellum equal to peduncle, 9-jointed.

Second antenna, ultimate joint longer than penultimate, flagellum a little longer than ultimate and penultimate joints together, 10-jointed. Neither antenna densely setose.

Mandible, 2nd joint of palp concave on inner margin.

First maxilla, inner plate with 1 seta, outer plate with 9 spines, palp with 5 spine-teeth.

Maxilliped, inner plate with 3 apical teeth, inner margin of outer plate with 5 ovate and 3 elongate spines (the transition gradual).

First gnathopod, 6th joint a trifle longer than 5th (measured along upper margin) but scarcely as wide, palm very oblique and not defined,

finger half 6th joint, stout, inner margin serrate, 5th and 6th joints setose but not densely; ♀ resembling the ♂.

Second gnathopod, lobe of 5th joint not very prominent, 6th joint oblong, palm angularly emarginate, defining angle rectangular, slightly produced, a blunt nodiform tooth just below the apex of the emargination on the inner surface of the palm, a few backwardly directed serrations near the hinge, finger closing just within the defining angle, leaving a triangular space, 5th and 6th joints setose but not densely; ♀ similar to ♂ but rather weaker.

All the peraeopods very sparsely setose; 2nd joint of 3rd peraeopod broadly oval, narrowing distally.

First uropod, outer ramus a trifle shorter than inner, its outer margin with 8 spines, outer margin of inner ramus with 6 very fine setules.

Second uropod, outer ramus shorter than inner, its outer margin with 3 spines, outer margin of inner ramus with 4 fine spinules, inner margin with 3 spines. Both rami of 1st and 2nd uropods ending in a short blunt spine-tooth.

Third uropod, outer ramus equal to peduncle, the apical setae almost concealing the very small 2nd joint, inner ramus short, bluntly ovate.

Length: 6.5 mm.

Colour: In spirit, pale pinkish, deeper on the 1st peraeon segment, antennae ringed with crimson.

Locality: Morewood Cove NW. by N. $\frac{3}{4}$ N., distant 3 miles (Natal). 27 fathoms. ♂♂ and ovigerous ♀♀; Umhloti River mouth NW. by W. $\frac{3}{4}$ N., distant 3 miles (Natal). 25 fathoms. ♂♂ and ovigerous ♀♀; Nahoon Point NW. by W., distant 5 miles (near East London). 45 fathoms. 1 ♂, 1 ovigerous ♀; off Knysna. 40–47 fathoms. ♂♂ and ovigerous ♀♀. s.s. "Pieter Faure." 18–19/12/00, 10/7/01, and 11/10/00. (S.A.M. Nos. A199, A200, A3400, and A3856–7.) One ovigerous ♀ was found in a thin semitransparent tube at the base of a Hydroid.

Geogr. Distribution: Shetland Islands, 2–5 fathoms (Bate & Westwood); Norway, 30 fathoms (Sars); France (Chevreux); Naples (Della Valle); Algiers (Chevreux); Ceylon (Walker); Seychelles, 22–34 fathoms (Walker); Wasin, Brit. E. Africa, 10 fathoms (Walker).

PHOTIS LONGIMANUS Walker.

1904. *Photis longimanus* Walker in Herdman's Ceylon Pearl Fish. Suppl. Rep. 17, p. 286, pl. 7, fig. 44.

Ocular lobes much produced (but not so much as in *dolichommata*), reaching nearly to middle of 1st joint of 1st antenna. Side-plate 1 scarcely widened below, not longer than deep, rounded antero-inferior angle not produced forward. Anterior lobe of side-plate 5 as deep as 4. Postero-lateral angles of 3rd pleon segment rounded.

Telson as long as broad, triangular, a small spine at each postero-lateral angle, apex between them much produced, forming a little tail (as in Stebbing's figure of *dolichommata* but more produced).

First antenna, 1st and 3rd joints subequal, 2nd longer, flagellum shorter than peduncle, 8-10-jointed.

Second antenna, 4th and 5th joints subequal, flagellum nearly equal to 4th plus 5th peduncular joints, 7-8-jointed.

Mandibular palp with 3rd joint longer than 1st, but shorter than 2nd.

First maxilla, inner plate with 1 seta.

First gnathopod, 2nd joint not distally lobed, 3rd and 4th subequal, 5th a trifle longer than 6th, 6th ovate, narrowing distally, palm not defined, 4th-6th joints inferiorly setose, 7th $\frac{3}{4}$ length of 6th, inner margin distally serrate.

Second gnathopod in ♂, 2nd joint stout with a large ear-like rounded lobe on the upper outer surface, beginning just beyond the middle of the joint and reaching to end of 3rd joint, 3rd with a rounded lobe on the lower inner surface and projecting horizontally inwards (the limb being considered in its natural vertical position), 4th longer than 3rd, 5th triangular, cup-like, very short, upper apex rounded, setose, lower apex produced in a rounded setose lobe, 6th longer than 2nd, ovate, palm oblique, shorter than hind margin, defined by a little spinule and within this a short, blunt, squarish knob, a prominent triangular tooth in the middle of palm, flanked by shallow concavities, at base of hind margin a strong, triangular, pointed tooth set at right angles to the joint and pointing inwards like the lobe on 3rd joint, finger gently curved, reaching to middle of hind margin, inner margin distally obscurely serrate; in ♀ 2nd joint not very stout, without the distal ear-like lobe, 3rd not lobed internally, 5th not so prominently lobed inferiorly, 6th oblong, palm oblique, concave, equal to hind margin, defining angle quadrate but not projecting, a little way within the defining angle is a low squarish knob, palm thence concave with a triangular pointed tooth, finger matching palm, very obscurely serrate distally.

Third and fourth peraeopods, 2nd joint broadly oval, narrowing distally, 6th joint with a spine in middle of inner margin and another at apex.

Fifth peraeopod, 2nd joint not so broad as in 3rd and 4th peraeopods, upper posterior angle quadrate.

Third uropod, inner ramus $\frac{1}{4}$ length of outer, 2nd joint of outer smaller than inner ramus, with 2 apical setae. All the uropods without lateral spines or setae, except for one spinule on each peduncle and ramus in 1st and 2nd uropods.

Length: ♂ 3 mm.; ♀ 3.5 mm.

Colour: Yellowish straw colour, 5th peraeon and 1st pleon segments with a transverse band of brown speckling, side-plates and pleura also speckled with brown, eyes black.

Locality: Durban Bay. July, 1915. (H. W. Bell-Marley.) 1 ♂, 1 ovigerous ♀. (S.A.M. No. A3869.)

A second and, in my opinion, not quite mature male from the same locality (S.A.M. No. A3840) is the connecting link between the above described specimens and Walker's. Without it one would have been bound almost to make a new species of these specimens in spite of their likeness in some characters to Walker's *longimanus*.

This second male agrees with Walker's description and figures except that the lobe of the 5th joint of the 2nd gnathopod is not so prominent and the hind margin is longer proportionately to the palm (approaching thus the form of the ♀ described above), and the first of the two palmar teeth is short, blunt and knob-like. The 2nd joint has the ear-like lobe as described above, but of which Walker makes no mention.

Another feature is the telson, which agrees with that described above; Walker says of his specimens "telson . . . of the usual form." In the absence of a more definite description, I think this point need not form a stumbling block, especially as the gnathopods correspond very closely. When more specimens come to light from both localities I think that any doubts there may be as to the specific distinctness of these two forms will vanish.

This male measures 2.75 mm. and possesses a 2nd gnathopod approximating to that of the ♀. Walker's specimens show the defining tooth shifting back, *i.e.*, the reduction of the hind margin at the expense of the palm, until it is right at the base of the joint, when it is bent inwards at a right angle to the hand, as in the first ♂ described above. It is legitimate to suppose that this last infolding of the tooth and the development of the incurved lobe on 3rd joint occur only at the last moult and are signs of sexual maturity; they would certainly form most efficient "claws" for holding the female.

The markings of this second male are a little different from that given above: ground colour as before yellowish, head a little deeper,

a dark brown medio-dorsal spot on peraeon segment 5 to pleon segment 2 inclusive, side-plates speckled, eyes black.

Both these forms were received too late to be figured in the present paper.

Geogr. Distribution : Ceylon (Walker).

PHOTIS DOLICHOMMATA Stebbing.

1910. *Photis dolichommata* Stebbing, Sci. Res. "Thetis," pt. 12, p. 609, pl. 55B.

Locality : Cape St. Blaize N. by E. distant 73 miles. 125 fathoms, 3 ♂♂, 1 ovigerous ♀ and immature specimens. s.s. "Pieter Faure." 21/12/99. (S.A.M. No. A3812.)

Geogr. Distribution : New South Wales, 50-60 fathoms.

GEN. CHEIRIPHOTIS Walker.

1904. *Cheiriphotis* Walker in Herdman's Ceylon Pearl Fish. Suppl. Rep. 17, p. 283.

1906. ,, Stebbing, Das Tierreich, 21, p. 737.

1910. ,, id. Sci. Res. "Thetis," pt. 12, p. 610.

1910. ,, id. Gen. Cat. S.A. Crust, p. 461.

Only two species of this genus are so far known: *C. megacheles* (Giles) from Ceylon and South Africa, and *C. australis* Stebbing 1910, from New South Wales. From both of these the following species is easily separated by the form of the 2nd gnathopods in the ♂.

CHEIRIPHOTIS DURBANENSIS n. sp.

Body slender and somewhat depressed. Antero-lateral angle of head not greatly produced, occupied by about half of the oval-shaped eye. Side-plates shallow, the first produced forwards to a subacute apex. Postero-lateral angle of 3rd pleon segment rounded-quadrate. Telson broader than long, distal margin concave between the postero-lateral angles, near both of which there is a small group of setules.

First antenna, 1st and 2nd joints subequal, 3rd shorter, flagellum 6-8-jointed, accessory flagellum 3-jointed, 3rd joint minute.

Second antenna subequal to first, 4th and 5th joints subequal, flagellum subequal to 5th joint, 6-jointed.

Upper lip slightly bilobed.

Lower lip with the inner lobes larger than the outer, apically abruptly truncate, the inner and outer apical angles being right angles, outer lobes obtusely rounded.

Mandibles, cutting-edge 4-dentate in left, 5 in right, secondary cutting-edge in left 4-dentate, in right represented by a stout spiniform process, spine-row with 7-8 spines, molar minutely denticulate, palp very large, 2nd joint twice length of 1st, 3rd not quite as long as 2nd, not enlarged but apically obtuse, setose.

First maxilla, inner plate with 4 setae, outer plate with 11 spines, 2nd joint of palp elongate.

Second maxilla with inner margin of inner plate setose.

Maxilliped as in *C. australis* Stebb.

First gnathopod similar in both sexes, 6th joint not quite as long as 5th, ovate, palm slightly convex, passing uninterruptedly into hind margin, finger matching palm, 5th joint more strongly setose than 6th.

Second gnathopod in ♂, 2nd joint with a small tooth on anterior apex, 5th well marked off from 6th inferiorly, but not so well on anterior margin, 6th large, ovate, palm a little oblique, longer than hind margin, with 2 strong pointed teeth, that near the hinge being apically bifid, defining angle also with a strong pointed tooth, finger as long as palm, smooth, distally rather strongly curved. In ♀ smaller, 2nd joint without tooth on anterior apex, 6th not quite as long as 2nd, ovate, narrowing distally, palm more oblique than in ♂, crenulate, with a blunt tooth, bearing 1 spine in the middle and another near the hinge, defining angle with a small acute tooth, finger matching palm, not strongly curved.

First and second pereopods, 4th joint somewhat enlarged, 6th longer than 4th, 7th half length of sixth.

Third to fifth pereopods increasing in length, 2nd joint broadly ovate, hind margin entire, with fairly numerous plumose setae, anterior margin also setose, especially when near the apex, but setae simple.

First and second uropods with peduncle longer than rami in 1st, only a little longer in 2nd, rami of both subequal.

Third uropod, peduncle stout, outer ramus subequal to peduncle in length but considerably narrower, apically spinulose, a 2nd joint not distinguishable, inner ramus minute, tipped with 1 spinule.

Length: 5 mm.

Colour: White, head yellowish, 4th and 7th pereopod segments and 3rd pleon segment grey, side-plates also speckled with grey, eyes dark brown.

Locality: Durban Bay Channel. July, 1915. (H. W. Bell-Marley.)
3 ♂♂, 1 nonovigerous ♀, 2 juv. (S.A.M. No. A3839.)

As these specimens arrived after the plates accompanying this paper

had been struck, it is unfortunately impossible to give a figure of this species, but I hope to do so on a future occasion.

GEN. EURYSTHEUS Bate.

1856. *Eurystheus* Bate, Ann. Mag. Nat. Hist. ser. 2, vol. 19, p. 143.
 1906. „ Stebbing, Das Tierreich, 21, pp. 610, 738 (refer-
 ences).
 1910. „ id. Sci. Res. "Thetis," pt. 12, p. 613.
 1910. „ id. Gen. Cat. S.A. Crust. p. 460.
 1910. „ Kunkel, Tr. Conn. Ac. Sci. vol. 16, p. 81.

EURYSTHEUS AFER (Stebbing).

(Plate XXVIII. Fig. 11.)

1888. *Gammaropsis afra* Stebbing, Challenger Rep. vol. 29, p. 1097,
 pl. 113.
 1908. *Eurystheus afer* id. S.A. Crust. pt. 4, p. 87.
 (Non Chilton, Tr. Roy. Soc. Edinb. vol. 48, pt. 2, 1912, p. 510, pl. 2,
 figs. 30-34.)

As no figure of the 2nd gnathopod of the ♂ has been published it seems advisable to give one here, especially since Stebbing (1908) has made the suggestion that *E. atlanticus* and *E. afer* are varieties of the same species; this suggestion has been more or less endorsed by Chilton (1912).

From the figure it will be seen that the difference between the 2nd gnathopods, though not great, is as well marked as that between the eyes of the two species, and these two characters together seem quite enough to keep the species separate.

The first gnathopods are alike in both sexes.

The second gnathopod is of the same general shape as in *E. atlanticus* but the palm has a very much shallower excavation near the lower angle, where there are two teeth and a stout spine (this spine is present also in *E. atlanticus* but has been omitted in Stebbing's figure, 1908, l.c. pl. 40B); also the palm is more even, cut into several (3-5) rounded lobes, each with secondary crenulations. Second gnathopod of ♀ as in Stebbing's figure (1888, l.c. pl. 113) but palm crenulate, not smooth as drawn (the description is correct)

The Challenger specimen was certainly immature as this species reaches 11mm. in length.

A frequent habitat of this species is in the empty worm tubes

ramifying through a sponge covering the gastropod *Tritonium murrayi* (Smith).

EURYSTHEUS IMMINENS n. sp.

(Plate XXVIII. Fig. 12.)

This species may be briefly characterised as follows: Eyes obliquely oblong; antennae of normal length; 1st gnathopod in ♂ with palm very oblique, without defining tooth, but with a small spine, entire but exceedingly finely crenulate, finger matching palm, inner margin serrulate, in ♀ similar; 2nd gnathopod in ♂ very like that of *E. longicornis* Walker (1907, Nat. Antaret. Exp. vol. 3, p. 35, pl. 12, fig. 21) but longer proportionately to breadth (more like that of *E. atlanticus*), a large spine above the defining tooth, another tooth in centre of palm, and between this and hinge a tooth larger than either of the others, all three apically blunt and surrounded by a pellucid border which is minutely fimbriate, finger matching palm, inner margin basally convex, smooth, in ♀ similar but a small notch above the defining angle of palm, with a spine in it, palm finely serrate, finger equalling palm, inner margin finely serrulate.

Telson and uropods as in *E. afer*.

Length: 6.5 mm.

Colour: In spirit, pale pinkish.

Locality: Morewood Cove NW. by N. $\frac{3}{4}$ N., distant 3 miles (Natal coast). 27 fathoms. 1 ♂, 2 ovigerous ♀♀. s.s. "Pieter Faure." 19/12/00. (S.A.M. No. A2778.)

Closely resembling *E. afer* in most characters, but agreeing with *E. longicornis* as regards the 2nd gnathopod. Distinguished from the latter by the absence of very long antennae and by the characters of the telson and uropods. It cannot be denied that the four Southern species *E. atlanticus*, *afer*, *longicornis* and *imminens* are very closely allied, and it is quite possible that intermediate forms may crop up which will necessitate uniting them all under one name.

It also resembles *E. dentatus* (Chevreux) in the form of the 2nd gnathopod of ♂, but the differently shaped eye, the entire 1st side-plate and absence of teeth on the pleon serve to distinguish it.

EURYSTHEUS SEMIDENTATUS n. sp.

(Plate XXVIII. Figs. 13, 14.)

Lateral angles of head not much produced, obtuse. Eyes small, horizontally oval. Inferior margin of side-plates 1-3 setose, but not

serrate or crenulate. Pleon segment 4 with 3 small dorsal teeth, the median one less prominent than the subdorsal ones, pleon segment 5 with 2 small subdorsal teeth, a seta in the angle of each tooth. Postero-inferior angle of pleon segment 3 with a small point, margin bulging above.

Telson with apex straight or slightly emarginate, a spine at both the lateral angles.

First antenna, 1st joint $\frac{2}{3}$ 2nd and equal to 3rd, flagellum not quite equal to peduncle, accessory flagellum 7-jointed.

Second antenna equal to first, ultimate and penultimate joints equal, flagellum shorter than peduncle. Both antennae fringed with long setae on lower margin.

First gnathopod, 5th joint as wide as and a little longer than 6th, the hind margin and palm of the latter forming one continuous curve.

Second gnathopod in ♂, 6th joint very large, palma little oblique, fine hairs, defined by a small acute tooth, followed by another similar tooth, middle of palm with a low rounded convexity, a squarish, denticulate tooth near the hinge, finger closing within defining tooth, tapering evenly, not strongly curved; in ♀ 6th smaller and much narrower in proportion to length than in ♂, defining tooth rather stout, near it is an elongate but very stout spine, near hinge a squarish tooth, finger overlapping defining tooth.

Third peraeopod, 2nd joint broadly oval, hind-margin setose and slightly serrate.

Fourth and fifth peraeopods subequal, larger than 3rd, 2nd joint half as long again as broad, postero-inferior angle quadrate, not produced, hind margin straight, in ♂ strongly, in ♀ slightly serrate.

Third uropod, peduncle with 3 stout apical spines, inner ramus smaller than outer.

Length : ♂ 4 mm., ♀ 6 mm.

Colour : Whitish with a series of grey-brown lateral spots, 1 on each segment above the junction of side-plates, back and 2nd joint of the gnathopods and peraeopods speckled with grey, distal joints of peraeopods speckled and banded with grey, eyes black.

Locality : Buffel's Bay (False Bay). 28/9/13 and 1/3/15. (K.H.B.) 1 ♂, 5 ovigerous ♀♀, and 3 ♂♂, 1 ovigerous ♀. (S.A.M. Nos. A2956 and A3286.)

This species is near *E. dentatus* (Chevreux), (Rés. Camp. Monaco, vol. 16, p. 93, pl. 12, fig. 1), but the side-plates are not dentate, the palm of 2nd gnathopod in ♂ has an additional tooth, and the eye is smaller and horizontal.

Both *dentatus* and *semidentatus* are distinguished from *thompsoni* Walker (Proc. Liverp. Biol. Soc. vol. 12, p. 283, pl. 16, figs. 3-6) by having 3 teeth on pleon segment 4, instead of 2 as in the latter species, and also by the 2nd gnathopod.

The 2nd gnathopod of ♀ bears some resemblance to that of *E. thompsoni* (Stebb.), but that of the ♂ is rather different so far as can be judged from Stebbing's description (Sci. Res. "Thetis," pt. 12, p. 614, 1910). It is compared with the 2nd gnathopod of *Elasmoides chevrouxi* Stebb., but such a comparison will not hold good for the present species.

GEN. CHEVALIA Walker.

1904. *Chevalia* Walker in Herdman's Ceyl. Pearl Fish. Suppl. Rep. 17, p. 288.
 1906. „ Stebbing, Das Tierreich, 21, p. 737.
 1912. „ Pearse, Proc. U.S. Nat. Mus. vol. 43 [1913], p. 374.

CHEVALIA AVICULAE Walker.

1904. *Chevalia aviculae* Walker, l.c. p. 288, pls. 7, 8, fig. 50.
 1906. „ „ Stebbing, l.c. p. 737.
 1909. „ „ Walker, Tr. Linn. Soc. Lond. vol. 12, pt. 4, p. 341.

These specimens agree with Walker's description. The 6th joint of the 2nd gnathopod is twice as long as the 5th, the palm is finely crenulate and the defining angle is not quite so prominent as in Walker's figure. The uropods and telson are exactly as Walker figures them.

Length: 5 mm.

Colour: In spirit, whitish, eyes reddish-brown.

Locality: Cape St. Blaize N. by E., distant 73 miles. 125 fathoms. 8 specimens, apparently all ♂♂. s.s. "Pieter Faure." 21/12/99. (S.A.M. No. A3813.)

Geogr. Distribution: Ceylon; Seychelles, 22-26 fathoms (Walker.)

FAMILY AMPITHOIDAE.

1899. *Ampithoidae* Stebbing, Ann. Mag. Nat. Hist. ser. 7, vol. 4, p. 211.
 1906. *Ampithoidae* id. Das Tierreich, 21, pp. 631, 738.
 1910. „ id. Gen. Cat. S.A. Crust. p. 462.

GEN. AMPITHOE Leach.

- 1813/14. *Ampithoe* Leach, Edinb. Encycl. vol. 7, pp. 403, 432.
 1910. „ Stebbing, l.c. p. 462.
 1910. *Amphithoe* Kunkel, Tr. Conn. Ac. Sci. vol. 16, p. 87.
 1911. „ Brügggen, Ann. Mus. Zool. St. Petersburg. vol. 12, p. 481.

AMPITHOE VAILLANTII (Lucas).

1846. *Amphithoe vaillantii* Lucas, Expl. Algérie An. Artic. vol. 1, p. 54,
 Crust. pl. 5, fig. 3.
 1880. „ *erythraea* Kossmann, Reise Roth. Meer. vol. 2, pt. 1,
 p. 134, pl. 14, figs. 12, 13.
 1893. „ *rubricata* Della Valle, F. u. Fl. Neapel. vol. 20, p. 456,
 pl. 2, fig. 2, pl. 13, figs. 1-17, pl. 57,
 figs. 25, 26 (non Montagu).
 1900. „ *vaillanti* Chevreux, Rés. Camp. Monaco, vol. 16,
 p. 100.
 1901. „ „ id. Mém. Soc. Zool. Fr. vol. 14, p. 418.
 1904. „ „ Walker in Herdman's Ceylon Pearl Fish.
 Suppl. Rep. 17, p. 291.
 1904. „ *intermedia* id. ibid. p. 290, pl. 7, figs. 46.
 1905. „ „ id. in Gardiner's Fauna Mald. and Laccad.
 Archip. p. 391.
 1906. „ *vaillantii* Stebbing, Das Tierreich, 21, p. 639. (Re-
 ferences and synonyms.)
 1907. „ *intermedia* Chevreux, Mém. Soc. Zool. Fr. vol. 20,
 p. 515, fig. 29.
 1909. „ „ Walker, Tr. Linn. Soc. Lond. vol. 12, pt. 4,
 p. 341.
 1910. „ „ Stebbing, Gen. Cat. S.A. Crust. p. 462.
 1910. „ *vaillanti* Chevreux, Mém. Soc. Zool. Fr. vol. 23,
 p. 260, pl. 20, figs. 1-4.

The differences between Lucas' and Walker's species appear to be so slight that there seems to be no necessity for keeping them separate. Much importance cannot be attached to the absence in Walker's description and figures (except 2nd gnathopod of ♀) of the distal lobe on the 2nd joint of the 1st and 2nd gnathopods; it is easily overlooked unless the limb be examined exactly in profile. Chevreux figures it in both gnathopods of both sexes of his specimens, which he assigns to *intermedia*, from the Gambier Archipelago. Nor can the length of the flagellum of the 2nd antenna of ♂ be counted as a

specific character except in conjunction with other and constant characters. Chevreux in 1900 described it in *vaillantii* as about equal to the 2 last peduncular joints, at least 25-jointed; Walker says that in *intermedia* it equals the last peduncular joint and is 9-jointed. The South African specimens form a link between these two varieties, the flagellum being equal to the last peduncular joint and 20-jointed.

The following details refer to the South African specimens:

First and second antennae about equal in length.

First maxilla, inner plate with 3-4 setae.

Second maxilla, outer plate wider than inner, widest at distal truncate end.

Maxilliped, outer plate with trifold spines along inner margin.

First gnathopod, lobe on apex of 2nd joint very prominent, crenulate and setose, 6th joint longer than 5th, tapering slightly distally, palm not defined from inferior margin except by a stout spine, finger strongly serrate; there is little difference in the two sexes, in the ♂ the limb is rather longer, 6th joint also proportionately longer. Inferior margin of the side-plate setulose.

Second gnathopod, lobe on apex of 2nd joint very prominent, crenulate and setose, 5th and 6th joints in ♂ as in Chevreux's figure of *intermedia* (l.c. 1907, fig. 29) but defining tooth broad, almost lobe-like (see Walker, l.c. 1904, p. 291, footnote, where a similar variety of the Ceylon form is mentioned), the outer margin straight, inner strongly convex; in ♀ 6th joint as in Walker's figure (l.c. 1904), but palm rather more sinuous; finger in both sexes strongly serrate, inferior margin of side-plate setulose.

Third uropod, peduncle with 4-5 stout spines on upper apical margin, inner ramus broader but shorter than outer, apex with 2-4 spines and 4 setae, outer ramus with 2 strong recurved spines, upper margin very minutely scabrous.

Telson obtusely triangular, with a few setae towards apex, distal margin convex between 2 small tubercles.

Length: ♂ 7.5 mm., ♀ 9.5 mm.

Colour: Claret or brownish green with a row of whitish irregular dorsal spots, one on each of peraeon segments 6 and 7 and pleon segments 1-3, and a whitish spot in the antero-inferior angle of side-plates 1-5, flagellum and distal joints of peraeopods whitish, eyes similar to the ground colour.

The markings correspond with those described by Chevreux for *vaillantii* (l.c. 1910, p. 260).

Locality: Buffel's Bay (False Bay). 28/9/13. (K.H.B.) ♂♂, ovigerous ♀♀ and young; Sea Point, near Cape Town. 15/11/13.

(K.H.B.) ♂♂, ovigerous ♀♀ and young. (S.A.M. Nos. A2519 and A2895.)

Geogr. Distribution: Mediterranean (Lucas, Della Valle, Chevreux); Portugal (Chevreux); West Coast France and English Channel, 10–12 metres (Chevreux); Azores, 5–15 metres (Chevreux); Black Sea (Czerniavski); Red Sea (Kossmann); Seychelles (Chevreux); Ceylon, Maldives, Seychelles, Zanzibar, Red Sea (Walker); Tuamotu and Gambier Archipelago (Chevreux); Algoa Bay, 10 fathoms (Stebbing.)

Walker's species *A. lobata* remains obscure. Of the two features which are claimed as distinguishing this species from others, the lobe on apex of 2nd joint of 1st and 2nd gnathopods is present in several other species, and the supposed tertiary cutting-edge in the mandible seems to be only the *new* mandible forming *within* the old (cf. Stebbing's figure of *A. flindersi*, *Challeng. Rep.* vol. 29, pl. 118). The lobe on the third joint of the gnathopods is also stated to be characteristic and is represented in the figures as rather strong, but this is also the case with the South African specimens of *A. vaillantii* and cannot be regarded as a distinguishing character. Walker himself is inclined to regard his specimens as immature, and the structure of the mandible confirms him. I am inclined therefore to regard *lobata* as an immature form of *vaillantii*.

AMPITHOE BREVIPES (Dana).

(Plate XXVIII. Fig. 34.)

1852. *Amphithoe brevipes* Dana, P. Amer. Ac. vol. 2, p. 216.
 1853/55. „ „ id. U.S. Expl. Exp. vol. 13, pt. 2, p. 941,
 pl. 64, figs. 5a–n.
 ? 1853/55. „ *peregrina* (juv.) id. *ibid.* p. 940, pl. 64, figs. 4a–b.
 1862. „ *falklandi* (? juv.) Bate, *Cat. Amph. Brit. Mus.*
 p. 237, pl. 41, fig. 6.
 1862. „ *brevipes* id. *ibid.* p. 248, pl. 43, fig. 2.
 1862. „ *peregrina*, id. *ibid.* p. 247, pl. 43, fig. 1.
 1893. „ *rubricata* (part), Della Valle, F. u. Fl. Neapel.
 vol. 20, pp. 456, 459.
 1906. „ *brevipes* Stebbing, *Das Tierreich*, 21, p. 637.
 1914. „ „ id. *Proc. Zool. Soc. Lond.* 1914, p. 371.

I have little hesitation in identifying these specimens with Dana's species, appending however a brief description of them.

Eyes subrotund. Side-plate 1 scarcely produced forwards, 5 largest.

Postero-inferior angle of 3rd pleon segment rounded. Antenna 1 half length of body, 1st joint largest. Antenna 2 with ultimate peduncular joint scarcely as long as penultimate. Inner plate of 1st maxilla with 1 seta. Gnathopod 1, 5th joint shorter and broader than 6th, which is narrow, oblong, inferior margin slightly concave, palm transverse, defining angle quadrate, finger longer than palm. Gnathopod 2, 5th joint cup-shaped, 6th elongate ovate, narrowing distally, palm concave but otherwise undistinguished from hind margin, a small rectangular tooth at the finger hinge, palm and hind margin with a few plumose setae, finger $\frac{3}{4}$ length of 6th joint. Neither 2nd nor 3rd joints of both gnathopods are lobed at distal anterior apex. In ♀ 1st and 2nd gnathopods resemble the 1st gnathopod of ♂. Peraeopods 1 and 2, 2nd joint strongly expanded, 4th distally lobed. Uropod 3, peduncle with 2 spines on distal margin, rami subequal in size, outer ramus with 2 hooked spines and numerous minute serrations on outer (upper) margin. Telson small, subtriangular, 2 setae between the lateral points.

Length : 12 mm.

Colour : Pale straw-colour, eyes crimson.

Locality : Buffel's Bay (False Bay), 28/9/13 and 1/3/15. (K.H.B.) One juv. and several ♂ ♂ and ovigerous ♀ ♀. (S.A.M. Nos. A2537 and A3288.)

Geogr. Distribution : Tierra del Fuego, 5 fathoms (Dana); Falkland Islands (Dana, Stebbing).

AMPITHOE sp. ?

Two specimens from Port Shepstone WNW., distant $2\frac{1}{2}$ miles (Natal). (24 fathoms. s.s. "Pieter Faure.") (S.A.M. No. 227), present the following features :

Both antennae lost. Eyes prominent. Inner plate of 1st maxilla with only one seta.

Side-plate 1 oblong, not produced forwards, 2 oblong, nearly twice as deep as long, inferior margins of both setulose, with a tuft of longer setae near the postero-inferior angle.

First gnathopod, 2nd joint with prominent distal lobe, in ♂ 6th joint longer than 5th, stout, oblong, not tapering distally, palm a little oblique, defining angle distinct but not prominent, palm sinuous, concave near defining angle, convex near hinge; in ♀ 6th joint not quite so stout, palm a little more oblique; finger strongly serrate.

Second gnathopod, 2nd joint with prominent distal lobe, in ♂ 6th rather similar in shape to that of *vaillantii* but front apex not pro-

duced beyond base of finger, defining tooth short, and palm not deeply excavate; in ♀ limb resembles 1st gnathopod of ♂, finger strongly serrate.

Second joint of 1st and 2nd pereopods as in *A. kergueleni* Stebb.

Third uropod, peduncle with 5-6 spines on upper apex, inner ramus a little larger than outer.

These specimens show a very strong likeness to *A. rubricata* (Mont.) and also to *A. kergueleni* Stebb. The latter however has numerous setae on the inner plate of 1st maxilla and only 2 spines on apex of peduncle of 3rd uropod. Until further and better material of the South African form comes to hand, it is not advisable to assign them to a particular species. It is possible that *kergueleni* may be only a southern form of *rubricata*, and that transitional forms may later be discovered.

GEN. GRUBIA Czern.

1868. *Grubia* Czerniavski, Syezda Russ. Est. Syezda 1. Zool. p. 103.
 1888. „ Stebbing, Challeng. Rep. vol. 29, p. 377.
 1893. „ Della Valle, F. u. Fl. Neapel, vol. 20, p. 464.
 1900. „ Chevreux, Bull. Soc. Zool. Fr. vol. 25, no. 5/6, p. 95.
 1901. „ id. Mém. Soc. Zool. Fr. vol. 14, p. 422.
 1903. „ Walker & Scott in Forbes. Nat. Hist. Sokotra, p. 226.
 1905. „ Holmes, Bull. U.S. Bur. Fish. vol. 24, p. 510.
 1906. „ Stebbing, Das Tierreich, 21, pp. 644, 738.
 1907. „ Chevreux, Bull. Mus. d'Hist. Nat. Paris, 1907, no. 6,
 p. 417.
 1910. „ Kunkel, Tr. Conn. Ac. Sci. vol. 16, p. 97.

The International Catalogue No. 7 refers to two new species (*Odusi kelleri* and *Grubia esa*) from Vladivostok described by von der Brüggén in "Bull. Ac. Sci. St. Petersb. ser. 6, 1, 1907 (660)." This reference must have been wrongly quoted as there is no paper on Amphipods by this author in the volume for 1907. In no. 2 of this volume; p. 44, however, occurs a notice of v. d. Brüggén's paper which appears to have been published in the following year in Ann. Mus. Zool. St. Petersb. 1907, xii, 4, p. 478. This reference is correctly quoted in the International Catalogue No. 8, where the new species are given as *Odius kelleri* and *Amphithoe eoa* (v. d. Brüggén writes the latter, *Amphitoe*).

I therefore regard *Grubia esa* as a synonym, or rather a *nomen nudum*, of *Amphithoe eoa* and non-existent as far as the genus *Grubia* is concerned.

In Proc. U.S. Nat. Mus. vol. 43 [1913], p. 376, Pearse gives a figure of *G. compta* Smith (?) and in the text says the specimens differ from Holmes' figures (l.c. *supra*): the chief difference apparently being that the 1st gnathopod is larger than the 2nd. If this is so, the specimens would seem to belong more properly to *Paragrubia* Chevreux 1901. I believe, however, that Pearse has accidentally made a slip and transposed the two limbs, since the so-called " $gn_1 \delta$ " and " $gn_2 \delta$ " in his figures correspond exactly in relative size as well as in the shapes of the component joints with the *second* and *first* gnathopods respectively of an ordinary species of *Grubia*; cf. for example Chevreux's figure of *G. hirsuta* (l.c. 1900).

GRUBIA AUSTRALIS, n. sp.

Body robust, dorsally rounded, not compressed. Eyes subrotund, faint in colour, situate in the antero-lateral angles of head. Side-plate 1 produced forwards but not beyond the vertical from the posterior margin of eye, 1-4 fringed, but not densely, on inferior margin with long simple setae, anterior lobe of 5 larger and deeper than any of the preceding. Postero-inferior angle of 3rd pleon segment bluntly quadrate.

Telson broader than long, distal margin convex between the sub-acute lateral angles, a group of 2-3 setae in the middle of the lateral margin, another group of ca. 6 longer setae near the lateral angles.

First antenna longer than 2nd, reaching to end of pereaeon ($\frac{2}{3}$ length of body), 1st and 2nd joints subequal, 3rd $\frac{1}{3}$ 2nd, flagellum longer than peduncle, accessory flagellum very small, 1-jointed, scarcely half length of 1st flagellar joint, with 2 apical setae.

Second antenna reaching to about 5th pereaeon segment, ultimate and penultimate joints subequal, flagellum a little longer than peduncle.

Neither antenna strongly setose.

Upper lip broader than long, apical margin convex and setose.

Lower lip, outer lobes shallowly bifid.

Mandibles, cutting-edge 8-dentate, secondary cutting-edge 7-dentate, spine-row with 6 spines, 2nd and 3rd joints of palp subequal in length.

First maxilla, inner plate with 6 faintly plumose setae, outer plate with 10 spines, palp with 9 spine-setae.

Second maxilla, inner plate only half the width of outer.

Maxilliped, outer plate with ca. 17 simple, not serrate, spine-teeth on inner margin.

First gnathopod ♂, 2nd joint not apically lobed, inferior margin of 4th and 5th subequal, anterior margin of 5th as long as 6th, 6th ovate, palm oblique, straight, slightly concave near the blunt defining angle which bears a spine, irregularly dentate, hind margin crenulate, both with long setae, finger slightly overlapping palm, inner margin serrulate; in ♀ similar to ♂ but not so large, and palm a little more convex.

Second gnathopod ♂, 2nd joint not or only very slightly lobed on front apex, 4th bluntly pointed, setose, inferior margin of 5th equal to that of 4th, straight, finely crenulate, 6th longer than 5th, ovate, palm oblique, concave, defining angle not produced, blunt, with a spine in immature specimens but apparently without in adults, anterior and hind margins of 5th and 6th densely fringed with very long plumose setae in the adult, much less setose in immature specimens, finger stout, tip closing on to surface of defining angle, inner margin serrate; in ♀ similar to ♂ but smaller, inferior margin of 5th not as long as that of 4th, palm more sinuous, *i.e.* convex near hinge, concave only near defining angle, 5th and 6th joints without the fringe of long plumose setae, being only sparsely clothed with simple setae which are most numerous on the inferior margin of the 5th.

First and second peraeopods, 2nd joint not expanded, similar to those of *Amphithoe rubricata* (Mont.).

Third peraeopod, 2nd joint not quite as broad as long, hind margin smooth, anterior margin of 6th with 6 stout spines increasing in length distally.

Fourth and fifth paraepods, 2nd joint half as long again as broad, hind margin smooth, anterior margin of 6th with 6 stout spines, increasing in length distally.

First and second uropods, rami shorter than peduncle, outer a trifle shorter than inner, both with 4-6 marginal spines, peduncle of 1st uropod with 1 very strong apical spine.

Third uropod, peduncle with ca. 10 very stout blunt spines on upper apical margin, rami shorter than peduncle, inner with ca. 6 stout spines on distal half of upper surface, apex with a group of setae, outer ramus with 2 stout, blunt spines in middle of upper outer margin followed by several setae, apex with 2 strong recurved spines.

Length: ♂ and ovigerous ♀, 20 mm., one ovigerous ♀ 23 mm.

Colour: Brown or greyish, with lighter spots on back, rather irregularly arranged but usually one or two on posterior margin of each peraeon segment, flagella of both antennae and 6th and 7th joints of the peraeopods whitish, apex of 6th and 7th joints of 1st and

2nd gnathopods in ♀ orange-brown, eyes faint, of the same colour as body.

Locality: Sea Point, near Cape Town, 15 and 29/11/13. (K.H.B.)
♂ ♂, ♀ ♀ (with ova and embryos) and immature specimens: (S.A.M. No. A2894.)

MACROPISTHOPOUS n. g.

Side plate 1-5 well developed, 5 as deep as 4, with small hind-lobe. First antenna without accessory flagellum. Outer lobe of lower lip deeply notched, the outer portion smaller than the inner. Molar well developed, palp of mandible with 3rd joint shorter than 2nd. First and second gnathopods similar in both sexes, 6th joint not enlarged, very feebly chelate. Sixth joint of peraeopods 3-5 not strongly expanded apically. Fifth peraeopod enormously enlarged, flattened, oar-like. Rami of 3rd uropod short, outer with 2 hooks. Telson with the lateral angles nearly apical.

MACROPISTHOPOUS STEBBINGI n. sp.

(Plate XXVIII. Figs. 15-17.)

Body fairly compressed, back rounded, smooth, lateral lobes of head not prominent, eye round. Side-plates 1-5 ovoid, rounded below, increasing in length and slightly in depth, a short row of long setae on postero-inferior angle, 6 shallow, bilobed, 7 shallow, semicircular.

Pleon-segments 1-3 with postero-inferior angles rounded.

Telson triangular, broader than long, apex shortly truncate with a small tubercle at each angle and 2 large and 2 small setae between them, 1 large and 1 small seta in the middle of lateral margin.

First antenna reaching to end of 4th peraeon segment, 1st joint stouter and a little longer than 2nd, 3rd half 2nd, all 3 joints apically setose, 1st and 2nd in ♂ with a fairly dense fringe of long plumose setae on lower margin, flagellum longer than peduncle, ca. 25-jointed in ♂, ca. 20 in ♀, in both sexes with narrow sensory filaments.

Second antenna half as long as 1st, ultimate joint slightly longer than penultimate, joints stouter in ♂ than in ♀, penultimate and antepenultimate joints in ♂ with dense fringe of long plumose setae on lower margin, flagellum equal to or a little shorter than peduncle, 13-jointed.

Upper lip broader than long, entire, distal margin setose.

Lower lip, outer lobes deeply notched, the outer portion being scarcely half the size of inner, mandibular processes curved, stout, apically subacute, inner lobes broad.

Mandibles, cutting-edge 5-dentate in left, 7 in right, secondary cutting-edge in left 8-dentate, 9 in right, spine-row with 9 spines, molar somewhat conical, palp slender, 1st and 2nd joints subequal, 3rd not enlarged, shorter than 2nd, only the 3rd bearing setae, which form an apical tuft.

First maxilla, inner plate broad with 1 apical seta, outer plate with 10 spines, palp slender, 2nd joint narrow, curved, with apical spinules.

Second maxilla, plates equal in length, inner narrow and more tapering than outer, its inner margin setose.

Maxilliped like that of *Ampithoe*, outer plate reaching to middle of 3rd joint of palp, inner margin with ca. 13 spines.

First gnathopod similar in both sexes, 2nd joint not lobed on anterior apex, 5th and 6th joints not lobed, cylindrical, their inferior margins setose, 6th a little longer than 5th, of nearly uniform width, distal margin between acute inferior apex ("thumb") and hinge angularly concave, a row of setae along the thumb, finger a little more than $\frac{1}{3}$ 6th, inner distal margin with 3-4 serrations.

Second gnathopod similar to 1st, but 5th and 6th joints a little stouter, and inferior margin of 5th is lobed, similar in both sexes.

First and second pereopods, 2nd joint expanded, ovoid, distal half wider than proximal, glandular, tapering, finger half length of 6th, inner margin smooth.

Third pereopod shorter than 1st and 2nd, 2nd joint ovoid, narrowing distally, 5th a little shorter than 4th, 6th longer than 4th, with 3 spines on posterior margin (anterior when in its natural reverted position) and 2 on posterior apex, finger and unguis short, curved.

Fourth pereopod longer than 3rd, 2nd joint not greatly expanded, but stout, half as long again as broad, 4th longer than 5th, 6th subequal to 4th, 4 spines on anterior margin and 2 on anterior apex, finger and unguis moderately curved.

Fifth pereopod longest, oar-like, all the joints very stout and expanded, more so in ♂ than ♀, 3rd not very expanded but distally lobed, 5th a little longer than 4th, 6th equal to 4th in ♂, equal to 5th in ♀, considerably narrower than 5th joint, its outer margin with a subapical and an apical tuft of setae, inner margin with 2 subapical groups consisting of 1 spine and several setae, and an apical one of 3-4 spines and setae, finger moderately curved; the whole surface of this pereopod in both sexes minutely granulate, so that the margins of the joints appear very finely crenulate.

First uropod, peduncle longer than rami, of which outer is shorter than inner, 5 marginal spines on outer, 2 on inner ramus, both rami with 3 apical spines.

Second uropod, peduncle a little longer than rami, outer ramus a little shorter than inner and distinctly stouter, 5 marginal spines on outer, 3 on inner ramus, both rami with 3 apical spines.

Third uropod reaching a little beyond 2nd uropod, very stout, peduncle with 4 stout spines on upper distal margin and some setae on lower distal margin, inner ramus as long as broad, apically truncate, with 1 large and 1 small stout spine and several setae, outer ramus a little longer but not quite as wide, with 2 strong recurved apical hooks, upper margin setulose.

Length: ♂ 7.5 mm., ♀ 7 mm.

Colour: Uniform whitish-yellow, eyes red.

Locality: Buffel's Bay (False Bay). 29/9/13 and 1/3/15. ♂♂, ovigerous ♀♀ and young. (K.H.B.); Port Elizabeth. November, 1914. 2 ♀♀ with embryos. (FitzSimons). (S.A.M. Nos. A2917, A3287, and A3035).

I have much pleasure in naming this species after Rev. T. R. R. Stebbing, who on many occasions has been kind enough to give me the benefit of his knowledge and experience.

FAMILY JASSIDAE.

1888. *Podoceridae* (part) Stebbing, Challeng. Rep. vol. 29, p. 1112.
 1893. „ („) G. O. Sars, Crust. Norw. vol. 1, p. 577.
 1899. *Ischyroceridae* Stebbing, Ann. Mag. Nat. Hist. ser. 7, vol. 4, p. 211.
 1906. *Jassidae* id. Das Tierreich, 21, p. 647.
 1908. *Ischyroceridae* Walker, Nat. Antarct. Exp. vol. 3, p. 38.
 1910. *Jassidae* Stebbing, Gen. Cat. S.A. Crust. p. 462.

GEN. JASSA Leach.

- 1813/14. *Jassa* (part) Leach, Edinb. Encycl. vol. 7, p. 433.
 1852. *Cratophium* Dana, Amer. J. Sci. ser. 2, vol. 14, p. 309.
 1853. „ id. U.S. Expl. Exp. vol. 13, pt. 2, pp. 832, 840.
 1899. *Jassa* Stebbing, Ann. Mag. Nat. Hist. ser. 7, vol. 3, p. 239.
 1905. *Bruzeliella* Norman, ibid. ser. 7, vol. 16, p. 83.
 1906. *Jassa* Stebbing, l.c. pp. 652, 739.
 1907. „ Chevreux, Exp. Antarct. Franç. p. 94.

JASSA FALCATA (Montagu).

1808. *Cancer falcatus* Montagu, Tr. Linn. Soc. Lond. vol. 9, p. 100, pl. 5, fig. 2.
 1813/14. *Jassa pulchella* Leach, l.c. p. 433.

1853. *Cratophium validum* Dana, l.c. p. 841, pl. 56, fig. 2.
 1879. *Podocerus australis* Haswell, Proc. Linn. Soc. N.S.W. vol. 4, p. 338, pl. 21, fig. 8.
 1888. *Jassa ingens* Pfeffer, Jahrb. Hamb. Anst. vol. 5, p. 131, pl. 3, fig. 1.
 1906. „ *pulchella* and *falcata* Stebbing, l.c. pp. 654, 656, 739 (references).
 1909. *Bruzeliella falcata* Walker, Tr. Linn. Soc. Lond. vol. 12, pt. 4, p. 343.
 1909. *Jassa pulchella* Chilton, Subant. Is. N. Zeal. vol. 2, p. 647.
 1910. „ „ Stebbing, Gen. Cat. S.A. Crust. p. 462.
 1911. „ *falcata* Sexton, J. Mar. Biol. Ass. n.s. vol. 9, pt. 2, p. 212, pl. 3, fig. 10 (side-plate 2 of adult ♂).
 1912. „ „ Chilton, Tr. Roy. Soc. Edinb. vol. 48, pt. 2, p. 511.
 1914. „ „ Stebbing, Proc. Zool. Soc. Lond. 1914, p. 371.

The South African form is the same as that described by Dana as *Cratophium validum*, having the basal tooth on 6th joint of the 2nd gnathopod of ♂ distally emarginate on outside and apically acute (see Stebbing, Challeng. Rep. vol. 29, pl. 138). In the ♀ the projection just distal to the basal tooth, which bears 3 spines, of 6th joint of 2nd gnathopod is angular as in Sars' figure of *pusilla*, not rounded as in his figure of *falcata*.

Side-plate 2 longer than deep, anterior margin scarcely more than half the posterior margin of side-plate 1, posterior margin not as deep as anterior margin of side-plate 3, inferior margin in ♂ very slightly concave, in ♀ straight or very slightly convex.

There appears to be only one form present in South Africa corresponding to Sexton's "Form 2." "Form 1" with swollen antennae and broad hand and thumb has not yet been discovered.

Length: 4-6 mm.

Colour: Greyish, somewhat mottled dorsally, frequently a darker grey dorsal patch on peraeon segments 5-7 and also sometimes on the pleon segments.

Locality: Buffel's Bay and St. James (False Bay). 29/9/13 and 15/2/14. (K.H.B.) ♂♂ and ovigerous ♀♀; Sea Point, near Cape Town. 26/2/14 and 13/4/14. (K.H.B.) ♂♂ and ovigerous ♀♀; Swakopmund. May, 1908. (J. Drury.) 1 ♀. (S.A.M. Nos. A2515, A2904, A2901, A2904, and A2952 respectively.)

Geogr. Distribution: Europe, Mediterranean (Montagu, Sars, Della Valle, Chevreux); Azores (Barrois); Rio Janeiro (Dana: *C. validum*) Pt. Jackson (Haswell: *P. australis*); South Georgia (Pfeffer: *P.*

ingens); 35° 4' S. 18° 37' E. and Kerguelen Is. (Stebbing: *P. falcatus*); 42° 43' S., 82° 11' W. and Philippine Islands (Stebbing: *P. validus*) New Zealand and neighbouring islands (Thomson and Chilton); Ceylon and Zanzibar (Walker); South Orkneys (Chilton); Falkland Islands (Stebbing).

GEN. ISCHYROCERUS Kröyer.

1838. *Ischyrocerus* Kröyer, Danske Selsk. Afh. vol. 7, pp. 283, 287.
 1894. " G. O. Sars, Crust. Norw. vol. 1, p. 587.
 1900. " Chevreux, Rés. Camp. Monaco, vol. 16, p. 104.
 1906. " Stebbing, Das Tierreich, 21, pp. 657, 739.

ISCHYROCERUS ANGUIPES Kröyer.

1838. *Ischyrocerus anguipes* Kröyer, Danske Selsk. Afh. vol. 7, p. 283,
 pl. 3, figs 14a-m.
 1894. " " + *minutus* G.O. Sars, l.c. pp. 588, 589,
 pl. 209, pl. 210, fig. 1.
 1906. " " Stebbing, l.c. p. 658. (References and
 synonyms.)
 1907. " " von der Brügggen, Ann. Mus. Zool. St.
 Petersb. vol. 11 [1906], p. 236.

Body slender in ♂ but rather stout in ♀, iridescent. Lateral lobes of head somewhat obtuse. Eye small, oval. Side-plates 1-4 increasing in depth in ♀, 1 narrowed below, 5 rather shallower, in ♂ 2-5 subequal in depth. Postero-lateral angle of 3rd pleon segment quadrate.

Telson broader than long, margins convex, apically rounded, with 2 submedian apical spines.

First antenna, 3rd joint longer than either 2nd or 1st, flagellum equal to 3rd joint plus half the 2nd, 5-jointed, accessory flagellum very small but distinct (in ♂ 1st antenna lost).

Second antenna a little longer than 1st, ultimate joint longer than penultimate, flagellum equal to or a little longer than ultimate joint, 6-jointed in ♂, 5 in ♀.

Mouth-parts as figured for *I. anguipes* Kröyer by Sars (l.c. pl. 209), but distal margin of upper lip a little more convex and 2nd joint of mandibular palp comparatively shorter and more angular on inner margin.

First gnathopod, 4th-6th joints rather slender, 5th elongate, nearly $\frac{1}{3}$ length of 2nd, inferior margin with a rather long but not promi-

nently projecting lobe, 6th equal to 4th and 5th together, elongate-oval, palm distinguished from inferior margin only by 2 spines and by its minute denticulation, inferior margin with 3 spines and several setae, finger evenly curved, equal to palm; in ♀ shorter, 5th joint stouter, inferior margin of 6th with only 1 spine at junction with palm, otherwise as in ♂.

Second gnathopod, in ♂ elongate, 2nd joint curved, 3rd lobed on anterior margin, 4th not or scarcely apically produced as in *I. anguipes*, 5th with a narrow lobe projecting backwards below 4th, 6th elongate, $3\frac{1}{2}$ times as long as broad, curved, inferior concave margin nearly parallel with upper convex margin and bearing long setae, a broad, truncate, apically bifid and denticulate tooth near the hinge, finger curved, not quite reaching base of 6th, inner margin near the hinge with 2 semicircular excavations to receive the bifid tooth on the palm; in the immature ♂ the hand is not so long, inferior margin straight, not convex, 2 teeth instead of one apically bifid near the hinge, finger not doubly excavate; in ♀ similar to 1st gnathopod and not larger.

First and second peraeopods as in *I. anguipes*.

Third to fifth peraeopods not slender, 2nd joint expanded, hind margin most convex in 5th peraeopod, postero-inferior angles rounded.

First and second uropods, outer ramus shorter than inner, rami shorter than peduncle in 1st uropod, inner ramus subequal to peduncle in 2nd uropod, apex of peduncle of 1st with acute spine.

Third uropod reaching very little beyond end of 2nd uropod, rami very small, equal to apical width of peduncle, inner ramus narrow, outer broad at base, distal half suddenly contracted, apex minutely hooked, 3 denticles on upper margin.

Length: 3 mm., ♂ a trifle over 3 mm.

Colour: ♂ usually whitish with a broad dorsal stripe of claret, ♀ usually greyish or claret, pleon sometimes lighter or with irregular patches of black, whole body, side-plates and appendages with minute circular black pigment specks, but the two types of coloration are not confined to the respective sexes.

Locality: Buffel's Bay (False Bay). 28/9/13 and 1/3/15. (K.H.B.) ♂♂ and ovigerous ♀♀; Sea Point, near Cape Town. 26/2/14. (K.H.B.) 1 ovigerous ♀. (S.A.M. Nos. A2533, A3290, and A2922.)

Geogr. Distribution: Widely distributed in the North Atlantic (incl. Arctic Ocean) and adjoining seas.

The chief differences between these specimens and the typical form lie in the shorter and more rounded telson, which is somewhat similar to that of *I. commensalis* Chevreux, and in the 2nd gnathopod of the male.

ISCHYROCERUS CARINATUS n. sp.

(Plate XXVIII. Fig. 18.)

Body only faintly iridescent. Lateral lobes of the head obtuse, eyes small, oval. Peraeon in adult ♂ covered with rather long scattered setae, segment 1 longer than 2, segments 1, 2, 6 and 7 each with a high medio-dorsal keel extending on segments 1 and 2 the whole length, on segments 6 and 7 only on the posterior part (of the segment), its upper margin straight and the angles rounded; in young ♂ ♂ measuring 2.5 mm. the peraeon is non-setose (except on the side-plates) and without keels, those of 3 mm. are faintly setose, with a low keel on 1st peraeon segment only; the nonovigerous ♀ is non-setose and keelless. Side-plate 1 somewhat narrowed below, 4 largest, anterior lobe of 5 as deep as 4, all side-plates sparsely setose on inferior margin and with their outer surface covered with minute widely spaced granules each bearing one or two wavy setules. Pleon keelless, postero-inferior angle of 3rd segment rounded.

Telson broader than long, apically obtuse, side-margins very slightly concave, 2 submedian spines on upper margin near apex.

First antenna, 1st joint shortest, 2nd and 3rd subequal, flagellum a trifle longer than 3rd joint, 4-5-jointed, accessory flagellum 2-jointed, half as long as 1st flagellar joint, 2nd joint minute.

Second antenna, ultimate peduncular joint a trifle longer than penultimate, flagellum equal to ultimate joint, 5-jointed.

Mouth-parts, as in *I. anguipes*, but 1st joint of mandibular palp shorter and 2nd more angular on inner margin.

First gnathopod in ♂, 2nd joint flask-shaped, very narrow at base, swelling rapidly, the anterior apex forming a rounded lobe, 4th longer than 3rd, its inferior margin straight or concave, 5th equal to 4th, 6th equal to 4th and 5th together, oval, interior margin setose and with 4-5 spines in middle, the palm undefined from hind margin except by its minute denticulation.

Second gnathopod in ♂, 2nd joint very long, remarkably slender proximally, strongly curved, the proximal $\frac{1}{3}$ convex and serrate in front, the distal $\frac{2}{3}$ concave in front, distal anterior lobe serrate and spinulose, 3rd with whole anterior margin produced as a rectangular lobe, highest proximally, the ends rounded, 4th triangular, distal apex rounded, with a small tuft of setae, 5th very short but as broad as base of 6th, anterior apex subacute, inferior margin straight, minutely denticulate, with a submarginal tuft of setae, 6th narrow-ovate, twice as long as broad, palm and hind margin confluent, convex, with a step-like constriction in middle, the distal half narrower than proximal,

near hinge a setiferous bifid tooth, of which the lower tooth is longer and more pointed, whole inferior margin with a row of plumose setae, finger curved, with 2 slight emarginations at base of inner margin; in young ♂♂ 2.5 mm. long, the inferior margin is without a "step," and in those 3 mm. long it has only a slight "step".

First and second gnathopods in ♀ similar to one another and very like those of *I. anguipes*, but 6th joint narrow-oval with 2 spines defining the palm.

Peraeopods very similar to those of *I. anguipes*, 3rd-5th rather robust, 2nd joint expanded, ovoid, hind-margin most convex in 5th peraeopod, postero-inferior angles rounded.

First and second uropods, outer ramus shorter than inner, peduncle of 1st with acute apical spine.

Third uropod reaching as far as or a little beyond ends of 1st and 2nd, peduncle with 3 spines on upper margin, outer ramus $\frac{1}{2}$ length of peduncle, inner ramus shorter than outer, both narrow, outer with an apical recurved spine and 2 minute denticles.

Length: ♂ 4 mm., nonovigerous ♀ 3 mm.

Colour: Mottled greyish, head and peraeon segments 1, 3, 4 and 5 darker than rest of body, black pigment specks absent.

Locality: Sea Point, near Cape Town. 5/10/14. (K.H.B.) 1 immature ♂, low-tide; Swakopmund, German S.W. Africa. May, 1908. (J. Drury.) 3 ♂♂, 5 immature ♂♂, 4 nonovigerous ♀♀, from floating buoy; Cape Town. 19/8/98. 1 ♂ off a *Palinurus lalandii*. (S.A.M. Nos. A2926, A2953, and A3393.)

ISAEOPSIS n. g.

Side-plate 5 as deep as 4 and much deeper than 6, entire. First antenna shorter than 2nd, accessory flagellum distinct, 1-jointed. Palp of maxilliped 4-jointed. First and second gnathopods in ♀ subequal, second gnathopod in ♂ very large. All the peraeopods stout and subchelate.

The resemblance to *Isaea* M. Edw. in general habit and the subchelate peraeopods is very remarkable, but the uncinata 3rd uropods, the mandibular palp, and the 2nd gnathopod of the male would seem to necessitate placing this genus in the family *Jassidae*. The subchelate peraeopods are evidently an adaptation to the habitat of the animal.

ISAEOPSIS TENAX n. sp.

(Plate XXVIII. Figs. 19-21.)

Lateral lobes of head not very prominent, subacute. Eyes small but

distinct, nearly round. Side-plate 1 small, 2-5 much deeper, about as deep as their segments, rounded-quadrate below, 6 not nearly as deep as 5, all the side-plates sloping outwards and giving the animal a rather broad appearance.

Telson not quite as long as broad, semicircular, with a spinule on either side a little beyond the centre.

First antenna stout, 1st joint a little longer than broad, 2nd and 3rd subequal, lower margin with long setae, flagellum a trifle longer than 3rd peduncular joint, 4-jointed, 1st joint equal to all the rest together, accessory flagellum small but distinct, 1-jointed.

Second antenna stout and a little longer than 1st, ultimate joint longer than penultimate, flagellum a little longer than ultimate joint, 4-jointed, 1st joint equal to all the rest together.

Lower lip, inner lobes distinct, outer lobes entire, not divided, apically rounded, mandibular processes subacute.

Mandibles, cutting-edge 3 (?) dentate, secondary cutting-edge in left bidentate, spine-row (in left) with three spines, molar somewhat conical, but apically blunt, palp large and stout, 2nd joint ovate, setose on inner margin, 3rd shorter than 2nd, laminar, expanded distal end with long setae.

First maxilla, outer plate with 9 (?) spines, palp 2-jointed, 2nd joint long and very slightly widened distally.

Maxilliped, outer plate reaching a little beyond middle of 2nd joint of palp, 2nd joint oblong, 3rd oval, half length of 2nd, 4th nearly as long as 3rd, narrow, bluntly pointed, both inner and outer plates and all the palpal joints setose.

Upper lip, inner plate of 1st maxilla and 2nd maxilla not successfully dissected out.

First gnathopod in ♂, 2nd joint narrow at base, distally widening, anterior margin produced into a rounded apical lobe with a few setae, 3rd and 4th much narrower than 2nd, 5th shorter and slightly narrower than 6th which is oval, palm oblique, continuous with inferior margin but distinguished by 4-5 spines becoming smaller towards the hinge, finger matching palm, serrulate on inner apex, outer apex acutely produced over base of unguis, with a comb-like row of fine setules, unguis small; in ♀ similar.

Second gnathopod in ♂, 2nd joint long, narrow, curved forwards (similar to that of *Ischyrocerus carinatus*), whole of anterior margin serrulate, anterior apex not strongly lobed, 3rd slightly lobed, 5th very short but broad, inferior margin truncate, 6th large, elongate, oblong, palm plus inferior margin slightly concave, sparsely setose or with a fairly strong bifid tooth at the hinge, finger half as long as 6th joint,

curved, apically blunt, inner margin convex in the middle; in ♀ similar to 1st gnathopod.

First and second peraeopods stout, glandular, 2nd joint linear, slightly wider distally, anterior apex rounded quadrate, 5th a little shorter than 4th, but longer than 3rd, 6th longer than 4th, oblong, palm oblique with 3 short, stout spines, finger overlapping palm, curved, unguis not distinct from finger.

Third to fifth peraeopods stout, peraeopod 3 reverted, 4 and 5 subequal, 2nd joint expanded, oval, postero-inferior angle rounded, extending nearly to end of 3rd joint, hind margin entire, 4th longer than 5th, both joints a little expanded distally, 6th equal to 4th, oblong, palm oblique, defined by a stout spine, finger overlapping palm, curved, outer apex acutely produced over base of unguis, with a comb-like row of fine setules, unguis distinct and pointed.

First uropod, peduncle with an apical acute process, upper margin with 3 spinules, outer ramus shorter than inner, which is equal to peduncle, apices of rami with 1 spine and 2 spinules.

Second uropod, outer ramus subequal to peduncle but shorter than inner ramus, both rami with 2 marginal spines and 3 stout unequal apical spines.

Third uropod, rami short, subequal, inner ending in 1 spine, outer with a recurved hook, upper margin with 2 denticles.

Length: ♂ 4 mm., ♀ 3.25 mm.

Colour: In spirit, whitish, eyes brown.

Locality: Table Bay. 26/3/96. (Dr. J. D. F. Gilchrist.) 1 ♀ with embryos; Cape Town. 19/8/98. 2 ♂♂, 5 ovigerous ♀♀, 3 juv. from amongst the egg-clusters on *Palinurus lalandii*. (S.A.M. Nos. A2847 and A3392.)

FAMILY COROPHIIDAE.

1849. *Corophidae* Dana, Amer. J. Sci. ser. 2, vol. 8, p. 139.

1888. *Corophiidae* Stebbing, Challeng. Rep. vol. 29, p. 1154.

1904. „ Coutière, Bull. Soc. philom. ser. 9, vol. 6, p. 166.

1906. „ Stebbing, Das Tierreich, 21, pp. 662, 739.

1910. „ id. Gen. Cat. S.A. Crust. p. 462.

GEN. SIPHONOECETES Kröyer.

1845. *Siphonoecetes* Kröyer, Naturh. Tidsskr. ser. 2, vol. 1, pp. 481, 491.

1876. „ Boeck, Skand. Arkt. Amphip. vol. 2, p. 630.

1888. *Siphonoecetes* Stebbing, Challeng. Rep. vol. 29, p. 212.
 1893. " Della Valle, F. u. Fl. Neapel. vol. 20, p. 357.
 1894. " G. O. Sars, Crust. Norw. vol. 1, p. 609.
 1904. " Walker in Herdman's Ceylon Pearl Fish. Suppl.
 Rep. 17, p. 294.
 1905. " Rathbun, Pap. Boston Soc. vol. 7, p. 74.
 1906. " Stebbing, l.c. pp. 681, 740 (references, with varia-
 tions in spelling).
 1910. " id. Sci. Res. "Thetis," pt. 12, p. 618.

SIPHONOECETES ORIENTALIS Walker.

1904. *Siphonoecetes orientalis* Walker, l.c. p. 294, pl. 7, fig. 49.
 1906. " " Stebbing, l.c. p. 740.

The South African specimens agree with Walker's description except in the following slight details:

Eyes poorly developed, composed of 8 lenses, more or less separate and arranged in a circle.

First antenna extending beyond end of penultimate peduncular joint of 2nd antenna, peduncular joints becoming successively shorter, flagellum subequal to peduncle, 10-11-jointed. (Walker's specimens had 14 joints; Stebbing in 1910, l.c. p. 618, remarks on the large number of flagellar joints in this species, a number double that found in any other species.)

Second antenna as long as body, ultimate and penultimate peduncular joints subequal, the ultimate joint densely setose, flagellum scarcely more than half length of ultimate joint, composed of 1 long and 2 short joints, densely setose, with marginal and apical unguiform spines.

In addition it may be stated that the mouth-parts resemble those figured by Sars (l.c. pl. 218) for *S. colletti* Boeck, but the inner plate of the first maxilla is quite obsolete. Ramus of 3rd uropod as broad as long.

Tube constructed of fragments of shell.

Length: 6 mm.

Colour: In spirit, whitish.

Locality: Umhloti River mouth NW. $\frac{1}{2}$ W., distant 15 miles (Natal). 100 fathoms. 4 ♂♂; Nanquas Peak N. $\frac{3}{4}$ W., distant 21 miles (East end of Algoa Bay). 63 fathoms. 1 ♀ in tube; Beacon East of East London N. $\frac{1}{4}$ E., distant 10 miles. 52 fathoms. 1 ♂; Amatikulu River mouth NW. $\frac{1}{2}$ N., distant 9 miles (Natal). 26 fathoms. 1 ♂.

s.s. "Pieter Faure." 19/12/00, 23/9/01, 12/7/01 and 30/1/01. (S.A.M. Nos. A213, A212, A2781, and A3391 respectively.)

Geogr. Distribution: Ceylon (Walker).

GEN. CERAPUS Say.

1817. *Cerapus* Say. Journ. Ac. Nat. Sci. Philad. vol. 11, p. 49.
 1888. " Stebbing, Challeng. Rep. vol. 29, p. 1157.
 1906. " id. Das Tierreich, 21, pp. 665, 740.
 1910. " id. Sci. Res. "Thetis," pt. 12, p. 616.

CERAPUS ABDITUS Templeton.

1836. *Cerapus abditus* Templeton, Tr. Entom. Soc. Lond. vol. 1, p. 188, pl. 20, figs. 5 a-k (♂).
 1885. *Cyrtophium calamicola* Giles, Journ. Asiat. Soc. Bengal, vol. 54, p. 54, pl. 1 (♂).
 1888. *Cerapus flindersi* Stebbing, l.c. p. 163, pl. 125 (♀).
 1892. " " Chilton, Rec. Austr. Mus. vol. 2, no. 1, p. 1, pl. 1 (♂, ♀).
 1904. " *calamicola* Walker in Herdman's Ceylon Pearl Fish. Suppl. Rep. 17, p. 293.
 1906. " " + *flindersi* + *abditus* Stebbing, l.c. pp. 668, 669.
 1910. " *abditus* id. l.c. p. 616, pl. 55A.

The above synonymy is taken from the last reference, where the discussion on it will be found.

A single ♀ may be thus briefly described:

Body of uniform width, narrowing only at the junction of 3rd and 4th pleon segments. Rostrum prominent, acute. Telson with 2 dorsal rows of upturned spinules. First antenna with a sharp projection on ventral surface, 3rd joint a good deal longer than 2nd, flagellum 6-jointed. Second antenna with 5th joint longer than 4th but not as long as the 6-jointed flagellum. Gnathopods and peraeopods as figured for *flindersi* by Stebbing. Ramus of 3rd uropod extremely minute.

Length: (Rostrum to telson) 6 mm.

Colour: In spirit, white, eyes brown.

Locality: O'Neil Peak NW. $\frac{1}{4}$ W., distant 9 miles (Zululand coast). 90 fathoms. 1 ♀, nonovigerous and without tube. s.s. "Pieter Faure." 28/2/01. (S.A.M. No. A3855.)

Geogr. Distribution: Mauritius? (Templeton.); Bengal (Giles);

North Australia (Stebbing); Port Jackson (Chilton); Ceylon (Walker); New South Wales, 41-52 fathoms (Stebbing).

GEN. COROPHIUM Latr.

1806. *Corophium* Latreille, Gen. Crust. Ins. vol. 1, p. 58.
 1813-14. *Corophrum* Leach, Edinb. Encycl. vol. 7, p. 432.
 1830. *Corophia* M. Edwards, Ann. Sci. Nat. vol. 20, p. 384.
 1851. *Audouinia* (nom. nud.) Costa in Hope. Cat. Crost. Ital. p. 24.
 1888. *Corophium* Stebbing, Challeng. Rep. vol. 29, p. 1670.
 1893. „ Della Valle, F. u. Fl. Neapel. vol. 20, p. 362.
 1894. „ G. O. Sars, Crust. Norw. vol. 1, p. 612.
 1904. „ Stebbing, Spolia Zeyl. vol. 2, pt. 5, p. 25.
 1906. „ id. Das Tierreich, 21, pp. 685, 740.
 1908. „ Bradley, Univ. Cal. Publ. Zool. vol. 4, no. 4,
 p. 229. (Key to the species.)
 1908. „ Chevreux, Bull. Soc. Zool. Fr. vol. 33, p. 70.
 1911. „ Vanhoeffen, SB. Gesell. Naturf. Berl. 1911,
 p. 400.
 1912. „ Wundsch. Zool. Anz. vol. 39, p. 732.

This genus has a wide distribution, but hitherto has not been recorded from South Africa.

COROPHIUM ACHERUSICUM Costa.

1851. *Audouinia acherusica* Costa in Hope. Cat. Crost. Ital. (nom. nud.).
 1857. *Corophium acherusicum* id. Mem. Acc. Ital. vol. 1, p. 232.
 1866. „ „ Heller, Denkschr. K. Ak. Wiss. Wien. vol. 26, p. 51, pl. 4, fig. 14.
 1893. „ „ Della Valle, F. u. Fl. Neapel. vol. 20, p. 364, pl. 1, fig. 11, pl. 8, figs. 17, 18, 20-41.
 1900. „ „ Chevreux, Rés. Sci. Monaco, vol. 16, p. 109.
 1906. „ „ Stebbing, Das Tierreich, 21, pp. 692, 740.

Anterior margin of head produced into a small triangular rostrum, scarcely extending beyond the level of the antero-lateral angles, which are subacute. Side-plate 1 apically acute, with 3 setae. Pleon segments 4-6 fused.

Telson subtriangular, apex slightly hollowed between 2 minute projections.

First antenna in both sexes, 1st joint with 2 recurved spines at base on inner surface, and 1 on apex, 2nd and 3rd more slender, flagellum equal to 2nd plus 3rd peduncular joints, 6-jointed.

Second antenna ♂ stout but not greatly enlarged or flattened, about as long as the peraeon plus head, 4th joint twice as long as broad or less, oval, inferior apex with 1 strong tooth and a smaller one above it, 5th scarcely as long as 4th and about half as wide, with in small specimens up to 2.5 mm. a well-marked tooth on lower margin about $\frac{1}{3}$ from base or sometimes nearly in the middle, in other and larger specimens without a tooth and much more sparsely setose, flagellum 3-jointed, not as long as 5th peduncular joint; in ♀ about equal to head plus the first 4 peraeon segments, 3rd joint with 2 (or 3) recurved spines on inner margin, 4th half as long again as broad, with three spines on inner lower margin, 5th shorter than 4th with 1 (or 2) spines, flagellum shorter than 5th joint, 3-jointed.

First and 2nd gnathopods as figured by Della Valle for *C. acherusicum*.

The other peraeopods also similar to those of *C. acherusicum*, but 4th joint of peraeopods 1 and 2 not so broad as in Della Valle's figure; 5th joint of peraeopods 3 and 4 with an apically transverse row of 5 spines and a subapical one of 3 spines.

First and second uropods as figured for *C. acherusicum*, but 1st not so spinulose; third uropod with peduncle broader than long, ramus oval, equal in length to the breadth of the peduncle.

Length: ♂ up to 4 mm.; ♀ 3 mm.

Colour: Whitish with brown or blackish mottlings forming transverse bands on peraeon segments 1-6 and pleon segments 1-3, these bands usually interrupted dorso-medially, peraeon segment 7 without markings, head with a dark transverse band between the eyes, which are black, antennae and ventral surface of peraeon also speckled with darker.

Locality: Durban Bay. March and July, 1915. (H. W. Bell-Marley.) ♂♂ and ovigerous ♀♀. (S.A.M. Nos. A3377 and A3843.)

To this species also I am inclined to ascribe a single ♀ from Hout Bay, Cape Peninsula (11/2/14. K.H.B. S.A.M. No. A2865); but since the telson appears to be apically acute (cf. Chevreux's figure of *C. acutum*. 1908. l.c. p. 75.) I prefer to leave open the question of the identity of this specimen until more material, consisting of both ♂♂ and ♀♀, comes to hand.

Geogr. Distribution: Mediterranean (Costa, Della Valle); Cadiz, Azores, Senegal, 0-10 metres (Chevreux). Stebbing records it also from Cuba and Hong Kong.

FAMILY PODOCERIDAE.

1849. *Dulichidae* Dana, Amer. J. Sci. ser. 2, vol. 8, pp. 135, 140.
 1857. *Dyopelidae* Bate, Ann. Mag. Nat. Hist. ser. 2, vol. 19, p. 150.
 1888. *Dulichidae* Stebbing, Challeng. Rep. vol. 29, p. 1182.
 1906. *Podoceridae* id. Das Tierreich, 21, p. 694.
 1910. „ id. Gen. Cat. S.A. Crust. p. 464.

GEN. LAETMATOPHILUS Bruzelius.

1859. *Laetmatophilus* Bruzelius. Svenska. Ak. Handl. n.s. vol. 6,
 p. 10.
 1906. „ Stebbing, l.c. p. 695.

LAETMATOPHILUS PURUS Stebbing.

1888. *Laetmatophilus purus* Stebbing l.c. p. 1198, pl. 132.
 1893. „ *tuberculatus* (part) Della Valle, F. u. Fl.
 Neapel. vol. 20, p. 317.
 1894. „ *purus* G. O. Sars, Crust. Norw. vol. 1, p. 630.
 1906. „ „ Stebbing, l.c. p. 696, figs. 120, 121.
 1910. „ „ id. l.c. p. 464.

The Challenger specimen was a male. The female has no row of serrate spines leading to the palmar angle on 6th joint of the 1st gnathopod, the 2nd gnathopod similar to that of *L. tuberculatus* Bruz. as figured by Sars (l.c. pl. 226), the palm marked off from hind margin, which is about $\frac{1}{2}$ its length, by an acute process, several very low rounded tubercles towards the hinge; in other respects no sexual difference except that the body is broader in the female.

Length: 6 mm.

Colour: In spirit, whitish, eyes reddish-brown.

Locality: Cape St. Francis NE., distant 29 miles. 75 fathoms. 1 ♀; North of Robben Island (Table Bay). ♂♂ and ♀♀ with ova and embryos; Paternoster Point SE. $\frac{3}{4}$ E., distant 9 miles (off Saldanha Bay). 80 fathoms. ♂♂ and ovigerous ♀♀. s.s. "Pieter Faure." 19/2/02, 28/10/97, and 17/3/02. (S.A.M. Nos. A109, A110, and A111 respectively.)

LAETMATOPHILUS TRIDENS n. sp.

(Plate XXVIII. Fig. 22.)

♂. The single specimen is somewhat incomplete, but is well enough preserved to show the essential characters.

Peraeon segment 1 with 2 transverse ridges and a depression between them, segments 2-4 each with 1 very small medio-dorsal tubercle.

First antenna as in *L. purus*. Second antenna lost.

First gnathopod similar to that of *L. purus*, but 6th joint without the row of serrate spines leading to palmar angle, finger very thick, outer margin very convex, 10 closely-set spine-teeth at distal end of inner margin.

Second gnathopod, anterior margin of 2nd joint with 2 keels, one acute and the other subacute apically, 6th joint of the same shape as that of *L. purus*, but palm concave in basal half, distal half bearing 3 teeth, the first acutely triangular, the second obtusely cylindrical, the third largest, broad, denticulate, finger equal to palm, stout, nearly even in width throughout, palm well furnished with plumose setae.

Third to fifth pereopods, 2nd joint with hind margin spinose, not keeled or produced.

Uropods and telson as in *L. purus*.

Length: 5 mm.

Colour: In spirit, pale pinkish.

Locality: Seal Island SW. $\frac{1}{2}$ S., distant $\frac{3}{4}$ mile (False Bay). 11 fathoms. 1 ♂. s.s. "Pieter Faure." 12/11/02. (S.A.M. No. A2779.)

This species is unique in having 3 teeth on the palm of the 2nd gnathopod, all the other species of the genus having only 2.

LAETMATOPHILUS DURBANENSIS n. sp.

Very similar to *L. purus*. Peraeon transversely rugulose though not very distinctly; wider in ♀ than ♂, being nearly circular in the former.

First gnathopod quite distinct from that of *L. purus* in that the 6th joint is not at all widened, is narrower than 5th joint and shows no differentiation of hind margin and palm, the inferior margin bearing a few feebly plumose setae; the finger is quite smooth, but bears a short, stout spine on the inner apex at the base of the unguis. Similar in both sexes.

Second gnathopod ♂, 2nd joint with 2 keels on anterior margin, both apically acute, 4th apically subacute, 6th ovate but shorter and

broader than in *L. purus*, palm at base not very angular, straight, with a low denticulate process extending from hinge almost $\frac{1}{2}$ along the palm, and a pointed tooth, furnished with plumose setae, anterior margin with 5 groups of spines, finger matching palm, nearly straight. In ♀ similar but smaller, 6th joint ovate, hind margin half length of palm and distinctly separated by a very small process and a spine, palm with a few simple setae only, finger matching palm, its inner margin faintly crenulate.

In other respects resembling *L. purus*.

Length: 3 mm.

Colour: Pale yellowish grey, a faint medio-dorsal grey stripe, eyes pale red.

Locality: Durban Bay. July, 1915. (H. W. Bell-Marley.) ♂ ♂ and ovigerous ♀ ♀. (S.A.M. No. A3841.)

This species was received too late for figuring, but I hope to give a figure of it on a future occasion.

GEN. PODOCERUS Leach.

- 1813/14. *Podocerus* Leach, Edinb. Encycl. vol. 7, p. 433.
 1852. *Platophium* Dana, Amer. J. Sci. ser. 2, vol. 14, p. 309.
 1853. *Podocerus* id. U.S. Expl. Exp. vol. 13, pt. 2, pp. 831, 837.
 1885. *Deziocerella* Haswell, Proc. Linn. Soc. N.S.W. vol. 10, p. 107.
 1888. *Podocerus* Stebbing, Challeng. Rep. vol. 29, p. 1184.
 1893. „ (part) Della Valle, F. u. Fl. Neapel. vol. 20, p. 327.
 1894. „ „ G. O. Sars, Crust. Norw. vol. 1, p. 629.
 1899. „ Stebbing, Ann. Mag. Nat. Hist. ser. 7, vol. 3, p. 237.
 1904. *Platophium* Walker in Herdman's Ceylon Pearl Fish. Suppl. Rep. 17, p. 295.
 1906. *Podocerus* Stebbing, Das Tierreich, 21, pp. 700, 741.
 1908. „ Chevreux, Mém. Soc. Zool. Fr. vol. 20, p. 521.
 1910. „ Stebbing, Sci. Res. "Thetis," pt. 12, p. 622.

PODOCERUS CRISTATUS (G. M. Thomson).

1879. *Cyrtophium cristatum* G. M. Thomson, Ann. Mag. Nat. Hist. ser. 5, vol. 4, p. 331, pl. 16, figs. 9-15.
 1880. „ *dentatum* Haswell, Proc. Linn. Soc. N.S.W. vol. 4, p. 342, pl. 22, fig. 5.
 1881. „ *cristatum* G. M. Thomson, Tr. N. Zeal. Inst. vol. 13, p. 219, pl. 8, fig. 8.

1885. *Dexiocerella dentata* Haswell, l.c. p. 109, pl. 17, figs. 8-12.
 1888. *Platophium cristatum* Stebbing, l.c. p. 500.
 1893. " *orientale* (part) Della Valle, l.c. p. 332.
 1899. *Podocerus cristatus* Stebbing, l.c. p. 239.
 1906. " " id. l.c. p. 706.
 1910. " " id. l.c. p. 651.

The single specimen does not seem distinguishable from Thomson's species, except in that the lobe on the palm of 2nd gnathopod near hinge is divided into two, the finger is only half the length of palm, and the fringe of setae along both sides of the palmar margin is so thick that the teeth are almost invisible.

Eyes prominent, forming the antero-lateral angles of head.

Length: 7 mm.

Colour: In spirit, pale pinkish.

Locality: Seal Island SW. $\frac{1}{2}$ S., distant $\frac{3}{4}$ mile (False Bay). 11 fathoms. 1 ♂. s.s. "Pieter Faure." 12/11/02. (S.A.M. No. A2780.)

Geogr. Distribution: New Zealand (Thomson); New South Wales (Haswell, Stebbing).

PODOCERUS PALINURI n. sp.

(Plate XXVIII. Fig. 23.)

Remarkably close to *P. hystrix* Stebbing, 1910. It will be enough to enumerate the distinguishing characters.

Head with a low rounded keel, without elevated process; eyes prominent, forming the antero-lateral angles.

Dorsal process on anterior half of peraeon segment 1 short and rounded, that on posterior half quite obsolete. Subdorsal processes present on peraeon segments 5-7 only, and these very feeble. Lower margins of segments without processes, only slightly thickened, chiefly on the posterior segments, rounded, overhanging the side-plates, all of which have the lower margins straight or slightly convex, not produced downwards, the 1st produced forwards acutely.

First antenna, flagellum 7-jointed.

First gnathopod not alike in the two sexes, in ♂ palm oblique and longer than hind margin, in ♀ transverse and shorter than hind margin.

Second gnathopod in ♂ similar to that of *P. hystrix*, but the finger is less strongly bent near the base, and the large, flat tooth near the hinge and small, conical one below it are more prominent; in ♀ palm

bears only a small, conical tooth near hinge, and a smaller conical one lower down as in ♂, defining angle with 2 spines.

Telson, ventral plate with 2 submedian spines, dorsal conical process bearing 3 large spines on each side of the median one.

Third uropod as in *P. hystrix*.

Length : 9 mm.

Colour : In spirit, pale yellowish, eyes brownish.

Locality : Table Bay. "Off a large *Palinurus*" (= *Jasus lalandii* (M. Edw.). June, 1897. 2 ♂♂, 1 ♀, 1 juv. (Dr. W. F. Purcell.) Seal Island SW. $\frac{1}{2}$ S., distant $\frac{3}{4}$ mile (False Bay). 11 fathoms. 1 ♂; Cape St. Blaize N. by E., distant 73 miles. 125 fathoms. 1 juv. ♀; off Knysna. 47 fathoms. 1 juv. ♂. s.s. "Pieter Faure." 12/11/02, 21/12/99 and 11/10/00. (S.A.M. Nos. A112, A113, A3811 and A3858.)

The above-mentioned characters are constant in the few specimens which are available, and would seem enough to separate this form from the closely allied New South Wales form *P. hystrix*.

PODOCERUS AFRICANUS n. sp.

(Plate XXVIII. Figs. 24, 25.)

As the South African specimens agree very closely with Dana's *brasiliensis*, it will be needful to mention only the points of difference.

The ultimate peduncular joint of 2nd antenna is a little shorter than the penultimate; 5th joint of 1st gnathopod as long as or a trifle longer than 6th joint in both sexes; 4th joint of 2nd gnathopod in ♂ strongly and acutely produced; 6th joint as in *P. variegatus* Leach, *i. e.* with 2 strong palmar teeth near the finger hinge; 1st and 2nd peraeopods with a lobe on anterior distal margin of 2nd joint; 3rd to 5th peraeopods with 2nd joint expanded and widest at base, as wide as long, distally narrowing; telson with only 2 spines on dorsal conical process (none on ventral plate).

Other characters as in *brasiliensis* : flagellum of both antennae 4-jointed; pleopods with 2 coupling spines.

Eyes about in the middle of the lateral margin. Antero-lateral angle of 1st peraeon segment quadrate, not produced.

Length : 5-6 mm.

Colour : Uniform pale claret.

Locality : Buffel's Bay (False Bay). 1/3/15. (K.H.B.) 6 ♂♂, 5 ♀♀ with ova and embryos, 4 juv. (S.A.M. No. A3820.)

This species combines the characters of the two species *variegatus* and *brasiliensis*. These two are closely allied and may eventually be united under Leach's name. The present specimens, however, seem to me to be quite distinct in the character of the 2nd joints of the peraeopods.

PODOCERUS SYNAPTOCHIR (Walker).

1904. *Platophium synaptochir* Walker in Herdman's Ceylon Pearl Fish. Suppl. Rep. 17, p. 296, pl. 8, fig. 52.
 1906. *Podocerus* „ Stebbing, Das Tierreich, 21, p. 741.
 1909. „ „ Walker, Tr. Linn. Soc. Lond, vol. 12, pt. 4, p. 243.

These specimens agree exactly with Walker's description and figures except that the palm of the 2nd gnathopod in the male has two little denticles near the finger-hinge. These are not mentioned by Walker, but are easily overlooked owing to the denseness of the fringes of plumose setae. The finger of the 1st gnathopod in both sexes is serrate on the inner margin and the palm in the male is minutely crenulate.

Posterior margins of peraeon and pleon segments sparsely setose, in the ♂ the humps on the 7th peraeon and 1st-3rd pleon segments each bear a little median tuft of setae. Antero-lateral angles of peraeon segment 1, as well as those of the side-plate, acutely produced forwards.

Eyes on the antero-lateral angles of the head.

Length: ♂ 6mm., ♀ 3 mm.

Colour: Light brown, speckled with darker, often a dark spot on the 3rd and 4th side-plates and in the ♂ a medio-dorsal spot on 6th peraeon segment, ♀ frequently with a pale oval dorsal patch extending over 3rd-6th peraeon segments, a dark transverse band between the eyes, which are bright red, sometimes the whole head dark.

Locality: Durban Bay. March and July, 1915. (H. W. Bell-Marley.) ♂♂ and ovigerous ♀♀. (S.A.M. Nos. A3375 and A3842.)

Geogr. Distribution: Ceylon (Walker); Zanzibar and Suez (Walker).

TRIBE CYAMIDEA.

FAMILY CAPRELLIDAE.

1847. *Caprellidae* White, List Crust. Brit. Mus. p. 91.
 1910. „ Stebbing, Gen. Cat. S.A. Crust. p. 464.
 1912. „ Mayer in Michaelsen, Fauna Südwest Austral. vol. 4, pt. 1, p. 1.

GEN. CAPRELLA Lamarck.

1801. *Caprella* Lamarck, Syst. Anim. sans Vertèbr. p. 165.
 1888. „ Stebbing, Challeng. Rep. vol. 29, p. 1251 (references).
 1890. „ Mayer, F. u. Fl. Neapel. vol. 17, p. 42.
 1903. „ id. Die Caprelliden d. Siboga Exp. vol. 34, pp. 14, 72.
 1910. „ Stebbing, l.c. p. 465.
 1910. „ Kunkel, Tr. Conn. Ac. Sci. vol. 16, p. 106.

CAPRELLA DANILEVSKII Czern.

1868. *Caprella danilevskii* Czerniavski, Mater. ad Zoogr. Pont. p. 92,
 pl. 6, figs. 21-34.
 1879. „ *inermis* Haswell, Proc. Linn. Soc. N.S.W. vol. 4, p. 348,
 pl. 23, fig. 3f, g.
 1882. „ *danilevskii* Mayer, F. u. Fl. Neapel, vol. 6, p. 54.
 1882. „ *inermis* id. ibid. p. 71 text-figs. 26-29 (non Grube
 1864).
 1885. „ „ Haswell, Proc. Linn. Soc. N.S.W. vol. 9,
 p. 1000.
 1888. „ *danilevskii* Stebbing, l.c. p. 1264, pl. 145.
 1890. „ „ Mayer, l.c. vol. 17, p. 58, pl. 5, fig. 44, pl. 7,
 figs. 12, 13, 54.
 1890. (?) „ *helleri* id. ibid. p. 58.
 1903. „ *danilevskii* id. l.c. p. 99.
 1910. „ „ Kunkel, l.c. p. 110.

The South African specimens do not differ from the published descriptions and figures of Mayer and Stebbing except in two minor points. The branchial lamellae are broader and more oval. The setae on the second antenna of ♂ are shorter and much sparser.

Mayer in describing *C. subinermis* n. sp. from Japan (l.c. 1890, p. 86) states, as one of the differences between the two species, that in *subinermis* the ungues of peraeopods 5-7 are denticulate, whereas in *danilevskii* they are smooth. Stebbing, however, represents them in the Challenger specimen of *danilevskii* as "minutely serrulate" in both descriptions and figure; and in the South African specimens they are very distinctly and regularly denticulate.

Length: ♂ 15 mm., ♀ 8 mm.

Colour: Uniform green, brownish or reddish according to the colour of the weed on which they are living.

Locality: Sea Point, near Cape Town. 29/11/13. (K.H.B.) ♂♂, ovigerous ♀♀ and young. (S.A.M. No. A2949).

Geogr. Distribution: Black Sea (Czerniavski); Mediterranean and Bay of Biscay (Mayer); Port Jackson (Haswell); Bermuda (Stebbing); Japan (Mayer); Rio de Janeiro (Mayer).

CAPRELLA EQUILIBRA Say.

1818. *Caprella equilibra* Say. Journ. Ac. Sci. Philad. vol. 1, p. 391.
 1868. „ *megacephala* M. Edwards, Arch. du Mus. d'Hist. Nat. Paris, iv, p. 89, pl. 20, fig. 12.
 1910. „ *equilibra* Stebbing, Gen. Cat. S.A. Crust. p. 466.

The distribution of this species in South Africa is extended by the discovery of specimens at the following localities:

Swakopmund, German S.W. Africa, May, 1908 (J. Drury); Table Bay, 26/2/14 (K.H.B.); Port Elizabeth, s.s. "Pieter Faure"; Durban, July, 1915 (H. W. Bell-Marley). (S.A.M. Nos. A2950, A2944, A2946 and A3853 respectively.)

The Swakopmund specimens reach a length of 15 mm. in ♂, 9 mm. in ovigerous ♀. The hand of the 2nd gnathopod in ♂ resembles that figured by Mayer (1903, *Siboga caprellidae*, pl. 7, fig. 67) belonging to a specimen from Sydney; the finger likewise is strongly curved.

The Durban specimens measure 13 mm. in ♂. The finger of the 2nd gnathopod in ♂ is not strongly curved.

I have not yet seen any specimens from the other localities in South Africa to equal the Durban or Swakopmund specimens in size.

Colour: The Durban specimens are pale whitish, with rather large brownish-orange spots on the posterior half of 2nd and the whole of 3rd-7th pereon segments and the hand of the 2nd gnathopods, anterior half of 2nd and whole of 1st pereon segments finely speckled with the same colour, eye brown, finger of 2nd gnathopod with two rings of orange.

Geogr. Distribution: Europe; Mediterranean; Bosphorus; South America; Sargasso Sea; Australia; Japan; Singapore; Madagascar.

CAPRELLA PENANTIS VAR. NATALENSIS Mayer.

1813. *Caprella penantis* Leach, Edinb. Encycl. vol. 7, p. 404.
 1816. „ *acutifrons* Latreille, Nouv. Dict. d'Hist. Nat. vol. 5, p. 433.
 1903. „ „ var. *natalensis* Mayer, *Siboga Exp.* vol. 34, p. 81, pl. 3, figs. 22, 23.
 1910. „ *penantis* var. *natalensis* Stebbing, Gen. Cat. S.A. Crust. p. 465.

Mayer states that he had only a single ♂ of this form, but gives the number of joints in the flagellum of 1st antenna of female as 11 and figures a portion of a ♀. Probably in mentioning the specimen found at Cape Town Mayer intended writing "♀" instead of "♂." The present specimens are in agreement with his description.

Length: ♂ 10 mm.; ♀ 6 mm.

Colour: Light brown with the anterior margins of the peraeon segments and a band between the eyes darker, a few dark specks on peraeon segments 2-5, antennae, peraeopods and branchial lamellae whitish, the hand of the 2nd gnathopods in ♂ with a basal and an apical band of orange spots, eyes dark brown; the ♀ is somewhat greyer in colour, 2nd gnathopods whitish, marsupial lamellae on 3rd segment each with two red streaks.

Locality: Durban. July, 1915. 1 ♂, 1 ovigerous ♀. (H. W. Bell-Marley.) (S.A.M. No. A3854.)

GEN. CAPRELLINA Thomson.

1879. *Caprellina* Thomson, Tr. N.Z. Inst. vol. 11, p. 247.
 1903. ,, Mayer, Die Caprelliden d. Siboga Exp. vol. 34, pp. 14, 15, 30.
 1910. ,, Stebbing, Gen. Cat. S.A. Crust. p. 470.

CAPRELLINA SPINIGER n. sp.

(Pl. XXVIII. Fig. 35.)

Female.—Head plus 1st peraeon segment equal to 2nd peraeon segment, unarmed; 2nd segment with a pair of dorsal spiniform tubercles on the middle of the segment and another pair on posterior margin, one spine above insertion of 2nd gnathopod; 3rd segment with a large dorsal spiniform tubercle, apically bifid longitudinally and directed forwards; 4th segment with a similar but smaller tubercle; both segments with a blunt tubercle above the branchial lamella; remaining segments smooth.

First antenna about $\frac{1}{3}$ length of body, 1st joint oval, half as long again as broad, 3rd joint longer than 1st, 2nd longer than 3rd, flagellum equal to 3rd joint, 4-jointed, its 1st joint equal to the other 3 together.

Second antenna reaching to end of 2nd joint of 1st antenna, ultimate peduncular joint a little longer than penultimate, flagellum 3-jointed.

Mandibles normal, palp 3-jointed, 3rd joint a little longer than 1st, 2nd a little longer than 3rd.

First maxilla, outer plate with 6 spines, 2nd joint of palp oval, much longer than 1st setose.

Maxilliped, inner plate with 2 apical spine-setæ, outer plate narrower than inner.

First and second gnathopods as in *C. longicollis* (Nicolet).

Branchial lamella on segments 2-4, oblong. First and second peraeopods absent.

Third peraeopod with 3 distinct joints, the basal joint without a suture in the middle and without the process found in the Cape specimens of *C. longicollis*.

Fourth and fifth peraeopods as in *C. longicollis*, with 4 proximal spines on 6th joint.

Pleon with 2 pairs of slender, apically acute, 1-jointed appendages, which are minutely and regularly spinulose on their upper margins.

Length: 8 mm.

Colour: Whitish, the anterior portions with minute purple specks, a purplish band at base of 6th joint of 5th peraeopod, eyes purplish-brown.

Locality: Buffel's Bay (False Bay). 1/3/15. (K.H.B). 1 ♀. (S.A.M. No. A3296.)

This constitutes the second species in this genus. It is unfortunate that the male has not been discovered.

GEN. PHTISICA Slabber.

1769. *Phtisica* Slabber, Natuurk. Verlust. pt. 10, p. 77.

1814. *Proto* Leach, Edinb. Encycl. vol. 7, p. 433.

1910. *Phtisica* Stebbing, Gen. Cat. S.A. Crust. p. 468.

PHTISICA MARINA Slabber.

1769. *Phtisica marina* Slabber, l.c. p. 77, pl. 10, figs. 1, 2.

1776. *Squilla ventricosa* O. F. Müller, Zool. Dan. Prodv. no. 2360, p. 360.

1903. *Proto* „ Mayer, Siboga Exp. vol. 34, p. 20, pl. 6, fig. 23.

1910. *Phtisica marina* Stebbing, l.c. p. 468.

Further localities in South Africa for this species are as follows:

Paternoster Point SE. $\frac{3}{4}$ S., distant 9 miles (off Saldanha Bay).

80 fathoms. 2 ♂♂, 3 ♀♀; Robben Island, Table Bay. 1 juv. ♂; Unkomaas River mouth NW. by W. $\frac{1}{2}$ W., distant 5 miles (Natal). 40 fathoms. 4 ♂♂; Walker Point NE. by N. $\frac{1}{2}$ N., distant 7 miles (off Knysna). 47 fathoms. 1 ♀; s.s. "Pieter Faure." 17/3/02, 28/10/97, 31/12/00, and 11/10/00 respectively. Sea Point, Cape Town. 26/2/14. 2 ♂♂ (K.H.B.) (S.A.M. Nos. A87-A89, A3860, and A2951.)

GEN. ORTHOPROTELLA Mayer.

1903. *Orthoprotella* Mayer, Siboga Exp. vol. 34, p. 35.

ORTHOPROTELLA MAYERI n. sp.

1903. *Orthoprotella spec.* Mayer, l.c. p. 36, pl. 1, figs. 25, 26, pl. 6, figs. 43, 44, 46, pl. 9, fig. 15.

These specimens agree with the form described and figured by Mayer, but the largest is more than twice as large as any this author saw. Mayer regarded it as a variety of *O. australis* (Haswell), but with a certain hesitation. Seeing that a very good and apparently constant distinguishing feature is to be found in the 2nd gnathopod of the ♂, and that it inhabits regions as widely separated as Sydney, Singapore and South Africa, it seems to merit specific rank.

One of the specimens (that from Glendower Beacon) has a single median spine on the 2nd peraeon segment above the 2nd gnathopods, but the rest of the specimens are devoid of dorsal spines or tubercles. All have a lateral spine on the 2nd and 3rd segments. Segments 6 and 7 not fused.

First antenna with flagellum of 20-30 joints; basal joint of 2nd antenna distinctly, and rather slenderly, produced.

Second gnathopod as figured by Mayer, but the tubercle on the anterior margin of hand more prominent and the apical angle more produced and acute; in the largest specimen the shape of the hand is more oblong, the inferior margin is distinctly concave and subparallel with the anterior margin; the venom-tooth is quite proximal, and there is a little notch between it and the inferior margin; inferior margin sparingly setose; the two teeth near the hinge would be better described as follows: a single triangular tooth with a narrow parallel-sided slit cut in the apex and extending nearly to the basal line; finger moderately slender and curved, reaching to the venom-tooth, its inner margin finely and regularly crenulate.

Peraeopods 1 and 2 half the length of the branchial lamellae 1-jointed, narrow, apically setose.

Peraeopods 3-5 lost in all specimens.

Pleon with 1 pair of 2-jointed appendages.

Length : Up to 19 mm.

Colour : In spirit, dirty pinkish, eyes brown.

Locality : Glendower Beacon N. $\frac{1}{2}$ W., distant 16 miles (near Port Alfred). 66 fathoms. 1 ♂ ; Walker Point NE. by N. $\frac{1}{2}$ W., distant 7 miles (near Knysna). 47 fathoms. 5 ♂ ♂ (incl. the largest specimen). s.s. "Pieter Faure." 10/9/01 and 11/10/00. (S.A.M. Nos. A90 and A3859.)

Geogr. Distribution : Sydney and Singapore (Mayer).

I hope to give a figure of the hand of the adult ♂ on a future occasion, as the specimens came to light only after the plates had been executed.

TRIBE PHRONIMIDEA.

FAMILY HYPERIIDAE.

1852. *Hyperidae* Dana, Amer. J. Sci. and Arts, ser. 2, vol. 14, p. 314.
 1904. *Hyperiidæ* Stebbing, Tr. Linn. Soc. Lond. 2nd ser. Zool. vol. 10, pt. 2, p. 33 (references).
 1910. ,, id. Gen. Cat. S.A. Crust. p. 475.

GEN. HYPERIA Latreille.

1823. *Hyperia* Latreille in Desmarest, Dict. Sci. Nat. vol. 28, p. 347.
 1889. ,, Bovallius, K. Sv. Vet. Ak. Handl. vol. 22, no. 7, p. 129 (references).
 1901. ,, Vosseler, Ergebn. Plankton Exp. Amphip. pt. 1, p. 56

HYPERIA GAUDICHAUDII M. Edw.

1840. *Hyperia gaudichaudii* M. Edwards, Hist. Nat. Crust. vol. 3, p. 77.
 1849. ,, ,, Nicolet in Gay's Hist. fis. y pol. de Chile. Zool. vol. 3.
 1862. *Lestrigonus* ,, Bate, Cat. Amphip. Crust. Brit. Mus. p. 289, pl. 48, fig. 3.
 1887. *Hyperia* ,, Bovallius, Bih. K. Sv. Vet. Ak. Handl. vol. 11, no. 16, p. 16.
 1888. ,, ,, Stebbing, Challenger Rep. vol. 29, p. 1394, pl. 169.
 1889. ,, ,, Bovallius, K. Sv. Vet. Ak. Handl. vol. 22, no. 7, p. 175, pl. 10, figs. 18-24.

1907. *Hyperia gaudichaudii* Walker, Nat. Antart. Exp. vol. 3, p. 7.
 1912. " " Chilton, Tr. Roy. Soc. Edimb. vol. 48, pt. 2,
 p. 513.
 1914. " " Stebbing, Proc. Zool. Soc. Lond. 1914,
 pt. 2, p. 374.

The Cape specimens agree in all respects with the descriptions and figures of Stebbing and Bovallius.

Length: ♂ 14 mm., ♀ 15 mm.; *breadth*: ♂ 2.5 mm., ♀ 5 mm.; antennae of ♂ ca. 8 mm.

Colour: When alive transparent pinky-red, with greenish eyes, in spirit reddish.

Locality: In large Rhizostomid jelly-fishes washed up on the shores of the West coast of the Cape Peninsula and False Bay (Muizenberg, False Bay. January, 1912. (K.H.B.) ♂♂, ♀♀ and juv.). Angra Pequenas, G.S.W.A. (Dr. J. D. F. Gilchrist.) 4 ♀♀. (S.A.M. Nos. A238 and A2867.)

Geogr. Distribution: Chile (M. Edw. and Nicolet); Patagonia, 53° 37' S. 70° 56' W. 10-15 fathoms (Stebbing); McMurdo Sound, 5-10 fathoms (Walker); Falkland Islands, 46° 3' S. 56° 30' W. and 37° 41' N. 29° 25' W. (Chilton); Falkland Islands (Stebbing).

FAMILY CYSTISOMATIDAE.

1875. *Cystosomatidae* v. Willemoes-Suhm. Tr. Linn. Soc. Lond. ser. 2,
 vol. 1, pt. 1, p. 24.
 1886. *Thaumatopsidae* Bovallius, Bih. K. Svenska Vet. Ak. Handl.
 vol. 11, no. 9, p. 13.
 1888. *Cystisomatidae* Stebbing, Challeng. Rep. vol. 29, p. 1317.
 1902. *Thaumatopsidae* Woltereck, Zool. Anz. vol. 26, p. 447.

GEN. CYSTISOMA Guérin-Méneville.

1842. *Cystisoma* Guérin-Méneville, Rev. Zool. July, 1842, p. 214.
 1873. *Thaumops* v. Willemoes-Suhm. Proc. Roy. Soc. vol. 21, p. 206.
 1888. *Cystisoma* Stebbing, l.c. p. 1318 (references).
 1889. *Thaumatops* Bovallius, K. Svenska Vet. Ak. Handl. vol. 22, no. 7,
 p. 40.
 1906. " " Tattersall, Fish. Irel. Sci. Invest. 1905, 4, p. 17.
 1910. " " Stebbing, Gen. Cat. S.A. Crust. p. 474.

The genus is widely distributed throughout the world. Stebbing included *C. spinosum* (Fabr.) in the General Catalogue of S.A. Crustacea

on the record of a specimen caught in 33° 23' S. 7° 40' E. Whether this be counted within the South African region, it is interesting to record a specimen from a locality quite near the South African coast, and moreover exhibiting features definite enough to characterise a new species.

CYSTISOMA AFRICANUM n. sp.

Head 30 mm. in length and about the same in breadth, depth indeterminable. Eyes contiguous, but diverging in the posterior quarter. Lower lateral margins with 18 teeth, on the under surface of head near the mouth-parts 6 teeth, of which the 1st (anterior) is the largest and stands somewhat in advance of the rest.

Pearaeon segments 1 and 2 apparently coalesced, the dorsal keel not markedly different from that of *C. spinosum*, but the denticulation on the lateral portions of the posterior margins very inconspicuous. Ventral surface very much as described by Stebbing for *C. spinosum* (1888, l.c. p. 1328), the "genital papilla," however, not so elongate as figured by him (plate 154). The rudimentary branchiae present and very similar in shape.

Both of the 1st antennae are broken, but apparently they would not exceed half the length of the head, there is a slight bend near the base, and the basal portion is stouter, but no suture is visible; present length 8 mm.

Epistome and upper lip similar to that of *C. spinosum*, but upper lip not or scarcely at all asymmetrically cleft.

Lower lip as in *C. spinosum*, but lobes more oblong, the apices roundly subtruncate.

Mandibles very similar to those figured for *C. spinosum*, but trunk with 3 strong teeth on anterior margin, cutting-edge with 10 teeth, secondary cutting-edge with 15 teeth.

First maxilla as figured for *C. spinosum*.

Second maxilla broad at base, a semicircular projection on inner margin with 4 small spinules, beyond this the inner margin narrows rapidly and runs nearly straight to apex, which bears fine acute teeth and small spinules on inner side.

Maxilliped, inner plate with long keel on inner surface, ending some distance before apex, the inner concave distal margin with 2 spinules on either side of middle, outer margin similarly armed, the spinules very small, outer plates with 14 teeth on right and 10 on left (excluding the apical one), all the teeth more or less of the same size, except the basal ones which are smaller.

First gnathopod measuring 9 mm., 1st joint equal to the other 4 together, anterior margin with 6 spines, postero-apical angle of 1st and 2nd joints ending in a spine, 4th and 5th joints as figured by Stebbing for *C. spinosum*.

Second gnathopod measuring 13 mm., 1st joint a little longer than the other 4 together, anterior margin with 6 spines, 4th and 5th joints as figured by Stebbing, but the marginal spines rather more numerous.

First peraeopod measuring 35 mm., 1st joint 16 mm., 10 spines on hind margin, the basal ones inconspicuous, none on the thickened anterior edge, 2nd with 2 teeth on posterior margin, 4th joint a little longer than 3rd, both with 10 spines on hind margin, the posterior ones on the 4th joint inconspicuous, anterior margin setose, the apical tuft the most conspicuous, 5th joint equal to 4th, almost without setae, 6th joint slightly curved, 1 mm. in length.

Second peraeopod incomplete, 1st joint 20 mm. long, ca. 12 spines (the basal ones inconspicuous) on posterior margin, none on thickened anterior edge, 2nd joint with 3 spines on posterior margin, 3rd joint 9 mm. long, with 14 spines on hind margin, 4th joint 11 mm. long, with ca. 20 spines on hind margin, a small one alternating with a larger on 3rd and 4th joints, 5th and 6th joints lost.

Third peraeopod ca. 82 mm. in length, 1st joint 25 mm. long, greatest width 5 mm., anterior apex strongly produced as a triangular projection as long as 2nd joint, anterior and posterior margins with small spines, 3rd joint 14 mm. in length, 4 mm. in width, 4th joint 20 mm. in length and 3 mm. in width, 5th joint 20 mm. in length, 6th joint straight, 1 mm. long.

Fourth peraeopod ca. 68 mm. in length, 1st joint 19 mm. long and 3 mm. wide, anterior and posterior margins with inconspicuous spines, 3rd joint 11 mm. long and 3 mm. wide, 4th joint 16 mm. long and 3 mm. wide, anterior margin of 3rd and 4th spinose, 5th joint 19 mm. long, 6th joint straight.

Fifth peraeopod 36 mm. in length, 1st joint 11 mm. long and 2 mm. wide, 3rd joint 6 mm. long, 4th joint 7 mm. long, anterior margin of 1st, 3rd and 4th spinose, 5th joint 10 mm. long, widening from 1.5 mm. at base to 2.5 at the point where palm meets inner margin, the former straight, the latter slightly concave, meeting at about an angle of 120°, almost completely filled with glands, 6th joint strongly curved, almost meeting middle of palm, finely setose.

Branchial lamellae at bases of 2nd, 3rd and 4th peraeopods, obovate, subequal in size.

Pleopods without special features.

First uropods measuring 20 mm. from base to apex of inner ramus which is fused with peduncle, width of peduncle 5 mm., both margins spinulose, length of inner ramus 5 mm., width at base 4 mm.

Second uropods measuring 15 mm., width 4 mm., inner ramus 4 mm. long and 3 mm. wide, outer ramus 5 mm. long and 1 mm. wide.

Locality: Buffalo River (East London) NW. by N., distant 21 miles. 490 fathoms. s.s. "Pieter Faure." 22/4/01. (S.A.M. No. A239.)

The particular features of this species are to be found in the head, the mandibles, third and fourth pereopods, and the uropods.

It is probable that when more material of all the species has been collected, an exhaustive comparison will lead to alterations in the diagnoses of the species. The other species of the genus are *C. spinosum* (Fabr.) 1775, *C. longipes* (Bov.) 1886, and *C. loveni* (Bov.) 1886. Stebbing in 1888 instituted provisionally *C. parkinsoni* and *C. fabricii*. Bovallius (1889, l.c. p. 45) calls attention to the close agreement in the measurements of the Challenger specimen F (*C. parkinsoni*) and *C. longipes*; the length of the antennae is distinctive, for in all other species they are shorter than the head. The locality of Bovallius' specimen (West coast of Australia) is not far removed from that of Stebbings' specimen (North of Amboina). I feel inclined therefore to reckon Stebbings' specimen F (*parkinsoni*) as a *C. longipes*.

The Challenger specimen G might possibly be a *C. loveni*, but a comparison is difficult. In the key given by Bovallius (l.c. p. 58) the measurements are in fair agreement, but it must be noted that Bovallius gives the length of the antennae of specimen G as "11 mm." instead of 20 mm. (Stebbing: $\frac{8}{10}$ inch). Leaving specimen G (*fabricii*) out of account, the species may be distinguished as follows:

Peduncle of uropods not twice the length of rami	}	Antennae longer than head, 14-18 teeth on lower margin . . . <i>C. lon-</i> <i>gipes</i> (Bov.).
	}	Antennae shorter than head, 13 teeth on lower margin . . . <i>C. spinosum</i> (Fabr.).
Peduncle at least twice the length of rami	}	A row of 6 spines on either side of mouth-parts . . . <i>C. africanum</i> n. sp.
	}	Only 2 spines on either side of mouth- parts <i>C. loveni</i> (Bov.).

Unfortunately I have been unable to consult Woltreck's paper on the "Valdivia" material (1902, Zool. Anz. xxvi. p. 447).

FAMILY LANCEOLIDAE.

1887. *Lanceolidae* Bovallius, Bih. Sv. Vet. Ak. Handl. vol. 11, no. 16, p. 5.
 1888. „ Stebbing, Challeng. Rep. vol. 29, p. 1301.
 1904. „ id. Tr. Linn. Soc. Lond. ser. 2, vol. 10, pt. 2, p. 28.
 1905. „ Woltereck, Zool. Anz. vol. 29, p. 413.
 1909. „ id. Bull. Mus. Comp. Zool. Harv. vol. 52, no. 9, p. 156.
 1907. „ id. *ibid.* vol. 31, p. 129.

GEN. SCYPHOLANCEOLA Woltereck.

1905. *Scypholanceola* Woltereck, l.c. p. 415.
 1909. „ id. l.c. p. 161.

SCYPHOLANCEOLA VANHOEFFENI Woltereck.

1909. *Scypholanceola vanhoeffeni* Woltereck, l.c. p. 167, pl. 7, figs. 24a (♂), 24b (♀).

Body dorsally rounded, not keeled. Rostrum triangular, base broader than length, not as long as rest of head, the "ocular cups" and "eye band" as figured by Woltereck. 1st and 4th peraeon segments subequal and shorter than 2nd and 3rd, which are also subequal. Side-plates 1-5 anteriorly narrowing to a point, scarcely reaching the posterior margins of their segments, 6 and 7 not reaching the anterior margins of their segments, posterior portion somewhat produced, subacute. Pleura neither spinose nor setose, rounded below.

Telson not quite reaching to $\frac{3}{4}$ length of peduncle of 3rd uropod, twice as long as its basal width.

First antenna as in *Lanceola aestiva* Stebbing 1888, but not serrate, reaching to end of 4th (penultimate) joint of 2nd antenna.

Second antenna, 2nd joint with prominent gland-cone as long as the joint, 3rd thrice 2nd, 4th twice 3rd, 5th lost on both sides.

Epistome as broad as long, upper lip broader than long, with very deep and fairly wide cleft, the lobes apically rounded.

Lower lip as in *Lanceola*.

Mandibles, anterior margin of trunk with a strong triangular projection or tooth, as figured for *L. aestiva*, 1st joint of palp a trifle broader than long, 2nd equal to length of trunk, 3rd $\frac{3}{4}$ length of 2nd, both joints setose, much the same as in *L. aestiva*.

First maxilla as figured for *L. pacifica* Stebbing, but inner margin

of inner plate scarcely concave, outer plate very much broader, ovate, broadest before the middle, thence tapering to a rounded apex with 3-4 spinules, 6-7 spinules on inner distal margin and many smaller ones on outer margin.

Second maxilla, apices of lobes strongly setose with 9 strong spines on outer plate and 11 on inner, arranged irregularly.

Maxilliped as figured for *L. aestiva*, but the apices of the lobes of inner plate blunter.

First and second gnathopods as in *L. aestiva*.

First and second pereopods 18 mm. long, 2nd joint longest, 5 mm., 4th and 5th each 4 mm., 6th 4.5 mm.

Third pereopod 20 mm. long, 2nd joint 7 mm., 4th 5.5 mm., 5th 4 mm., 6th 3.5 mm.

Fourth pereopod, 22.5 mm. long, 2nd joint 6.5 mm., 4th 5 mm., 5th 4 mm., 6th 7 mm.

Fifth pereopod, 11 mm. long, 2nd joint 4 mm., 4th and 5th each 2 mm., 6th 3 mm.

The first gnathopod very feebly spinulose, the 2nd and all the pereopods neither spinulose nor setose.

Branchial lamella of 2nd gnathopod and 1st pereopod very small, 1 mm. long; that of remaining pereopods 4-5 mm. long, oval, non-setose.

Uropods all extending as far as one another, the peduncle 1st, 2nd and 3rd being respectively 5, 4 and 3 mm. long, the rami of all about the same length, narrow-lanceolate, inner ramus of 3rd the broadest.

Length: Ca. 27 mm. (from end of rostrum to end of telson).

Colour: In spirit, transparent white, the internal lining of the paeon purplish-brown.

Locality: Cape Point NE. by E., distant 36 miles. 650 fathoms. 1 ♂. s.s. "Pieter Faure." 15/7/03. By tow-net on beam of trawl. (S.A.M. No. A2733.)

Geogr. Distribution: Antarctic Ocean. 10/3/03. "Gauss" Expedition; Indian Ocean, Sta. 239 (=4°-6° S., 48°-41° E.). "Valdivia" Expedition.

FAMILY PHROSINIDAE.

1888. *Phrosinidae* Stebbing, Challenger Rep. vol. 29, p. 1423 (references).

1910. ,, id. Gen. Cat. S.A. Crust. p. 476.

GEN. PHROSINA Risso.

1822. *Phrosina* Risso, J. de Phys. Chim. Hist. Nat. vol. 94, p. 244.
 1889. „ Bovallius, K. Sv. Vet. Ak. Handl. vol. 22, no. 7,
 p. 421.

PHROSINA SEMILUNATA Risso.

1822. *Phrosina semilunata* Risso, l.c. p. 245.
 1888. „ „ Stebbing, l.c. p. 1425, pl. 176 (references
 and synonymy).
 1889. „ „ Bovallius, l.c. p. 426, pl. 18, figs. 3-30
 (references and synonymy).
 1900. „ „ Chevreux, Res. Camp Sci. Monaco, fasc. 16,
 p. 147.
 1901. „ „ Vosseler, Ergebn. Plankton Exp. Amphip.
 pt. 1, p. 89, pl. 8, figs. 18-20.
 1904. „ „ Walker in Herdman's Ceylon Pearl Fish.
 Suppl. Rep. 17, p. 230.
 1909. „ „ Walker, Tr. Linn. Soc. Lond. vol. 13,
 pt. 1, p. 52.
 1910. „ „ Stebbing, l.c. p. 477.
 1912. „ „ Pearse, Proc. U.S. Nat. Mus. vol. 43
 [1913], p. 378.
 1913. „ „ Stewart, Ann. Mag. Nat. Hist. ser. 8,
 vol. 12, p. 257.

The single specimen taken by the s.s. "Pieter Faure" represents the form *P. nicetensis* as figured by Bate (1862, Cat. Amphip. Crust. Brit. Mus. p. 320, pl. 51, fig. 6), with one or two minor differences.

Third and fourth pleon segments with median tooth on posterior margin.

Pleura of 1st to 3rd segments with the postero-inferior angles acute.

First antenna, 1st joint as broad as long, 2nd joint 3 times length of 1st.

First peraeopod, 4th joint $1\frac{1}{2}$ times as long as broad, inferior margin equal to palm, with strong spine at their junction, palm with 5 denticles, 5th and 6th joints together longer than palm.

Second peraeopod, 4th joint ovate, a long stout spine springing almost from base, the inferior (posterior) margin being very short, palm very oblique, with 6 denticles, the 2 nearest the hinge of finger smaller than the others, 5th and 6th joints together only a little longer than palm.

Third peraeopod, 1st joint not more than $1\frac{1}{2}$ times as long as broad, 4th joint ovate, with 6 sharp teeth on anterior margin, the 2nd and 6th teeth smaller than the others.

Fourth peraeopod spiniform posterior apex of 3rd joint not extending quite half way along posterior margin of 4th, 4th joint with 4 teeth on palm, the 2nd and 4th teeth smaller than the other two.

Fifth peraeopod intermediate between that figured for *P. nicetensis* by Bate and that for *P. semilunata* by Stebbing (1888, l.c. pl. 176), posterior margin very convex basally, then narrowing rapidly to the truncate and slightly emarginate apex, anterior margin nearly straight.

Length: 18 mm. (to end of uropods), 3rd peraeopod 16 mm.

Colour: In spirit colourless, transparent, the muscles and ommatidia of the eyes brownish.

Locality: Buffalo River NW. by N., distant 21 miles (off East London). 490 fathoms. s.s. "Pieter Faure." 22/4/01. 1 ♀ with ova. (S.A.M. No. A104.)

Geogr. Distribution: Mediterranean (Risso and M. Edwards); Cape of Good Hope (Paris Museum); North and South Atlantic, 0-ca. 800 fathoms (Challenger and Plankton Exp.); Indian and Pacific Oceans (Bovallius); Indian Ocean, between Socotra and Ceylon (Walker); Azores (Chevreux); Gulf of Mexico (Pearse); near Cape of Good Hope (Stewart); Chagos Archipelago, 0-1200 fathoms (Walker).

FAMILY PRONOIDAE.

1879. *Pronoidae* Claus, Zool. Inst. Univ. Wien. vol. 2, pp. 149, 168.

1910. ,, Stebbing, Gen. Cat. S.A. Crust. p. 479.

GEN. PARAPRONOË Claus.

1879. *Parapronoë* Claus, Die Gatt. u. Art. d. Platysceliden, pp. 23, 29.

1886. ,, Gerstaecker in Bronn's Klass. u. Ordn. vol. 5, pt. 2, p. 485.

1887. ,, Bovallius, Bih. K. Sv. Vet. Ak. Handl. vol. 11, no. 16, p. 42.

1887. ,, Claus, Die Platysceliden, pp. 48, 53.

1888. ,, Stebbing, Challenger Rep. vol. 29, p. 1521.

PARAPRONÖE CLAUSI Stebbing.

1888. *Parapronöe clausi* Stebbing, l.c. p. 1526, pl. 190.

A few small differences are observable between the Australian and South African specimens :

First gnathopod, 5th joint not longer than 4th, more as in *P. crustulum* Claus (see figure by Stebbing, l.c. pl. 193A).

Second gnathopod, the inner margin of the process of 4th joint even more convex than in Stebbing's figure and more strongly dentate, the inner margin of the 5th joint on the contrary less convex.

Telson in the female comparatively broader, about $1\frac{1}{2}$ times as long as basal breadth, apex reaching the apex of the inner ramus of 3rd uropod. In the smaller (♀ ♂) specimen the telson like the typical form.

The mouth parts were not examined since they seemed firmly united into a solid mass, perhaps due in some manner to the method of conservation.

Length: ♀ 25 mm., (♀) ♂ 17 mm., embryos from brood-pouch 1 mm.

Colour: In spirit, yellowish-brown, without spots of any colour.

Locality: East London NW. $\frac{1}{2}$ N., distant 20 miles. 400 fathoms. s.s. "Pieter Faure." 17/4/01. 1 ♀ and 1 (♀) ♂. (S.A.M. No. A108.)

Geogr. Distribution: South of Australia, 39° 45'S., 140° 40' E. (Stebbing); South Pacific (Stebbing). Surface.

	PAGE	G	PAGE
crenatipalma (Lembooides)	240		
crenulata (Socarnopsis)	124	<i>gaimardii</i> (Ampelisca)	133, 139
<i>crenulata</i> (Stenothoe)	154	<i>gaimardii</i> (Byblis)	139
cristatus (Podocerus)	276	gallensis (Stenothoe)	154
cubensis (Lysianassa)	120	<i>Gammarellus</i>	148, 170, 226
CYAMIDEA	279	GAMMARIDAE	186
Cyphocaris	116	GAMMARIDEA	106
<i>Cyrtophium</i>	271	<i>Gammaropsis</i>	249
Cystisoma	286	Gammarus	202
CYSTISOMATIDAE	286	gaudichaudii (Hyperia)	285
		<i>georgianus</i> (Hyale)	234
D		Gitanopsis	144
danilevskii (Caprella)	280	<i>gracilis</i> (Leucothoe)	150
dassenensis (Parorchestia)	227	grandicornis (Hyale)	230
<i>dentatum</i> (Podocerus)	276	<i>grandimana</i> (Leucothoe)	150
DEXAMINIDAE	210	granulosa (Nototropis)	173
<i>Dexiocerella</i>	276	grimaldii (Rhachotropis)	178
diadema (Ampelisca)	133	Grubia	257
diastoma (Hyale)	232	<i>Guerinia</i>	106
<i>diemenensis</i> (Leucothoe)	150	Guernea	213
diodon (Bruzelia)	168		
dolichoceras (Leucothoe)	151	II	
dolichommata (Photis)	247	Haliceuon	165
dolichopopus (Stenothoe)	153	<i>Halimedon</i>	162, 163
DULICHIDAE	274	hamigera (Maera)	196
durbanensis (Cheiriphotis)	247	HAUSTORIIDAE	142
durbanensis (Laetmatophilus)	275	<i>helleri</i> (Caprella)	280
DYOPEIDAE	274	<i>Helleria</i>	213
		Hippomedon	125
E		hirondellei (Maera)	194
eastwoodae (Talitriator)	223	hirtipalma (Hyale)	234
<i>Egidia</i>	143	Hyale	229
<i>Eiscelades</i>	242	<i>Hyalella</i>	224
Elasmopus	197	hypacanthus (Lembos)	237
<i>elegans</i> (Rhachotropis)	179	Hyperia	285
Epimeria	170	HYPERIIDAE	285
EPIMERIDAE	170		
equilibra (Caprella)	281	I	
Eriopisa	187	Ichnopus	122
<i>Eriopsis</i>	187	imminens (Eurystheus)	250
<i>erythraea</i> (Ampithoe)	253	inaequipes (Maera)	193
Euonyx	110	inaequistylis (Melita)	191
Eurystheus	249	<i>inca</i> (Hyale)	234
EUSIRIDAE	174	<i>inermis</i> (Caprella)	280
Eusiroides	174	<i>ingens</i> (Jassa)	263
<i>exilii</i> (Melita)	190	insignis (Triodos)	140
		<i>integrimana</i> (Maera)	193
F		<i>intermedia</i> (Ampithoe)	253
falcata (Jassa)	262	inyacka (Hyale)	233
<i>falklandi</i> (Ampithoe)	255	<i>Iphimedia</i>	183
faurei (Cyphocaris)	117	<i>irrostrata</i> (Urothoe)	143
<i>fimbriata</i> (Hyale)	234	Isaeopsis (Jassidae)	267
<i>fischeri</i> (Orchestia)	217	ISCHYROCERIDAE	262
<i>flindersi</i> (Cerapus)	271	Ischyrocerus	264
fresnelii (Melita)	189		

	PAGE		PAGE
PONTOGENEIIDAE	183	<i>sylvicola</i> (Parorchestia)	226
PONTOPOREIDAE	142	<i>symbiotica</i> (Aristias)	121
<i>prevostii</i> (Hyale)	230	<i>synaptochir</i> (Podocerus)	279
<i>Prianassus</i>	213	SYRRHOIDAE	168
PRONOIDAE	293		
<i>Proto</i>	283	T	
<i>proxima</i> (Liljeborgia)	167	<i>Talitriator</i>	220
<i>Pseudotryphosa</i>	126	TALITRIDAE	215
<i>pulchella</i> (Jassa)	262	<i>Talorchestia</i>	215
<i>pulchella</i> (Urothoe)	143	<i>taurus</i> (Ichnopus)	123
<i>purus</i> (Laetmatophilus)	274	<i>Temnophilus</i> (Phliantidae)	158
<i>pusilla</i> (Gitanopsis)	144	<i>tenax</i> (Isaeopsis)	267
		<i>tenuicornis</i> (Melita)	191
Q		<i>tenuipes</i> (Polycheria)	211
<i>quadrispinosa</i> (Talorchestia)	217	<i>tenuis</i> (Parorchestia)	226
		<i>Thaumatops</i>	286
R		THAUMATOPSIDAE	286
<i>Rachotropis</i>	178	<i>thomsoni</i> (Maera)	195
<i>recens</i> (Parorchestia)	226	TIRONIDAE	168
<i>reinhardi</i> (Photis)	243	<i>tridens</i> (Laetmatophilus)	275
<i>Rhachotropis</i>	178	<i>trigonochir</i> (Hyale)	234
<i>richardi</i> (Cyphocaris)	116	<i>Triodos</i> (Ampeliscidae)	140
<i>richiardii</i> (Leucothoe)	150	<i>triquetra</i> (Plioplateia)	156
<i>rubricata</i> (Ampithoe)	253, 255	<i>Trischizostoma</i>	106
		<i>Tritaeta</i>	211
S		<i>Tritopsis</i>	178
<i>saldanha</i> (Hyale)	229	<i>truncatipes</i> (Maera)	193
<i>scissimana</i> (Maera)	193	<i>Tryphosella</i>	126
<i>Scypholanceola</i>	290	<i>tuberculatus</i> (Laetmatophilus)	274
<i>semiarmata</i> (Epimeria)	171	<i>tumida</i> (Nicippe)	161
<i>semidentatus</i> (Eurystheus)	250	<i>typica</i> (Aora)	236
<i>semilunata</i> (Phrosina)	292		
<i>serricus</i> (Ichnopus)	123	U	
<i>serrula</i> (Elasmopus)	197	<i>Uristes</i>	126
<i>setipes</i> (Melita)	189	<i>Urothoe</i>	143
<i>Siphonoecetes</i>	269		
<i>Socarnopsis</i>	124	V	
<i>spinicarpa</i> (Leucothoe)	148	<i>vallantii</i> (Ampithoe)	253
<i>spinicornis</i> (Ichnopus)	123	<i>validum</i> (Jassa)	263
<i>spiniger</i> (Caprellina)	282	<i>validus</i> (Melita)	189
<i>Squilla</i>	283	<i>vanhoeffeni</i> (Scypholanceola)	290
<i>stebbingi</i> (Macropisthopous)	260	<i>ventricosa</i> (Proto)	283
STEGOCEPHALIDAE	128	<i>verticillatus</i> (Hyale)	230
<i>Stegocephaloides</i>	128	<i>Vijaya</i>	114
<i>Stegocephalus</i>	131	<i>villosa</i> (Hyale)	234
<i>Stenothoe</i>	153		
STENOTHOIDAE	152	Z	
<i>Stomacontion</i>	109	<i>zeylanica</i> (Melita)	191
<i>suensis</i> (Maera)	196		

EXPLANATION OF PLATES.

PLATE XXVI.

FIG.

1. *Trischizostoma paucispinosum* n. sp. 1st gnathopod, with palm further enlarged.
2. *Paravalettia chelata* n. g. et sp. 1st gnathopod, with hand further enlarged.
3. " " " 2nd gnathopod.
4. *Cyphocaris faurei* n. sp. 4th and 5th side-plates with 2nd joints of 3rd and 4th pereopods.
5. *Stegocephaloides attingens* n. sp. 5th pereopod.
6. *Ampelisca miops* n. sp. 5th pereopod.
7. " *natalensis* n. sp. 5th pereopod.
8. *Triodos insignis* n. g. et sp. Lateral view of 4th and 5th pleon segments with telson and 3rd uropod.
9. " " " Telson.
10. " " " 5th pereopod.
11. *Gitanopsis pusilla* n. sp. Telson and 3rd uropod.
12. " " " 2nd gnathopod, with portion of palm further enlarged.
13. *Peltocora australis* n. sp. 2nd gnathopod, with portions of palm and inner margin of finger further enlarged.
14. *Leucothoe dolichoceras* n. sp. 2nd gnathopod ♂, with lower portion of palm further enlarged.
15. *Stenothoe dolichopous* n. sp. 4th side-plate of right side.
16. " " " 1st gnathopod.
17. " " " 2nd gnathopod.
18. *Plioplateia triquetra* n. g. et sp. Lateral view of ♀, with antennae but without appendages of pereon and pleon.
19. " " " 1st maxilla, with one spine further enlarged.
20. " " " Maxilliped, with portion of 4th joint of palp further enlarged.
21. " " " 1st pleopod.
22. " " " 3rd pleopod.
23. " " " 3rd uropod.
24. " " " 6th and 7th joints of 1st gnathopod.

FIG.

25. *Temnophlias capensis* n. g. et sp. Dorsal view of ♂, with pleon flexed, and without appendages of peraeon and pleon.
26. " " " Lateral view of 2nd pleon segment of ♂.
27. " " " Maxilliped, with apex of inner plate further enlarged.
28. " " " 1st and 2nd maxillae, with apex of 2nd and one spine from 1st further enlarged.
29. " " " 2nd peraeopod ♂.
30. " " " Telson.
31. " " " 3rd uropod ♀.
32. " " " 2nd uropod ♀.
33. " " " 1st uropod ♂, with portion of inner margin of ramus further enlarged.
- 34, 35. " " " 2nd uropod ♂, viewed from above and from the outside respectively.

PLATE XXVII.

FIG.

1. *Bathymedon palpalis* n. sp. Telson.
2. " " " Mandibular palp.
3. " " " 1st gnathopod.
4. *Halicreion* (?) *ovalitelson* n. sp. Telson.
5. *Epimeria semiarmata* n. sp. 4th and 5th side-plates of right side.
6. " *longispinosa* n. sp. 4th and 5th side-plates of right side; a portion of the surface sculpturing has been drawn in and portion of this further enlarged:
7. *Cleonardopsis carinata* n. g. et sp. 2nd and 3rd pleon segments.
8. " " " 5th and 6th side-plates of right side.
9. " " " Telson.
10. *Rhachotropis paeneglaber* n. sp. 2nd-4th pleon segments.
11. *Maera hamigera* (Haswell). 6th and 7th joints of 2nd gnathopod of immature specimen.
12. " " " 6th and 7th joints of 2nd gnathopod of immature adult specimen.
13. *Elasmopus boeckii* (Haswell). Telson.
14. " " " 6th and 7th joints of 2nd gnathopod.
15. *Elasmopus levis* n. sp. 6th and 7th joints of 2nd gnathopod.
16. *Eriopisa capensis* n. sp. Mandibular palp.
17. " " " Telson.
18. " " " 5th, 6th, and 7th joints of 2nd gnathopod.
19. " " " 3rd uropod.
20. *Gammarus capensis* n. s.p. Telson.
21. " " " Gland-cone on 2nd antenna.
22. " " var. *a.* Telson.
23. " *nigroculus* n. sp. Telson.
24. " *crassicornis* n. sp. Telson.
25. " " " 2nd antenna ♂.

FIG.

26. *Gammarus auricularius* n. sp. 2nd, 3rd, and 4th joints of second antenna ♂.
 27. " " " 4th-7th joints of 1st pereopod ♂.
 28. " " " Telson.
 29. *Talorchestia quadrispinosa* n. sp. 6th and 7th joints of 2nd gnathopod ♂.
 30. " " " 2nd joint of 4th pereopod ♂.
 31. " " " 2nd joint of 5th pereopod ♂.
 32. " " " abnormal 2nd gnathopod of ♂ (4th-7th joints).
 33. " *australis* n. sp. 4th-7th joints of 1st gnathopod ♂.
 34. " " " 4th-7th joints of 2nd gnathopod ♂.
 35. " *ancheidos* n. sp. 4th-7th joints of 1st gnathopod ♂.
 36. " " " 4th-7th joints of 2nd gnathopod ♂.
 37. *Hyale saldanha* Chilton. 5th pereopod.
 38. *Chiltonia capensis* n. sp. 4th joint of palp of maxilliped.
 39. " " " 1st gnathopod.
 40. " " " Telson and 3rd uropods.

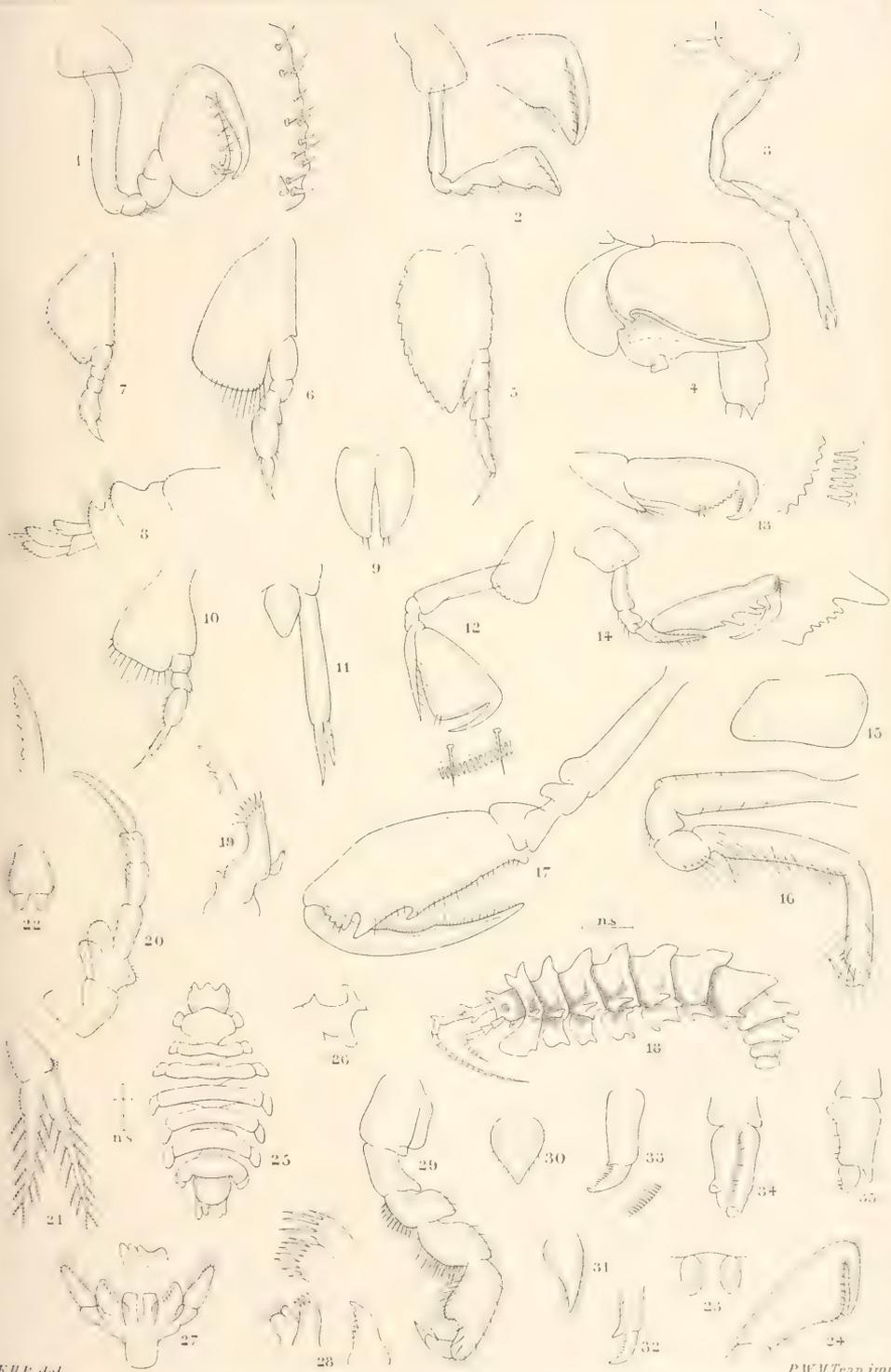
PLATE XXVIII.

FIG.

1. *Parorchestia dassenensis* n. sp. 4th-7th joints of 1st gnathopod ♂.
 2. " " " 4th to 7th joints of 2nd gnathopod ♂.
 3. *Hyale diastoma* n. sp. 4th-7th joints of 2nd gnathopod ♀.
 4. " *inyacka* n. sp. 5th pereopod, with 7th and end of 6th joint further enlarged.
 5. *Lembos hypacanthus* n. sp. 6th and 7th joints of 1st gnathopod ♂, with defining angle of palm further enlarged.
 6. " " " 2nd joint of 2nd gnathopod ♂.
 7. *Lemboides acanthiger* n. sp. 6th and 7th joints of 1st gnathopod ♂.
 8. " " " 6th and 7th joints of 2nd gnathopod ♂.
 9. " *crenatipalma* n. sp. 1st gnathopod ♂, with palm and finger further enlarged.
 10. " " " 2nd gnathopod ♂, with palm and finger further enlarged.
 11. *Eurystheus afer* (Stebbing). 6th and 7th joints of 2nd gnathopod ♂.
 12. " *imminens* n. sp. 6th and 7th joints of 2nd gnathopod ♂, with middle tooth of palm further enlarged.
 13. " *semidentatus* n. sp. 6th and 7th joints of 2nd gnathopod ♂.
 14. " " " Palm and finger of 2nd gnathopod ♀.
 15. *Macropisthopous stebbingi* n. g. et sp. 5th-7th joints of 1st gnathopod, with 7th and apex of 6th joint further enlarged.
 16. " " " 5th pereopod ♂, with portion of surface sculpturing further enlarged.
 17. " " " Telson and 3rd uropod.

FIG.

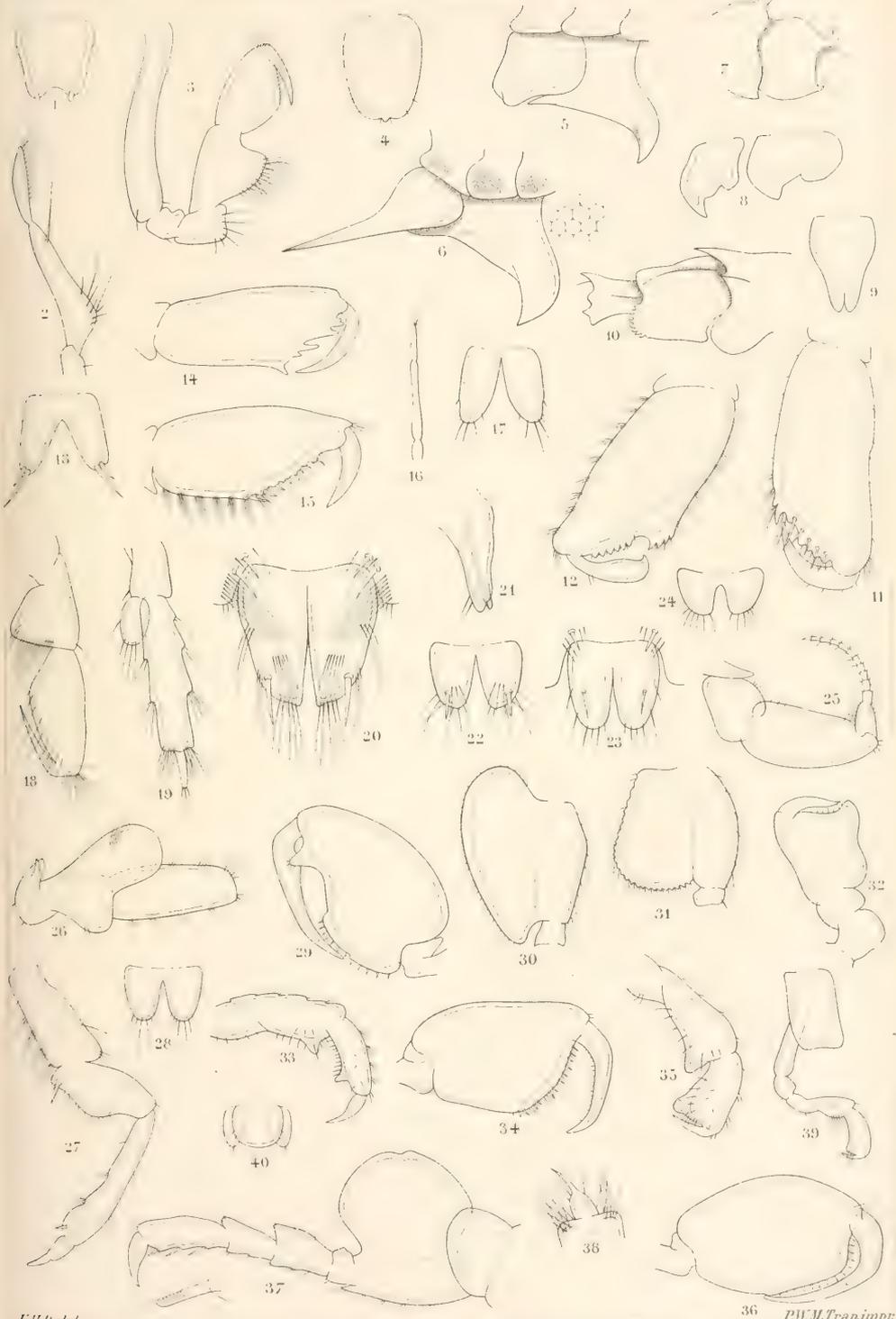
18. *Ischyrocerus carinatus* n. sp. 1st and 2nd peraeon segments, side-plates and gnathopods, with palmar tooth of 2nd gnathopod further enlarged.
19. *Isaeopsis tenax* n. g. et sp. 6th and 7th joints of 1st peraeopod.
20. " " " 5th peraeopod, with finger further enlarged.
21. " " " Telson and 3rd uropods, with outer ramus further enlarged.
22. *Lactmatophilus tridens* n. sp. 2nd gnathopod ♂.
23. *Podocerus palinuri* n. sp. Head and 1st and 2nd peraeon segments.
24. " *africanus* n. sp. 2nd joint of 1st peraeopod.
25. " " " 2nd joint of 5th peraeopod.
26. *Photis longicaudata* (B. & W.) 6th and 7th joints of 2nd gnathopod of ♂, view of inner surface.
27. *Stomacontion capense* n. sp. 1st side-plate.
28. " " " 1st antenna.
29. *Stegocephalooides australis* n. sp. 5th peraeopod.
30. *Ampelisca palmata* n. sp. 6th and 7th joints of 1st gnathopod, with palm further magnified, the setae omitted.
31. " " " 5th peraeopod.
32. *Melita fresnelii* (Audouin). 1st-6th segments of pleon, the median tooth shown in segments 1-4.
33. *Elasmopus pecteniscrus* (Bate). Lower hind margin of 2nd joint of 4th peraeopod.
34. *Ampithoe brevipes* (Dana). 6th and 7th joints of 2nd gnathopod, with seta from palm further enlarged.
35. *Caprellina spiniger* n. sp. Head and peraeon segments 1-4 of ♀, with dorsal tubercles of segments 3 and 4 seen from behind.



K.H.E. del

P.W.M. Trap. impr.

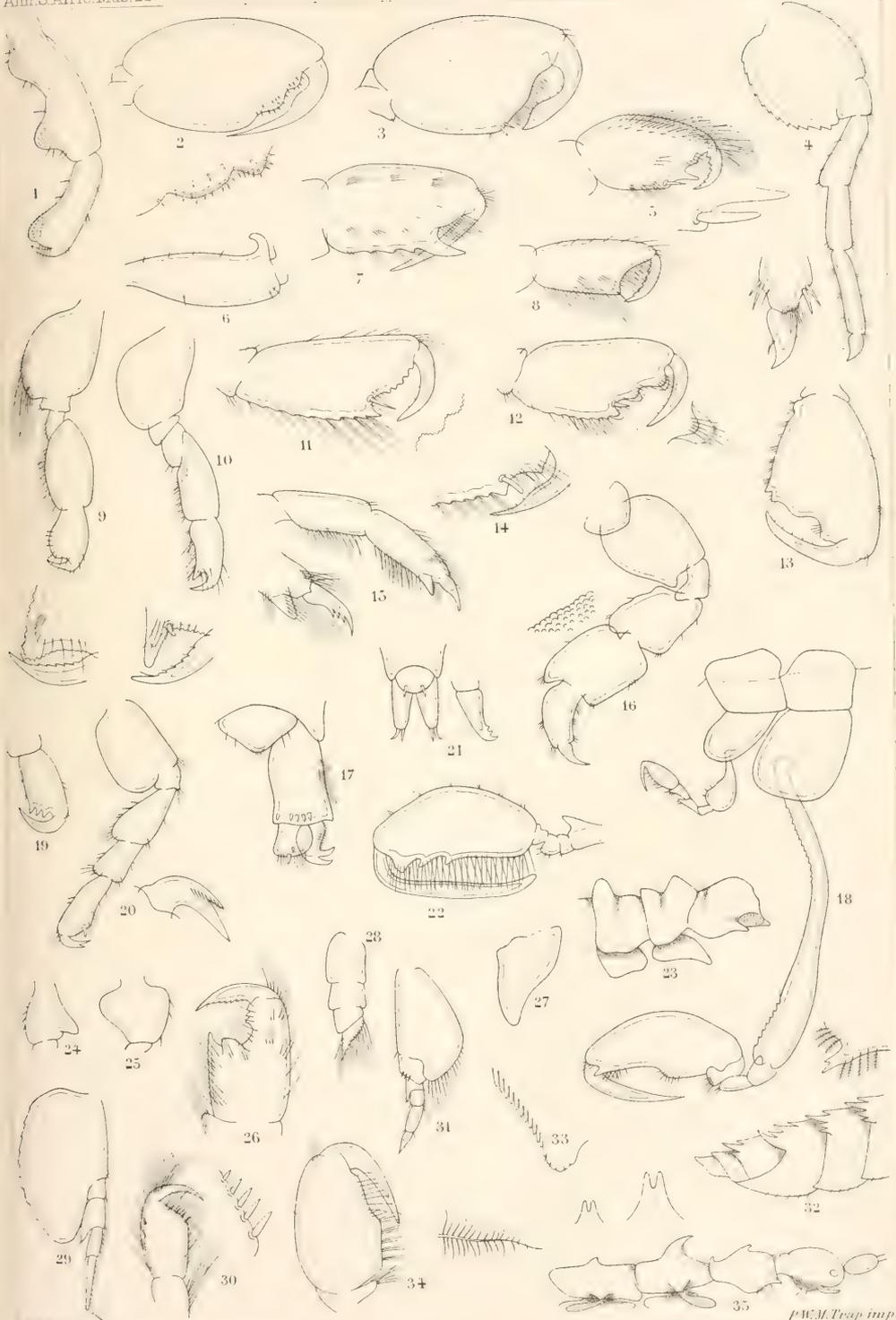
SOUTH AFRICAN AMPHIPODA.



K.H.E. del.

P.W.M. Trap. impr.

SOUTH AFRICAN AMPHIPODA.



K.H.B. del.

P.W.M. Trap imp.

SOUTH AFRICAN AMPHIPODA.

4.—*The Fresh-water Entomostraca of Cape Province (Union of South Africa)*.—By G. O. Sars. Part I: Cladocera. With 13 plates.

(Plates XXIX–XLI.)

INTRODUCTION.

UNDER the above title I intend to give an account of all the forms of fresh-water Entomostraca from *Cape Colony*, which have as yet come under my notice, with short descriptions and easily recognisable figures of each species. The present part only deals with the *Cladocera*; in two or three succeeding parts the *Ostracoda* and *Copepoda* will be treated of in a similar manner.

In the General Catalogue of South African Crustacea published by the Rev. T. R. R. Stebbing in the present Annals, vol. vi, nineteen species of Cladocera are enumerated. Nine of these had been described by the present author in a previous paper* from specimens raised out of dried mud from Knysna, and in another paper† two other species belonging to the Fauna of Sumatra were also stated to occur in Cape Colony. The remaining eight species have been recorded chiefly by Prof. Brady from the neighbourhood of Natal. In the present paper more than twice as many species, viz. forty-three, will be described as belonging to the Fauna of Cape Colony, eleven of which are apparently new to science.

The greater number of the forms here treated of have been reared from dried mud in my aquaria, and have been domesticated for several years and in numerous successive generations. I have thereby been enabled to subject the said species to a very thorough investigation, and at the same time to give good and characteristic figures of them, representing the animals as they appear in the fresh and living state. The great advantage attained by this method for the study of exotic fresh-water Entomostraca will be easily appreciated. For thereby not only will, as a rule, a sufficient number of specimens of each species be obtained for examination and comparison, but this method permits the study of the biological relations of the species, their growth, movements, propagation, and seasonal variation. Especially as regards the *Cladocera*, the

* On some South African Entomostraca raised from dried mud. Chr. Vid. Selsk. Skrifter f. 1895.

† Fresh-water Entomostraca from China and Sumatra. Arch. f. Mathem. u. Naturv. 1903.

said method has proved to be of invaluable service, as these very delicate organisms scarcely admit of being satisfactorily examined except in the fresh and living condition. By immersion in alcohol or any other preserving fluid, they very soon not only lose much of their beauty and transparency, but in many cases even become more or less deformed by the contraction of the softer parts and the inconvenient twisting of the natatory antennae and the caudal part, so as to be less serviceable for an exact examination. The imperfectness of the habitus-figures generally given of exotic Cladocera is indeed in most cases due to the above-mentioned injurious action of the preserving fluid on the specimens examined.

The mud which has been placed at my disposal was taken from four different localities in Cape Colony, viz.:

(1) *Knysna*. Four parcels collected by Mr. Theson from a swamp in 1890 and 1891.

(2) *Port Elizabeth*. Three parcels kindly forwarded to me in 1897, 1899 and 1900 by Mr. Hodgson, and collected by his brother from a "vley" near that town.

(3) *Green Point Common*. Several small parcels kindly sent to me in 1898 and 1899 by Dr. Purcell.

(4) *Cape Flats and neighbourhood of Bergvliet, Cape Town*. A large quantity of mud from four different localities kindly sent to me by Dr. Purcell in 1909.

Moreover, I have received from the South African Museum, through the kind intervention of Dr. Purcell, a number of alcoholic samples taken from different localities in the neighbourhood of Cape Town.

It will be seen from the above communication that a very extensive material for the study of the fresh-water Entomostraca of the Cape Colony has been placed at my disposal, and I venture, therefore, to believe that the present account will be rather a complete one, comprising in reality the great majority of the species which are to be found in that region.

The *Cladocera* of Cape Colony belong to the three following families; *Daphniidae*, *Macrothricidae* and *Chydoridae*; the *Sididae*, *Bosminidae* and *Polyphemidae* not being represented.

FAM. DAPHNIIDAE.

GEN. 1. DAPHNIA, O. Fr. Müller.

Remarks.—In his Revision of the Cladocera Dr. J. Richard has divided this genus into two groups, according to the presence or absence

of secondary denticles on the caudal claws. All the species treated of in the present paper belong to the first of these groups with denticulated caudal claws. This group again is divided by Dr. Richard into two subdivisions, according to the form of the cephalic fornix, which in the one subdivision is rather prominent, terminating behind on each side in a well-marked sharp corner, whereas in the second subdivision it is quite simple, without any projecting corner behind. Both these subdivisions are represented in the Fauna of Cape Colony, the first five species described below belonging to the former subdivision, the other two species to the latter. In my opinion the form of the cephalic fornix is of more essential significance than the armature of the caudal claws, and accordingly I should prefer to base the primary division upon this character, and to use the armature of the caudal claws in the second place for distinguishing two subdivisions of the one primary group.

1. DAPHNIA MAGNA, Straus.

(Plate XXIX, figs. 1, 1 a, b.)

Daphnia magna, Straus. Mém. Mus. d'Hist. Nat. vol. vi, 1820, p. 159, pl. 29, figs. 21 and 22.

Syn.: *Daphnia Schaefferi*, Baird.

Specific Characters—*Female*.—Valvular part of shell (carapace), seen laterally, broadly oval in outline, with the spine originating far above the axis of the body and more or less strongly upturned; denticles of dorsal edge extending about to the cervical region. Cephalic part of shell (head) of moderate size and rather procumbent, exhibiting on each side a well-marked arched keel running parallel to the dorsal edge, and in some cases accompanied by another imperfectly developed keel; fornix strongly prominent and terminating behind in a sharp corner; dorsal margin of head evenly curved and joining the almost straight ventral margin by an abrupt bend; rostrum slightly prominent, though obtuse at the tip. Eye of moderate size. Antennulae small, but well defined and conical in form. Tail-piece rather produced and considerably attenuated distally; posterior or dorsal edge deeply sinuated beyond the middle, dividing the anal denticles into two sets; apical claws rather slender and evenly curved, with the secondary denticles very delicate and densely crowded.

Remarks.—The above-characterised form is unquestionably identical with the well-known European species, *D. magna*, though the South African specimens differ a little from the typical ones in the form of the head and in the more strongly upturned shell-spine. The largest of the specimens examined had a length (without the shell-

spine) of 4·2 mm., whereas the European form may grow to a length of 5·3 mm.

Occurrence.—Numerous specimens of this form were contained in a sample taken by Dr. Purcell in September, 1896, from a dam at Touws River Station, Worcester Div. The species has recently been successfully reared in my aquaria from mud taken by Mr. Orjan Olsen from a pond near the Whaling Station at Saldanha Bay.

Distribution.—Throughout Europe, Turkestan, Palestine, Central Asia, Algeria, Tunis, Greenland.

2. DAPHNIA DOLICHOCEPHALA, G. O. Sars.

(Plate XXIX, figs. 2, 2 a, b.)

Daphnia dolichocephala, G. O. Sars. On some South African Entomostraca raised from dried mud. Chr. Vid. Selsk. Skrifter f. 1895, p. 4, pl. 1.

Specific Characters—Female.—Carapace, seen laterally, oblong oval in outline, and gradually contracted behind, with the spine of variable length and originating nearly in the axis of the body, though slightly upturned; denticles of dorsal edge extending (at least in ehippial specimens) beyond the cervical region. Head comparatively large, with the occipital part more or less bulging above, front sub-angular below; inferior edge quite straight; rostrum short and obtuse, slightly scabrous in front. Eyes well developed and occurring just within the frontal angle. Antennulæ small, knob-like, and originating from a broad fleshy protuberance immediately behind the rostrum. Tail-piece comparatively short and conical in form, with the hind edge quite straight, and denticles small, ten to twelve on each side, and not extending to the middle of the piece; apical claws short and thick, with the secondary denticles well marked. Intestinal tube forming a bold curve within the occipital part of the head.

Body pellucid, with a greenish tinge.

Length of shell (without the spine) reaching 3 mm.

Remarks.—This form was described by the present author as early as the year 1895 from specimens reared out of mud taken at Knysna, and its specific distinctness had been admitted by all subsequent authors, though in some respects it exhibits a certain resemblance to *D. atkinsoni*, Baird.

Occurrence.—I have reared this form from the Knysna mud and also from mud taken in another locality, viz. at Green Point Common, near Cape Town, and the same species was moreover contained in two alco-

holie samples kindly sent to me by Dr. Pureell, the one taken at Green Point Common, the other at Salt River, October 22nd, 1898.

The present species has not yet been recorded from other parts of the world.

3. *DAPHNIA HODGSONI*, n. sp.

(Plate XXIX, figs. 3, 3 a, b.)

Specific Characters—*Female*.—Carapace, seen laterally, rounded oval in outline, with the spine generally very long and obliquely turned upwards, issuing somewhat above the axis of the body; denticles of dorsal edge extending beyond the cervical region and in ephippial specimens of quite an unusual length, almost setiform. Head of moderate size and defined from the carapace above by a slight concavity of the dorsal margin; occipital part more or less produced in a hood-like manner, front scarcely angular below, the anterior and inferior edges being in some cases even quite continuous; rostrum, as in *D. dolichocephala*, short and obtuse, with a rather conspicuous scabrosity in front. Eye very large, with numerous refracting bodies. Antennulae about as in *D. dolichocephala*. Tail-piece, however, differing conspicuously both in form and armature, being comparatively larger, with the posterior edge angularly produced in the middle; anal denticles well developed and continued on each side of the proximal part by a well-marked lateral series almost extending to the base of the piece; apical claws comparatively larger than in *D. dolichocephala*.

Body highly pellucid, with a faint yellowish or greenish tinge.

Length of shell (without the spine) reaching 2.5 mm.

Remarks.—This form is allied to *D. dolichocephala*, but differs conspicuously in the shape of the head, and more particularly in the form and armature of the tail-piece. It is named in honour of Mr. Hodgson, to whom I am indebted for discovering this handsome species.

Occurrence.—Numerous specimens of this form developed in some of my aquaria prepared with mud from Port Elizabeth, and were watched for several successive generations. The female specimen figured on the plate belonged to the earlier generations. Later in the season the size of the specimens somewhat diminished, and at the same time the form of the head was slightly changed, the occipital part being less prominent. In ephippial females the carapace assumed a broadly rounded form, with the ephippium generally of a very dark colour and edged dorsally with unusually long, almost setiform denticles. The male of this species exhibits a very similar appearance to that of *D. dolichocephala*, as described in my former paper.

4. DAPHNIA CORONATA, n. sp.

(Plate XXX, fig. 1, 1a-f.)

Specific Characters—Female.—Carapace, seen laterally, oval in outline, with the spine rather coarse and turned obliquely upwards, originating considerably above the axis of the body. Head comparatively large, with the occipital part produced above to a hump-like protuberance, front rounded below, inferior edge straight; rostrum short and obtuse, resembling that in the two preceding species. Dorsal denticles of carapace rather coarse and arranged in a double series extending far in front, and on the occipital part of the head diverging to encircle a somewhat lozenge-shaped area just behind the hump-like protuberance. Eye of moderate size. Antennulae small, resembling in structure those in the two preceding species. Tail-piece exhibiting a similar form to that in *D. dolichocephala*, but having the apical claws comparatively larger and the anal denticles more coarsely developed.

Length of shell (without the spine) reaching 2 mm.

Remarks.—The above-described form is closely allied to *D. dolichocephala*, and indeed at first I was inclined to regard it as merely a variety of that species. On a closer examination, however, I have found that it ought to be distinguished specifically, as it differs very conspicuously in the shape of the head and more particularly in the peculiar ornamentation of the occipital part, which latter character has suggested the specific name here proposed. A somewhat similar ornamentation is also found in the form at first recorded by Dr. Richard under the name *D. bolivari*, but subsequently considered by that author to be a variety of *D. atkinsoni*, Baird, as also in the peculiar form described by the present author from the Central Asiatic lake Tennice as *D. triquetra*. The present form is, however, otherwise very different from either of these two species.

Occurrence.—Numerous specimens of this *Daphnia* (most of them still immature) were contained in an alcoholic sample kindly sent to me by Dr. Purcell, who procured it from a pond in the Karroo at Ashton, Robertson Division, August 26th, 1900. All the female specimens exhibited the same characteristic shape of the head and the same peculiar ornament of its occipital part. In the male, however, of which only a single specimen was found, this ornament was wholly wanting, as seen from the fig. 1f on the accompanying plate.

5. DAPHNIA THOMSONI, G. O. Sars.

(Plate XXX, figs. 2, 2 a-c.)

Daphnia thomsoni, G. O. Sars. Contributions to the knowledge of the Fresh-water Entomostraca of New Zealand. Chr. Vid. Selsk. Skrifter f. 1894, p. 5, pl. i.

Syn.: *Daphnia similis* Thomson (not Claus).

Specific Characters—Female.—Carapace, seen laterally, broadly oval in outline, with the spine rather thin and obliquely upturned, originating somewhat above the axis of the body. Head comparatively large and distinctly carinated throughout, being defined above from the carapace by a slight concavity of the dorsal margin, frontal part evenly rounded off, inferior edge straight and produced behind to a rather prominent acuminate rostrum. Dorsal denticles of carapace not extending beyond the cervical region. Eye of moderate size. Antennulæ extremely small, scarcely projecting beyond the hind edge of the head except with the apical papillæ. Tail-piece rather produced and tapering distally, with the hind edge somewhat flexuous, exhibiting below the anal fissure a slight sinus; anal denticles well developed, twelve to fourteen in number on each side; apical claws slender and evenly curved, with the secondary denticles well marked.

Body highly pellucid, with a faint yellowish or pale reddish tinge.

Length of shell (without the spine) reaching 3·7 mm.

Remarks.—This form was first recorded by Prof. Thomson from New Zealand under the name of *D. similis*; but as that name had been previously given by Claus to another species, it was changed by the present author to *D. thomsoni*. Its nearest ally is unquestionably the Australian species *D. carinata*, King, and not, as believed by Dr. Richard, *D. similis*, Claus. From the numerous varieties of the former species it is easily distinguished by the rather different shape of the tail-piece, which somewhat resembles that in *D. magna*.

Occurrence.—The present species, which has been fully described and figured in my paper on the New Zealand Entomostraca, was also reared in the year 1895 from the Knysna mud, and some specimens of the earlier generations were at that time secured and preserved for further examination and comparison. The figures given on the accompanying plate have been drawn from one of these specimens.

Distribution.—New Zealand.

6. DAPHNIA PROPINQUA, G. O. Sars.

(Plate XXXI, figs. 1, 1 a, b.)

Daphnia propinqua, G. O. Sars. On some South African Ento-

mostraca raised from dried mud. Chr. Vid. Selsk. Skrifter f. 1895, p. 9, pl. 2, figs. 1-8.

Specific Characters—Female.—Carapace, seen laterally, regularly oval in outline, with the spine very short and issuing about in the axis of the body; dorsal denticles only occupying the posterior half of the carapace. Head of moderate size and slightly carinated, with the fornix quite simple, not exhibiting any projecting corner behind; dorsal edge evenly curved, front broadly rounded below, inferior edge slightly concaved; rostrum terminating in a short deflexed point. Eye unusually large. Antennulæ small, but distinctly prominent, arising from a rounded fleshy protuberance behind the rostrum. Tail-piece slightly tapering distally and narrowly truncated at the end, with the hind edge a little bulging in the middle; anal denticles about twelve on each side, and extending to the middle of the piece; apical claws of moderate size and having the secondary denticles well marked.

Body highly pellucid, with a faint greenish-blue tinge.

Length of shell reaching 1·8 mm.

Remarks.—This form, like the following one, belongs to the group of *Daphnia* generally termed the “*pulex* group,” which agrees with the preceding species in the armature of the caudal claws with distinct secondary denticles, but differs materially in the quite simple fornix of the head. The nearest ally of the present species seems to be *D. obtusa*, Kurz., and indeed Dr. Richard is inclined to regard it merely as a variety of that species. It differs, however, conspicuously in the form of the head and in the presence of a well-marked, though short, shell-spine, which is obsolete in *D. obtusa*, as indicated by the specific name of that species.

Occurrence.—The specimens originally described by the present author were reared from mud taken at Knysna. I have subsequently had an opportunity of examining some additional specimens of the same form found in an alcoholic sample kindly sent to me from the South African Museum and procured by Dr. Purcell, April, 1896, from a small duck-pond at Salt River, near Cape Town. These specimens exactly agreed with those raised from the Knysna mud.

The present species has not as yet been recorded from other parts of the world.

7. *DAPHNIA TENUISPINA*, n. sp.

(Plate XXXI, figs. 2, 2 a, b.)

Specific Characters—Female.—Shell very thin and transparent, with the carapace, seen laterally, oval in outline and not defined from the head by any obvious concavity of the dorsal margin, spine very thin and fragile, issuing in the axis of the body and not at all upturned, in

some cases even prominently deflexed; denticles of the dorsal edge very small and only visible in the posterior part of the carapace. Head comparatively smaller than in *D. propinqua*, with the front less prominent and narrowly rounded below; rostrum well marked and somewhat less deflexed than in the said species. Eye of comparatively smaller size. Antennulae about as in that species. Tail-piece somewhat less produced and having the hind edge straight; anal denticles about ten on each side and scarcely extending to the middle of the piece; apical claws resembling in structure those in *D. propinqua*.

Length of shell reaching 1.8 mm.

Remarks.—In its general appearance this form is not unlike some of the many varieties of *D. longispina*, and could, therefore, easily at first sight be assigned to that species. A closer examination of the tail-piece, however, shows it in reality to belong to quite a different group of *Daphniae*, viz., to the “*D. pulex* group.” From the preceding species, which belongs to the same group, it is easily distinguishable by the different shape of the head and by the very thin and fragile shell-spine, which latter character has suggested the specific name here proposed.

Occurrence.—Numerous specimens of this form were contained in an alcoholic sample kindly sent to me by Dr. Purcell, who procured it, May, 1896, from a brick-pond at Bergvliet. The present species was not raised in my aquaria.

GEN. 2. SIMOSA, Norman.

Syn.: *Simocephalus*, Schoedeler.

Remarks.—As the name *Simocephalus*, given to this genus by Schoedeler and in general use by subsequent authors, has proved to be preoccupied, the above change of name was proposed in the year 1903 by Canon A. M. Norman. The genus originally comprised three well-defined European species, viz., *S. exspinosa* (de Geer), *S. vetula* (Müller), and *S. serrulata* (Koch). To these there have been added in recent times several other species from different parts of the world; but some of them exhibit such a close relationship to the one or the other of the three said European species, that their specific validity appears somewhat questionable. This may indeed apply to the three South African species described below.

8. SIMOSA AUSTRALIENSIS (Dana).

(Plate XXXI, figs. 3, 3 a, b.)

Daphnia australiensis, Dana. United States Exploring Expedition. Crustacea II, 1853, p. 1271, pl. 89, figs. 4 a-e.

Simocephalus australiensis, G. O. Sars. Additional Notes on Australian Cladocera. Chr. Vid. Selsk. Forhandl. f. 1888, p. 15, pl. 2, figs. 1-5.

Specific Characters—Female.—Carapace, seen laterally, obliquely oval or sub-rhomboid in outline, being only slightly expanded behind, dorsal margin almost straight in the greater part of its extent, but forming behind an abrupt curve before joining the well-marked posterior protuberance of the shell; the latter, as also the adjoining part of the dorsal edge strongly denticulated; posterior edges of valves somewhat flexuous and very oblique, joining the inferior ones without any intervening angle. Head comparatively small, though, as usual, having the fornix greatly expanded, front sub-angular below, rostral projection abruptly deflexed, and defined from the straight inferior edge of the head by an angular notch. Ocellus small, rhomboid in form. Tail-piece rather broad in its proximal part, with the supra-anal angle obtuse; anal denticles ten to twelve on each side and rapidly increasing in length distally; apical claws slender and nearly straight, with a number of distinct denticles at the base.

Colour more or less dark ochraceous.

Length of shell reaching 2·8 mm.

Remarks.—This form was rather imperfectly characterised and figured by Dana under the name of *Daphnia australiensis*, and was subsequently more fully described by the present author from specimens raised out of dried Australian mud. It is closely allied to the European species, *P. exspinosa* (de Geer), from which indeed it only differs in the somewhat unlike shape of the posterior part of the shell in adult female specimens.

Occurrence.—I have reared this form in considerable numbers from three different parcels of mud kindly sent to me by Dr. Purcell. The parcels were taken partly from pools in the Cape Flats, partly from swamps in the neighbourhood of Bergvliet. It was also reared from the Knysna mud.

Distribution.—Australia.

9. SIMOSA VETULOIDES (G. O. Sars).

(Plate XXXII, figs. 1, 1 a, b).

Simocephalus vetuloides, G. O. Sars. The Cladocera, Copepoda, and Ostracoda of the Jana Expedition. Annuaire du Musée Zool. de l'Acad. Imp. de St. Petersbourg, 1898, p. 5, pl. vi, figs. 11 and 12.

Specific Characters—Female.—Carapace, seen laterally, rounded trigonal in outline, being considerably expanded behind and terminating

in a short, obtuse protuberance located about in the axis of the body; dorsal margin strongly curved in its posterior part; hind edges of valves nearly straight and rather oblique, joining the inferior ones at a well-marked angle. Posterior part of dorsal margin strongly denticulated, the denticles being also continued on the terminal protuberance of the shell. Head somewhat more prominent than in the preceding species, with the front narrowly rounded below; rostral projection very small, and not defined in front by any notch. Ocellus forming a narrow stripe obliquely ascending from the base of the rostrum. Tail-piece resembling in shape that in the preceding species, though having the supra-anal angle somewhat more prominent; anal denticles 8-10 on each side; apical claws without any secondary denticles at the base.

Colour light yellow.

Length of shell reaching 2.2 mm.

Remarks.—The above-characterised form agrees fairly well with the species described in 1897 by the present author from specimens collected during the Russian Jana Expedition. As indicated by the specific name, it is nearly allied to the European species, *S. vetula* (Müller), differing, however, conspicuously in the shape of the carapace, the hind part of which exhibits a well-marked median protuberance, wholly wanting in *S. vetula*.

Occurrence.—Several specimens of this form were reared from one of the parcels of mud kindly sent to me by Dr. Purcell and taken from old gravel-pits at Bergvliet. The same form was also found in some of the alcoholic samples forwarded to me from the South African Museum and procured by Dr. Purcell in 1896 from ponds in the Cape Flats.

Distribution.—Siberia, Central Asia.

10. SIMOSA CAPENSIS (G. O. Sars).

(Plate XXXII, figs. 2, 2 a, b).

Simocephalus capensis, G. O. Sars. On some South African Entomostraca raised from dried mud. Chr. Vid. Selsk. Skrifter, 1895, p. 15, pl. 3.

Specific Characters—Female.—Carapace, seen laterally, broadly oval or somewhat rhomboid in outline, with a well-marked protuberance behind in the middle, dorsal margin evenly curved and slightly sinuated just above the said protuberance; hind edges of valves oblique and joining the inferior ones at an obtuse angle. Posterior part of dorsal margin denticulate, the denticles being continued on

the terminal protuberance, but not on the hind edges of the valves. Head comparatively small and somewhat prominent, with the dorsal margin evenly curved, front forming below an acute angle clothed anteriorly with a number of minute denticles; rostral projection extremely small. Eye comparatively large, with the refractive bodies very conspicuous; ocellus small, rhomboid in form. Tail-piece comparatively less broad than in the two preceding species, with the supra-anal angle rather produced; anal denticles about eight on each side; apical claws without secondary denticles at the base, but finely ciliated along the concave edge.

Colour light ochraceous, with a tinge of chestnut.

Length of shell reaching 2.4 mm.

Remarks.—This form, described by the present author in 1895, is allied to the European species *S. serrulata* (Koch), but differs somewhat in the shape of the head and in the armature of the hind part of the shell; the denticles being not, as in *S. serrulata*, continued on the posterior edges of the valves.

Occurrence.—This form was reared by the present author from mud taken at Knysna. It has also been recorded by Prof. Brady from Richmond, Natal. In other parts of the world it has not yet been observed.

GEN. 3. SCAPHOLEBERIS, Schoedeler.

Remarks.—Of this characteristic genus at least four well-defined species are known from the northern hemisphere. To the fauna of Cape Colony belongs another species, to be described below.

11. SCAPHOLEBERIS KINGI, G. O. Sars.

(Plate XXXII, figs. 3, 3 a, b).

Scapholeberis kingi, G. O. Sars. Fresh-water Entomostraca from China and Sumatra. Arch. f. Mathem. u. Naturv., 1903, p. 8, pl. 1, figs. 2, 2 a-c.

Syn.: *Daphnia mucronata*, King (not Müller).

Specific Characters—*Female*.—Carapace rather tumid, seen laterally, oval quadrangular in outline, being transversely truncated behind, with the inferior corner of each valve produced to a comparatively short spiniform process pointing backwards, inferior edges of valves straight and slightly angular in front. Head less prominent than in the type species, with the frontal part unarmed and narrowly rounded, inferior edge deeply concave, rostrum short and blunt. Shell sculptured with distinct transverse striae, particularly strong and ridge-like in the

posterior part; inferior edges of valves densely ciliated, eye comparatively large; ocellus small, located close to the rostrum. Tail-piece short and obliquely truncated at the end; anal denticles only four or five on each side; apical claws short and stout.

Colour dark brown, with still darker, almost blackish, shadows.

Length of shell scarcely exceeding 0·8 mm.

Remarks.—This form was observed as early as the year 1852 by King in the neighbourhood of Sydney, but was erroneously identified with *S. mucronata* (Müller), from which it differs in its much smaller size, as also in the different shape of the head and the comparatively small size of the processes issuing from the infero-posterior corners of the valves.

Occurrence.—Some specimens of this form were reared from one of the parcels of mud kindly sent to me in 1909 by Dr. Purcell. The mud was taken from an old brick-pond at Bergyllet. The same species also occurred occasionally in some of the Australian samples.

Distribution.—Australia, Sumatra.

GEN. 4. CERIODAPHNIA, Schoedeler.

This genus seems to be very rich in species, and is represented in nearly all parts of the world. Nearly thirty species have been described by different authors; but it is not improbable that some of them must be withdrawn as insufficiently characterised. To the fauna of Cape Colony belong six species, to be described in the following pages.

12. CERIODAPHNIA PRODUCTA, n. sp.

(Plate XXXIII, figs. 1, 1 a, b.)

Specific Characters—Female.—Carapace, seen laterally, rounded in outline, with a very large and conspicuous conical protuberance behind, issuing nearly in the axis of the body. Head, as usual, sharply marked off from the carapace, and somewhat less procumbent than in the other species; frontal part rather produced and narrowly rounded, without any rostral angle behind. Reticulation of shell very close, but not very conspicuous; free edges of valves minutely denticulate, the denticles being also continued on the dorsal margin. Eye large, almost filling up the frontal part; ocellus very small. Antennulae comparatively short. Tail-piece of normal shape, tapering slightly towards the end; anal denticles eight on each side; apical claws each with five secondary denticles in their proximal part.

Colour not yet ascertained.

Length of shell reaching 1·5 mm.

Remarks.—This form is allied to the European species *C. reticulata* (Jurine); but is of larger size, and, moreover, distinguished by the very large protuberance issuing from the shell behind, a character which indeed has given rise to the specific name here proposed.

Occurrence.—Several specimens of this form were found in an alcoholic sample kindly sent to me by Dr. Purcell, and taken in 1896 from a pond in the Cape Flats. This species has not been reared in my aquaria.

13. *CERIODAPHNIA RETICULATA* (Jurine), var. *minor*, n.

(Plate XXXIII, figs. 2, 2 a, b.)

Monoculus reticulatus, Jurine. *Histoire des Monocles*, etc. 1820 p. 139, pl. 14, figs. 3 and 4.

Specific Characters—Female.—Carapace, seen laterally, rounded oval in outline, with the posterior protuberance rather slight and issuing far above the axis of the body. Head less erect than in the preceding species, with the frontal part slightly angular behind. Reticulation of shell not very sharply marked, and not so close as in that species; free edges of valves perfectly smooth. Eye of moderate size. Antennulae resembling in structure those in *C. producta*. Tail-piece with the posterior edge slightly sinuate beyond the middle; anal denticles eight on each side, the outermost ones somewhat smaller than those in the middle; apical claws each with six well-marked denticles at some distance from the base.

Body pellucid, with a faint yellow tinge.

Length of shell reaching 0·9 mm.

Remarks.—The above-characterised form agrees in all essential structural details so closely with a small variety of *C. reticulata* occurring rather commonly in Norway and other countries of Europe, that I have found it impossible to distinguish it specifically. I am also now inclined to believe that the two forms previously described by me as *C. sublaevis* and *C. richardi* should more properly be assigned to the same species.

Occurrence.—This form was reared in great abundance from a parcel of mud taken by Dr. Purcell from a small pool in the Cape Flats. It was also present in an alcoholic sample procured by that gentleman from the same region, and kindly sent me for examination.

Distribution.—Throughout Europe, central part of Asia, New Zealand, North and South America.

14. CERIODAPHNIA QUADRANGULA (MÜLLER), var.

(Plate XXXIII, figs. 3, 3a, b.)

Daphnia quadrangula, O. Fr. Müller. Entomostraca, 1785, p. 90, pl. xiii, figs. 3 and 4.

Specific Characters—Female.—Carapace, seen laterally, rounded quadrangular in outline, with the posterior protuberance distinctly produced and issuing far above the axis of the body. Head rather procumbent, with the frontal part evenly rounded off, without any angle behind. Reticulation of shell coarser than in the two preceding species; free edges of valves minutely denticulate, the denticles being also continued on the hind part of the dorsal margin. Eye of moderate size. Antennulae somewhat more produced than in the two preceding species. Tail-piece comparatively short and stout, with the posterior edge scarcely sinuated; anal denticles of uniform size, and about eight on each side; apical claws perfectly smooth.

Body somewhat less pellucid than in *C. reticulata*, with a yellowish-grey tinge.

Length of shell reaching 0·9 mm.

Remarks.—This form also I have been induced to identify with a well-known European species, viz., *C. quadrangulata* (Müller), though it differs somewhat from typical specimens of that species in the coarser reticulation of the shell and the distinctly denticulate edges of the valves. Otherwise I have, however, failed to detect any reliable difference to distinguish it specifically.

Occurrence.—Some specimens of this form were reared in one of my aquaria prepared with mud from the Cape Flats kindly sent to me by Dr. Purcell.

Distribution.—Throughout Europe, Central Asia, Greenland.

15. CERIODAPHNIA DUBIA, Richard.

(Plate XXXIV, figs. 1, 1a, b.)

Ceriodaphnia dubia, Richard. Entomostracés recueillis dans le lac Joba, Sumatra. Ann Mus. Gen. xxxiv, 1895, p. 570, text-figs. 6–8.

Specific Characters—Female.—Carapace, seen laterally, oval in outline, with the posterior protuberance rather short and issuing somewhat above the axis of the body. Head less procumbent than in *C. quadrangula*, with the frontal part narrowly rounded and distinctly angular behind. Shell very thin, with the reticulation rather faintly marked; edges of valves smooth. Eye comparatively large. Antennulae about as in *C. reticulata*. Tail-piece with the posterior edge

quite straight, anal denticles about ten on each side, the outermost one smaller than the others; apical claws without any secondary denticles.

Body highly pellucid, with a faint greenish tinge.

Length of shell reaching 0·7 mm.

Remarks.—The present species, established by Dr. Richard, has a general resemblance to the above-described variety of *C. reticulata*, and may, at first sight, easily be confounded with it. On a closer examination, however, it admits of being clearly distinguished by the absolute absence of secondary denticles on the caudal claws.

Occurrence.—This form developed in great abundance in some of my aquaria prepared with mud received from Dr. Purcell in the year 1909. The mud was taken from different localities in the neighbourhood of Bergvliet.

Distribution.—Sumatra, New Zealand, Australia.

16. CERIODAPHNIA LATICAUDATA, P. E. Müller.

(Plate XXXIV, figs. 2, 2 a, b.)

Ceriodaphnia laticaudata, P. E. Müller. Danmarks Cladocerer, 1867, p. 130, pl. 1, fig. 19.

Syn.: *Daphnia reticulata*, Baird (not Jurine).

„ *Ceriodaphnia quadrangula*, G. O. Sars (not Müller).

Specific Characters—*Female*.—Carapace, seen laterally, rounded quadrangular in outline, with the posterior protuberance not very prominent and occasionally considerably above the axis of the body. Head comparatively small and rather procumbent; frontal part narrowly rounded, with only a slight trace of angle behind. Reticulation of shell very conspicuous, edges of valves smooth. Eye of moderate size. Antennulae somewhat produced, though resembling in structure those in the preceding species. Tail-piece unusually large and expanded, almost securiform in shape, the posterior edge forming in the middle a bold curve; anal denticles ten on each side and nearly equal-sized; apical claws perfectly smooth.

Colour of shell yellowish orange, with the enclosed body of a darker red hue.

Length of shell reaching 0·75 mm.

Remarks.—I have failed to detect any essential differences between the above-characterised form and typical specimens of *C. laticaudata* taken in Norway. The species is particularly distinguished by the shape of the tail-piece, which is rather unlike that in the other species here described.

Occurrence.—Some specimens of this form developed in one of my aquaria, and at once attracted my attention by their bright red colour and comparatively slow movements. The mud with which the aquarium was prepared was derived from a small pool in the Cape Flats, and kindly sent to me by Dr. Purcell.

Distribution.—Throughout Europe, Turkestan, Madagascar, Australia.

17. CERIODAPHNIA RIGAUDI, Richard.

(Plate XXXIV, figs. 3, 3 a, b.)

Ceriodaphnia rigaudi, Richard. Sur quelques animaux inférieurs des eaux douces de Tonkin. Mém. Soc. Zool. de France, t. vii, 1894, p. 239.

Specific Characters—Female.—Carapace, seen laterally, more or less rounded in outline, with the posterior protuberance only slightly produced, and occurring somewhat above the axis of the body. Head rather procumbent, with the frontal part rounded anteriorly and produced below to a very conspicuous acuminate rostrum pointing obliquely downwards. Reticulation of the shell rather coarse, edges of valves smooth. Eye comparatively large, with very distinct refracting bodies. Antennulae of the usual structure, not nearly extending to the end of the rostrum. Tail-piece moderately broad and obliquely truncated at the end; anal denticles rather thin, six to eight on each side; apical claws smooth.

Body semipellucid, with a more or less distinct reddish or orange tinge. Length of shell scarcely exceeding 0.55 mm.

Remarks.—This form, first described by Dr. Richard, is the smallest of the known species, and is, moreover, at once recognisable by the acuminate beak-like projection issuing from the head below. The form described by the present author from Australia as *C. cornuta* is regarded by Dr. Richard as only a variety of the present species.

Occurrence.—Numerous specimens of this characteristic form were reared by me in the year 1895 from the Knysna mud. It also occurred in an alcoholic sample taken by Dr. Purcell from a dam at Faure, near Cape Town, and kindly sent to me for examination.

Distribution.—Tonkin, Palestine, Sumatra, Ceylon, New Guinea, Australia.

GEN. 5. MOINA, Baird.

Remarks.—By the rather fully developed and mobile antennulae, this genus exhibits a certain approach to the next family, the *Macrothricidae*; but the structure of the legs is very different, and on the

whole built on the same type as in the *Daphniidae*, to which family it accordingly ought to be referred. It comprises several species, four of which belong to the fauna of Cape Colony.

18. *MOINA MACROCOPA* (Straus).

(Plate XXXV, figs. 1, 1 a.)

Daphnia macrocopa, Straus-Durkheim. Mémoire sur les Daphnia. Mém. Mus. Hist. Nat., vol. v, 1819.

Syn.: *Moina paradoxa*, Weissman.

Specific Characters—Female.—Carapace of somewhat varying form, according to the more or less great distension of the incubatory cavity, which in some cases causes the dorsal part to be almost globular in shape; valvular part of carapace comparatively small and forming behind, at the junction with the dorsal part, an obtuse protuberance. Head somewhat erect, with the dorsal margin quite evenly curved, without any supra-ocular depression; frontal part rounded off, lower edge of head only very slightly convex at the insertion of the antennulae. Eye of moderate size. Antennulae not much produced and narrowly fusiform in shape. Tail-piece with the distal tapering part comparatively short, not nearly half as long as the proximal part; anal denticles nine on each side, the outermost one, as usual, bidentate, the others very delicate, lancet-shaped, and finely ciliated; apical claws comparatively short and without any distinct secondary denticles. Ehippium with two egg-ampullae.

Body semipellucid, with a yellow or orange tinge.

Length of shell reaching 1.4 mm.

Remarks.—The above-characterised form, which I believe is that originally recorded by Straus-Durkheim as *Daphnia macrocopa*, may be easily recognised by the quite evenly rounded contour of the head, the comparatively short fusiform antennulae, and the shape and armature of the tail-piece. The form recorded by Mr. Gurney from Kroonstadt as *M. bella* is scarcely different from the present species.

Occurrence.—Several specimens of this form were reared in my aquaria prepared with mud partly from Port Elizabeth, partly from Green Point Common.

Distribution.—Europe, central part of Asia, Japan, North America.

19. *MOINA TENUICORNIS*, G. O. Sars.

(Plate XXXV, figs. 2, 2 a-c.)

Moina tenuicornis, G. O. Sars. Fresh-water Entomostraca from the neighbourhood of Sydney. Arch. f. Math. u. Naturv. 1896, p. 24, pl. 4.

Specific Characters—Female.—Carapace about as in the preceding species. Head, however, considerably more procumbent, with the dorsal margin evenly curved throughout, front obtusely rounded, lower edge strongly protuberant at the insertion of the antennulae. Eye comparatively larger than in *M. macrocopa*. Antennulae very slender and narrow, almost linear in form. Tail-piece with the distal part more produced than in the preceding species, being fully half as long as the proximal one; anal denticles eleven on each side; apical claws each with a series of well-marked secondary denticles at the base. Ehippium, as in *M. macrocopa*, with two egg-ampullae.

Body rather pellucid, with a very faint yellowish tinge.

Length of shell reaching 1·5 mm.

Remarks.—This species, established in the year 1896 by the present author, is allied to *M. macrocopa* but easily distinguishable by the different shape of the head, the slender and narrow antennulae, and the more produced tail-piece, the apical claws of which have each a well-marked row of denticles at the base.

Occurrence.—Some specimens of this form developed in one of my aquaria prepared with mud taken by Dr. Purcell in the neighbourhood of Bergvliet.

Distribution.—Australia, near Sydney.

20. MOINA BRACHIATA (Jurine).

(Plate XXXV, figs. 3, 3 a, b.)

Monoculus brachiatus, Jurine. Histoire des Monocles, 1820, p. 131, pl. xii, figs. 3 and 4.

Syn.: *Moina rectirostris*, Leydig.

Specific Characters—Female.—Carapace rather large and broad, being in gravid specimens greatly distended dorsally. Head slightly procumbent, with a well-marked sinus above the ocular region, the latter narrowly rounded, lower edge of head only slightly convex at the insertion of the antennulae. Eye of moderate size. Antennulae about as in *M. macrocopa*. Tail-piece conically tapered, with the distal part more than half as long as the proximal one; anal denticles about thirteen on each side; apical claws each with a series of well-marked secondary denticles at the base. Ehippium with only a single egg-ampulla.

Colour whitish grey, with a slight yellow or violaceous tinge.

Length of shell reaching 1·3 mm.

Remarks.—The present species has generally been recorded by recent authors under the name *M. rectirostris*; but in my opinion this

name cannot properly be supported, as it not only is a very inappropriate one, but, moreover, depends on an erroneous identification of this form with Müller's *Daphnia rectirostris*, which in reality belongs to a very different genus (*Lathonura*). It is here recorded under the name assigned to this species by some of the earlier authors, and indeed I am of opinion that it in reality is identical with Jurine's *Monoculus brachiatus*. From the two preceding species it may easily be distinguished by the rather different shape of the head.

Occurrence.—I have reared this form both from the mud taken at Port Elizabeth and from that derived from Green Point Common. The same species I have recently reared in great abundance from some parcels of mud taken by Mr. Orjan Olsen from water-holes in the neighbourhood of the whaling station in Saldanha Bay. It also occurred in an alcoholic sample taken by Dr. Purcell from pools near the Salt River and kindly sent to me for examination.

Distribution.—Throughout Europe, Central Asia, North America.

21. MOINA DUBIA, Richard.

(Plate XXXV, figs. 4, 4 a, b.)

Moina dubia, Richard. Cladocères et Copépodes d'eau douce des environs de Rufisque. Mém. Soc. Zool. de France, 1892, p. 527.

Specific Characters.—*Female*.—Carapace comparatively small and never so strongly distended dorsally as in the three preceding species. Head rather large in proportion to the carapace, with a very distinct supra-ocular sinus; front somewhat prominent and narrowly rounded, lower edge of head strongly convex at the insertion of the antennulae, with a notch-like sinus behind. Eye comparatively large, with the refracting bodies very conspicuous. Antennulae of moderate size and densely ciliated behind. Tail-piece with the distal part scarcely more than half the length of the proximal one; anal denticles only seven on each side; apical claws without any secondary denticles, but finely ciliated along the concave edge. Ehippium with only a single egg-ampulla.

Body highly pellucid and nearly colourless.

Length of shell scarcely exceeding 1 mm.

Remarks.—This species, established by Dr. Richard, is nearly allied to *M. brachiata*, but of much smaller size and more delicate structure, differing, moreover, conspicuously in the shape of the head and in the armature of the tail-piece.

Occurrence.—I have reared this form in great abundance from the mud kindly forwarded to me in 1909 by Dr. Purcell, and taken near

Bergvliet. Of this mud a great quantity is still in my possession, and, though it has now remained dry for nearly seven years, I can still obtain from it plenty of specimens. The same species also occurred in an alcoholic sample taken by Dr. Purcell from a dam at Faure.

Distribution.—Senegal, central part of Africa, Australia.

FAM. MACROTHRICIDAE.

GEN. 6. ECHINISCA, Lièvin.

Remarks.—This genus was established in the year 1848 by Lièvin, to comprise a *Macrothricid*, which he erroneously identified with *Monoculus roseus*, Jurine. The genus was not admitted by subsequent authors, but was regarded as merely a synonym of the genus *Macrothrix* of Baird, and the form originally described by Lièvin has since by most authors been recorded under the name of *Macrothrix rosea* (Jurine), though it in reality does not at all agree with the figure given by that author. I have had an opportunity of examining the true Jurinian species, of which specimens have been raised from mud taken in Algeria, and find it to be a genuine *Macrothrix*, nearly allied to *M. laticornis*, but very different from the form generally recorded as *M. rosea*. The difference is indeed so essential that I have felt justified in restoring Lièvin's genus, at the same time accepting for the type species the specific name *tenuicornis*, under which this form has been recorded by Kurz. The validity of the present genus would seem to be still more corroborated by the discovery recently of some forms, which, though evidently specifically distinct, exhibit a close agreement in all essential characters with the typical species, *Echinisca tenuicornis* (Kurz). Two such species have been described by the present author, the one from South America as *Macrothrix elegans*, the other from New Zealand as *M. Schauinslandi*. A third well-defined species of the present genus belongs to the fauna of Cape Colony, and will be described below.

22. ECHINISCA CAPENSIS, n. sp.

(Plate XXXVI, figs. 1, 1a-d.)

Specific Characters.—*Female*.—Carapace, seen laterally, broadly oval in outline, and terminating behind in a blunt, nearly central protuberance; dorsal margin much more strongly curved than the ventral, and quite smooth. Head defined above from the carapace by a very slight notch-like depression, and produced below to a compara-

tively short and blunt rostrum, carrying at the end the antennulae, and provided on each side with a distinctly prominent arched crest extending upwards near the dorsal margin; the latter slightly protuberant in the ocular region; lower edge of head behind the rostrum abruptly bulging to form a very conspicuous hump-like protuberance. Surface of shell apparently quite smooth, without any obvious sculpture; free edges of valves clothed with a double row of strong, spiniform setae. Eye well developed, with distinctly prominent crystalline bodies. Ocellus very small and located near the base of the rostrum. Antennulae nearly straight, sublinear in form, with a row of very small spinules inside; apical papillae of moderate size. Antennae rather strongly built, with the proximal setae of lower ramus very coarse and dark-coloured. Epipodite in all the legs simple, sac-like. Tail-piece with the extremity conically produced and carrying on the tip the very small recurved caudal claws; anal denticles minute, almost hair-like; upper part of posterior edge nearly straight and very finely serrate throughout; caudal setae with the distal joint very short, but clothed with long diverging hairs.

Male scarcely half as large as female, and having the carapace comparatively much smaller, with the dorsal margin straight and terminating in an almost rectangular corner. Head large in proportion to the carapace, with the protuberance of the lower edge only slightly indicated. Antennulae very much produced, fully half as long as the body, and provided anteriorly with two delicate sensory setae, the one about in the middle, the other nearer the base. First pair of legs, as usual, each armed at the end with a strong claw. Tail-piece not much differing in shape from that in female, though having the extremity somewhat blunter.

Body in female rather pellucid, with a more or less distinct yellowish-brown tinge, that of male nearly colourless.

Length of female reaching 1.2 mm.

Remarks.—This new species is at once recognised from any of the other forms belonging to the present genus by the very conspicuous hump-like protuberance formed by the lower edge of the head behind the rostrum. It also differs in the simple sac-like shape of the epipodites of the legs.

Occurrence.—I have reared this handsome species in great numbers both from the mud taken at Port Elizabeth, and from one of the parcels of mud kindly sent to me in 1909 by Dr. Purcell and taken from a small dried-up vley on the Cape Flats. It also occurred rather abundantly in an alcoholic sample taken by that gentleman from about the same locality, and kindly sent to me for examination.

GEN. 7. MACROTHRIX, Baird.

Remarks.—In the restriction here adopted, the present genus may be easily distinguished from the preceding one, to which it bears a close relationship, by the somewhat different shape of the head, the rostral part of which is more prominent, and wholly wants the characteristic arched crests in front, present in all the species of *Echinisca*. Moreover, the coarser structure of the antennulae and their pronounced curvature is rather characteristic, as also the short and stout shape of the tail-piece. Several species of this genus have been discovered from different parts of the world; but, as above stated, some of these ought to be transferred to the preceding genus. Two well-defined species belong to the fauna of Cape Colony and will be described below.

23. MACROTHRIX PROPINQUA, G. O. Sars.

(Plate XXXVI, figs. 2, 2 a-c.)

Macrothrix propinqua, G. O. Sars. Fresh-water Entomostraca from South Georgia. Arch. f. Math. u. Naturv. 1909, p. 5, pl. 1.

Specific Characters—*Female*.—Carapace, seen laterally, oval in outline, terminating behind in a short and obtuse protuberance occurring about in the axis of the body; dorsal margin more or less strongly arched and quite smooth, lower edges of valves only slightly curved and exhibiting the usual armature of strong spiniform setae. Head not defined above by any distinct depression from the carapace, and having the dorsal margin evenly curved throughout; rostral part rather prominent and without any trace of lateral crests, lower edge of head behind the rostrum straight. Surface of shell nearly smooth. Eye comparatively large; ocellus much smaller and located nearer to the tip of the rostrum than to the eye. Antennulae rather strongly built and considerably curved, gradually dilated distally, with about six transverse rows of delicate spinules inside, projecting from as many notches of the anterior edge. Antennae of the usual structure. Epipodite of last pair of legs scarcely larger than those on the other legs. Tail-piece short and stout, obtusely truncated at the end, with the hind edge distinctly sinuated immediately above the anal fissure, anal denticles about ten on each side, apical claws very small, upper part of posterior edge slightly arched and finely denticulate throughout.

Body semipellucid, with a more or less distinct reddish-orange tinge.

Length of shell reaching 0.93 mm.

Remarks.—This form was described by the present author in the year 1909 from specimens collected in South Georgia. It is very closely allied to the northern species *M. hirsuticornis*, Brady, though differing in some particulars rather conspicuously, especially as regards the size of the ocellus and its position in relation to the eye.

Occurrence.—The present form was reared in considerable numbers from the mud kindly forwarded to me in 1909 by Dr. Purcell, and taken in the neighbourhood of Bergvliet.

Distribution.—South Georgia, Falkland Islands, Australia.

24. *MACROTHRIX SPINOSA*, King.

(Plate XXXVI, figs. 3, 3 a, b.)

Macrothrix spinosa, King. On Australian Entomotraca. Papers and Proc. Roy. Soc., Van Diemen's Land, vol. ii, pt. 2, 1852, p. 256, pl. 6 E.

Specific Characters—Female.—Carapace, seen laterally, broadly oval in outline, and terminating behind in a well-marked though short protuberance occurring about in the axis of the body; dorsal margin evenly curved, ventral slightly bulging in front of the middle. Head of moderate size, with the rostral part comparatively less prominent than in the preceding species, lower edge behind the rostrum straight. Surface of shell sculptured, especially towards the dorsal face, with closely set squamous ridges, giving the upper contours a more or less conspicuous jagged appearance. Eye comparatively smaller than in the preceding species; ocellus extremely minute and located near the end of the rostrum. Antennulae less strongly built than in the preceding species, with the spinules of the inner face shorter. Epipodite of last pair of legs much larger than that of the anterior pairs, forming an elliptical vesicle, generally covering laterally the end of the tail-piece. The latter resembling in shape that in *M. propinqua*, but comparatively shorter and more rounded at the end, with the anal denticles fewer in number.

Body rather pellucid with a faint yellowish tinge.

Length of shell scarcely exceeding 0.54 mm.

Remarks.—The present species was established as early as the year 1852 by King, and was redescribed by the present author in 1888 from specimens raised out of dried Australian mud. It is easily distinguishable from the preceding species by its much smaller size and the conspicuously squamous sculpture of the shell. The form described by the present author from South America as *M. squamosa* is scarcely different from this species.

Occurrence.—This form also developed in great abundance in some of my aquaria prepared with mud from the neighbourhood of Bergvliet. It was also found occasionally in some of the alcoholic samples sent to me from the South African Museum.

Distribution.—Australia, South America.

GEN. 8. ILYOCRYPTUS, G. O. Sars.

Remarks.—This peculiar genus differs considerably from the other genera comprised within the family *Macrothricidae*, both in general appearance and in structural details, and should perhaps more properly be regarded as the type of a separate family. We know of three well-defined European species, and to these have been added recently a limited number of exotic forms more or less closely related to them. To the fauna of Cape Colony belongs one species, to be described below.

25. ILYOCRYPTUS SORDIDUS (Lièvin).

(Plate XXXVII, figs. 1, 1 *a-c.*)

Acanthocercus sordidus, Lièvin. Die Branchiopoden der Danziger Gegend. N. Schriften d. naturh. gesellsch. in Danzig. vol. iv, 2, 1848, p. 34, pl. viii, figs. 7-12,

Specific Characters—Female.—Carapace, seen laterally, subtrigonal in outline, gradually expanding behind, with the posterior and inferior edges of the valves of about equal length and passing into each other by a very strong curvature, being throughout fringed with ciliated setae, dorsal margin only very slightly arched and joining the free edges of the valves at an obtuse angle; superposed valves varying in number according to age. Head comparatively small, seen laterally, triangular in form, and defined above from the carapace by a distinct depression, fornix rather prominent and terminating in front in an angular corner; inferior edge of head straight and horizontal, without any distinct rostral projection. Eye remote from the front, with only three or four refracting bodies; ocellus a little smaller than the eye and occurring at a short distance behind it. Antennulae distinctly biarticulate, proximal joint very small, distal joint long and slender, linear in form. Antennæ short and thick, not adapted for swimming. Tail-piece large and compressed, conically produced at the tip, and exhibiting in the middle of the posterior edge a distinct sinus, supra-anal margin occupying about half the length of the piece and armed with about ten equal-sized denticles, anal denticles about fourteen pairs, sub-marginal spines rather slender and somewhat curved, about nine on

each side; apical claws slender, each with two hair-like denticles at the base.

Colour bright red.

Length of shell reaching about 1 mm.

Remarks.—I have failed to detect any reliable difference between the above-characterised form and typical specimens of *T. sordidus* taken in Norway. It is the first described species, and accordingly ought to be regarded as the type of the present genus.

Occurrence.—This form developed in great numbers in the bottom-deposit of some of my aquaria prepared with mud from the neighbourhood of Borgvliet. Most of the specimens were covered by a thick coating of mud so firmly adhering to the shell that it was a matter of no little difficulty to remove it, in order to get a correct view of the animal.

Distribution.—Throughout Europe, North and South America, Sumatra, Australia.

FAM. CHYDORIDAE.

GEN. 9. LEYDIGIA, Kurz.

Remarks.—This genus was established in the year 1874 by Kurz, to include the peculiar form described by Fischer as *Lynceus acanthocercoides*. Another form belonging to this genus was recorded by Leydig, but erroneously identified by that author with *Lynceus quadrangularia* Müller. To these two northern forms a few exotic species have in recent times been added. The genus may be easily recognised by the broadly expanded, almost trigonal shell, and by the largely developed caudal piece, which in shape and armature somewhat recalls that in *Ilyocryptus*. Three well-defined species of this genus belong to the fauna of Cape Colony, two of them being new to science.

26. LEYDIGIA MACRODONTA, n. sp.

(Plate XXXVII, figs. 2, 2 a, b.)

Specific Characters—Female.—Shell, seen laterally, broadly triangular in outline, and considerably expanded behind, dorsal margin nearly straight in its posterior part, but anteriorly forming a quite even curve until the tip of the rostrum; upper posterior corner well marked; hind edges of valves very oblique and almost straight, passing into the inferior ones by a very strong curvature. Head slightly procumbent, with the rostral projection scarcely curved, and

pointing obliquely downwards. Surface of shell without any obvious sculpture, lower edges of valves, as usual, densely clothed with delicate, partly finely ciliated setae. Eye comparatively small; ocellus, on the other hand, very fully developed, being about three times as large and triangular in form. Antennulae extending almost to the tip of the rostrum. Tail-piece large and expanded, with the distal part of the hind edge, below the anal sinus, gently curved and minutely ciliated, submarginal spines unusually long and slender, about eight on each side, each of the spines being accompanied above with two much smaller spinules; apical claws rather slender and only slightly curved, each with a very minute denticle at the base.

Colour bright red.

Length of shell reaching 1.2 mm.

Remarks.—This is a very distinct species, easily recognisable from the other known forms of the present genus by the quite smooth shell and by the very long and slender sub-marginal spines of the tail-piece, the latter character having indeed suggested the specific name here proposed. It is also of larger size than any of the other species.

Occurrence.—This handsome form was reared in considerable numbers from one of the parcels of mud kindly sent to me by Dr. Purcell in 1909, and procured from a small pool in the Cape Flats, alongside the railway line between Retreat and Lakeside. Only female specimens of this form were observed.

27. LEYDIGIA PROPINQUA, G. O. Sars.

(Plate XXXVIII, figs. 1, 1 a, b.)

Leydigia propinqua, G. O. Sars. Fresh-water Entomostraca from China and Sumatra. Arch. f. Math. u. Naturv., 1903, p. 14, pl. 1, figs. 4, 4 a.

Specific Characters—Female.—Shell, seen laterally, broadly triangular in outline, widening distally, and less obliquely truncated behind than in the preceding species; dorsal margin evenly arched throughout, hind edges of valves with a very conspicuous bulging in the middle. Head only slightly procumbent, rostral projection comparatively short and obtuse. Surface of valves very distinctly sculptured with somewhat irregular longitudinal striae partly anastomosing with each other. Eye of moderate size; ocellus scarcely larger and located nearly in the middle between the eye and the tip of the rostrum. Antennulae scarcely extending as far as the latter. Tail-piece very broad and expanded, with the distal part of the hind edge boldly curved; sub-marginal spines less slender than in the preceding species and

about eight in number on each side, each of the spines only accompanied by a single spinule; apical claws each with an extremely minute denticle at the base.

Colour reddish-orange.

Length of shell scarcely exceeding 0.9 mm.

Remarks.—This form was described by the present author in both sexes as early as the year 1895 from specimens raised out of mud taken at Knysna. It was, however, at that time erroneously identified with the European species *L. acanthocercoides* (Fischer), from which it in reality differs, both in the general outline of the shell and in the larger size of the eye as compared with the ocellus. The form recorded by Mr. Gurney from Kroonstad as *L. africana* is scarcely different from the present species.

Occurrence.—Besides from the Knysna-mud, I have reared this form rather abundantly from some of the parcels of mud kindly forwarded to me in 1909 by Dr. Purcell, and taken in the neighbourhood of Bergvliet.

Distribution.—Sumatra.

28. LEYDIGIA MICRIPS, n. sp.

(Plate XXXVIII, figs. 2, 2 a-d.)

Specific Characters—Female.—Shell, seen laterally, of the usual broadly triangular form, with the dorsal margin somewhat irregularly curved; hind edges of valves obliquely arcuate, without any obvious bulging in the middle. Head comparatively more produced than in the two preceding species, with the rostral projection acuminate and slightly recurved at the end. Surface of valves sculptured with rather faint longitudinal striae. Eye extremely small, punctiform; ocellus well developed, resembling in size and shape that in *L. propinqua*; its distance from the eye scarcely more than half that from the tip of the rostrum. Antennulae not nearly extending as far as the latter. Tail-piece less expanded than in the two preceding species and obtusely truncated at the end, hind edge nearly straight and joining the end edge by a strong curve; sub-marginal spines rather numerous, twelve to fourteen on each side, but rapidly diminishing in size proximally, each spine being accompanied by a somewhat smaller spinule; apical claws each with a series of very delicate denticles in their proximal half.

Male much smaller than female and having the dorsal margin of the carapace straight. Antennulae much thicker than in female. First pair of legs each armed with a very strong hook. Tail-piece very

unlike that in female, being much narrower and conically tapered distally, with the end produced in front of the rather small apical claws into a cylindrical appendage containing the terminal part of the vasa deferentia; sub-marginal spines fewer in number and densely crowded below.

Colour of female more or less bright red, that of male much paler.

Length of female reaching 0·86 mm.

Remarks.—This new species is especially characterised by the imperfect development of the eye, which is smaller than in any of the other species known to me. It may also be easily distinguished from the two preceding species by the more produced rostrum and by the shape and armature of the tail-piece.

Occurrence.—Specimens of this form were reared from mud taken in three different localities, viz. Green Point Common, Klipdam, and neighbourhood of Bergvliet. Except in the Klipdam mud, it only occurred very occasionally.

GEN. 10. ALONA, Baird.

Remarks.—The species of this genus may generally be recognised by the compressed more or less quadrangular shell, the valvular part of which, as a rule, is sculptured with regular longitudinal striae. The genus is very rich in species, and is also well represented in the fauna of Cape Colony, no less than nine different species being distinguished, four of which are apparently new to science.

29. ALONA AFFINIS (Leydig).

(Plate XXXIX, figs. 1, 1 a.)

Lynceus affinis, Leydig. Naturgeschichte der Daphniden, 1860, p. 223, pl. ix, figs. 68 and 69.

Syn: *Lynceus quadrangularis*, Fischer (not Müller).

„ *Alona oblonga*, P. E. Müller.

Specific Characters—Female.—Shell, seen laterally, oblong oval in outline and somewhat obliquely truncated behind, dorsal margin evenly curved throughout, hind edges of valves slightly arcuate, lower ones nearly straight. Head only slightly procumbent, with the rostral corner rather prominent and pointing obliquely in front. Surface of valves sculptured with faint, somewhat distant longitudinal striae. Eye of moderate size; ocellus a little smaller, and about twice as remote from the tip of the rostrum as from the eye. Antennulae not nearly extending as far as the rostrum. Tail-piece rather strongly

built and nearly of uniform width throughout, end truncated, with the hind corner obtuse-angular; supra-anal prominence very slight, infra-anal margin armed with about thirteen pairs of rather coarse denticles, sub-marginal combs well marked, about twelve on each side; apical claws rather strong, each with a coarse denticle at the base accompanied proximally by a series of small spinules.

Length of the specimen examined, 0·9 mm.

Remarks.—The above-characterised form is unquestionably identical with the European species *A. affinis* (Leydig), agreeing in every detail exactly with typical specimens taken in Norway. It is one of the largest species of the genus, and is moreover easily recognised by the comparatively narrow oblong form of the shell, the rather produced rostral part, and the structure of the tail-piece.

Occurrence.—A single but well-preserved female specimen of this form, that here figured, was found in an alcoholic sample taken by Dr. Purcell from a pond in the Cape Flats, and kindly sent to me for examination.

Distribution.—Throughout Europe, Central Asia, Siberia, Greenland, North and South America, Azores.

30. ALONA HARPULARIA, n. sp.

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

Specific Characters—Female.—Shell, seen laterally, oval quadrangular in outline, being almost transversely truncated behind; dorsal margin abruptly curved in the cervical region, hind edges of valves nearly straight, with the upper corner well marked, the lower rounded off. Head rather procumbent, with the rostral corner less prominent than in the preceding species. Surface of valves sculptured with regular, somewhat distant longitudinal striae. Ocellus scarcely smaller than the eye, and located at about midway between it and the tip of the rostrum. Antennulae nearly extending as far as the latter. Tail-piece comparatively short and obtusely truncated at the end, with the hind corner rounded off; supra-anal angle well marked; infra-anal margin with about eight pairs of very small denticles, sub-marginal combs very delicate but distinct, about twelve on each side, apical claws with the basal denticle rather slender.

Body pellucid with a slight greenish tinge.

Length of shell reaching 0·55 mm.

Remarks.—This form is closely allied to the New Zealand species, *A. eucostata*, G. O. Sars, but is of larger size, and moreover differs in the somewhat more distant and less strongly marked striae of the

valves. The form and armature of the tail-piece is also a little different.

Occurrence.—Numerous specimens of this form developed in some of my aquaria prepared with mud from Port Elizabeth.

31. *ALONA ARCUATA*, n. sp.

(Plate XXXIX, figs. 3, 3 a.)

Specific Characters—Female.—Shell, seen laterally, very broad, rounded oval in outline, with the dorsal margin boldly arched in the middle, hind extremity obtusely truncated, with the upper corner obtuse-angular, the lower rounded off. Head rather procumbent, with the rostral corner somewhat more prominent than in *A. harpularia*. Surface of valves sculptured with rather closely set and somewhat wavy longitudinal striae, partly anastomosing with each other, and in the anterior part of the valves crossed by a number of transverse arcuate striae. Ocellus a little smaller than the eye and somewhat nearer to it than to the tip of the rostrum. Antennulae not extending as far as the latter. Tail-piece resembling in shape somewhat that in *A. harpularia*, but comparatively less broad in its distal part, with the infero-posteal corner less prominent; supra-anal angle only slightly produced, infra-anal denticles very small, sub-marginal combs inconspicuous; apical claws about as in the preceding species.

Body pellucid, with a faint yellowish-green tinge.

Length of shell reaching 0.43 mm.

Remarks.—This form looks rather like *A. harpularia*, and as it was found together with that species, I at first believed it to be merely a variety. A closer examination, however, has convinced me that it in reality is specifically distinct, exhibiting, as it does, some well-marked differences named in the above diagnosis.

Occurrence.—Only a few specimens of this form have come under my notice. They were found in one of my aquaria prepared with mud from Port Elizabeth.

32. *ALONA STRIOLATA*, n. sp.

(Plate XXXIX, figs. 4, 4 a.)

Specific Characters—Female.—Shell, seen laterally, oval quadrangular in outline, with the dorsal margin evenly arched, hind extremity transversely truncated, with the lower corner subangular; inferior edges of valves nearly straight. Head somewhat less procumbent than in the two preceding species, with the rostral corner rather prominent. Surface of valves exhibiting an exceedingly dense and

delicate striation, the striae also extending on the dorsal surface of the head. Eye of larger size than in most other species, and provided with numerous crystalline bodies; ocellus smaller than the eye, though well developed, and located much nearer to it than to the tip of the rostrum. Antennulae not nearly extending as far as the latter. Tail-piece not much produced and somewhat contracted in its distal part, supra-anal angle well marked, infra-anal denticles inconspicuous, sub-marginal combs, however, distinct and about twelve in number on each side; apical claws moderately strong, but with the basal denticle comparatively small.

Body of a whitish-grey colour and less pellucid than in the other species, owing to the dense sculpture of the shell.

Length of shell reaching 0.48 mm.

Remarks.—This is a very distinct species, being at once distinguished from all the other forms here recorded by the very dense and delicate striation of the shell. In this respect it approaches somewhat to the European species *A. elegans*, Kurz, which, however, in other respects is rather different.

Occurrence.—Some specimens of this form were reared in one of my aquaria prepared with mud from Green Point Common, near Cape Town.

33. ALONA INTERMEDIA, G. O. Sars.

(Plate XXXIX, figs. 5, 5 a.)

Alona intermedia, G. O. Sars. Om dei Omegnen af Christiania forekommende Cladocerer. Chr. Vid. Selsk. Forh. f. 1861, p. 38.

Specific Characters—Female.—Shell, seen laterally, oblong oval in outline and somewhat widening behind, with the dorsal margin evenly arched, hind edges of valves somewhat obliquely curved, lower edges straight. Head not much procumbent, with the rostral corner rather prominent. Surface of valves sculptured with rather distant and not very strongly marked longitudinal striae. Eye comparatively small; ocellus fully as large, and located a little nearer to it than to the tip of the rostrum. Antennulae not nearly extending as far as the latter. Tail-piece of a very characteristic shape, being conspicuously expanded in its distal part and almost transversely truncated at the end; supra-anal angle rather prominent; infra-anal denticles small, but distinct; sub-marginal combs unusually coarse, about ten on each side; apical claws of moderate size, with the basal denticle rather slender.

Length of shell about 0.47 mm.

Remarks.—This species was established as early as the year 1861 by the present author, and has subsequently been recorded by several

other naturalists. It is especially distinguished by the shape and armature of the caudal piece.

Occurrence.—Two well-preserved female specimens of this form were found in an alcoholic sample taken by Dr. Purcell from a pond in the Cape Flats, and kindly sent to me for examination.

Distribution.—Norway, Sweden, Finland, South America.

34. *ALONA CRASSICAUDA*, n. sp.

(Plate XL, figs. 1, 1 a.)

Specific Characters—*Female*.—Shell, seen laterally, oval in outline, with the dorsal margin quite evenly arched throughout, ventral straight or slightly concave in the middle, hind extremity obtusely truncated, with no distinct angle either above or below. Head somewhat procumbent, with the rostral corner moderately produced and curved downwards. Surface of valves indistinctly striated, exhibiting slight traces of an irregular reticulation. Ocellus somewhat smaller than the eye, and located a little nearer to it than to the tip of the rostrum. Antennulae nearly extending as far as the latter. Tail-piece comparatively short, but unusually strongly built, being rather thick at the base and slightly narrowed towards the extremity, which is transversely truncated; supra-anal angle not much prominent, and occurring nearly in the middle of the piece; infra-anal denticles rather irregular, the two or three distal ones on each side much coarser than the others; sub-marginal combs well marked, about eight on each side; apical claws rather coarse, with the basal denticle of moderate size.

Body pellucid, with a slight yellowish-brown tinge.

Length of the specimen examined, 0·48 mm.

Remarks.—I cannot identify the above-characterised form with any of the known species. The nearest ally seems to be *A. cambouci*, Richard; but the form and armature of the tail-piece is rather different.

Occurrence.—Only a single female specimen of this form has hitherto come under my notice. It was found in one of my aquaria prepared with mud taken by Dr. Purcell from an old brick-pond near Bergvliet.

35. *ALONA PULCHELLA*, King.

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

Alona pulchella, King. On Australian Entomostraca. Papers and Proc. Roy. Soc. Van Diemen's Land, vol. ii, part ii, 1852, p. 260, pl. viii b.

Specific Characters—Female.—Shell, seen laterally, oblong oval in outline, with the dorsal margin evenly arched, ventral nearly straight, hind extremity obtusely truncated. Head not much procumbent, with the rostral corner moderately produced. Surface of valves sculptured with somewhat distant longitudinal striae, partly anastomosing with each other. Ocellus smaller than the eye, and located much nearer to it than to the tip of the rostrum. Antennulae almost extending as far as the latter. Tail-piece somewhat produced, with the distal part comparatively narrow and of uniform width throughout, and transversely truncated, with the hind corner sub-angular; supra-anal angle rather slight, and occurring far above the middle of the piece; infra-anal denticles well marked, and gradually somewhat increasing in size distally; sub-marginal combs about nine on each side; apical claws attached to a short conical prominence and rather slender, with the basal denticle of moderate size.

Length of shell about 0.42 mm.

Remarks.—This form was recorded as early as the year 1852 by King, and was subsequently redescribed by the present author from specimens collected by Dr. Th. Whitelegge in the neighbourhood of Sydney. It may easily be recognised from any of the species here recorded by the shape and armature of the tail-piece.

Occurrence.—Some few specimens of this form were found in an alcoholic sample procured by Dr. Purcell from a dam near Bergvliet, and kindly sent to me for examination.

Distribution.—Australia.

36. ALONA BUKOBENSIS, Welthner.

(Plate XL, figs. 3, 3a.)

Alona bukobensis, Welthner. Die Cladocerer Ost Africas, 1897, p. 9, pl. i, figs. 16–18, 20, pl. 2, fig. 32.

Specific Characters—Female.—Shell, seen laterally, oblong quadrangular in outline, with the dorsal margin gently arched, ventral nearly straight, posterior extremity obtusely truncated, with the upper corner well marked, lower rounded off. Head somewhat procumbent, with the rostral corner moderately produced and obtuse at the tip. Surface of valves sculptured with somewhat distant and rather faint longitudinal striae, in some places anastomosing with each other. Ocellus almost as large as the eye, and located nearer to it than to the tip of the rostrum. Antennulae almost extending as far as the latter. Tail-piece comparatively short, but rather broad and scarcely narrowed distally, infero-posteal corner evenly rounded off; supra-anal angle

slightly prominent and occurring near the middle of the piece; marginal denticles very small, sub-marginal combs well marked, about ten on each side; apical claws of moderate size, with the basal denticle rather slender.

Body very pellucid, with a faint yellow tinge.

Length of shell scarcely exceeding 0·35 mm.

Remarks.—I think I am right in identifying the above-characterised small *Alona* with the species recorded by Welthner from East Africa. The description and figures given by that author are certainly rather unsatisfactory, and it is even possible that several nearly allied species have been confounded by him; but on the whole I cannot see any reliable difference, and the measurements of the shell given (0·24–0·35) agree fairly well with those of the present species, which, indeed, is by far the smallest of the South African species of *Alona*.

Occurrence.—This form developed very abundantly in several of my aquaria prepared with mud partly from Port Elizabeth, partly from the neighbourhood of Cape Town.

Distribution.—East Africa.

37. *ALONA KARUA*, King.

(Plate XL, figs. 4, 4a.)

Alona karua, King. L.c. 1852, p. 260, pl. viii d.

Syn.: *Alonella karua*, G. O. Sars.

„ *Alona mülleri*, Richard.

„ *Leydigia quadridentata*, Brady.

Specific Characters—Female.—Shell, seen laterally, irregularly quadrangular in outline, with the dorsal margin considerably arched in the middle, ventral straight in its posterior part, but conspicuously ascending anteriorly; posterior extremity somewhat obliquely truncated, with the upper corner well marked, lower rounded off. Head less procumbent than in most other species, with the rostral corner rather prominent and pointing obliquely forwards. Surface of valves sculptured with very distinct and somewhat oblique striae, crossed in the anterior part of the valves by a number of arcuate ridges running parallel to the anterior edges; inferior edges, as usual, densely setiferous, and exhibiting, moreover, just in front of the infero-posteal corner, a row of three to five small denticles. Ocellus smaller than the eye, and located much nearer to it than to the tip of the rostrum. Antennulae not nearly extending so far as the latter. Tail-piece comparatively short, but rather broad, widening somewhat distally, with the infra-anal margin evenly curved throughout; supra-anal angle very slight, and

occurring far above the middle of the piece; marginal denticles inconspicuous, sub-marginal combs, however, well marked, and varying in number from six to ten on each side; apical claws attached to a well-marked conical prominence and rather coarse, basal denticle, however, very small.

Colour dark yellow, or corneous.

Length of shell reaching 0.43 mm.

Remarks.—This form was recorded by King under the above name at the same time as *A. pulchella*, and was redescribed in 1888 by the present author from a specimen raised out of Australian mud. It has also in recent times been observed by some other authors; but its identity has not always been recognised. Thus I have elsewhere shown that the *Alona mülleri* of Richard is identical with the present species, and also the form recently recorded by Brady from the Victoria Falls under the name of *Leydigia quadridentata* is unquestionably the same species. I have formerly referred this form to the genus *Alonella*, but am now of opinion that it should more properly be retained in the genus *Alona*, as the oblique striation of the anterior part of the valves is also found in some evidently genuine species of *Alona*, for instance, in the above-described *A. arcuata*.

Occurrence.—This easily recognisable form developed rather abundantly in one of my aquaria prepared with mud taken by Dr. Purcell from a small grassy vley on the Cape Flats.

Distribution.—Australia, South America, Ceylon.

GEN. II. ALONELLA, G. O. Sars.

Remarks.—This genus was established by the present author in the year 1862, to include four European species. To these there have been added in recent times a number of exotic forms, especially from South America; but some of these are, in reality, so deviating from the European types as scarcely to be congeneric. To the fauna of Cape Colony belongs one genuine species of the present genus.

38. ALONELLA EXCISA (Fischer).

(Plate XL, figs. 5, 5a.)

Lyuceus excisus, Fischer. Bull. Soc. Imp. d. naturalistes de Moscou, 1854, p. 428, pt. iii, figs. 11–14.

Specific Characters—*Female.*—Shell, seen laterally, oval subquad-rangular in outline, with the dorsal margin evenly arched, the ventral straight behind and ascending in front, posterior extremity somewhat

narrowed and transversely truncated, with both the upper and lower corners distinctly angular. Head only slightly procumbent, and terminating in a rather prominent rostrum, slightly curved at the end. Surface of valves sculptured with well-marked, somewhat curved longitudinal striae, which at regular intervals anastomose with each other, so as to form a rather conspicuous reticulation, and in the anterior part are crossed by a number of transverse arcuate ridges; posterior edges of valves exhibiting, just above the lower corner, two or three slight crenulations. Ocellus smaller than the eye, and located much nearer to it than to the tip of the rostrum. Antennulae not nearly extending as far as the latter. Tail-piece rather narrow and slightly tapered distally, with the infra-anal edge nearly straight and terminating in an angular corner; supra-anal angle rather prominent, and occurring far above the middle of the piece; marginal denticles rather small; sub-marginal combs inconspicuous; apical claws comparatively small, each with two unequal denticles at the base.

Length of shell about 0.37 mm.

Remarks.—The above-characterised form is unquestionably identical with Fischer's species, and is distinguished from the nearly-allied Australian species *A. clathratula*, G. O. Sars, by a somewhat shorter and stouter form of the shell, and more particularly by the presence of distinct crenulations of the hind edges of the valves at the infero-posteal corners, these crenulations being wholly absent in the former species.

Occurrence.—Two or three specimens of this form were found in an alcoholic sample taken by Dr. Purcell from a pond in the Cape Flats, and kindly sent to me for examination.

Distribution.—Throughout Europe, Siberia, Iceland, Greenland, North America.

GEN. 12. CHYDORUS, Baird.

Remarks.—The species of this genus may be easily recognised by the more or less globular shape of the shell. Most of them are so closely allied that their distinction is attended with no little difficulty; but there are also among them some more deviating forms, one of which will be described below.

39. CHYDORUS BARROISI (Richard).

(Plate XL, figs. 6, 6a, b.)

Pleuroxus barroisi, Richard. Cladocères recueillis en Syrie et en Egypte. Revue Biol. du Nord de France, Tome vi, 1893, p. 16.

Specific Characters—Female.—Shell very tumid, seen laterally almost circular in outline, with the dorsal margin boldly arched, the ventral bulging in the middle, but nearly straight behind; posterior extremity narrowly truncated. Head rather procumbent, and terminating in a slightly curved acute rostrum; surface of valves sculptured in their anterior part, with very distinct curved striae running parallel to the anterior edges, the posterior part exhibiting a more or less conspicuous reticulation; infero-posteal corners armed with a distinct curved denticle. Ocellus smaller than the eye, and located somewhat nearer to it than to the tip of the rostrum. Antennulae comparatively small. Lower expansion of the labrum securiform and having the edge divided into four well-marked serrations. Tail-piece with the distal part rather narrow and incised at the end; supra-anal angle considerably prominent, and occurring almost in the middle of the piece; marginal denticles well marked, about ten on each side, the three posterior pairs more prolonged than the others; apical claws comparatively short, each with two unequal denticles at the base.

Colour dark yellowish-grey.

Length of shell about 0.3 mm.

Remarks.—This form was first described by Richard as a species of the genus *Pleuroxus*; but was subsequently referred by the present author to the genus *Chydorus*, to which it evidently bears a much nearer relationship, though differing in some points from the more typical species of that genus.

Occurrence.—The present characteristic form was reared in considerable numbers from the Knysna mud, but did not develop from any of the other parcels received.

Distribution.—Palestine, South America.

40. CHYDORUS LEONARDI, King.

Chydorus leonardi, King. L.c. 1852, p. 258, pl. vii c.

Remarks.—This cosmopolitan species (not figured in the plates) must also be included in the fauna of Cape Colony, as several specimens were found in two alcoholic samples taken by Dr. Purcell from ponds in the neighbourhood of Cape Town. The same form also appeared abundantly in nearly all my aquaria, though an accidental transfer together with the aquatic plants, which for the sake of aëration of the water were introduced in them, was not excluded. By most authors this form is regarded as only a small variety of the common *Chydorus sphaericus* (Müller).

GEN. 13. EURYALONA, G. O. Sars.

Remarks.—This genus was established in the year 1901 by the present author, to include a *Chydorus* raised out of dried mud from the Argentine, and named *E. occidentalis*, its true relation to the previously described species, *Alonopsis colletti*, not being at that time recognised. The genus is chiefly characterised by the broadly expanded and quite smooth shell, as also by the slender form of the tail-piece.

41. EURYALONA COLLETTI (G. O. Sars).

(Plate XLI, figs. 1, 1 a, b.)

Alonopsis colletti, G. O. Sars. On some South African Entomostraca raised from dried mud. Chr. Vid. Selsk. Skrifter f. 1895, p. 22, pl. 4, figs. 5-8.

Syn.: *Euryalona occidentalis*, G. O. Sars.

Specific Characters—Female.—Shell, seen laterally, broadly quadrangular in outline, with the dorsal margin evenly arched, ventral slightly flexuose, posterior extremity obtusely truncated, with the upper corner obtuse-angular, the lower rounded off. Head comparatively small and slightly procumbent, with the rostral corner not much produced and pointing obliquely forward. Surface of valves smooth, without any obvious sculpture, except a faint concentric dotting near the free edges. Ocellus a little smaller than the eye and located nearly midway between it and the tip of the rostrum. Antennulae comparatively small, not nearly extending as far as the latter. Tail-piece very slender and elongated, slightly tapering distally, and deeply incised at the end, with the hind corner rather prominent; supra-anal angle slight and far remote from the middle; marginal denticles well developed and equal-sized, sub-marginal combs only faintly indicated; apical claws slender and only slightly curved, each round at the base with a single rather large denticle; outer part of the claws quite smooth.

Colour more or less dark yellowish-brown.

Length of shell somewhat exceeding 1 mm.

Remarks.—I have convinced myself of the complete identity of the South African and South American forms, and, of course, the specific name at first proposed ought to be retained for the present species. The form recorded by Dr. Daday from Ceylon as *Alonopsis orientalis* is evidently congeneric, but differs, according to the figures given by that author, both in the general form of the shell and in the armature

of the tail-piece. A third species belonging to this genus has been added recently by the same author from Paraguay.

Occurrence.—This form was originally described from specimens reared from dried mud taken at Knysna. It did not develop from any of the other parcels of mud subsequently received.

Distribution.—South America.

GEN. 14. PLEUROXUS, Baird.

Remarks.—The species of this genus are recognised by the more or less pronounced trigonal form of the shell, and the strongly produced acuminate rostrum, which admits of being closely appressed to the anterior part of the valves. About twenty species have been recorded from different parts of the world, one of them being also represented in the fauna of Cape Colony.

42. PLEUROXUS INERMIS, G. O. Sars.

(Plate XLI, figs. 2, 2 a, b.)

Pleuroxus inermis, G. O. Sars. Fresh-water Entomostraca from the neighbourhood of Sydney. Arch. f. Math. u. Naturv. 1896, p. 31, pl. 5, figs. 8, 9.

Specific Characters—*Female.*—Shell, seen laterally, oval trigonal in outline, with the dorsal margin boldly arched in the middle, ventral slightly flexuose and protuberant in front of the middle; posterior extremity somewhat exserted and narrowly truncated, with the upper corner well marked, the lower obtuse and without any obvious denticles. Head comparatively short and strongly procumbent, terminating in a long and sharply pointed rostrum, pointing obliquely backwards. Anterior part of valves sculptured with a number of very conspicuous arched striae running parallel to the anterior edges; posterior part smooth, or with a very faintly indicated reticulation. Ocellus much smaller than the eye and far remote from the tip of the rostrum. Antennulae comparatively small, scarcely extending beyond the middle of the rostrum. Tail-piece of moderate size, with the anal sinus well marked; distal part slightly narrowed and shallowly incised at the end; supra-anal angle very slight; marginal denticles comparatively small, about fifteen pairs; apical claws rather strong, each with two unequal denticles at the base.

Length of shell about 0.55 mm.

Remarks.—This form was described under the above name in 1896 by the present author from Australian specimens. It is closely allied

to the European species *P. aduncus* (Jurine), exhibiting a very similar sculpture of the valves, but is at once distinguished by the absence of the strong denticles occurring in that species at the infero-posteal corners of the valves; hence the specific name proposed.

Occurrence.—Several specimens of this form were picked out from an alcoholic sample taken by Dr. Purcell from a pond in the Cape Flats and kindly sent to me for examination. It was not reared in any of my aquaria.

Distribution.—Australia.

GEN. 15. DUNHEVEDIA, King.

Syn.: *Crepidocercus*, Birge.

Remarks.—This is a very distinct genus, being especially characterised by the tumid shell, the greatly prominent cephalic fornix, and the peculiar structure of the tail-piece. It contains as yet only a very limited number of species, one of which is represented in the fauna of Cape Colony.

43. DUNHEVEDIA CRASSA, King.

(Plate XLI, figs. 3, 3 a-c.)

Dunhevedia crassa, King. L.c., 1852, p. 261, pl. vii f.

Specific Characters—Female.—Shell very tumid, seen laterally irregularly oval in outline, with the dorsal margin boldly arched, the ventral nearly straight, or slightly flexuose, and forming at the junction with the anterior edge a broad, somewhat projecting curve, posterior extremity slightly exserted and narrowly truncated, with the upper corner well marked, the lower rounded off and armed in front on each valve with a well-marked, somewhat deflexed denticle. Head very broad as seen dorsally or ventrally, and somewhat procumbent, with the rostral corner acute and curved downwards. Surface of valves smooth, without any obvious sculpture, inferior edges densely fringed with finely ciliated setae. Eye rather fully developed, with a number of very conspicuous crystalline bodies projecting in front of the dark pigment; ocellus much smaller and located a little nearer to the eye than to the tip of the rostrum. Antennulae not nearly extending as far as the latter. Lip-plate with the edge quite smooth. Tail-piece almost boat-shaped, being abruptly bent at the base, with the posterior edge bulging in the middle, below the anal fissure, to form a broadly rounded heel-shaped protuberance; distal part of the piece gradually tapering to an obtuse apex, and clothed on

each side and along the straight lower edge with fine hair-like spinules; apical claws short and strongly curved, each with a well-marked denticle at the base; supra-anal angle very slight and occurring at a short distance from the base.

Colour more or less dark yellowish-brown.

Length of shell reaching 0.48 mm.

Remarks.—This form was recorded as early as the year 1852 by King, and was re-described by the present author in 1888 from specimens raised out of dried Australian mud. It is closely allied to *D. setigera* (Birge), chiefly differing in the want of any distinct sculpture of the valves. From the likewise closely allied South American species *D. odontoplax* it may at once be distinguished by the perfectly smooth edge of the lip-plate.

Occurrence.—This form developed rather abundantly in some of my aquaria prepared with mud from Port Elizabeth.

Distribution.—Australia, Ceylon.

EXPLANATION OF THE PLATES.

PLATE XXIX.

Daphnia magna, Straus.

- FIG.
1. Adult female, viewed from left side (antennae not fully drawn).
1*a*. Rostral part of head (with antennula).
1*b*. Tail-piece.

Daphnia dolichocephala, G. O. Sars.

2. Adult female, lateral view.
2*a*. Rostral part of head, with antennula.
2*b*. Tail-piece.

Daphnia hodgsoni, n. sp.

3. Adult female of the earlier generations, lateral view (antennae not fully drawn).
3*a*. Rostral part of head, with antennula.
3*b*. Tail-piece.

PLATE XXX.

Daphnia coronata, n. sp.

1. Ehippial female, lateral view.
1*a*. Another female without ehippium, dorsal view.
1*b*. Occipital part of head.
1*c*. Rostral part of head, with antennula.
1*d*. Tail-piece.
1*e*. Extremity of same, more highly magnified.
1*f*. Anterior part of body of an adult male, lateral view (antenna omitted).

Daphnia thomsoni, G. O. Sars.

2. Adult female of the earlier generations, lateral view.
2*a*. Rostral part of head, with antennula.
2*b*. Tail-piece.
2*c*. Extremity of same, more highly magnified.

PLATE XXXI.

Daphnia propinqua, G. O. Sars.

1. Adult female, lateral view.
1*a*. Frontal part of head.
1*b*. Tail-piece.

Daphnia tenuispina, n. sp.

2. Adult female, lateral view.
 - 2a. Frontal part of head.
 - 2b. Tail-piece.
- Simosa australiensis* (Dana).
3. Adult female of the earlier generations, lateral view.
 - 3a. Rostral part of head, with antennula.
 - 3b. Tail-piece.

PLATE XXXII.

Simosa vetuloides (G. O. Sars).

1. Adult female, lateral view.
 - 1a. Head of same, more highly magnified.
 - 1b. Tail.
- Simosa capensis* (G. O. Sars).
2. Adult female, lateral view.
 - 2a. Frontal part of head.
 - 2b. Tail-piece.

Scapholeberis kingi, G. O. Sars.

3. Adult female, lateral view.
- 3a. Head of same, more highly magnified (antennae omitted).
- 3b. Tail-piece.

PLATE XXXIII.

Ceriodaphnia producta, n. sp.

1. Adult female, lateral view.
- 1a. Head of same, more highly magnified (antennae omitted).
- 1b. Tail.

Ceriodaphnia reticulata (Jurine) var. *minor*, n.

2. Adult female, lateral view (antennae not fully drawn).
- 2a. Frontal part of head.
- 2b. Tail-piece.

Ceriodaphnia quadrangula (Müller), var.

3. Adult female, lateral view.
- 3a. Frontal part of head.
- 3b. Tail-piece.
- 3c. Posterior protuberance of shell.
- 3d. Male antennulae.

PLATE XXXIV.

Ceriodaphnia dubia, Richard.

1. Adult female of the earlier generations, lateral view.
- 1a. Head of same, without the antennae.
- 1b. Tail.

Ceriodaphnia laticaudata, P. E. Müller.

2. Adult female, lateral view.
- 2a. Frontal part of head.
- 2b. Tail.

Ceriodaphnia rigaudi, Richard.

3. Adult female, lateral view.
- 3a. Frontal part of head.
- 3b. Tail.

PLATE XXXV.

Moina macrocopa (Straus).

1. Adult gravid female, lateral view.
- 1a. Tail.
- 1b. Ehippium.

Moina tenuicornis, G. O. Sars.

2. Adult gravid female, lateral view.
- 2a. Antennula.
- 2b. Tail-piece.
- 2c. Extremity of same, more highly magnified.

Moina brachiata (Jurine).

3. Adult gravid female, lateral view.
- 3a. Tail-piece.
- 3b. Extremity of same, more highly magnified.

Moina dubia, Richard.

4. Adult gravid female, lateral view.
- 4a. Tail-piece.

PLATE XXXVI.

Echinisca capensis, n. sp.

1. Adult female of the earlier generations, lateral view.
- 1a. Frontal part of head.
- 1b. Antennula.
- 1c. Tail, with epipodite of last leg.
- 1d. Adult male, lateral view.

Macrothrix propinqua, G. O. Sars.

2. Adult female of the earlier generations, lateral view.
- 2a. Antennula.
- 2b. Tail with epipodite of last leg.

Macrothrix spinosa, King.

3. Adult female of the earlier generations, lateral view.
- 3a. Tip of rostrum with antennula.
- 3b. Tail with epipodite of last leg.

PLATE XXXVII.

Ilyocryptus sordidus (Lièvin).

1. Adult female, with 5 superposed valves, lateral view.
- 1a. Head and adjacent part of carapace (antennae omitted).
- 1b. Antenna.
- 1c. Tail-piece.

Leydigia macrodonta, n. sp.

2. Adult female, lateral view.
- 2a. Inferior part of head.
- 2b. Tail-piece.

PLATE XXXVIII.

Leydigia propinqua, G. O. Sars.

1. Adult female, lateral view.
- 1a. Inferior part of head.
- 1b. Tail-piece.

Leydigia microps, n. sp.

2. Adult female, lateral view.
- 2a. Inferior part of head.
- 2b. Tail-piece.
- 2c. Adult male, lateral view.
- 2d. Tail-piece of same.

PLATE XXXIX.

Alona affinis (Leydig).

1. Adult female, lateral view.
- 1a. Tail-piece.

Alona harpularia, n. sp.

2. Adult female, lateral view.
- 2a. Tail-piece.

Alona arcuata, n. sp.

3. Adult female, lateral view.
- 3a. Tail-piece.

Alona striolata, n. sp.

4. Adult female, lateral view.
- 4a. Tail-piece.

Alona intermedia, G. O. Sars.

5. Adult female, lateral view.
- 5a. Tail-piece.

PLATE XL.

Alona crassicauda, n. sp.

1. Adult female, lateral view.
- 1a. Tail-piece.

Alona pulchella, King.

2. Adult female, lateral view.
- 2a. Tail-piece.

Alona bukobensis, Welthner.

3. Adult female, lateral view.
- 3a. Tail-piece.

Alona karua, King.

4. Adult female, lateral view.
- 4a. Tail-piece.

Alonella excisa (Fischer).

- 5. Adult female, lateral view.
- 5a. Tail-piece.

Chydorus barroisi (Richard).

- 6. Adult female, lateral view.
- 6a. Inferior part of head, with adjoining part of valve.
- 6b. Tail-piece.

PLATE XLI.

Euryalona colletti (G. O. Sars).

- 1. Adult female, lateral view.
- 1a. Inferior part of head, with adjoining part of valve.
- 1b. Tail-piece.

Pleuroxus inermis, G. O. Sars.

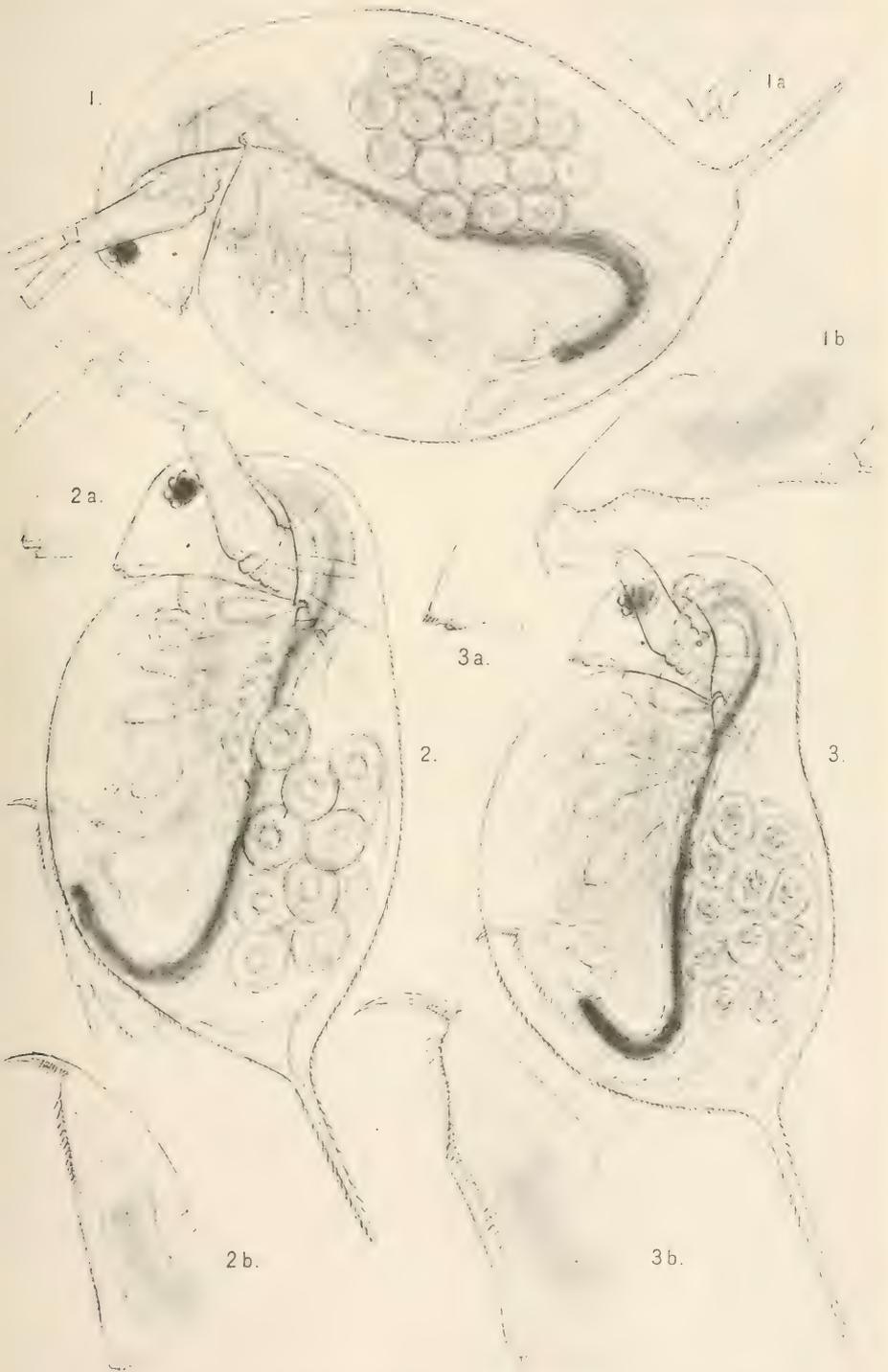
- 2. Adult female, lateral view.
- 2a. Inferior part of head, with adjoining part of carapace.
- 2b. Tail-piece.

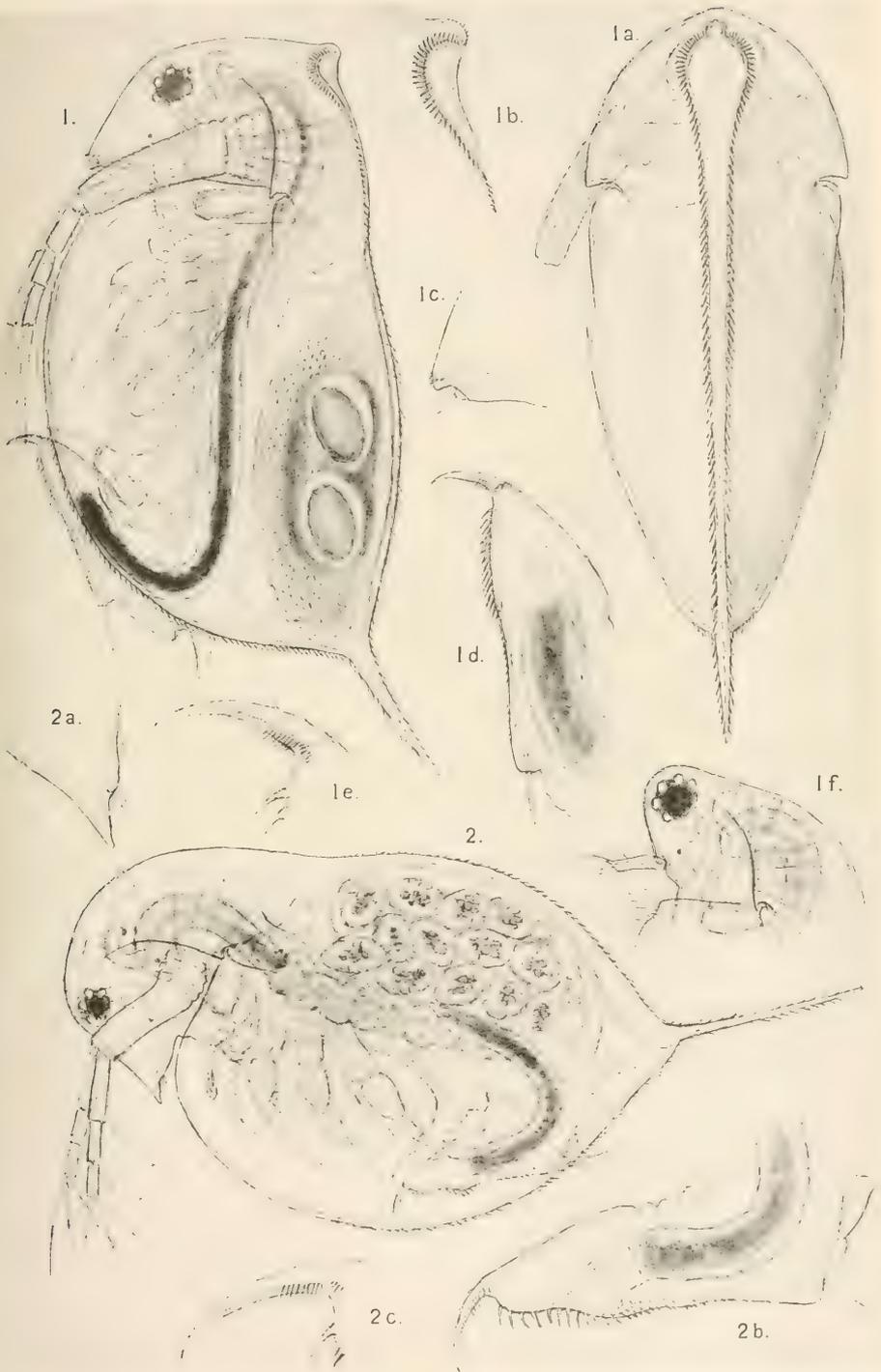
Dunhevedia crassa, King.

- 3. Adult female, lateral view.
- 3a. Same, ventral view.
- 3b. Inferior part of head, with adjoining part of valve.
- 3c. Tail-piece.

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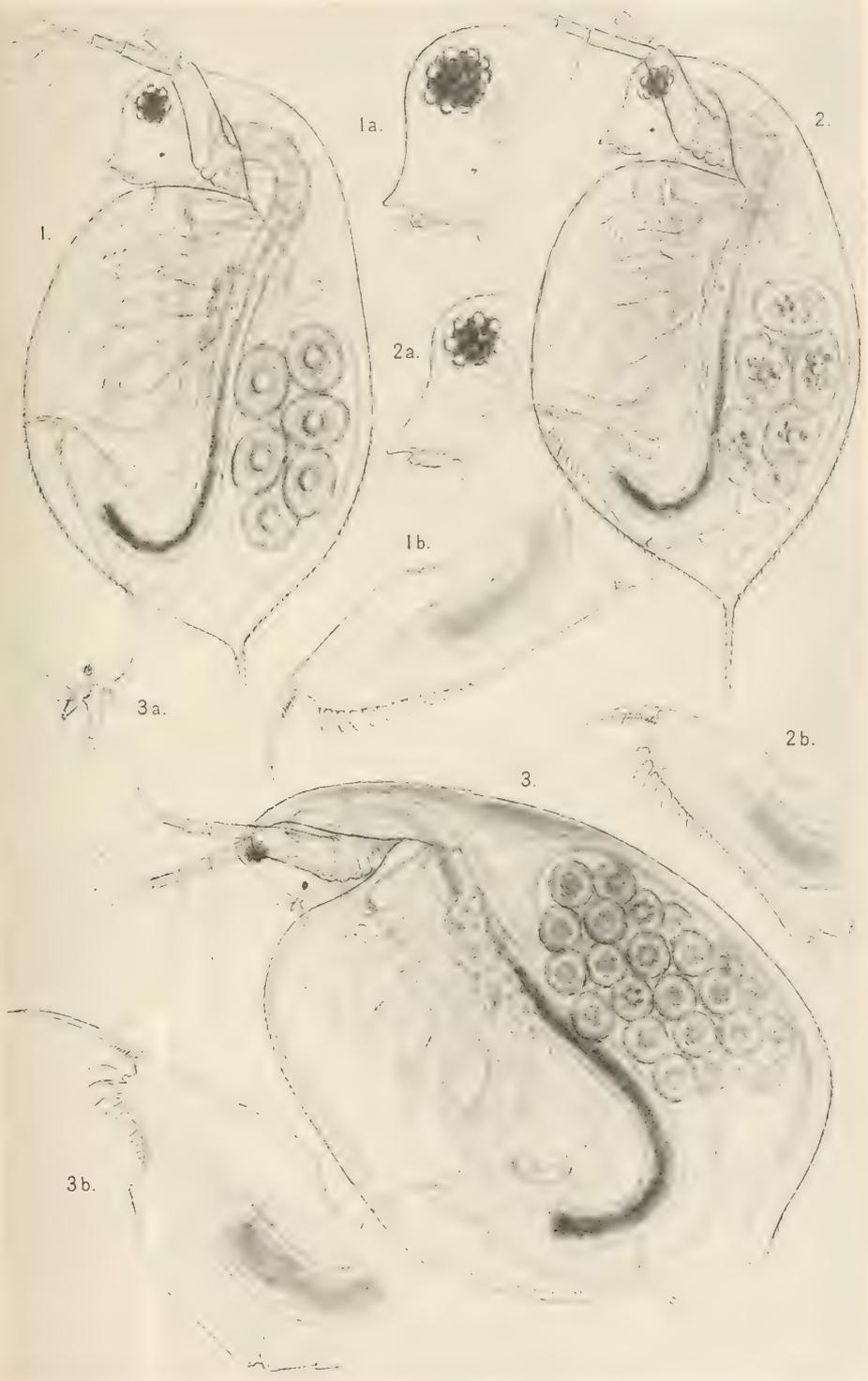
O		PAGE			PAGE
<i>oblonga</i> (Alona)	331		<i>reticulata</i> (Daphnia)		318
<i>occidentalis</i> (Euryalona)	341		<i>reticulatus</i> (Monoculus)		316
			<i>rigaudi</i> (Ceriodaphnia)		319
P					
<i>paradoxa</i> (Moina)	320		S		
Pleuroxus	342		<i>Scapholeberis</i>		314
<i>producta</i> (Ceriodaphnia)	315		<i>schaefferi</i> (Daphnia)		305
<i>propinqua</i> (Daphnia)	309		<i>similis</i> (Daphnia)		309
<i>propinqua</i> (Leydigia)	329		<i>Simocephalus</i>		311
<i>propinqua</i> (Macrothrix)	325		<i>Simosa</i>		311
<i>pulchella</i> (Alona)	335		<i>sordidus</i> (<i>Acanthocercus</i>)		327
			<i>sordidus</i> (<i>Ilyocryptus</i>)		327
			<i>spinosa</i> (Macrothrix)		326
			<i>striolata</i> (Alona)		333
Q					
<i>quadrangula</i> (Ceriodaphnia)	317		T		
<i>quadrangula</i> (Ceriodaphnia)	318		<i>tenuicornis</i> (Moina)		320
<i>quadrangula</i> (Daphnia)	317		<i>tenuispina</i> (Daphnia)		309
<i>quadrangularis</i> (Lynceus)	331		<i>thomsoni</i> (Daphnia)		309
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<i>rectirostris</i> (Moina)	321		V		
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			<i>vetuloides</i> (<i>Simosa</i>)		312

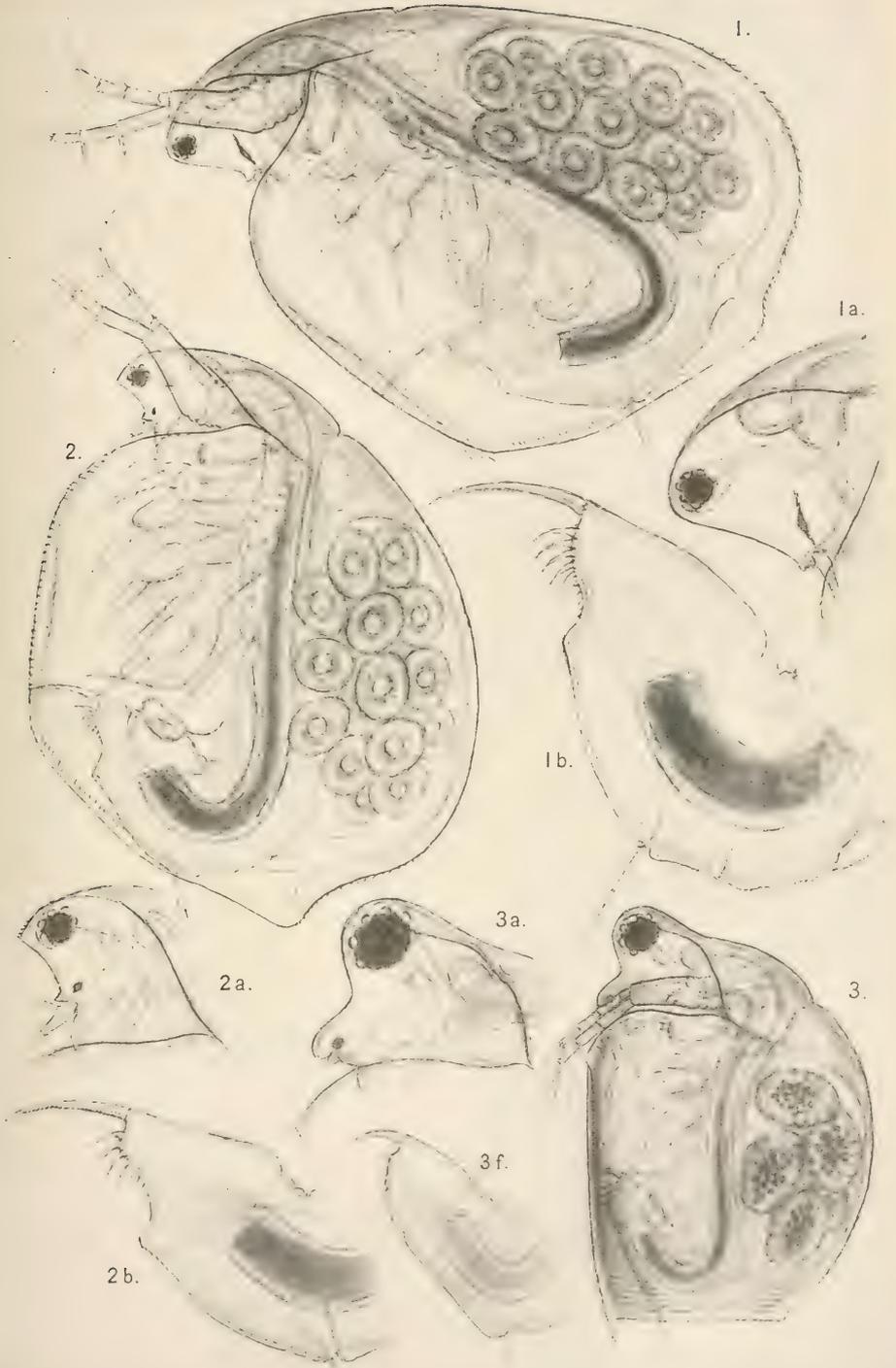




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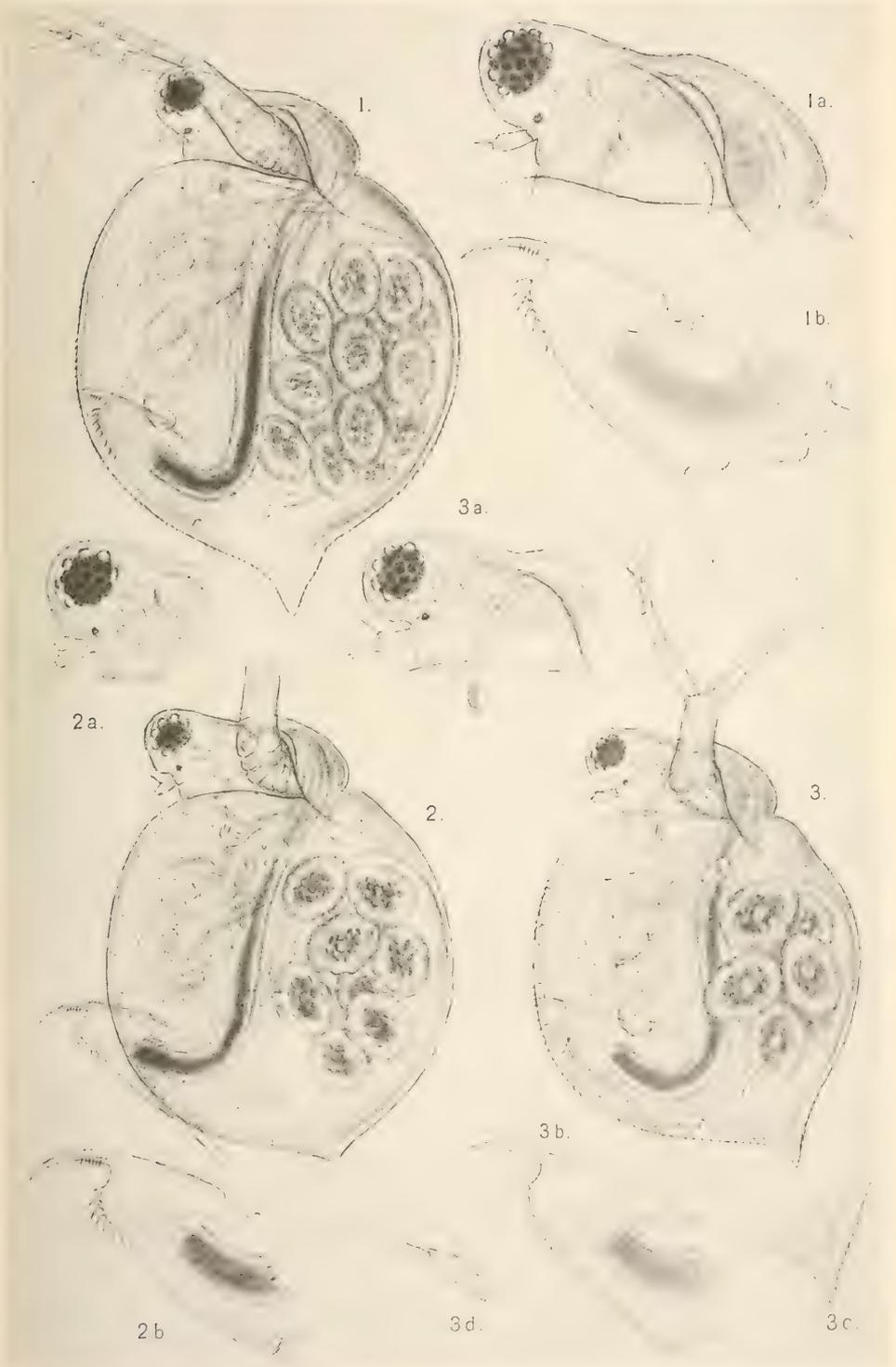
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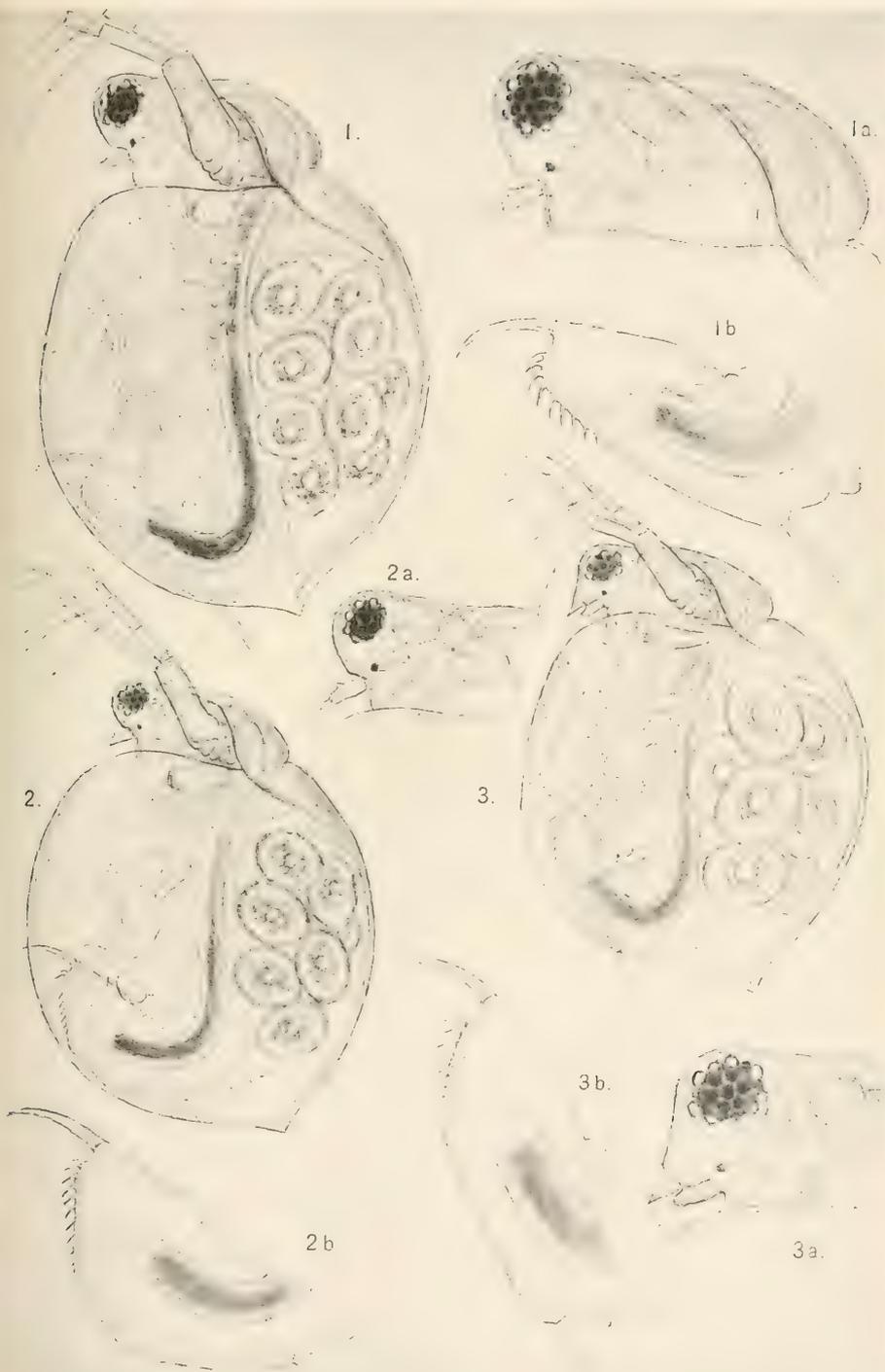
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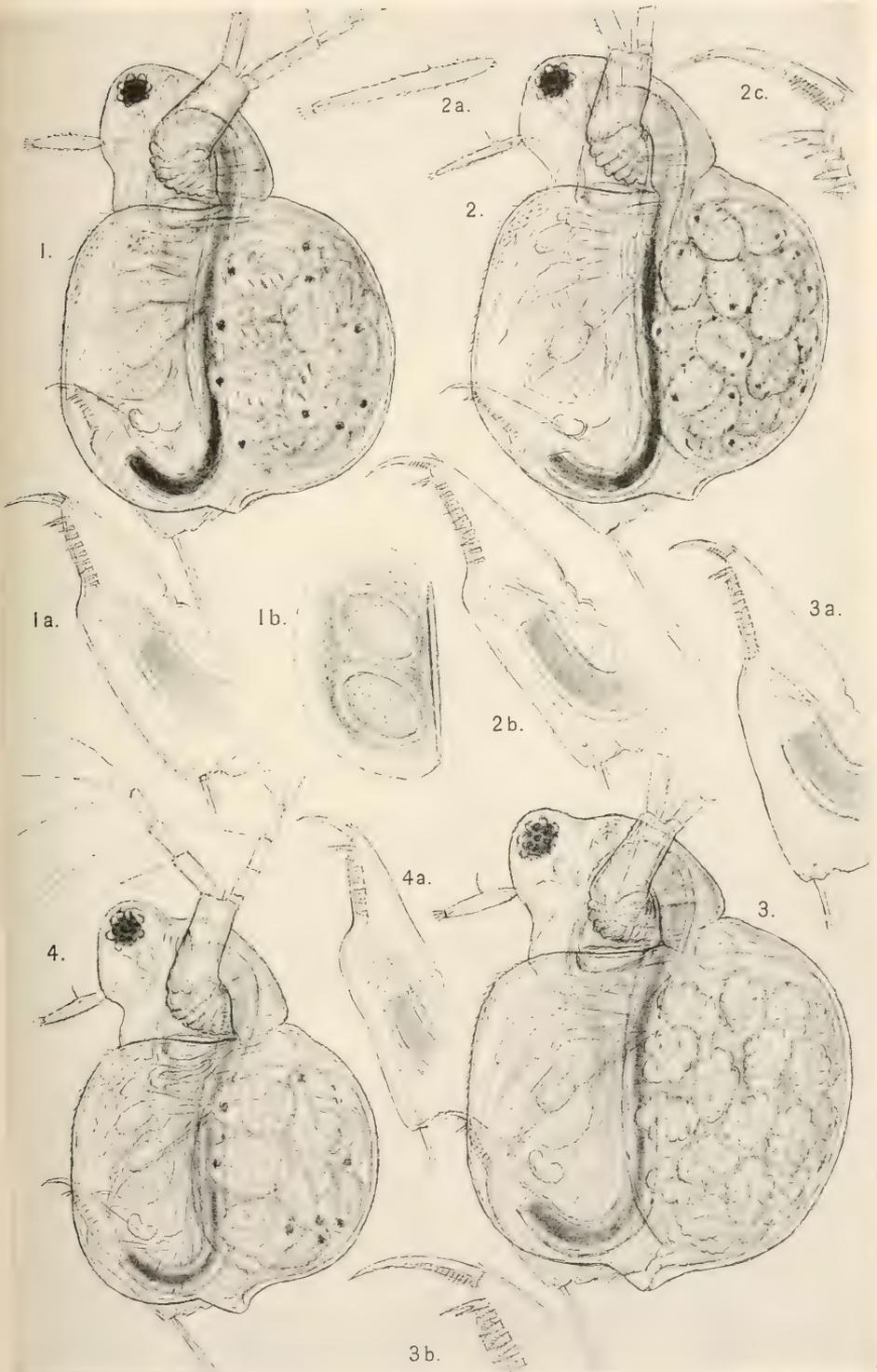
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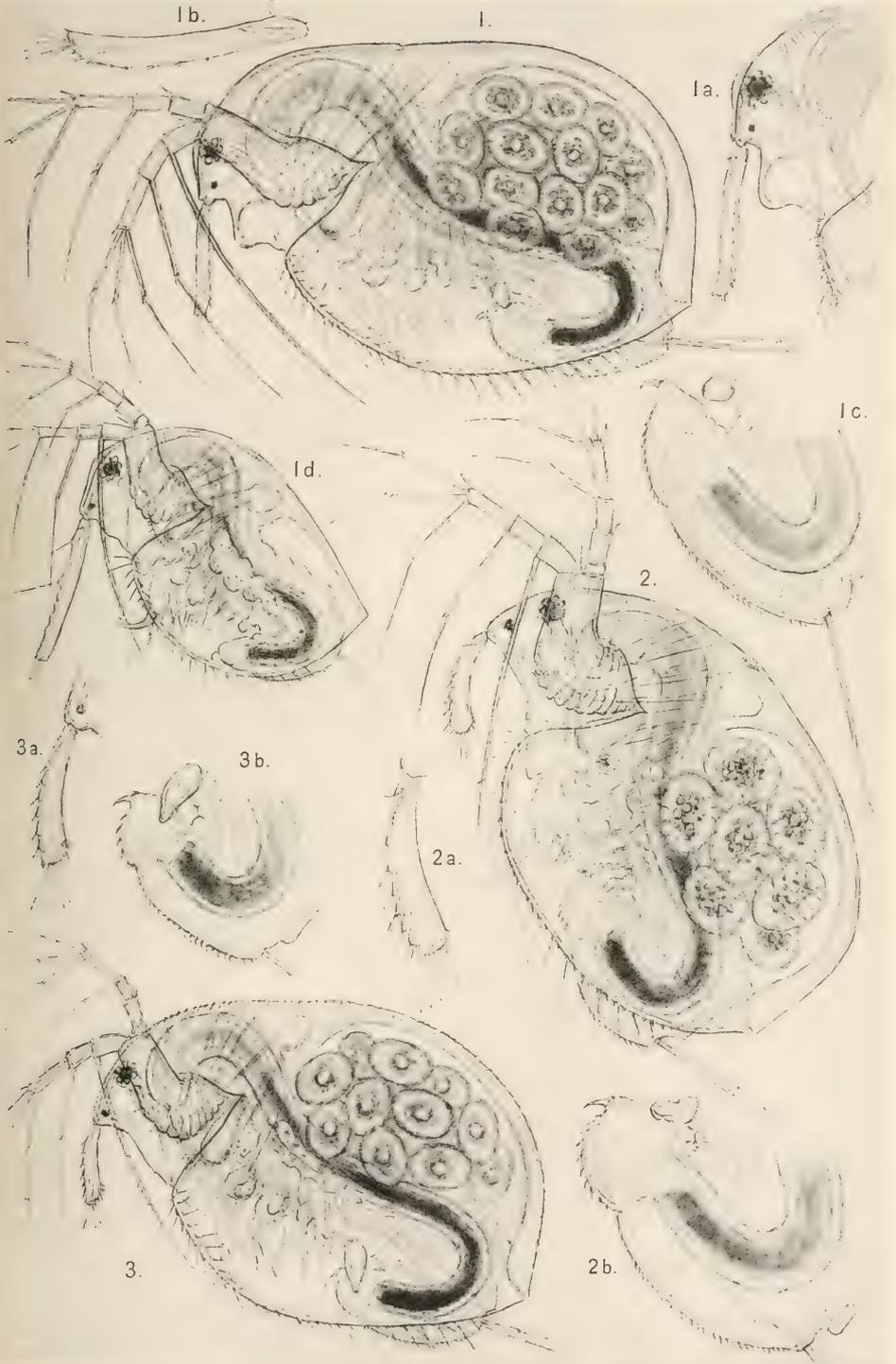
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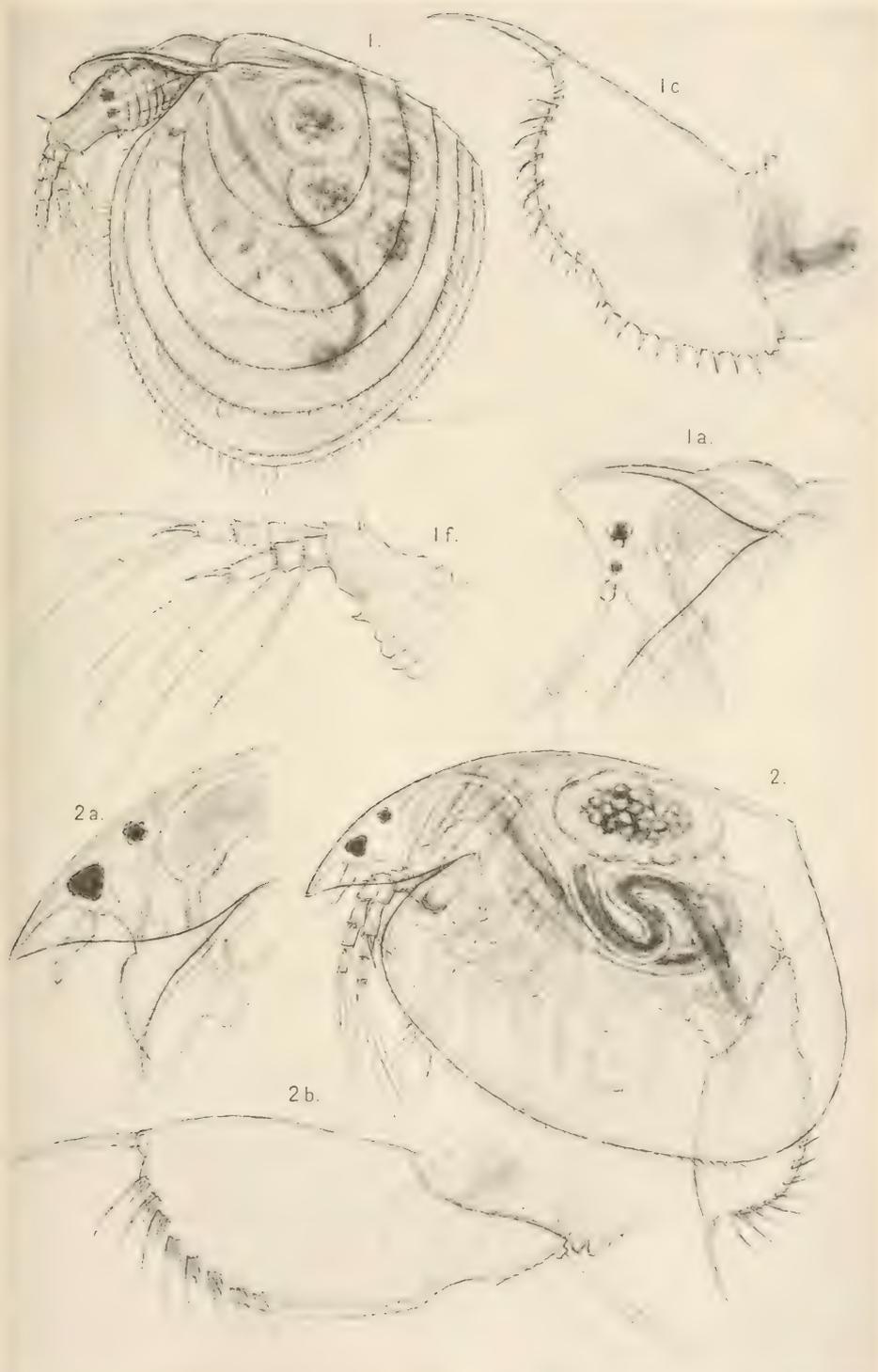
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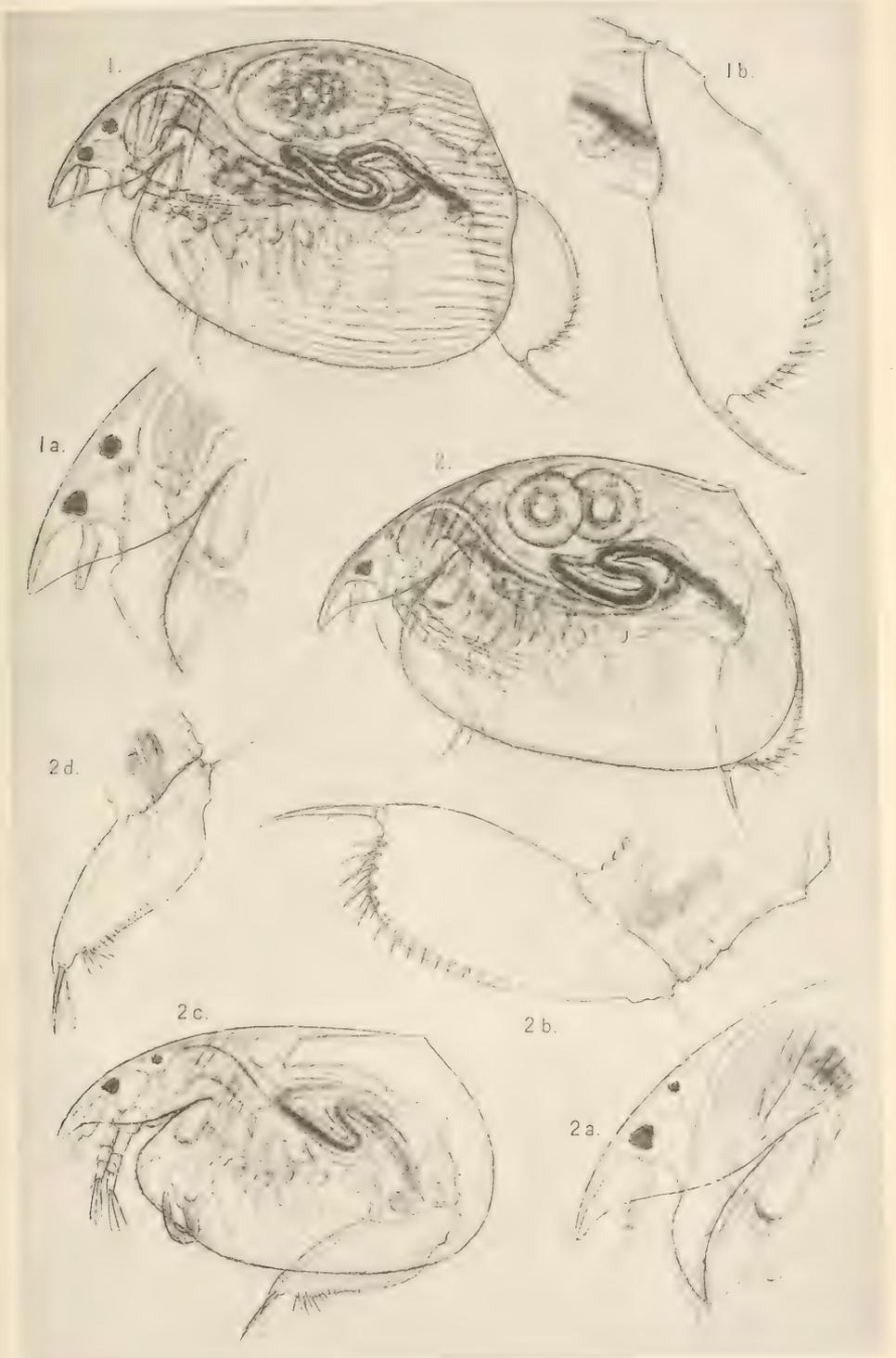
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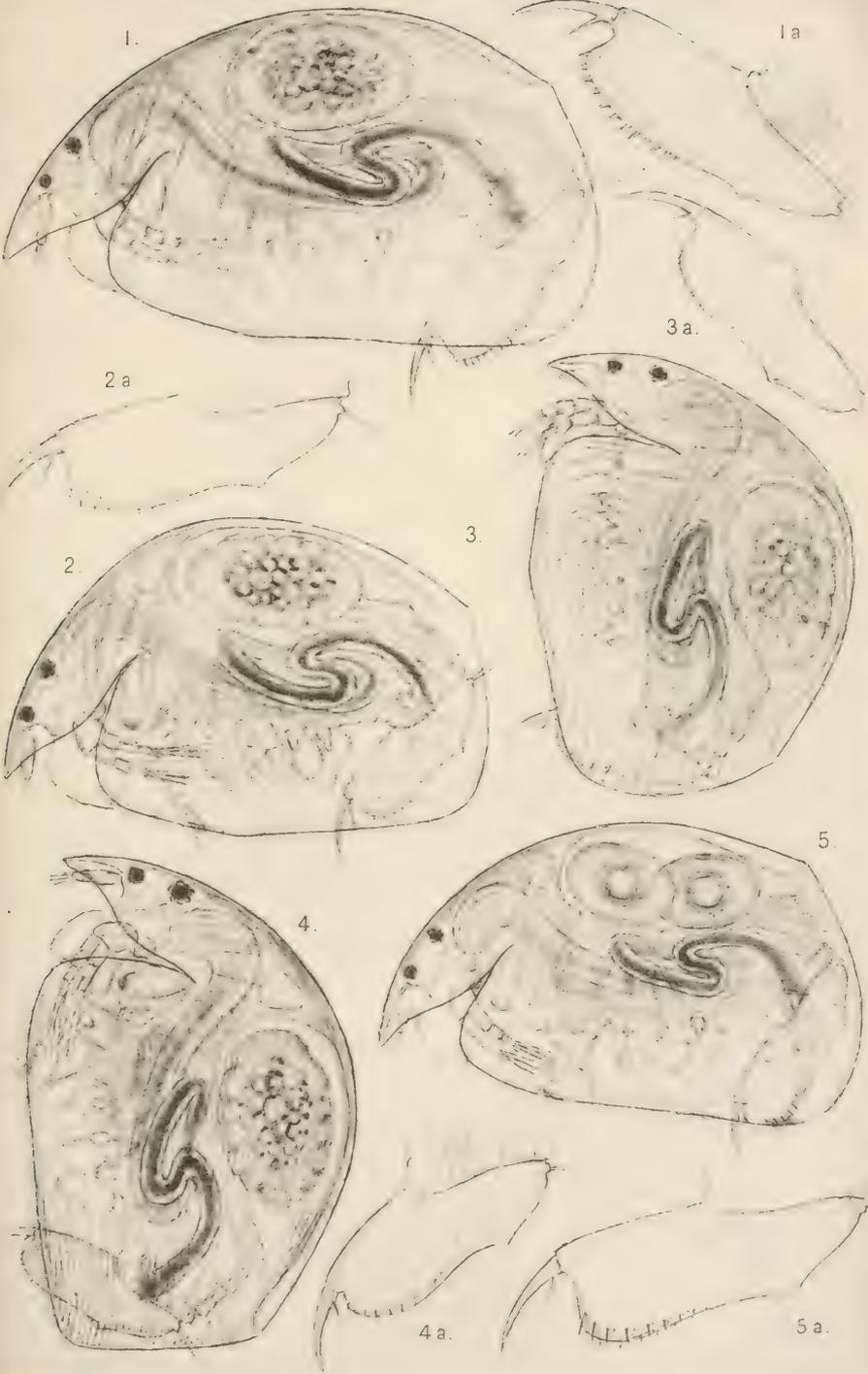
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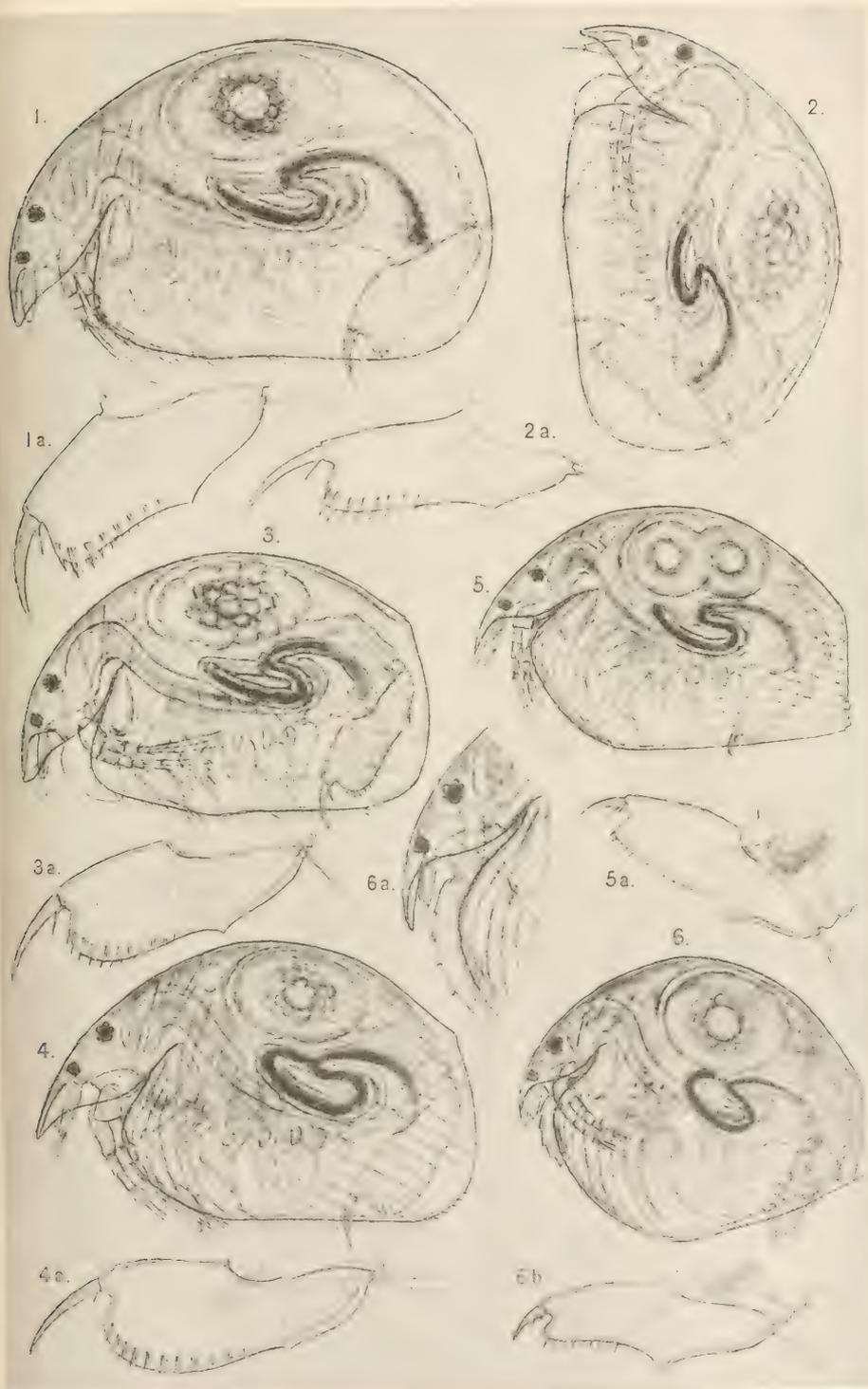
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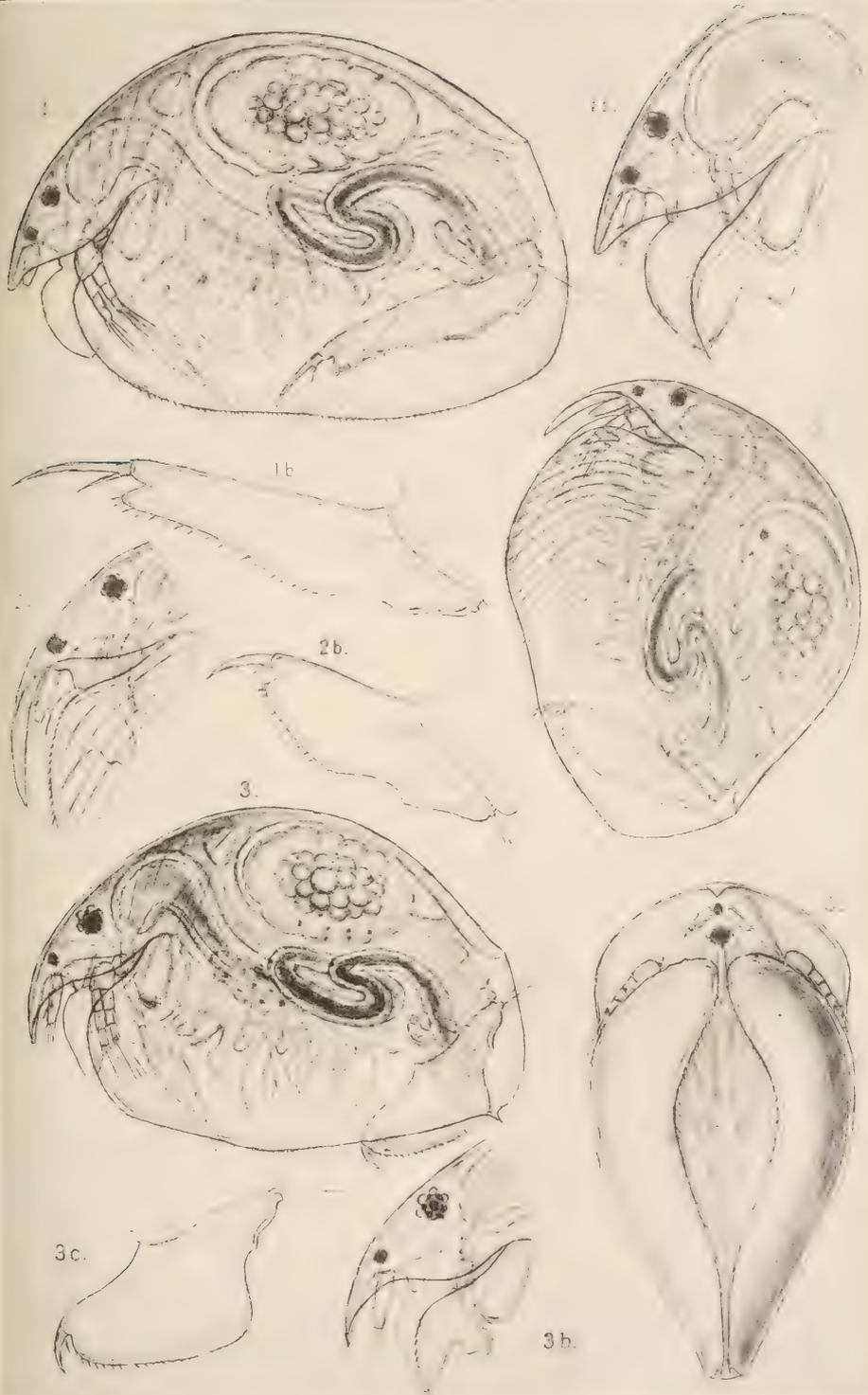
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5.—*On some South African Ichneumonidae in the Collection of the South African Museum.*—By CLAUDE MORLEY, F.E.S., F.Z.S., etc. Author of *Ichneumonologia Britannica, A Revision of the Ichneumonidae, etc.* Part I.

THERE has recently been forwarded to me from the South African Museum a small collection of Ichneumonidae for determination and description. It consists of 136 specimens, distributed as follows among the five subfamilies of these parasitic Hymenoptera: Ichneumoninae, 32 specimens, comprising 23 species, of which 4 were already described; Cryptinae, 32 specimens, comprising 19 species, of which 5 were described; Pimplinae, 29 specimens, comprising 19 species, of which 12 were already described; Tryphoninae, 9 specimens, comprising 7 species, of which 5 were already described; and Ophioninae, 34 specimens, comprising 19 species, of which 11 were already described: giving the total of 87 species, of which no more than 37 had previously been known, and several of these from Europe only. These have all been compared by Dr. L. Péringuey with the types of 92 South African species in that Museum, described by Peter Cameron, and found by the former to be distinct.

I am not aware that anything in the form of a bibliography of the African Ichneumonidae has yet been attempted; and it may be well to here indicate where students of these insects should turn for descriptions of their captures. This is in so scattered a form that the following must be regarded as no more than the works entering my head as I write. First, in the 4th volume of Lepeletier's general work on Exotic Hymenoptera, *Histoire naturelle des Insectes, Hyménoptères*, we have a good many species superficially sketched by Brullé in 1846; Lucas added others in his *Exploration Scientifique de l'Algérie, Zoologie*, in the same year. Guérin Méneville extended our knowledge in Lefèvre's *Voyage en Abyssinie* in 1848. Next Holmgren brought forward several kinds in his general account, *Eugenies Resa Insect.* of 1868; and Dr. Taschenberg described several Ophionides in *Zeits. Ges. Nat.* 1875, p. 436. Fred. Smith added others in the

Rodriguez Expedition in *Ann. Nat. Hist.* 1876, p. 449; and Saussure beautifully figured several plates of them, but with no description, in Grandidier's *Histoire de Madagascar* in 1890. Saussure also added a few kinds in Distant's *Naturalist in the Transvaal* in 1892. Kriechbaumer described some collected by Dr. Brauns in *Berl. Ent. Zeit.* 1894, p. 30, etc.; *cf.* also *Zeits. Hym.-Dip.* 1901 for more by the same author. M. l'Abbé Berthoumieu published others from northern Africa in *Revue Scientifique du Bourbonnais* in 1894, p. 181, and W. F. Kirby from the Congo in *Ann. Nat. Hist.* 1896, p. 257. Prof. Krieger brought forward others in *Berl. Ent. Zeit.* 1894, p. 304, and *Sitz. Nat. Ges. Leipzig*, 1899, p. 113. Jacob added something in *Revue Russe d'Entomologie*, 1907, p. 7. We have several somewhat indifferently described species by Szépligeti in *Ann. Mus. Nation. Hongarie*, 1903 and 1905; in the *Bull. Mus. Paris*, 1907, p. 139; and in his account of the material collection by Sjösted's Kilimanjaro-Meru Expedition ii, 8, 1910. Other works are Gribodo *Anni Museo Civico Genova*, 1879, p. 345; du Buysson in *Annales Société Entomologique France*, 1897, p. 352; Cameron in *Records of Albany Museum*, 1904, p. 146, and 1905; *Zeits. Hym.-Dip.* 1905, p. 343; *Trans. S. African Phil. Soc.* 1905, and 1906; *Annals S. African Museum*, 1906, pp. 81-182 et 1907, pp. 203-225, and *Trans. Linn. Soc.* 1907, p. 80; Schulz has added a little in *Spolia Hym.* 1906, and *Zool. Annalen* of 1911. Mr. S. A. Neave has recently collected somewhat extensively in Central Africa, and much of his material, along with Mr. W. L. Distant's collection from the Transvaal and other material in the British Museum, has been monographed by me in the four parts of *Revision of the Ichneumonidae during 1912-15*; and I also worked out Scott's material from the Seychelles Islands in the *Proc. Linn. Soc.* in 1912, ii. p. 169. But the only account of considerable extent on the subject is Dr. J. Tosquet's "*Ichneumonides d'Afrique*" in *Mémoires Soc. Ent. Belgique*, 1896, pp. 1-430: a complex work.

The types of the new species are, unless otherwise mentioned, in the South African Museum at Cape Town.

In the descriptions I have attempted to give a superficial idea of the facies in the first few words.

CLASSIFIED CATALOGUE.

ICHNEUMONIDAE.	ISCHNOJOPPA, Krch.
ICHNEUMONINAE.	<i>luteator</i> , Fab.
<i>Joppides</i> .	<i>extremitas</i> , sp. n.
EIJOPPA, Szépl.	XANTHOJOPPA, Cam.
<i>didymata</i> , sp. n.	<i>inermis</i> , sp. n.

Listrodromides.

NEOTYPUS, Först.
conflatus, sp. n.

ANISOBAS, Wesm.
rabula, sp. n.

Ichneumonides.

Oxyppygini.

BYSTRA, Cam.
quadrata, sp. n.
EUPALAMUS, Wesm.
convexius, sp. n.
MELANICHNEUMON, Th.
pulcher, sp. n.
rufator, sp. n.
BARICHNEUMON, Th.
grandis, sp. n.
CHASMIAS, Ashm.
glaucopterus, sp. n.

Amblypygini.

CTENICHNEUMON, Th.
brevis, sp. n.
AMBLYTELES, Wesm.
auxifer, Tosq.
tuberculata, sp. n.

Platyurini.

EURLABUS, Wesm.
cyanocroceus, sp. n.
PLATYLABUS, Wesm.
rufescens, sp. n.
pulchellus, sp. n.
miniatulus, sp. n.
vallatus, sp. n.
CTENOCHARES, Först.
blandita, Tosq.
testacea, Szépl.
thyridiens, sp. n.

CRYPTINAE.

Phygadeuonides.

Phygadeuonini.

PHYGADEUON, Grav.
bitinctus, Gmel.
exiguus, Grav.

Hemitekini.

HEMITELES, Grav.
Alecto, sp. n.

Cryptides.

Mesostenini.

GORYPHUS, Holmgr.
trisulcatus, sp. n.
bisulcatus, sp. n.
basalis, sp. n.
evanescens, sp. n.
testaceus, sp. n.
LISTROGNATHUS, Tek.
transversus, sp. n.
STENARAÆUS, Thoms.
lissnotus, var. nigripes, var. n.
SILSILA, Cameron.
variegata, sp. n.

Cryptini.

OSPRHYNCHOTUS, Spin.
niger, sp. n.
STICTOCRYPTUS, Cam.
petiolaris, sp. n.
octonarius, sp. n.
ETHA, Cameron.
castanea, sp. n.
CRYPTUS, Fab.
xanthopus, Brullé.
blanditus, Tosq.
scurrilis, Tosq.
videndus, sp. n.
magnificus, sp. n.

PIMPLINAE.

Xoridides.

GABUNIA, Kriech.
Bardo, sp. n.
XYLONOMUS, Grav.
unifasciatus, sp. n.

Acaenitides.

ACAENITUS, Latr.
bivittatus, sp. n.
CTENOTOMA, Cam.
ruficeps, Cam.

Echthromorphides.

ECHTHROMORPHA, Hlmgr.
variegata, Brullé.

Pimplides.

PIMPLA, Fab.
spiloaspis, Cam.
crocata, Tosq.
bistricta, sp. n.
melanospila, Cam.
heliophila, Cam.
POECILOPIMPLA, Morl.
testacea, sp. n.
THERONIA, Hlmgr.
trivittata, Krieg.
lucida, Tosq.
HEMIPIMPLA, Saus.
bifasciata, Morl.
divisa, Tosq.
PHILOPSYCHE, Cam.
abdominalis, sp. n.
SJOSTEDTIELLA, Szépl.
nigripectus, Brullé.

Lissonotides.

LISSONOTA, Grav.
Halidayi, Holmgr.
CRYPTOPIMPLA, Tasch.
rubrithorax, sp. n.

Banchides.

EXETASTES, Grav.
annulator, sp. n.

TRYPHONINAE.

Metopiides.

METOPHIUS, Panz.
hilaris, Tosq.
lugubris, Tosq.
albipictus, Tosq.
apophua, sp. n.

Bassides.

BASSUS, Fab.
laetatorius, Fab.
HOMOCIDUS, Morl.
lineipes, sp. n.

Ezochides.

POLYCLISTUS, Först.
femoralis, Fourc.

OPHIONINAE.

Ophionides.

ALLOCAMPTUS, Thoms.
africanus, Morl.
NOTOTRACHYS, Marsh.
foliator, Fab.

Anomalides.

AGRYPON, Först.
xanthomelas, Brullé.
TRICHOMMA, Wesm.
cariniscutum, Cam.

Paniscides.

PANISCUS, Schr.
testaceus, Grav.
radialis, sp. n.

Cremastides.

CREMASTUS, Grav.
pestifer, Morl.

Campoplegides.

CHAROPS, Holmgr.
spinitarsis, Cam.
cariniceps, Cam.
CAMPOPLEX, Grav.
juventas, sp. n.
CYMODUSA, Holmgr.
flavipes, Brisch.
CASINARIA, Holmgr.
moesta, Grav.
NEMERITIS, Holmgr.
canescens, Grav.
PHOBOCAMPA, Thoms.
strigipes, sp. n.
OMORGA, Thoms.
sordicincta, sp. n.
exareolata, sp. n.
CALLIDORA, Thoms.
costulata, sp. n.
NEPIERA, Thoms.
concinna, Holmgr.
ANGITIA, Thoms.
claripennis, Thoms.

FAMILY ICHNEUMONIDAE.

SUBFAMILY ICHNEUMONINAE.

TRIBE JOPPIDES.

A monograph of this Tribe has recently appeared in my Revision, part iv, published by the British Museum in 1915. In it is enumerated the genus

EIJOPPA, Szépl.

Term. Füz. 1900, p. 282.

Essential Characters.—Abdomen parallel-sided, narrower than thorax; second segment elongate. Labrum concealed beneath clypeus. Mesonotum evenly punctate; clypeus not apically produced, nor colour metallic. Segments both aciculate and laterally angularly produced; flagellum of ♀ centrally dilated and of ♂ serrate. A single species of this genus only has hitherto been described, and that from Brazil; but the following fills all the necessary characters and may well find a position therein.

EIJOPPA DIDYMATA, sp. nov.

♂ only. A dull, pale flavous species with only the mandibular apices, ocellar region quadrately, antennae except underside of scape, mesonotum except two discal vittae, a lateral frenal mark, the external and dentiparal areae both before and beyond the costulae, and whole of the hind tibiae and tarsi, black; stigma fulvous. Face coarsely punctate, centrally elevated and not discreted from the laterally elevated and centrally foveate clypeus; frons and vertex glabrous, with a slight central tubercle above the scrobes. Antennae gradually attenuate throughout, serrate and slightly shorter than the body. Thorax sparsely and not finely punctate, shining; areola hexagonal, strong and distinctly longer than broad; basal sulcus and costulae strong; dentiparal areae trans-strigose and apophyses wanting. Scutellum strongly convex, glittering and sparsely punctate, with somewhat broad lateral carina almost to its apex. Abdomen parallel-sided and immaculate, with the three basal segments aciculate; postpetiole abruptly explanate and laterally subelevated, with no discal carinae; gastrocoeli large and deeply impressed, as broad as the intervening space; valvulae exerted and not large. Legs normal and not elongate, immaculate with the anterior tarsi subinfuscate and both the hind tibiae and tarsi, as well as their strong calcaria, dead black. Wings fulvescent hyaline

and not infumate; upper basal nervure postfurcal; areolet pentagonal and not large, emitting the angled and bifenestrate recurrent nervure from but slightly beyond its centre; nervellus postfurcal and straight, intercepted at its lower third. Length, 12 mm.

The type was captured at Bulwar in Natal by W. Haygarth.

ISCHNOJOPPA, Kriechb.

Ent. Nachr. 1898, p. 32.

ISCHNOJOPPA LUTEATOR, Fab.

Ent. Syst. Suppl. 1798, p. 222.

In the same monograph, I have referred to this species' occurrence in Asia, Africa, Australia, and its erroneous record from Europe. It is known throughout Central Africa; but none were hitherto captured so far south as the following typical example.

One ♀ at Mfongosi, in Zulu Land, by W. E. Jones.

ISCHNOJOPPA EXTREMITAS, sp. nov.

♂ only. A slender, clear testaceous species with the head except mandibles and palpi and clypeal margin, antennae except underside of scape, and the anus from base of the fifth segment, dead black; flagellum discally white-banded beyond its centre; and the wings fulvescent with stigma luteous. In structure it differs hardly at all from *I. luteator*: the face is shorter, the hind coxae are distinctly more sparsely punctate below, the eyes a little less prominent; and the wings are narrower, with the discoidal cell a little longer and narrower, and the radial distinctly narrower with the apical radial abscissa straighter. It is, however, abundantly distinct in its immaculate legs, black head and pale-banded antennae. Length, 12 mm.

No nearer locality than South Africa is assigned the type.

XANTHOJOPPA, Cam.

Ann. Mag. Nat. Hist. vii, 1901, p. 378.

Essential Characters.—Metanotal areolar carinae entirely wanting; wings not hyaline; species testaceous. Apophyses distinct; scutellum not strongly convex; areolet pentagonal and of normal size. Flagellum of ♀ more or less strongly dilated and of ♂ serrate. Segments but little discreted, neither angularly produced nor aciculate.

XANTHOJOPPA INERMIS, sp. nov.

♀ only. A dull and testaceous species with the head except discally, thorax except mesonotum, and the scutellum, flavidous. Flagellum

except its six pure white central joints, extreme mandibular apices, ocellar region circularly, terebra and hind onychii, black. Remainder of hind tarsal joints and apices of their tibiae infusate. Wings fulvescent hyaline, with nervures black and stigma luteous. Petiolar area not transversely reticulate. Length, 10 mm. From the six described species of this genus, of which all are from India, the present differs in its obsolete apophyses, subfiliform antennae which are slightly explanate beyond their centre and apically attenuate, in its superficial gastrocoeli which are not elongate, its mainly testaceous hind legs and pale stigma. It most closely approaches *X. latebalteata*, Cam. Ann. Nat. Hist. xx, 1907, p. 186, which has broad black thoracic and abdominal markings, with transversely reticulate petiolar area.

The type was captured at East London during July, 1914, by R. M. Lightfoot.

TRIBE LISTRODROMIDES.

NEOTYPUS, Först.

Ver. pr. Rheinl. 1868, p. 194.

NEOTYPUS CONFLATUS, sp. nov.

♀ only. A squat, convex, dull brick-red species with small white markings. Head as broad as thorax and posteriorly as broad as the eyes; occiput shining and subglabrous; frons finely punctate, its white orbits elevated and higher than eyes, with scrobes large and glittering; face convex, closely and evenly punctate, continuous with the stout clypeus; cheeks elongate and buccate, labrum exerted; mandibles very stout with their subequal teeth black and their base, with an external orbital dot, white. Antennae stout, short and immaculate, not extending beyond thorax. Thorax very stout and as long as abdomen, deeply and not very closely punctate, white-pilose; notauli wanting; anteradical callosity and subradical line white, mesosternum basally black; petiolar area deeply impressed and occupying three-fourths of metanotum; areola small and twice as broad as long, costulae entire, external area narrower than the dentiparal; spiracles oval, apophyses wanting. Scutellum sparsely punctate, shining and margined throughout; postscutellum white. Abdomen broadly ovate with the black fourth and broadly white-margined following segments small; basal segment sparsely punctate, its glabrous apex white and petiole elongate; second and the nigrescent third segments broader than long, deeply punctate, the former with strong basal gastrocoeli

and white apical angles; terebra exerted, black and apically pale; hypopygium large and apically acuminate. Legs short and somewhat stout; calcaria, all the coxae except base of hind ones, apices of anterior femora and inner side of their tibiae, pure white; tarsal claws strongly pectinate. Wings small and broad, hyaline with stigma and nervures black; lower basal nervure antefurcal, areolet subquadrate. Length, 8 mm. A very typical species of this distinct genus.

Captured at Chinde in Mozambique, Portuguese East Africa, by K. H. Barnard, during November, 1912.

ANISOBAS, Wesm.

Nouv. Mém. Ac. Brux. 1844, p. 111.

ANISOBAS RABULA, sp. nov.

♀ only. A somewhat bright red species with the black antennae, abdomen and legs all white-marked. Head posteriorly, mandibles at both extremities and apex of clypeus black; orbits not white-marked. Scape red-dotted beneath, and a central flagellar band white. Thorax with small anteradical white callosity, and the whole sternum black; postscutellum red. Abdomen black with apical angles of two basal segments, and the anus, white-marked; postpetiole glabrous with only a row of punctures before its apex; hypopygium covering terebral base but not apically produced. Legs black with only apices of front femora and the inner side of the anterior tibiae, with all calcaria, white; claws not pectinate. Wings slightly but distinctly infumate. Length, 7 mm.

The position of the *Listrodromides*, and their very right to Tribal rank, are yet uncertain: this species, compared with the last, goes some way to uphold Prof. Thomson's view (Opusc. Ent. xix, p. 2099) that the genera *Listrodromus* and *Neotypus* which have pectinate tarsal claws, and *Anisobas* which has not, form a small and compact group among the *Amblypygini*, sharing the following characters in common: Clypeus not discreted, its lateral foveae obsolete; genal costa continuous; antennae inserted high on frons, with scapes not further from each other than from the eyes; metanotal costulae entire, the dentiparal area externally arcuate; tibiae submutic, the hind ones hardly longer than their femora; lower basal nervure oblique, antefurcal and pretty well straight. The above two species possess all these characters and, indeed, differ *inter se* only in the features indicated under the latter.

The type was captured at Stellenbosch, Cape Colony, by R. M. Lightfoot, during September, 1913.

TRIBE ICHNEUMONIDES.

SUBTRIBE OXYPYGINI.

BYSTRA, Cam.

Ann. Nat. Hist. ix, 1902, p. 149.

Generic Characters.—Head with the occiput obtusely margined, the cheeks strongly buccate, the labrum exerted and upper mandibular tooth the longer. Antennae stout and, beyond their centre, strongly compresso-dilated; basal flagellar joints but little longer than broad. Metathorax with complete areae and linear spiracles, its apex sub-vertically declivous; areola subcrescentic or hexagonal, basally not curved. Scutellum deplanate, laterally and apically carinate. Abdomen with only seven visible discal segments; ventral segments two to four, and base of the fifth, plicate; terebra not strongly exerted. Tibiae and tarsi spinulose. Areolet pentagonal; basal nervure continuous through median; nervelet more or less distinct. I here give a revised account of this genus since, upon examining the genotype, from India, I found several of Cameron's characters quite erroneous and these are rectified above. The genus is excluded from the *Joppides* only by its lack of basal metanotal sulcus. One species alone has hitherto been known.

BYSTRA QUADRATA, sp. nov.

♀ only. A rufescent-testaceous species, finely punctate and somewhat dull with the anus glittering; pleurae, sternum and coxae subflavescent. Face, clypeus, cheeks, all the orbits broadly, and the eighth to sixteenth flagellar joints, white; costa, mandibular apices and remainder of flagellum, alone black. Face deeply and not very closely punctate; lateral clypeal foveae large; whole disc of thorax very closely and finely punctate, with notauli obsolete and the petiolar area both discreted and shagreened; metanotal areae entire and strong, with areola hexagonal, basally truncate and hardly longer than broad. Abdomen a little narrower than thorax; petiole slender, not short, and half breadth of postpetiole, which is convex and finely shagreened with no carinae nor punctures; gastrocoeli small and lateral; second and third segments evenly and very finely punctate, dull with apex of the latter and whole of remaining segments glabrous and nitidulous; hypopygium not extending to base of the black and hardly exerted terebra. Legs normal and not slender; hind coxae obsoletely punctate and not scopuliferous, their tibiae a little curved. Areolet pentagonal,

laterally not quite coalescent above, emitting recurrent nervure from its centre. Length, 14 mm.

The type and co-type were taken at Salisbury, in Southern Rhodesia, during 1915 by D. Dodds, and at Salisbury in September, 1913.

EUPALAMUS, Wesm.

Nouv. Mém. Ac. Brux. 1844, p. 13.

This originally ill-differentiated genus is well characterised by Prof. Thomson (Ann. Soc. France, 1886, p. 11): Cheeks always quite short and in ♀ sub-buccate, mandibles stout and clypeus apically truncate with labrum distinctly exerted; face short and the confluent antennal scrobes large and glittering; vertex not broad. Flagellum of ♀ centrally dilated, in ♂ its seventh to fifteenth joints with elevated carinae. Areola longer than broad, and coxal area distinct; scutellum not transverse. Petiole gently and equally curved throughout; postpetiole not aciculate, somewhat smooth or rugulose, with its central area twice as broad as the lateral ones; gastrocoeli small and subrugulose, thyridii far from base and not large. Posterior tibiae and femora stout. Thorax and abdomen somewhat deplanate.

EUPALAMUS CONVEXIUS, sp. nov.

♀ only. A stout and dull black species with the palpi, a central flagellar band, and inner side of the front tibiae, white; face, cheeks, frontal orbits, underside of scape, a broad anteradial line, small callosities below radices, a discal mesonotal mark and whole of both the scutellum and postscutellum, sanguineous-red (perhaps stramineous in nature); front tarsi infusate. Head posteriorly not broad; face closely and coarsely, frons closely and evenly, punctate; antennae abruptly attenuate at extreme apices, with the penultimate joint and that preceding it (perhaps accidentally) deeply excavate. Thorax with no notauli; metanotal costulae strong; areola elongate, subglabrous, nitidulous and but indefinitely separated from the strongly punctate, pilose and strongly discreted petiolar area. Scutellum large, strongly convex, glittering and very conspicuous. Abdomen fusiform and immaculate with the petiole narrow and postpetiole abruptly explanate, finely rugulose, with prominent spiracles. Legs normal and coxae simple; wings broad and a little clouded; costa, stigma and nervures black; lower basal nervure but slightly postfurcal; areolet pentagonal, not coalescent above, emitting recurrent subcentrally. Length, 13 mm.

The type occurred at Bulwer in Natal during 1914 to W. Haygarth.

MELANICHNEUMON, Thoms.

Opusc. Ent. xviii, 1893, p. 1954.

MELANICHNEUMON PULCHER, sp. nov.

♀ only. A black and red species, with white markings. Black with the mandibles, clypeus, propleural dot before radices, meso-pleuræ and -notum, frenum, scutellum, and the anterior legs, except basally, sanguineous red; palpi, frontal dots, eight central flagellar joints, postscutellum apically, apical lateral angles of the three basal segments and whole disc of the 6th and 7th, white. Face closely and strongly punctate, hardly discreted from the apically truncate clypeus, fourth to sixth flagellar joints moniliform and the central ones explanate. Thorax closely punctate and shining, metanotal areae entire, the lateral rugulose; areola subparallel-sided, glabrous and extending to base, petiolar area subvertical, hardly discreted and roughly sculptured, scutellum deplanate and not margined. Abdomen fusiform and dull, becoming gradually more nitidulous from the fourth segment, postpetiole broad and closely punctate, gastrocoeli transverse and deeply impressed. Legs normal and not slender. Wings broad with the costa and nervures infusate, stigma castaneous; areolet pentagonal. Length 12 mm. Allied to *M. saturatorius*, Linn., but stouter with the flagellum much more incrassate, in colouration it resembles *Neotypus lapidator*, Fab.

Type and co-type were taken at Potchefstroom in the Transvaal by T. Ayres.

MELANICHNEUMON RUFATOR, sp. nov.

♀ only. Brick-red, even to the mandibles and terebra, with only the posterior coxæ infusate; the orbits indefinitely and a central flagellar band paler and sometimes whitish. Head narrow behind the eyes, face evenly punctate, centrally elevated and hardly discreted from the apically truncate clypeus; antennae subfiliform and not apically attenuate nor centrally explanate. Thorax finely and evenly punctate, with metanotum duller and subcoriaceous; areola strong, hexagonal and hardly longer than broad, strongly separated from the discreted petiolar area. Scutellum glittering, subglabrous, deplanate and not margined. Abdomen fusiform and apically nitidulous; postpetiole deplanate, shagreened and not broad; gastrocoeli superficial, legs normal and not stout, with no scopulæ. Wings narrow and slightly fulvescent, with stigma castaneous. Length, 7-10 mm. The totally red colouration is remarkable; in structure this species resembles *M. sanguinator*, Rossi.

The type was captured at Potchefstroom in the Transvaal by T. Ayres; and two co types are from Kimberley on May 5th, 1912, by Bro. Power, and Cape Town early in 1915 by L. Péringuey. Co-type in the British Museum.

BARICHNEUMON, Thoms.

Opusc. Ent. xviii, 1893, p. 1959.

BARICHNEUMON GRANDIS, sp. nov.

♀ only. A black and red species, with white markings. Black with the epistoma, labrum, underside of scape, propleurae above, meso- and meta-thorax except the frenal callosities, scutellum, and the anterior legs except basally, dull dark red; palpi, mandibular base, sides of clypeus, inner and the upper outer orbits, a broad central flagellar band, pronotum centrally, subradical callosities and post-scutellum both linearly, apical lateral angles of two basal segments and whole disc of the seventh and sixth, white. Face sparsely punctate and not discreted from the apically truncate and centrally slightly produced clypeus, whose lateral foveae are large. Thorax finely and evenly punctate, shining; pronotum discally tuberculate, notauli obsolete; metanotal areae entire with but weak carinae and evanescent costulae, areola strongly elongate and apically emarginate. Scutellum deplanate, sparsely punctate and not margined. Abdomen fusiform and dull, with the fourth and following segments pilose and shining; postpetiole evenly explanate, broad and punctate with no carinae; gastrocoeli deeply impressed but not large. Legs normal and subelongate, with very strong hind coxal scopulae and inpectinate claws. Wings somewhat narrow, with black stigma and nervures, areolet broad above, basal nervure continuous through the median. Length, 10 mm. It has the facies of a large *B. ridibundus*, Grav., and shares with that species the pronotal tubercle, though the abdomen is more ovate and of different colouration.

The type was captured at Dunbrody in the Cape Province on March 1st, 1912.

CHASMIAS, Ashm.

Proc. U. S. Nat. Mus. 1900, p. 17.

Chasmodes, Wesm. Nouv. Mém. 1844, p. 13 (*nec* Cuvier).

Essential Characters.—Metathoracic spiracles elongate; hypopygium remote from terebral base; scutellum deplanate, basal metanotal sulcus wanting; clypeus apically emarginate; body subcylindrical.

CHASMIAS GLAUOPTERUS, sp. nov.

♀ only. A dull and somewhat pale castaneous species, with black markings and broadly white-banded antennae. Flagellum with the 6th-7th joints and its apex from the 17th, propleurae except above, whole mesopleurae and frenum, metathorax, except the external and dentiparal areae, terebra and hind tarsi, black. Face strongly punctate, short and convex, with epistoma prominent and cheeks buccate; clypeus isolatedly punctate, thrice broader than long, basally discreted and apically emarginate with a central fovea; labrum exerted and elongately ciliate. Thorax dull and closely punctate, with notauli elongate but very weak; metanotum finely coriaceous and pilose with all the carinae complete, weak and not elevated; areola hexagonal, longer than broad, extending to base and apically emarginate. Scutellum deplanate, isolatedly punctate and glittering. Abdomen subcylindrical, not broader than thorax, dull with the anus hardly less so; petiole slender and shining; postpetiole not broad, closely and deeply punctate, obsolete bicarinate; gastrocoeli large, deeply impressed and broader than the slightly aciculate intervening space; terebra exerted, as long as the seventh segment. Legs neither stout nor short; all the coxae simple and extremely finely punctate; hind tarsi abruptly and totally black. Wings fulvescent-hyaline with the stigma, costa and nervures pale testaceous; lower basal nervure slightly postfural; external cubital and apex of the anal nervures pellucid. Length, 14 mm. Very distinct from *Chasmodes fortunatus* Tosq.; of the size and facies of *C. paludicola*, Wesm., but distinctly a little stouter.

The type came from Komgha in Cape Colony on February 15th, 1904.

SUBTRIBE AMBLYPYGINI.

CTENICHNEUMON, Thoms.

Opusc. Ent. xix, 1894, p. 2033.

CTENICHNEUMON BREVIS, sp. nov.

♂ only. A dark red species with the thorax mainly black, and both scutellum and flagellum bright flavous throughout. Head and the pilose mesonotum dark red; face and clypeus uneven and coarsely punctate, dull flavidous with the latter laterally black and apically truncate; frons and vertex closely and deeply punctate. Antennae flavous, stout and strongly attenuate throughout, hardly extending beyond basal segment, with the scape discally black and the half-

dozen apical joints excavate beneath; prothorax, meso-pleurae and -sternum, and metathorax except a discal mark, black; notauli and metanotal basal sulcus wanting; all carinae obsolete, costulae wanting, areola subtransverse and only basally carinate. Scutellum and post-scutellum glabrous, glittering and slightly convex. Abdomen dull, closely punctate, castaneous, and elongate-ovate with only base of the fourth and fifth segments indefinitely black; postpetiole broad, finely aciculate-punctate and strongly bicarinate; gastrocoeli deeply impressed and fully as broad as the aciculate intervening space; anus obtuse and smoother. Legs fulvidous with coxae and trochanters partly nigrescent; hind claws small. Wings hyaline with the stigma and nervures deep brunneous; areolet broad above. Length, 11 mm. The short and setigerous flagellum combined with indefinitely dark red and apically obtuse body lend this species much more the appearance of the Indian *Protichneumon* (*Amblyjoppa*) *ruficeps*, Cam., than any species of the present genus with which I am acquainted.

The type was captured at Utrecht in Natal during 1907.

AMBLYTELES, Wesm.

Nouv. Mém. 1844, p. 111.

Thoms. Opusc. Ent. 1894, p. 2090.

AMBLYTELES AUXIFER, Tosq.

Mém. Soc. Ent. Belg. 1896, p. 82, ♀.

♀ only. A stout black species with dull red head, mesonotum, petiole and legs. Head red and not constricted behind eyes, closely punctate with the clypeus more sparsely and as long as the elevated epistoma, its sides and the mandibular apices black. Antennae stout and filiform with their apices strongly attenuate, nigrescent with scape red and (in these examples) no pale central flagellar band. Thorax dull and discally deplanate, very finely punctate with no notauli; metanotum coriaceous with longitudinal carinae entire though weak; areola not smoother, subquadrate with sides a little curved; petiolar area scabrous with basal carina strong and apophyses distinct though small. Scutellum black, subglabrous and glittering, hardly convex. Abdomen elongate-ovate and black with only the basal segment entirely, and disc of the 7th, somewhat clear red; postpetiole broad and deplanate with only a few distinct discal punctures, carinae obsolete; gastrocoeli small and much narrower than the simple intervening space; second and third ventral segments plicate; hypopygium extending to the nitidulous anus, terebra red. Legs

stout and dark red with all the trochanters, and the simple coxae, black; hind femora infuscate. Wings distinctly and evenly nigrescent throughout; stigma and nervures black; basal nervure continuous through median, areolet broad above. Length, 12 mm. Very like the last species but differing, besides the divergence of the gastrocoeli, in the postpetiolar and metanotal structure, abdominal colouration and deeply infumate wings. I have no doubt it is the insect described under this name by Tosquinet, but give an account of it, since it appears to belong to his "var. 1," which is barely mentioned.

"Le Cap de Bonne-Espérance" (Tosq.).—Port Elizabeth by J. L. Drège, and Johannesburg in 1898 by A. Ross.

AMBLYTELES TUBERCULATA, sp. nov.

♀ only. A dull, brick-red species with profuse black markings, and evenly infumate wings having the stigma stramineous. Head closely and coriaceously punctate, with the truncate and margined apex of the narrow clypeus alone smooth; mandibular teeth, of which the lower is very small, the superficial clypeal foveae, vertex and occiput, alone black; apex of scrobes with a minute and acute central tubercle. Antennae not short, fulvous and somewhat slender to beyond their centre, thence black and compresso-dilated, with their apices strongly attenuate. Thorax stout and coriaceously punctate with the prosternum apically, mesopleurae except above, meso- and meta-sternum, metapleurae, frenum, metanotal base linearly, mesonotum except two vittae, and the scutellar fovea, black; metanotum with elongate but obsolete areola and weak lateral carinae indicated, its spiracles large and remarkably strongly elevated; apophyses wanting. Scutellum convex, dull and coarsely punctate, with strong lateral carinae to beyond its centre. Abdomen exactly fusiform with the terebra, and basal half of the second to fourth segments both discally and ventrally, dead black; postpetiole deplanate and so finely aciculate as to appear shagreened, with prominent spiracles and apical angles; second segment basally glabrous, succeeded by very rough puncturation, its gastrocoeli somewhat deep but not large; second to fourth ventral segments very definitely plicate; hypopygium not acuminate, extending nearly to the anus. Legs elongate and somewhat slender, with only base of the simple and closely punctate hind coxae black. Wings distinctly infumate though not nigrescent, with nervures piceous; costa and stigma bright stramineous; nervelet strong, basal nervure subcontinuous, areolet broad emitting recurrent from slightly before its centre. Length, 12 mm. The structure of the metanotum and especially of its spiracles, the convex and margined scutellum, and the rare

contrast of the dark wings with very pale stigma, render this insect, which has much the facies of a pale *A. armatorius*, Forst., remarkable.

Found at Saldanha Bay, eighty miles from Cape Town, during September, 1912, by L. Péringuey.

SUBTRIBE PLATYURINI.

EURLABUS, Wesm.

Nouv. Mém. Ac. Brux. 1844, p. 150.

EURLABUS CYANOCROCEUS, sp. nov.

♀ only. A large and slender, dull and dark metallic blue species with the basal two-thirds of the strongly attenuate flagellum (becoming stramineous centrally), the large and strongly convex, sparsely punctate and immarginate scutellum, with the whole legs except coxae and trochanters, bright croceous. Metanotum deplanate and scabriculous, with basal petiolar carina strong and all others wanting; postpetiole deplanate, narrow and subglabrous; abdomen not broader than thorax, with its terebra subconcealed; hind coxae elongate and simple. Wings hyaline with the stigma and nervures black; basal nervure continuous, nervelet elongate, areolet a little higher than broad, emitting recurrent from its centre. Length, 15 mm. A most conspicuous species in its brilliant colouration.

The type is from Giftsberg, Rhynsdorp, in Cape Colony, during September, 1911.

PLATYLABUS, Wesm.

Nouv. Mém. Ac. Brux. 1844, p. 150.

PLATYLABUS RUFESCENS, sp. nov.

A dull, dark brick-red species with the sternum, hind coxae, their trochanters and femora, the fourth to seventh and apical flagellar joints, and the stigma, black; the eighth to fifteenth flagellar joints, and anus from apical half to the fifth segment, white. Head narrow and constricted behind the eyes; frons and face strongly and evenly punctate; clypeus not basally discreted, with its apex slightly rounded and black-margined; cheeks elongate and not buccate. Flagellum slender and filiform to near its apex, before which it is slightly compresso-dilated. Thorax very closely and evenly punctate, dull, with no notauli; metanotum deplanate with areae entire, costulae weak, areola oval and longer than broad, spiracles linear and not small; petiolar area abruptly declivous, discreted, with its basal carina strong

and apophyses obtuse. Scutellum closely punctate, not convex, margined to its apical third. Abdomen deplanate, oval and dull, with the basal segment nitidulous, sparsely punctate and excarinate; thyridii, transverse and superficial, small. Legs slender and elongate. Wings hyaline with basal nervure continuous and areolet not coalescent above. ♀. . . . The ♂ differs slightly in having the flagellum setigerous and internally serrate towards its apex, with only four central joints discally white; and the areola a little transverse, with strong costulae. The legs are darker, the abdomen nigrescent from base of second to centre of fifth segments, with extreme apex of the fourth also white, as are the palpi, anterior coxae beneath, extreme clypeal apex and part of the facial orbits. Length, ♀ ♂, 9-10 mm. It is allied to *P. rufus*, Wesm., but with the legs more elongate and slender, etc.

L. C. Péringuey took the typical female at Green Point, Cape Town, and T. Ayres found the two co-typical males at Potchefstroom in the Transvaal.

PLATYLABUS PULCHELLUS, sp. nov.

♂ only. Extremely like the last species and similarly, though more profusely, white-marked: thus it has in addition the vertical orbits and sides of the clypeus both broadly, all the trochanters, the post-scutellum, whole apex of second and apex of third segments laterally white, with the fourth and fifth alone entirely black. The hind tibiae and tarsi, and base of flagellum, are entirely black. Structurally it is known by the absence of metanotal costulae and the elongate areola, which is subparallel-sided and nearly twice as long as broad, broadest before its centre; by the glabrous postpetiole and subcircular thyridii. Length, 10 mm.

Captured at Mfongosi in Zululand by W. E. Jones during December, 1914.

PLATYLABUS MINIATULUS, sp. nov.

♂ only. Closely related in colouration to the two previous species, but smaller and much more nitidulous; instantly known by its scabrous metathorax, which lacks all trace of areae, by the immarginate scutellum, by the narrower and smaller areolet, subantefurcal lower basal nervure, by a brilliant white dot at base of each mandible, and the entirely concolorous labrum below the centrally produced clypeus, by the internally pure white anterior femora and tibiae and the pure white second and third hind tarsal joints, similar to those of *P. albinus* Grav. Length, $7\frac{1}{2}$ mm.

Found at Cape Town by L. Péringuey early in 1915.

PLATYLABUS VALLATUS, sp. nov.

♂ only. A testaceous species, with pale stramineous markings, and the mesonotum castaneous. Head not strongly constricted behind eyes, evenly and closely punctate throughout, and pale stramineous with only the occiput, ocellar region and centre of frons black; mandibles immaculate with the teeth, of which the lower is much the shorter, acuminate; cheeks short and subbuccate; clypeus laterally elevated and subproduced, basally not discreted, apically truncate. Antennae distinctly serrate throughout, hardly shorter than the body, black with the scape testaceous and five central joints white. Thorax closely and finely punctate with the pronotum, elongate anteradial lines, subradial callosities, and two short discal mesonotal vittae, stramineous; metanotum short with the external and dentiparal areas alone nigrescent: areola transverse, semilunate and remote from the base; costulae strong, spiracles elongate, apophyses wanting. Scutellum and postscutellum stramineous; the former sparsely punctate and nitidulous, surrounded except at its extreme apex by an elevated black carina. Abdomen fusiform and unicolorous, closely punctate and dull; postpetiole finely punctate and somewhat shining; thyridii transverse and superficial. Legs slender and unicolorous. Wings with the stigma and nervures black; hyaline with the basal nervure continuous, areolet narrow above. Length, 10 mm. The structure of the scutellum and clypeus are distinctive.

Received from W. H. Bell Marley, who took the type at Durban in Natal.

CTENOCHARES, Cam.

Ann. S. Afric. Mus. v, 1906, p. 177.

CTENOCHARES BLANDITA, Tosq.

Mém. Soc. Ent. Belg. 1896, pp. 72 et 425, ♀.

Two females, found at Salisbury in Southern Rhodesia by D. Dodds; and a third, taken at Durban in Natal by W. Haygarth. I have recorded both sexes from Algeria, Rhodesia, Transvaal, Mashonaland, East Africa, Nyassaland and Uganda in 'Revision of the Ichneumonidae,' 1915, pp. 95, 96; at the latter page the words "*C. instructor*" should be substituted for "the last." Nothing is yet known of its hosts.

CTENOCHARES TESTACEA, Szépl.

Kilimanjaro-Meru Exped. 1908, p. 52.

Marley has considerably extended the known range of this species by the capture of a female at Stella Bush, near Durban, Natal, early in 1915. I was only able (*lib. cit. supra*) to record it from East Africa.

CTENOCHARES THYRIDENS, sp. nov.

♀ only. A small, somewhat pale brick-red species with the head, anus and part of hind legs quite black. Head scabrously punctate and, behind the eyes, obliquely constricted; cheeks elongate; clypeus not broad, its base hardly discreted with distinct foveae, its apex somewhat strongly rounded and in centre a little impressed; mandibles except apically and palpi red, the former very slender and acuminate with the lower tooth minute; scrobes large. Antennae slender and filiform with basal flagellar joints elongate, the ninth to twelfth discally white, and remainder black. Thorax slender, cylindrical, immaculate, dull and coriaceously punctate, with no notauli; metathorax elongate with no carinae, apophyses obsolete, spiracles elongate. *Scutellum fractum*. Abdomen very slender, closely punctate and dull, with the fifth to seventh segments black and the last discally white-marked; postpetiole slender and subglabrous, broader than high; second segment impressed at its extreme base, its thyridii deep and not large, situated at the basal third of the segment and far remote from its base; anus subcompressed, with the black terebra somewhat exerted. Legs slender and elongate with apical half of the hind femora and tibiae black, their tarsi infusate; outer side of hind tibiae with some nine stout setae. Wings narrow and quite hyaline, with the nervures pale and stigma luteous; basal nervure continuous, areolet broad and not large, emitting the strongly angled recurrent from its centre. Length, 9 mm. By no means a typical member of this genus, and far more like *Ischnus* in its slender body and remote thyridii; but the meta-thoracic spiracles are not circular.

The type is from Barberton in the Transvaal, where Miss H. Edwards captured it during April, 1911.

SUBFAMILY CRYPTINAE.

TRIBE PHYGADEUONIDES.

SUBTRIBE PHYGADEUONINI.

PHYGADEUON, Grav.

Ichn. Europ. 1827.

PHYGADEUON BITINCTUS, Gmel.

Syst. Nat. xii, 1788, i, p. 2719; Morley, Ichn. Brit. 1907, ii, p. 74.

One female was found at Clanwillian in Cape Colony by E. P. Phillips during September, 1911. Palaearctic.

PHYGADEUON EXIGUUS, Grav.

Ichn. Europ. 1829, ii, p. 666; Morley, Ichn. Brit. 1907, ii, p. 91.

Two males of this abundant palaeartic species were taken by Péringuey in Cape Town early in 1915; probably imported in Dipterous puparia.

SUBTRIBE HEMITELEINI.

HEMITELES ALECTO, nom. nov.

Hemiteles striatus, Cameron, Spolia Zeylanica, 1905, p. 116, ♀
(nec Brullé, 1846).

This is a small subtropical species, allied to *H. rubroratus*, Cam., and the common European *H. areator*, Panzer; it is common in Ceylon and I have seen the male from Kuching in Sarawak. The bifasciated wings are distinctive.

Two (probably imported) females have occurred in Cape Town to L. Péringuey.

TRIBE CRYPTIDES.

SUBTRIBE MESOSTENINI.

GORYPHUS, Holmgr.

Eug. Resa Ins. 1868, p. 398.

Melcha, Cameron, Ann. Nat. Hist. ix, 1902, p. 153.

Essential Characters.—Metanotum with no longitudinal carinae areolet small and quadrate; upper basal nervure not antefurcal nor body metallic; metathoracic spiracles oval, neither circular nor linear; mesosternum not laterally spinate, nor areolet minute. *Goryphus* has not been employed by systematists since first erected; but a study of Holmgren's African diagnosis (overlooked by Tosquinet in 1896) leaves no doubt that it is synonymous with Cameron's Indian name. The species are subtropical, and I have seen them only from the two above countries, though they are also recorded from China, the Philippines, Valparaiso, etc.

GORYPHUS TRISULCATUS, sp. nov.

♂ ♀. A somewhat stout, black species with white markings, and the thorax entirely red. Head dull and scabriculous, posteriorly short but not obliquely constricted; face centrally elevated; clypeus tuberculiform and twice as broad as long, its apex margined and a little

rounded; mandibles stout, with the teeth of subequal length; cheeks not short, palpi white. Antennae slender and filiform, stouter in ♀ beyond the central white band, with basal flagellar joints elongate. Thorax unicolorous throughout, or with sternum nigrescent, and dull with a discal mesonotal sulcus in addition to the deep notauli; metathorax rugulose, with only a centrally inflexed basal transcarina; spiracles oval and apophyses wanting. Scutellum and postscutellum red, coarsely punctate and not margined. Abdomen of ♂ elongate, of ♀ fusiform, finely punctate and dead black with apical half of the shagreened or subglabrous postpetiole and whole of the fifth to seventh segments white; gastrocoeli of the subquadrate second segment small and basal; third strongly transverse; terebra as long as the first segment or a third of the abdomen. Legs black with all the calcaria, apices of anterior femora and the inner side of their tibiae, dull stramineous; ♂ legs paler, with the anterior trochanters also white. Wings hyaline, in ♀ with a more or less deeply infumate cloud in the centre only of the wing, before the small and quadrate areolet; stigma and nervures nigrescent; lower basal nervure a little antefurcal; nervellus opposite, intercepted at its lower third. Length, ♂ 6, ♀ 7-8 mm. Of the twelve described Indian species of this genus (including *Cryptus onustus*, Walk.), this most closely approaches *G. (Melcha) ornatipennis*, Cam., which has the mesothorax mainly black, the alar infumation much broader, the metanotal base smooth, etc.; it is very like *G. basilaris*, Holmgr.

Three females and a male from Durban in Natal were probably bred together with a fourth female which is labelled, along with its host's cocoon, by Bell Marley from the same locality, "host possibly *Ponometa postica*" (a Lasiocampid moth), 1911.

GORYPHUS BISULCATUS, sp. nov.

♀ only. A red species with the abdomen except basal segment, sternum, with part of the flagellum and hind legs, black; anus, calcaria, a central flagellar band and inner side of front tibiae, alone white; mesonotum not centrally sulcate. Length, $8\frac{1}{2}$ mm. This species too closely resembles the last to need a detailed description; therefrom it differs structurally in its more finely punctate and shining scutellum, more coarsely punctate and convex metanotum with distinct though not large apophyses, its distinctly bicarinate postpetiole of which the central area is striolate and the lateral are punctate, and in the more deeply and confluent punctate abdomen; in colour it may be known therefrom by its entirely red head, five basal antennal joints and first abdominal segment which is not white-marked, by

the entirely red coxae and rufescent hind femora; and by the hyaline wings.

The type was taken at Smithfield in the Orange River Colony by Dr. D. R. Kannemeyer during 1910.

GORYPHUS BASALIS, sp. nov.

♀ only. A somewhat stout red species with the abdomen except its extremities, the posterior legs and antennae, black; a central flagellar band, the fifth to seventh segments and base of hind tibiae, pure white; front legs internally stramineous; metathorax very short and convex, with basal area entire but its lateral transcarina wanting, apophyses acute and not small; postpetiole nigrescent, much broader than long and subrugulose throughout, abdomen short-ovate, petiole red; terebra reflexed and as long as basal segment; wings hyaline with the second recurrent nervure emitted from extreme apex of areolet; lower basal nervure strongly antefurcal. Length, 8 mm. Instantly known from both the above by the apical emission of the recurrent nervure, the elongately antefurcal lower basal nervure and the basally pure white hind tibiae, in which feature it is closely allied to the Indian *G. (Melcha) Nursei*, Cameron, though differing in its shorter metanotum with distinct apophyses, the position of the lower basal nervure, lack of white-marked orbits and postpetiole, etc.

The type was taken at Kimberley by Bro. J. H. Power during August, 1913.

GORYPHUS EVANESCENS, sp. nov.

♂ only. A slender, dark castaneous species, partly merging into black, with the apical half of the second and fifth segments, disc of the anal entirely, face, clypeus and palpi, with anterior coxae and trochanters, white. Head dull and not very narrow posteriorly, distinctly punctate with the clypeus twice as broad as long, its base subdiscreted, apex rounded and strongly margined and sides deeply black-foveated; mandibles black with equal teeth. Antennae immaculate, nearly as long as body and apically a little attenuate. Thorax narrow and somewhat shining; mesonotum coriaceously punctate, with deep and entire notauli; metathorax rugose and distinctly bitranscarinate, with its base glabrous on either side of the triangular basal area; spiracles oval, apophyses wanting. Scutellum small, finely punctate and not margined. Abdomen slender and centrally subnigrescent; basal segment but slightly explanate apically, scabrous throughout, with spiracles at its apical third; second segment twice as long as broad, punctate, with small thyriddii; hypopygium not pro-

duced. Legs slender and not short, the anterior internally dull stramineous. Wings hyaline with stigma and nervures black; lower basal nervure distinctly antefurcal, nervelet wanting, discoidal cell narrow; recurrent nervure emitted from a little beyond centre of the quadrate and very small areolet, the outer nervure of which is sometimes obsolete; radius reflexed before its apex. Length, 8 mm. Distinct in its bicarinate and basally smooth metathorax, the small and apically weak areolet, and in the apically white second segment.

Three males, evidently bred from a moth, host cocoon, from Durban in Natal, where they occurred to Bell Marley in May, 1913.

GORYPHUS TESTACEUS, sp. nov.

♂ only. A testaceous and very finely punctate species, with only the stigma, nervures, mandibular apices, ocellar region, posterior tarsi, and the hind calcaria with apical third and extreme base of their tibiae, black; pleurae dull flavidous and the head, except occiput, stramineous. Frons finely scabriculous, face shagreened and flat and dull, clypeus discreted and subdeplanate, twice as broad as long, with its apex hardly curved. *Antennae desunt*. Notauli deep and entire; metathorax finely scabriculous, with weak but entire basal transcarina and a central trace of the apical one; basal area obsolete, spiracles short oval, and apophyses wanting. Scutellum shining, sparsely punctate and laterally margined to centre. Abdomen slender, unicolorous and, including basal segment, closely and finely punctate. Wings hyaline. Length, 8 mm. Very unlike any of the above in its punctate basal segment, finely sculptured body and testaceous colouration; though with all the characteristics, and especially the small and quadrate areolet, of the present genus. The facies and punctate postpetiole resemble *Stictocryptus*.

The type was bred from "Larva of *Dendrolimus* sp. (a Lasiocampid moth), Invermanzi River, July, 1913," by Bell Marley at Durban in Natal.

LISTROGNATHUS, Tschek.

Verh. zoo.-bot. Ges. Wien, 1870, p. 153; Thomson, Opusc. Ent. xxi, p. 2379.

Essential Characters.—Upper basal nervure not antefurcal; clypeus neither apically reflexed nor depressed; metathoracic spiracles elongate; frons centrally cornute; apex of pronotum not laterally tuberculate. It differs but slightly (in the last-named character) from *Suwalla*, Cameron.

LISTROGNATHUS TRANSVERSUS, sp. nov.

♀ only. A stout and black species with the pro- and meso-thorax, the scutellum and frenum, brick-red; the abdomen apically badius with its apex, the palpi and a central flagellar band, white. Head deeply punctate and not posteriorly constricted; frons strongly excavate, with a central fusiform and glabrous horn above the laterally subelevated scrobes; facial orbits pale-marked; face and clypeus dull and closely punctate, the latter strongly transverse and apically truncate; labrum exerted, mandibles stout with subequal teeth, cheeks not short. Antennae stout, with the scape and elongate basal flagellar joints badius. Thorax cylindrical, somewhat scabrously punctate with the sternum, base of mesopleurae and whole metathorax black; notauli and sternauli deeply impressed, the latter short; both the metanotal transcarinae strong and entire, basal area weak and subquadrate, apophyses small and acute, spiracles distinctly longer than broad. Scutellum sparsely punctate and not dull. Abdomen elongate fusiform and black, becoming indefinitely dark castaneous from apex of the large second segment which is hardly longer than apically broad, with its apex callose; seventh segment entirely white; basal segment elongate, but little explanate apically and glabrous with a central subapical sulcus only; remainder finely and closely punctate, with obsolete thyridii; terebra straight, stout and longer than half abdomen. Legs normal and nigrescent with the anterior femora, tibiae and tarsi fulvidous, and hind calcaria paler. Wings fulvescent hyaline, stigma and nervures castaneous; lower basal a little antefurcal; discoidal nervure nearly straight and strongly divergent from the anal, which forms a subobtuse angle with the broadly fenestrate recurrent, and this is emitted from the apical third of the rectangular and a little broader than high areolet; radial nervure apically strongly reflexed; nervellus opposite and intercepted very slightly below its centre. Length, 11 mm.

Barberton in the Transvaal, taken by Miss H. Edwards during November, 1911.

STENARAEUS, Thomson.

Opusc. Ent. xxi, 1896, p. 2381.

Umlima, Cameron, Ann. Nat. Hist. ix, 1902, p. 208.

Essential Characters.—Upper basal nervure not antefurcal; clypeus apically reflexed and centrally depressed; metathorax spiracles elongate; frons mutic; apex of pronotum not laterally tuberculate.

STENARAÆUS (MESOSTENUS) LISSNOTUS, Caml., var. NIGRIPES,
var. n.

♂ ♀. A very slender and strongly elongate black species, with the thorax and ♀ basal segment brick-red; the labrum or in ♂ whole front of head and the frontal orbits, anus, apices of second and in ♀ first segments narrowly, and centre of flagellum and hind tarsi broadly, white, as in ♂ also are the anterior legs, hind trochanters and the petiolar metathoracic area; terebra much longer than whole body. Head strongly nitidulous with face dull and clypeus glabrous, its apex reflexed and centrally depressed. Antennae nearly as long as body; basal joints strongly elongate and, in ♀, apically subnodulose. Thorax very finely and closely punctate, mesonotum glittering and subglabrous with deep and crenulate notauli; metathorax elongate, gradually declivous throughout and apically a little produced between the coxae; basal carina entire; basal area and apophyses wanting, spiracles elongate, petiolar area trans-strigose. Scutellum shining, sparsely punctate and not margined. Abdomen dull with basal segment linear and shining throughout, sulcate, black and sparsely punctate before its white apex; terebra apically a little reflexed, five-thirds longer than the whole body. Legs slender and strongly elongate, with the ♀ anterior tibiae and disc only of their femora fulvidous white; ♂ hind femora red. Wings broad and hyaline, stigma and nervures black; areolet quadrate and very small, emitting the centrally broadly fenestrate recurrent from near its apex; radius apically straight; nervellus intercepted but slightly below its centre. Length, ♂ 10, ♀ 12, terebra 20 mm. The association of the sexes is purely arbitrary.

The type occurred at Pilgrim's Rest in the Transvaal to Miss Schunke; and the co-typical male at Durban to W. Haygarth during April, 1913.

This form differs from the type, which I have examined in the South African Museum, in nothing but the black hind legs with no red markings at all and its much brighter red basal segment.

SILSILA, Cameron.

Mem. Manchester Lit. Phil. Soc. 1903, no. 14, p. 1.

Essential Characters.—Upper basal nervure not antefurcal; metathoracic spiracles elongate; frons mutic, at most centrally carinate; apophyses wanting.

SILSILA VARIEGATA, sp. nov.

♂ only. A slender and testaceous species with profuse black markings, and only the face, clypeus, palpi, frontal orbits and seventh segment substramineous. Head otherwise deep black with the frons closely punctate and a simple carina between the scrobes; face and clypeus equally closely punctate, the latter apically rounded and neither margined nor impressed; mandibles not short, margined below and basally pale, their apical teeth normal and of equal length. Antennae black and gradually attenuate throughout, extending to apex of basal segment. Thorax cylindrical and slender, finely punctate; black with the pronotum, callosity before radices, a central mesonotal mark at base of the deep but not crenulate notauli, and whole metathorax testaceous; sternauli crenulate, inflexed and entire; metathorax scabrous, gradually declived throughout the bitranscarinate with the apical carina deeply emarginate centrally; spiracles elongate, apophyses and basal area wanting. Scutellum and frenum testaceous, the former long and laterally margined to near its apex. Abdomen sub-linear, very slender with the basal two-thirds of second segment and whole of the fourth to sixth, with the elongate ventral valvulae, black; basal segment linear and elongate, subsulcate discally before its glabrous apex; thyridii small, circular and remote from base of the elongate second segment. Legs long; hind ones with the tarsi, coxae except a discal mark, base of trochanters, femora except basally beneath, and both extremities of the tibiae, black. Wings hyaline and broad, with stigma and nervures black; basal nervure continuous, areolet quadrate and very small, emitting recurrent from its centre; nervellus intercepted at its centre. Length, 11 mm. This is not a true member of the present genus, which has the lower mandibular tooth much the smaller; but in all the essential characters and in its elongate facies it agrees sufficiently to allow of a position here until the opposite sex be discovered.

The type is from D'Urban in Natal, where Bell Marley discovered it on February 8th, 1915.

SUBTRIBE CRYPTINI.

OSPRHYNCHOTUS, Spinola.

Guér. Magaz. de Zool. xi, 1841, p. 45.

Distantella, Saussure, Nat. in Transvaal, 1892, p. 229.

Essential Characters.—Apical metathoracic transcarina entire; spiracles elongate; mouth rostriform, with cheeks strongly elongate;

basal segment subcylindrical and but little explanate apically; nervellus intercepted almost at its centre; areolet large and broad above.

OSPRHYNCHOTUS NIGER, sp. nov.

♂ ♀. A nitidulous, black species with the wings deeply violaceous, the scutellum convex, and only the inner side of front femora and tibiae pale. Head distinctly and not very closely punctate, with a small sulcus beyond apical ocellus; clypeus not discreted, its apex subtruncate; mandibular teeth of equal length. Antennae of ♂ stout, and attenuate only at extreme apices, the joints cylindrical and extending to second segment; of ♀ *desunt*. Thorax closely punctate and somewhat shining; mesonotum sparsely punctate and glittering, with notauli elongate, but sternauli foveiform; metanotum distinctly short, its base glabrous on either side, its apical transcarina alone present, somewhat strong; spiracles elongate-oval, basal area and apophyses wanting. Scutellum convex, glittering, sparsely punctate and not margined. Abdomen glabrous, strongly nitidulous and exactly fusiform, narrower in ♂; basal segment strongly convex, with a central postpetiolar sulcus; terebra deflexed, slightly shorter than abdomen, with spicula red; ♂ ventral valvulae exerted and black. Legs normal and not stout. Wings evenly nigrescent throughout, with violet iridescence; lower basal nervure slightly antefurcal; areolet large, above rectangular and broad, emitting the broadly fenestrate recurrent from its centre; nervellus a little postfurcal, emitting nervellus nearly from its centre. Length, 9 mm. This is a much smaller and darker species than any referred to in my monograph of this genus (*Entomologist*, 1914, p. 24), nor does it appear to be contained in Ghigi's account—of which I was then ignorant and to which Dr. E. Bergroth has kindly called my attention—published in *Ann. Mus. Zool. Napoli*, vol. iii, 1911.

L. Péringuey took the typical female along with a couple of males at Saldanha Bay in Cape Colony during September, 1912. Co-type in the British Museum.

STICTOCRYPTUS, Cameron.

Zeits. Hym.-Dip. 1907, p. 462.

Essential Characters.—Face not centrally tuberculate; areolet not explanate above; nor nervellus intercepted above its centre; basal segment but little explanate apically; metathorax not trans-striate, its spiracles neither circular nor strongly elongate; sides of scutellum carinate.

STICTOCRYPTUS PETIOLARIS, sp. nov.

♀ only. A clear testaceous species with the head except palpi and labrum and mandibles, the antennae, sternum extending to lower part of meso- and meta-pleurae, petiole, terebra and the third to sixth segments, black; frontal orbits, centre of flagellum discally and the seventh segment, white. Length, 13 mm. Extremely closely allied to the Indian *S. testaceus*, Cam., *loc. cit. supra*, but there the whole metathorax is black in ♀, with a strong apical transearina, which is here represented only by equally acute apophyses; the present species has the post-petiole much more strongly and closely punctate, the head posteriorly broader, the size larger and wings a little flavescent; in all other respects they agree *ad amussim*.

The type was captured at Mfongosi in Zululand by W. E. Jones during March, 1914 (firmly attached to one of its front calcaria by its mandibles is a small testaceous myrmecine ant, *Pheidole spec.*).

STICTOCRYPTUS OCTONARIUS, sp. nov.

♂ ♀. A slender, clear testaceous species with the frons, occiput, mandibular apices and most of the antennae alone black; face, mouth, all (in ♂ except vertical) orbits broadly, centre of flagellum broadly, eighth segment, and in ♀ the second and third hind tarsal joints, pure white. Length, 9 mm. A very much more slender species than the last, with abdomen narrower and fully double as long as the black terebra, the metanotum feebly transbicarinate, postpetiole like the remainder of abdomen finely shagreened (or in ♂ subglabrous), the areolet small and hardly broader than high, but especially distinct in the very strongly exerted eighth abdominal segment. The flagellar joints are strongly elongate and the basal ones fulvidous; the ♀ has the centre of the sixth to apex of the twelfth, and the ♂ the twelfth to twenty-fourth, joints white. The association of the sexes is arbitrary.

The type occurred to W. Haygarth at Bulwer in Natal during 1914; and he also took the co-typical male at Durban in April, 1913.

ETHA, Cameron.

Mem. Manchester Lit. Phil. Soc. 1903, no. 14, p. 17.

Essential Characters.—Face not centrally tuberculate; areolet not explanated above; nor nervellus intercepted above its centre; basal segment but little explanate apically; metathoracic spiracles linear and elongate; mouth normal and not rostriform.

ETHA CASTANEA, sp. nov.

♀ only. A stout, finely punctate and hardly shining species, castaneous with that colour indefinitely merging into black upon the face, sternum, coxae, hind trochanters and anus; didymate dots on both the face and clypeus, the whole labrum and palpi, a central band of the black flagellum, lines before and callosities beneath the radices, apical two-thirds of the scutellum, the second and third hind tarsal joints, anterior trochanters and part of their coxae, white. Head finely punctate and not posteriorly constricted; face deplanate and discreted from the strongly transverse and apically subconcave clypeus; mandibles stout and not large, with their lower tooth distinctly a little the longer; cheeks short and punctate. Antennae elongate, filiform and slender, as long as body, with the scape red and discally infusate. Thorax stout and subcylindrical, with the entire notauli crenulate and the narrow sternaui inflexed; metanotum evenly declivous, basally shagreened, trans-strigose throughout beyond the centrally evanescent basal carina, the apical with both apophyses and basal area wanting; spiracles linear. Abdomen elongate-fusiform; basal segment dull and very finely coriaceous, the postpetiole deplanate with sparse and distinct punctures; thyridii basal and not broad; terebra nearly as long as abdomen. Legs elongate and not slender, with claws simple; front tibiae paler, strongly intumescant and basally constricted. Wings ample and hyaline; areolet pentagonal, small and laterally parallel-sided; discoidal cell narrow and also of equal breadth throughout, apically obtuse below. Length, 15 mm. I consider this female to belong to *Etha*, since it agrees therewith in all its characteristics but the strongly inflated front tibiae, which exactly resemble those of *Xylophrurus* and *Nyxeophilus*, Forster.

It was captured at Durban in Natal by W. Haygarth during February, 1914.

CRYPTUS, Fabric.

Syst. Piezat. 1804.

CRYPTUS XANTHOPUS, Brullé.

Tosq. Mém. Soc. Ent. Belg. 1896, p. 130, ♀.

Instantly known by its cyaneous body and wings, and the black legs with red femora and anterior tibiae.

Described from the Cape of Good Hope. W. Haygarth took a female at Durban in Natal during 1914.

CRYPTUS BLANDITUS, Tosq.

Mém. Soc. Ent. Belg. 1896, p. 203, ♀.

One female captured at Bulawayo in S. Rhodesia in 1912 by H. C. Pead.

CRYPTUS SCURRILIS, Tosq.

Mém. Soc. Ent. Belg. 1896, p. 177, ♂.

The ♀ has not hitherto been described. It differs from Tosquinet's ♂ description only in having the face black, with its centre red; the clypeus, mandibles and external orbits immaculate black. Antennae filiform and centrally white. The pleural 'sutures latérales' and all other white markings are wanting on the thorax and scutellum. Segments one to five are dull black with only the apical angles of the second obsoletely white-marked; and the legs are much darker. The elongate cheeks and frontal horn exclude this species from the genus *Cryptus*, as restricted by Prof. Thomson. Dalla Torre is in error in omitting the *c* from the specific name. Superficially this insect bears a remarkable resemblance to *Ctenochaeres blandita*, Tosq.

The male was from Senegal. W. E. Jones took this certainly synonymous female at Mfongosi in Zululand during March, 1914.

CRYPTUS VIDENDUS, sp. nov.

♂ only. A slender, black species with the legs except posterior coxae red; the facial orbits, a genal mark, the mandibles except apices, palpi, under side of scape, the postscutellum, apical half of scutellum, and apices of the second to fourth and of the seventh segments, white. Length, 9 mm. In structure, sculpture and outline, it exactly agrees with the male of *C. viduatorius*, Fab., from which it is only distinguished with facility by its much darker, bruneous wings with their stout nigrescent nervures, black stigma and larger, nearly parallel-sided areolet.

Captured at Kimberley by Bro. J. H. Power during 1912.

CRYPTUS MAGNIFICUS, sp. nov.

♀ only. A very large and very stout, brilliant metallic blue species, with the head alone rufescent, the front legs nigrescent, and the evenly infumate wings bearing strong iridescent cyaneous reflection. Length, 29 mm.; terebra, 11 mm. Apart from its remarkable size and colouration, this species, the largest Cryptid with which I am acquainted from any part of the world, bears many characteristics to render it most interesting; thus the mouth is rostriformly produced as in

Osprhynchotus, Spin., the frons strongly excavate with its orbits narrowly elevated to level with the eyes though not to the extent found in *Plesiocryptus*, Cam., the prothoracic tubercles are strong as in *Swalta*, Cam., the metathorax is glabrous with its sides and apex trans-striate, with four acute apophyses, the broad, laterally reflexed and striate postpetiole and remarkable areolet, which is (like that of *Mansu*, Tosq. = *Colganta*, Cam., Entom. 1902, p. 20) broader than high and much broader above than below. It superficially resembles the Xoridid genus *Gabunia*, Kriech. = *Nadia*, Tosq.

The type, in the author's collection, was captured by Mrs. Lethaby in Portuguese East Africa; two more females in the British Museum are from Uganda.

SUBFAMILY PIMPLINAE.

TRIBE XORIDIDES.

GABUNIA, Kriech.

Sitzb. Nat. Ges. Leipzig, 1895, p. 130.

Essential Characters.—Clypeus and frons mutic; mandibular teeth of equal length; temples not tuberculate; central mesonotal lobe sulcate; metathorax exareolate and trans-striate; femora slender; front tibiae intumescant and basally constricted; areolet entire; nervellus not intercepted below centre.

GABUNIA BARDO, sp. nov.

♀ only. A large and slender black species with only the mandibular and petiolar bases, and the sparsely punctate hind coxae, fulvous; central flagellar band white; and the wings nigrescent with two broad hyaline fasciae. Head tumidous, sparsely and finely punctate and posteriorly as broad as the eyes; face and clypeus finely trans-strigose with the latter sparsely punctate, transverse and apically truncate; cheeks normal, labrum exerted. Antennae slender, attenuate throughout and five-sixths the length of the body. Thorax irregularly punctate and shining, with slight metallic blue reflection; central mesonotal lobe much the longest and centrally sulcate; metathorax gradually declivous throughout, finely and closely strigose both dorsally and laterally, with elongate spiracles, but neither areae nor apophyses. Scutellum deplanate, sparsely punctate, apically truncate and not laterally margined. Abdomen elongate and obfusiform, dull and shagreened, nearly double length of the apically a little deflexed

terebra and its black spicula; basal half of the first segment glabrous, its apical but little explanate and spiracles before its centre. Legs elongate and dull; front tibiae inflated; hind tarsi apically rufescent. Wings ample with base and apices of both pairs, and in the front ones a central fascia from the antefurcal lower basal nervure to below the narrow and black stigma, nigrescent with cyaneous reflection; areolet triangular, entire and not large, laterally subcoalescent above, emitting recurrent from its centre. Length 24, terebra 7, mm. The transstriation of both head and thorax, and shape of the areolet are dissimilar from *Xylophrurus*, Först., to which this genus has been considered closely allied. The alar infumescence is well delimited and very distinctive, relating the present species to the West African *G. ruficoxis*, Kriech.

The type was captured during 1912 by Dr. C. A. Wiggins at Entebbe in Uganda, on the northern shore of the Victoria Nyanza, and presented to the author by Ernest A. Elliott, F.Z.S.

XYLONOMUS, Grav.

Ichn. Europ. iii, 1829, p. 819.

XYLONOMUS UNIFASCIATUS, sp. nov.

♀ only. A handsome red and black species with white markings, and the basal nervure alone infumate throughout. Head dull, globose and red with coarse puncturation; a small mark at centre of the external orbits, and the facial orbits broadly, white; face convex, rugose and centrally, like the mandibles, black; frons centrally carinate and, between the scrobes, stoutly cornute. Antennae stout and filiform, not extending to thoracic apex, black with a central white band; the apical joint elongate and strongly geniculate, with the penultimate apically spinate. Thorax deplanate, bright red and coarsely punctate, with pronotum and tegulae nigrescent; metathorax scabriculous and centrally bicarinate to the short petiolar area. Scutellum and post-scutellum deplanate, red and coarsely punctate. Abdomen dull and black with the entire apices of fourth to seventh segments, and two subapical marks on the second, clear white; first segment sessile, convex and closely punctate throughout; second and third transimpressed before their apices; the third also triangularly impressed discally, with its apical margin emarginate; hypopygium remote from base of the white-banded terebral valvulae, which are longer than the abdomen. Legs very short, black with the hind tibiae rufescent; the subintumescent and basally constricted anterior tibiae, and their femora partly

beneath, white. Wings hyaline with the stigma, nervures, and a transfascia including the whole basal nervure, black. Length 13, terebra 11, mm. A typical member of this distinct genus, most closely allied in abdominal sculpture to the Indian *X* (*Epirhyssa* [*sic*]) *annulicornis*, Cam.

It was captured at Mfongosi in Zululand by W. E. Jones during December, 1914. Two co-types in the British Museum are from Zululand in 1865 and *ex coll.* Distant from Durban, taken by Bell Marley.

TRIBE ACAENITIDES.

ACAENITUS, Latr.

Gen. Crust. et Ins iv, 1809, p. 9.

ACAENITUS BIVITTATUS, sp. nov.

♂ only. A testaceous species with the flagellum, mandibular apices, clypeal foveae, disc of the scape, of the head, of the mesonotum except two vittae, and of the fifth to seventh segments, black. Head closely punctate with the clypeus basally discreted, apically bisinuate and centrally a little produced; metathorax glabrous, with the basal area indicated; scutellum convex and obsoletely punctate; basal segment glittering and impunctate, discally sulcate, with spiracles before its centre. Hind legs *desunt*. Wings ample and deeply flavescent, with only the apical margin of both pairs infumate; stigma small and, like the nervures, testaceous; upper basal nervure straight and postfurcal; nervelet distinct; intercubital nervure not short, fenestrate below and continuous with the bifenestrate recurrent; nervellus centrally intercepted. Length, 11 mm. Of Tosquinet's species the present is most closely allied to *A. Germanus*.

Found at Barberton in the Transvaal by Miss H. Edwards during November, 1911.

CTENOTOMA, Cam.

Ann. S. African Museum, v, 1906, p. 128.

CTENOTOMA RUFICEPS, Cam.

Ann. S. African Museum, v, p. 127.

One female of this common African species is labelled Delagoa Bay. In the British Museum it is represented from Cape Colony and Natal; a female from the latter is labelled "Parasite on a Saturnia, Port Natal." I by no means agree with Cameron (Ann. S. African Mus., 1907, p. 224) that this genus is synonymous with *Macrogaster*, Brullé.

TRIBE ECHTHROMORPHIDES.

ECHTHROMORPHA, Holmgr.

Eugen. Res. Ins. 1868, p. 406.

ECHTHROMORPHA VARIEGATA, Brullé.

Hist. Nat. Ins. Hym. iv, 1846, p. 91.

Two females of the eastern form of this species (var. *continua*, Kriech. Berl. Ent. Zeit. 1894, p. 304) which is known to extend from British East Africa to Natal, and is abundant in Uganda. The first is labelled "Marley, Stella Bush, Durban, Natal, March, 1915"; and the other—a somewhat immature example—"Berea Road (Durban), W. H. B. Marley, Nov., 1911." Bred from the pupa of the Saturniid moth *Nudaurelia wahlbergi*, Bsdv.

TRIBE PIMPLIDES.

PIMPLA, Fabr.

Syst. Piez. 1804, p. 112.

PIMPLA CROCATATA, Tosq.

Mém. Soc. Ent. Belg. 1896, p. 301.

A female of this well-known species, which extends from Cape Colony through Eastern Africa to Abyssinia, with hyaline wings, was taken at Bulwer in Natal by W. Haygarth during 1914.

PIMPLA BISTRICATA, sp. nov.

♀ only. A dull, black species with the anterior legs, hind coxae, the concave clypeus, underside of scape, and whole abdomen, somewhat dark red or pale castaneous; radices and tegulae and base of the black stigma alone flavidous; petiolar area subglabrous; metanotum bicarinate; front tibiae centrally inflated. Length, 14 mm. Extremely similar to *P. spiloaspis* and differing, besides its sparser pale markings, in nothing but the longer legs, narrower abdomen with its segmental apices not callose and postpetiole less centrally elevated; while in two points it is distinct from *Pimpla* as a whole—viz., the petiolar area is circular and carinate, not trans-striate, with two distal carinae extending from its base to that of the metanotum; and the front tibiae have their centre abruptly intumescent with both extremities constricted.

Durban in Natal; found by W. Haygarth during February, 1914.

POECILOPIMPLA, Morley.

Revis. Ichn. iii, 1914, p. 35.

Essential Characters.—Metathorax very short; antennae apically subclavate; metanotum with carinae; abdomen impunctate; tarsal claws of ♀ basally lobate; clypeus centrally impressed; areolet entire; third segment not longer than broad.

POECILOPIMPLA TESTACEA, sp. nov.

♀ only. A pale, testaceous species with only the mandibular apices, ocellar region narrowly, antennae, apical angles of the second segment transversely, and the hind tarsi, determinately black. The head is subbuccate behind the eyes, the face convex and nearly glabrous; antennæ filiform and but slightly explanate apically, extending to second segment; the metathorax is glittering and exareolate, with scattered punctures and small, circular spiracles; abdomen much longer than head and thorax, with all the segments short and apically callose, tubercles distinct and thyridii of the second transverse. Wings narrow, with the discoidal cell apically strongly acute below; areolet almost petiolate and but slightly broader than high, emitting the curved and bifenestrate second recurrent distinctly beyond its centre; nervellus centrally intercepted. Length 8, terebra 6, mm.

Found by W. H. Bell Marley at Durban, Natal, early in 1915.

THERONIA, Holmgr.

Ofv. Vet. Ak. Förhdl. 16, 1859, p. 123.

THERONIA TRIVITTATA, Krieg.

Sitz. Nat. Ges. Leipzig, 1899, p. 113.

A male from the Elsenburg, Stellenbosch, Cape Colony. Known from Sierra Leone to Delagoa Bay and Madagascar.

THERONIA LURIDA, Tosq.

Mém. Soc. Ent. Belg. 1896, p. 282.

A male found at Barberton in the Transvaal by Miss H. Edwards during April, 1911. "Emerged from mud nest of wasp." Widely distributed from British East Africa southwards.

PHILOPSYCHE, Cam.

Spolia Zeylanica, 1905, p. 137.

Essential Characters.—Eyes internally emarginate; face centrally

carinate; areolet entire and not pentagonal; segmental apical segments obtuse and their disc not triangularly impressed; nervellus intercepted below centre.

PHILOPSYCHE ABDOMINALIS, sp. nov.

♂ ♀. An elongate black species with long white pubescence, and the abdomen red; palpi, radices and a dot before the concolourous tegulae, and the anterior legs except in ♀ inner side and in ♂ the whole of the intermediate tibiae, white. The ♂ has the second to fourth incisures and disc of the seventh segment black, and the ♀ black dots at the apical angles of the second to fourth segments. Length ♂ 7, ♀ 14, terebra 5, mm. In structure and outline it agrees in every way with *P. albobalteata*, Cam.; cf. Morl. Fauna India, Ichn. 1913, p. 194.

The latter species has been bred from three or four species of *Psyche* in Ceylon: and the present pair, which is from Kentani in Cape Colony, was "bred from a Psychid moth, *Chaliodes junodi*," by Miss Pegler during 1909.

SJOSTEDTIELLA, Szep.

SJOSTEDTIELLA NIGRIPECTUS, Brullé.

Nat. Hist. Ins. Hym. iv, 1846, p. 108.

Males were taken at Giftsberg, Rhynsdorp, Cape Colony, in September, 1911, and by Péringuey at Cape Town early in 1915; a couple of females are labelled as the last, and were probably found along with it.

TRIBE LISSONOTIDES.

LISSONOTA, Gravh.

Ichn. Eur. vol. 3, 1829, p. 30.

LISSONOTA HALIDAYI, Holmgr.

Sv. Ak. Handl. 1860, no. 10, p. 59, ♀.

A single male from the south-west district of Cape Colony differs from the male of Holmgren's species, which was first described in my Ichn. Britannica, iii, 1908, p. 211, to so slight an extent that I have no hesitation in regarding it as no more than a local form of that species. With the description referred to it agrees in every detail, excepting only that the white markings are here replaced with red and the alar areolet is externally wanting; more material would probably show the latter to be a variable character.

CRYPTOPIMPLA, Tasch.

Zeits. Ges. Nat. 1863, p. 292.

Essential Characters.—Body not elongately pilose; head fully as broad as thorax; apical flagellar joints well discreted and the last half dozen moniliform; metathoracic areae wanting, and spiracles both small and circular; tarsal claws not pectinate; wings somewhat small with areolet entire.

CRYPTOPIMPLA RUBRITHORAX, sp. nov.

♀ only. A black species with deep red scutellum, meso- and meta-thorax, evenly punctate and not very shining; the collar except centrally, tegulae and radices, the seventh segment and base of stigma, alone pure white. Antennae slender, black and of equal breadth throughout with the 29 basal flagellar joints elongate, the apical of these well discreted; remainder *desunt*. Metathorax evenly convex and punctate throughout with no trace of discal or lateral carinae; mesosternum black-marked; basal segment sessile, evenly punctate with centre of its basal half glabrous and glittering; the fourth and at least apical half of the third segment glittering and impunctate; terebra short, as long as basal segment, or a third of abdomen; legs elongate and black with only the front tibiae rufescent. Wings narrow and hyaline with the stigma except basally, and all the nervures, deep black; external radius a little curved above the sub-triangular areolet, of which the lower half of the external nervure is fenestrate and continuous with the centrally broadly unifenestrate second recurrent; lower basal nervure postfurcal; discoidal cell very short, subquadrate, with distinct nervelet; nervellus intercepted far below centre. Length 8, terebra 2, mm. Has the facies of *C. errabunda*, Grav., with the thoracic and abdominal colouration transposed.

The type was captured at Elsenburg, Stellenbosch, Cape Colony, on October 11th, 1914, by C. W. Mally, of the Agricultural Department.

TRIBE BANCHIDES.

EXETASTES, Grav.

Ichn. Europ. vol. iii, 1829, p. 395.

Cf. Morl. Revis. Ichn. iv, 1915, p. 142.

EXETASTES ANNULATOR, sp. nov.

♀ only. A black species and somewhat nitidulous with evenly

nigrescent wings, the anterior femora and their tibiae, except apical half of the intermediate, fulvous; and both flagellum and hind tarsi centrally white-banded; metapleural carinae wanting. Length 12, terebra 2, mm. It is most closely allied to *E. nigripes*, Grav., in its whole sculpture, especially in the fine and superficial mesonotal puncturation; but differs—besides the very distinct colouration, more particularly that of the wings, which (in my experience) is unique in the present genus—in the much larger areolet, subcontinuous basal nervure through the median, and distinctly broader metanotal sulcus.

It was found at Bulwer in Natal by W. Haygarth during 1914.

SUBFAMILY TRYPHONINAE.

TRIBE METOPIIDES.

METOPIUS, Panz.

Krit. Revis. 1806.

Representatives of *Metopius hilaris*, *lugubris*, *albipectus*, Tosq., were found at Mfongosi in Zululand by W. E. Jones in 1914. The last was described by its author in such a manner that I was unable in my monograph of the genus (Revision Ichn. i, 1912, p. 73) to tabulate it; I now find that it is not a *Peltocarus*, but should be inserted quite close to *M. bicarinatus*, Morl., from the Amazon, since it agrees with it in the entirely bicarinate basal segment, though abundantly distinct in colouration and many structural characters.

METOPIUS APOPHUA, sp. nov.

♀ only. A dull black species with the ochreous wings apically infusate, the rufescent antennae short; the facial carinae, anterior femora with all the tibiae and tarsi, red; and the following flavous markings: palpi, a large mesopleural mark beneath radices, the small apophual tubercles of the mesopleurae, the postscutellum and apical half of scutellum, and apical margin of the five basal segments except disc of the first. Head with the frons centrally cornute between the scrobes; lateral facial carinae parallel; clypeus apically truncate; mandibles apically mutic. Antennae attenuate, stout and extending only to second segment. Scutellum laterally carinate throughout, apically produced on either side and subtruncate in the centre. Basal segment not bicarinate; calcaria rufescent. Areolet triangular, nearly twice as long as broad; second recurrent unifenestrate. Allied in my Table of Species (Revision Ichn. i, 1912, p. 76), to *M. fuscipennis*, Wesm., but with wings much paler.

Taken at Jackals Water, Bushmanland, in the Cape Province, by R. M. Lightfoot during October, 1911.

TRIBE BASSIDES.

BASSUS, Fall.

BASSUS LAETATORIUS, Fab.

Spec. Insect. i, p. 424.

Péringuey has taken several examples of this most cosmopolitan of all Ichneumonidae in Cape Town during 1913 and 1915. I am unaware that it has hitherto been recorded from South Africa, though well known in Egypt, Abyssinia and other northern countries, and figured by de Saussure in Grandidier's Hist. Madag. in 1892 under the name *Bassus venustus* from Madagascar.

HOMOCIDUS, Morl.

Ichn. Britannica, iv, 1911, p. 87.

HOMOCIDUS LINEIPES, sp. nov.

♂ only. A small and inconspicuous species, black with only the thorax shining; the whole front of head, underside of scape, prosternum, a conspicuous apical mesopleural mark, radices, tegulae and a subhamate mark before them, scutellar apex, and all the legs except hind tarsi and the outer side of their tibiae, stramineous. Head with vertex somewhat emarginate; face parallel-sided; metanotal and petiolar areae wanting; scutellum subdeplanate; postpetiole not quadrate; areolet wanting. Length, 4 mm. In my latest table of the species of this genus (Revision Ichn. iii, 1914, p. 129) the present is most closely allied to *H. biguttatus*, but with the hind tibiae not at all white.

The type was captured at Elsenburg, Stellenbosch, in Cape Colony on October 11th, 1914, by C. W. Mally of the Agricultural Department.

TRIBE EXOCHIDES.

POLYCLISTUS, Först.

Verh. pr. Rheinl. 1868, p. 161.

POLYCLISTUS FEMORALIS, Fourc.

Ent. Paris, ii, 396.

L. C. Péringuey has found this species in Cape Town during 1913. It has doubtless been imported from Europe; and seems to have

occurred in some numbers in Southern Africa, whence Peter Cameron has sent supposititious types of new names for this species to the British Museum: *Plesioexochus rufipes*, Cam. ♀ and *Exochus fuscipilosus*, Cam. ♂ (cf. *Morl. Ann. Nat. Hist.* 1915).

SUBFAMILY OPHIONINAE.

TRIBE OPHIONIDES.

NOTOTRACHYS, Marsh.

Tr. Ent. Soc. 1872, p. 260.

NOTOTRACHYS FOLIATOR, Fab.

Entom. Syst. Suppl. 1798, p. 239.

Two males of this genus, which I prefer to temporarily regard as colour forms of the palaeartic *N. foliator*, were taken at Dumbrody, in Cape Province, on March 11th, 1912, and by Haviland at Estcourt in Natal during December, 1896, also cf. *Record of Albany Museum*, 1905, p. 250, *et Revis. Ichn.* 1912, p. 69. Both have the anices of metathorax and hind coxae, with the scutellum flavous and the abdomen partly red.

TRIBE ANOMALIDES.

AGRYPON, Först.

Verh. pr. Rheiml. xvii, 1860, p. 151.

AGRYPON XANTHOMELAS, Brullé.

Barylypa xanthomelas, *Morl. Revision Ichn.* ii, 1913, p. 81.

A study of a female example of this species, which no one has recognised since first described (*Hist. Nat. Ins. Hym.* iv, 1846, p. 173, ♀), enables me to at length assign it a definite genus in our modern classification. The character which led me to place it in *Barylypa* in 1913 is less pronounced than Brullé's description leads one to believe and, moreover, the nervellus emits no nervure. The present example is from Elsenburg in the Cape district; the earlier record is vaguely from South Africa.

(I should like to here record the occurrence of a ♀ example of *Barylypa humeralis*, Brauns, from the Island of Paros in the Grecian Archipelago, which I have examined in the *Deuts. Ent. Mus. ex coll. Leonardi*; it is a very little known species.)

TRIBE PANISCIDES.

PANISCUS, Grav.

Ichn. Europ. iii, 1829, p. 622.

PANISCUS TESTACEUS, Grav.

A common species in at least the east and south of Africa; recorded from Algeria in 1846 (for localities *cf.* Morl. Revis. *Ichn.* ii, 1913, p. 117). The present collection contains several examples from Durban in Natal during February, 1914 (W. Haygarth); Vryburg, in Cape Colony, during 1904 (J. W. Jones); Barberton in the Transvaal (H. Edwards), and Mfongosi in Zululand during September, 1911 (W. E. Jones).

PANISCUS RADIALIS, sp. nov.

♀ only. A somewhat dark rufescent-testaceous species with only the mandibular apices, whole flagellum, terebra, stigma and costa, black; wings evenly but not deeply infumate. The head is posteriorly short and hardly narrower than the eyes, with both epistoma and the deeply discreted clypeus convex. Thorax almost dull, with distinct notauli; prothorax unusually prominent and convex; metathorax stout and trans-strigose throughout with no carinae, its basal sulcus deeply impressed and apophal tubercles prominent. Scutellum elongate, finely punctate, and strongly margined right round its apex. Abdomen a little darker with basal segment elongate, evenly explanate apically throughout and as long as terebra. Legs unicolorous. Wings not large; lower basal nervure postfurcal and strongly curved; areolet higher than broad and apically pellucid below, emitting recurrent from its apex; radial nervure subvertical above areolet and there so strongly curved as to form almost a right angle; nervelet small; nervellus intercepted far above centre. Length, 13 mm. Remarkable for its prominent collar and metapleural tubercles, and for the sharp angulation of the outer radius. It is most closely allied to my *P. Madeirensis*.

Found by L. Péringuey at Saldanha Bay, Cape Colony, during September, 1912.

TRIBE CREMASTIDES.

CREMASTUS, Grav.

Ichn. Europ. iii, 1829, p. 730.

CREMASTUS PESTIFER, Morl.

Fauna India, Ichn. i, 1913, p. 498, ♀.

Since the publication of this female description, I have seen several

Indian males and find them to differ from the above account in nothing but their darker abdomen and longer flagellum, and in no way from a male bred "Natal, Durban, H. W. Bell Marley; Host, a Noctuid, August, 1912."

TRIBE CAMPOPLEGIDES.

CAMPOPLEX, Gravh.

Ichn. Europ. iii, 1829, p. 453.

CAMPOPLEX JUVENTAS, sp. nov.

♂ only. A black and slender species with white capital and thoracic pubescence, and both legs except coxae and anterior trochanters, and abdomen except disc of second segment, fulvous; mandibles except apically, palpi, radices, tegulae, anterior trochanters and front coxae, stramineous. Head constricted and narrow behind eyes; frons unicarinate between the simple scrobes, but not impressed; metathoracic spiracles elongate; areolet slightly petiolate and not small; basal abscissa of radius in hind wing not longer than its recurrent nervure; nervellus very slightly geniculate far below its centre. Length, 8 mm. It is very closely allied to, and possibly no more than a local form of, *C. juvenilis*, Först., but with the basal segment and anus entirely pale red.

The type was taken at Durban in Natal by W. Haygarth during 1914.

CYMODUSA, Holmgr.

Act. Ac. R. Luec. xv, 1860, p. 321.

CYMODUSA FLAVIPES, Brisch.

Schr. Nat. Ges. Dantzig, 1880, p. 144, ♂.

A couple of males from the south-western district of Cape Colony and taken by L. C. Péringuey at Cape Town during September, 1913, are referable to this palaeartic male, which (Ichn. Brit. v, 1914, p. 105) I have synonymised with *C. antennator*, Holmgr. I have, however, seen no African females and, since the synonymy is not yet quite proved, I here retain the male name. They were doubtless imported from Europe.

CASINARIA, Holmgr.

Act. Ac. R. Luec. xv, 1860.

CASINARIA MOESTA, Grav.

Ichn. Europ. iii, p. 599.

Another palaeartic and doubtless imported species, of which a typical male was taken at Cape Town during 1915 by Péringuey.

NEMERITIS, Holmgr.

Svensk. Vet. Akad. Handl. ii, 1858, p. 104.

NEMERITIS CANESCENS, Grav.

Ichn. Europ. iii, p. 555.

This is an addition to the African fauna of the greatest importance, since the species is the parasite *par excellence* of the terribly destructive moth *Ephestia Kuhniella*, which executes such havoc among flour. Its beneficial Ichneumon has been known since 1829, but the economy of the latter was quite recently discovered and two new names bestowed upon it (*Idechthis Oahuensis*, Ashm. Fauna Hawaiianis, 1901, p. 355, et *Amorphota ephestiae*, Cam. Proc. Linn. Soc. New South Wales, 1912, p. 187), the references to which exhibit a considerable range, to which must now be added Potchefstroom in the Transvaal, some thousand miles to the north of Cape Town, where a female occurred to T. Ayres.

PHOBOCAMPA, Thoms.

Opusc. Ent. xi, 1887, p. 1120.

Essential Characters.—Wings with the discoidal cell apically acute below, both lower basal nervure and nervellus strongly oblique, and the radius centrally subrectangular; metathorax declived only from its centre; clypeal foveae neither large nor deeply impressed; nervellus antefurcal and geniculate; metathoracic spiracles circular.

PHOBOCAMPA STRIGIPES, sp. nov.

♀ only. A small black species with the anterior legs except basally, hind femora, apices of central segments and sides of the apical ones, fulvous; mandibles, tegulae, radices, trochanters except base of the hind ones, base of hind tarsi and of hind tibiae with centre of the latter externally broadly, whitish-stramineous. Scape and anterior coxae black; metanotal areae subentire; postpetiole subglobose and a little longer than broad; terebra hardly as long as basal segment; stigma and nervures luteous, areolet elongately petiolate and not small, emitting the recurrent from its centre; discoidal cell apically acute below. Length, $4\frac{3}{4}$ mm. It is most closely allied to *P. obscurella*, Holmgr.

The type was taken in the Prieska District of the Cape Province by Dr. R. Marloth.

OMORGA, Thoms.

Opusc. Ent. xi, 1887, p. 1125.

Essential Characters.—Postpetiole ovate, abruptly explanate basally;

terebra longer than basal segment; thoracic spiracles circular; areolet small, not rhomboidal; ♀ flagellum not pale-banded; lateral petiolar sulci wanting; apical abscissa of radial nervure longer than basal; lower basal nervure not determinately oblique.

OMORGA SORDICINCTA, sp. nov.

♂ ♀. A small black species with white pubescence; the apices but not sides of the second and following segments indefinitely and the legs dull testaceous, and hind legs infusate; mandibles, palpi, radices, tegulae and apices of at least the ♀ hind trochanters, dull stramineous. Head posteriorly constricted; antennae slightly longer than head and thorax, of which the metanotal carinae are strong; basal area and costulae entire; areola hexagonal and apically incomplete to the transstrigose petiolar area. Abdomen dull; basal segment not longer than terebra, with slender petiole and ovate, abruptly explanate postpetiole: ventral plica flavous. Stigma and costa pale piceous; areolet small and petiolate, emitting recurrent nervure from its centre; radial apically straight; nervellus geniculate below its centre. Length, 5 mm. It is most closely allied to *O. multicincta*, Grav.

A single pair, of which the female is type, was captured in the southwestern district of Cape Colony.

OMORGA EXAREOLATA, sp. nov.

♀ only. A black species with white pubescence and unicolorous red femora, tibiae and tarsi; palpi, mandibles except apices, trochanters except base of hind ones, the calcaria and sides of second segment narrowly, stramineous; tegulae pure white. Head not strongly narrowed posteriorly; antennae extending to second segment, with scape apically dull testaceous beneath. Metathorax a little excavate with two trans-carinae, both centrally emarginate, and neither areae nor longitudinal carinae. Abdomen dull black with the ventral plica infusate and lateral margin of second segment very narrowly stramineous; postpetiole ovate and abruptly explanate, not longer than the reflexed terebra. Stigma and nervures nigrescent; basal nervure continuous; areolet wanting. Length, 7 mm. Differs from whole remainder of genus in its utter lack of areolet, wherein it resembles *Hymenobosmina*, which has elongate thoracic spiracles, and *Diocles*, which has straight and postfural nervellus, but in its other features most closely approaches *O. Fannus*, Grav.

It was taken at Bulawayo, South Rhodesia, by H. C. Peard during 1912.

CALLIDORA, Thoms.

Opusc. Ent. xi, 1887, p. 1135.

Essential Characters.—Areolet large and rhomboidal; ♀ flagellum pale-banded and terebra not exerted; lateral petiolar sulci wanting; apical abscissa of radial nervure longer than the basal; lower basal nervure not oblique; metathorax declived from centre; lateral clypeal foveae not large; nervellus antefurcal; head transverse; petiolar area not excavate; spiracles round.

CALLIDORA COSTULATA, sp. nov.

♂ only. A somewhat stout, dull black species with the abdomen except both extremities, mandibles except apices, the small tegulae, and whole of the legs, deep red. Head posteriorly nearly as broad as the eyes (as in *Meloboris*) with clypeus not discreted, apically rounded and its lateral foveae wanting; antennae not slender, apically attenuate and extending to second segment. Thorax convex, with notauli punctiform; metathorax scabriculous with the indefinite petiolar area subtriangular and terminating in the very small areola, which emits determinate costulae and basal area; petiole slender and black, postpetiole red, shagreened, much longer than broad, parallel-sided, convex and basally abruptly explanate. Wings ample, evenly and very slightly clouded, with stigma and nervures black; basal nervure continuous; discoidal cell parallel-sided, apically strongly acute below, emitting an elongate nervelet; areolet entire, subpetiolate and not higher than broad; radius but very slightly angled centrally; nervellus distinctly antefurcal, geniculate below its centre and emitting a pellucid and curved spurious nervure. Length, 10 mm. The neuration and metanotal areae are distinctive.

Captured by L. Péringuey at Saldanha Bay in Cape Colony during September, 1912.

NEPIERA, Först.

Verh. Ver. Rheinl. xxv, 1869, p. 56.

NEPIERA CONCINNA, Holmgr.

Sv. Ak. Handl. 1858, p. 84.

Five females of this abundant palaeartic species have been captured at Estcourt in Natal during 1894 (Haviland; Stellenbosch in Cape Colony during 1897 (L. Péringuey); and at East London in July, 1914 (R. M. Lightfoot). They differ to no appreciable extent from

the English examples, described by me in *Ichn. Britannica*, v, 1914, p. 160, and have doubtless been imported, like the next species, in European produce.

ANGITIA, Holmgr.

Act. Ac. R. Zuec. Consp. xv, 1860.

ANGITIA CLARIPENNIS, Thoms.

Opusc. Ent. xi, 1887, p. 1161.

Another palaeartic species, of which Péringuey captured a female at Cape Town early in 1915.

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6.—*Descriptions of New or Little-known Orthoptera in the Collection of the South African Museum.*—By L. PÉRINGUEY, D.Sc., F.Z.S., F.E.S., Director. Part I.

(With Plate XLII. and 8 Text-figs.)

FAMILY ACRIDIDAE.

SUB-FAM. PNEUMORINAE.

The insects belonging to this group are the most aberrant of all Acrididae. They have no saltatorial power. In the males the abdomen is produced in the shape of a very large vesicle so transparent that the disposition of the internal organs, especially the tracheal system, is often visible; the hind femora are cylindrical, yet the music they produce is louder than that of any other Acridid, and I can also safely say of any Orthopteron known to me. It is also of an entirely different character; I should, perhaps, say key. It consists of a long and very deep and loud rasping noise, a stop, and a second noise shorter, but occasionally louder than the first, and sounding as if it were produced by exhalation. The phonetic spelling of the name given them by the Kaffirs is *Grōōniā*, the G being very guttural; the female, however, produces the shrill, rasp-like notes of the Acridid. In *Bulla* and *Pneumora* the tegmina and wings of the female are very rudimentary but horny, and hidden under the tectiform pronotum. When alarmed she raises the pronotum at a high angle, and produces an extremely sharp stridulation, nearly equal in intensity to that of a Decticeid, and meanwhile she is endeavouring to escape, but her movements are very slow. The large *Cystocoelia*, in which the wings are partially developed, but membranous instead of being horny, are probably not able to produce the same noise as *Pneumora*.

As usual with the species in which the females are apterous, the males frequent trees or bushes, at the foot of which I have often found them dead. I was once camping near the sea-board of Saldanha in a waterless spot. In the evening rain fell. One would have thought himself on the edge of a pond tenanted by frogs, owing to the incessant music of the Gecko lizards, occupying every clump of reeds

(*Restio* sp.) growing in this sandy spot. Then the deep voice of *Bulla immaculata* would be heard above the din, and answered from a distance by another competitor. It was a challenge, doubtless, for several males came nearer to the tent, and their notes were indeed weird. It may be, however, that the lure was the whiteness of the tent, for in the morning I did not succeed in capturing a single female, and the males often fly to the lights or camp fires. They are so well adapted by colour to that of their surroundings that they are in daytime very difficult of detection. The females are still better protected at night or dusk by the brilliancy of their white markings, which consist of raised enamelled lines or patches of silvery white. That the reflections of crepuscular light on these white surfaces break altogether the contour of the animal, even when in motion, was very well instanced by two females of *Pneumora* which I kept in captivity.

The Pneumorids seem restricted to South Africa. I have not seen any examples from the Transvaal, either Eastern or Western, nor from Southern Rhodesia or N'Gamiland. This does not mean that they have no representatives there, because one, somewhat abnormal, form is recorded, and figured from the Zambesi, by Westwood. This genus, and species, *Physophorina livingstoni*, is not represented in the Museum Collection, and I am not acquainted with *Prostalia* (*Pompholix*) *granulata* Stål; but with the exception of one species of *Bulla*, all the described species are represented in our Cabinet, and there are several which, it is believed, are described here for the first time.

GEN. BULLA, Linn.

(Syst. Nat. (ed. x), 1758, i, p. 427.)

Linnaeus in 1758 founded the genus for one species, *B. unicolor*; another, *B. carinata*, is ascribed to him by Kirby in his 'Synonymic Catalogue of Orthoptera.' It is described in two lines, and the habitat given is India. Thunberg, in 1810, described and figured seven. His figures are not trustworthy and his descriptions are not very clear. He unduly multiplied the species. Stål, in his 'Recensio Orthopterorum,' 1, 1873, described anew Thunberg's species, which I understand are in the Museum of the Upsala University, and made possible the identification. He sunk three species in synonymy, and added one, *B. longicornis*, and in 1870 Walker described a larval ♀ form, *B. membraciodes*, which is probably the same kind.

I am satisfied that our examples of *B. unicolor*, *B. immaculata*, *B. discolor*, are correctly identified; *B. ocellata* remains a little doubtful; *B. papillosa* I have not yet met with; *B. serrata* I take to be the ♀ of

B. ocellata. As in the case of the closely allied genus *Pneumora*, the identification is strengthened by our knowledge of the parts of the Cape of Good Hope visited by Thunberg.

The facies of the species is very uniform, but the different species can be divided into three groups: one in which, in the known males, the pronotum, although provided with a crest, is somewhat tectiform; the other where it is highly arcuate and compressed along the crest; the females are more difficult to define, but in one (*longicornis*) the high carination and compression is very conspicuous. *B. subulata*, n. sp., ♀ belongs to a third group which, when the ♂ be known, will possibly have to be included in a new genus. In this new species the tegmina reach the hind part of the pronotum, but in *B. consobrina* ♀ there are also tegmina, but they are very rudimentary. The females which I refer to the males have always been found in the same locality, and it is very probable that they are rightly allocated. I am adding three species.

Key to the Species.

MALES.

- A². Pronotum tectiform.
- B². Pronotum with silvery bands *maculosa*.
- B¹. Pronotum without silvery bands.
- C². Vertex, sides of pronotum and legs pubescent; crest of pronotum not obtuse in front, discoidal part very coriaceous *unicolor*.
- Crest of pronotum not obtuse in front, discoidal part not coriaceous *immaculata*.
- C¹. Vertex, pronotum and legs glabrous. Anterior lobe of pronotum granular laterally, posterior roughly coriaceous, crest with 4 notches in the anterior lobe *discolor*.
- Anterior lobe closely granulate, serrate and very sloping, not granulate laterally *ocellata*.
- Anterior lobe longer and with 6 or 7 sharp serrate teeth, granulose laterally, the shiny granules extending to the fore part of the hind lobe *consobrina*.
- A¹. Pronotum very highly arcuate. Anterior lobe of pronotum not tuberculate laterally, sub-coriaceous, anterior lobe not serrate dentate, crest simple *intermedia*.
- Pronotum sprinkled laterally with small shiny granular tubercles; anterior lobe strongly serrate dentate; crest tuberculate *longicornis*.

FEMALES.

- A³. Pronotum tectiform.
- B². Anterior and intermediate tibiae smooth.

- C². Pronotum without silvery band or patches, but with a slight marginal white sinus.
 Anterior lobe hardly serrate :
 Vertex and labrum closely granular *unicolor*.
 Vertex and labrum with scattered granules *immaculata*.
 Sides of pronotum with slanting silvery bands.
- C¹. Anterior lobe of pronotum 4 times incised, 4 or 5 distinct slanting silvery patches on each side :
 Humeral sinus reddish or cretaceous, crest red *discolor*.
 Humeral sinus and crest not red *ocellata*.
- B¹. Anterior and intermediate tibiae tuberculate.
- A². Pronotum less tectiform. Anterior lobe of pronotum 6-serrate, sides with 5 supra-lateral silvery bands *intermedia*.
- A¹. Pronotum very highly arcuate. Anterior lobe of pronotum 7-8 serrate, no supra-lateral silvery bands *longicornis*.

BULLA UNICOLOR, Linn.

Syst. Nat. (x) i, 1758, p. 427.

rubens (pt.), Thumb., Vet. Ak. Handl. 36, 1810, p. 57, pl. 2, fig. 1.

♂. Uniform pale green with the edge of the crest flavescent or yellow; head, sternum, anterior part of pronotum and legs villose; pronotum tectiform, the crest simple, that of the anterior lobe nearly following the curve of the crest, and therefore not retuse; face roughly varicose and even granular; anterior lobe of pronotum roughened and granular, the folds somewhat indistinct, posterior lobes very roughly coriaceous, no markings below the humeral ridge; abdominal segments with or without ocelli-like lateral patches, anterior and intermediate tibiae with indistinctly tuberculate impressions.

Length 35-37 mm.

♀. Uniform grey or greenish, a narrow silvery white border along the lateral sinuation, abdomen closely maculated with silvery grey spots which are, however, occasionally absent; second, third and fourth basal segments with a lateral silvery, elongate patch; head rugose granular; pronotum very roughly punctate and with distinct scattered granules denser in the lower lateral part, crest of the anterior lobe irregularly denticulate, the incised folds plain.

Length 30-34 mm.

As usual the juvenile forms are more granular than the adults.

The ♂ is shorter than the other species. The habitat of *unicolor* extends inland from the sea-board, from Cape Town to Namaqualand. In examples from there the pronotum and head are usually a little more rugose than in examples from intermediate parts.

BULLA IMMACULATA, Thunb.

Vet. Ak. Handl. xxxi, 1875, p. 256, pl. 7, fig. 1.

♂. Uniform pale green with the edge of the pronotal crest slightly flavescent or entirely pink (body, wings and legs). Closely resembling *B. unicolor* but the crest of the hind lobe is a little more retuse in front; the head, prosternum and legs are also pubescent, but the face and vertex are weakly punctate, the anterior lobe is much less rugosely plicate and non-granulate, the posterior is finely aciculate punctate, the crest is smooth and less denticulate in the anterior lobe; abdomen with or without the lateral series of ocellate patches.

Length 42–44 mm.

♀. Also closely allied to the same sex of *B. unicolor*; the anterior lobe of the pronotum is slightly less rugose, and the posterior is less closely and roughly punctate and there are no scattered tubercles; the body is green, the concolorous abdomen has a somewhat indistinct, lateral white patch; in the pronotum the white border of the lateral sinuation is as in *B. unicolor*.

Length 40–41 mm.

Longer than *B. unicolor*. This species occurs in the Cape Peninsula and in the neighbouring districts of Stellenbosch and the Paarl.

BULLA DISCOLOR, Thunb.

♂ Vet. Akad. Handl. xxxvi, 1810, p. 57, pl. 2, fig. 2.

♂ *pupillata*, Thunb., *loc. cit.* p. 60, pl. 2, fig. 4.

♂. Pale green turning occasionally to pink. Differs from *B. unicolor* and *immaculata* by the more elongate body, the glabrous head, and the longer pronotum which, as much tectiform as in the other two species, has the carina of the anterior lobe divided by four incisions continued laterally as grooves; the antennae are of about the same length, the face is closely coriaceous with a few granules, the sides of the anterior lobe of the pronotum bear numerous granules, and those of the posterior are roughly coriaceous; the impressions on the femora are evident; the abdominal segments have faint traces of two superposed ocellate spots; the pectus is very slightly pubescent.

Length 40–44 mm.

♀. Green with the antennae, legs and crest and humeral ridge of pronotum pinkish red in fresh examples. Face, genae, and especially the labrum closely granular, vertex non-granulate; pronotum tectiform, the disk well defined by a raised ridge reaching from the anterior part to two-fifths of the whole length; anterior lobe with four incisions

along the crest as in the ♂, but with the sides closely tuberculate; posterior lobe closely varicose; on the sides are four raised yellowish bands slanting backwards, but reaching neither the crest nor the humeral ridge, and a smaller spot on the anterior margin but in a line with the bands; abdomen with three conspicuous superposed elongate whitish yellow bands on each segment.

Length 46–47 mm.

Hab. Cape Town (Cape Peninsula).

BULLA OCELLATA, Thunb. ♂.

Vet. Akad. Handl. xxxvi, 1810, p. 57, pl. 2, fig. 3.

? *serrata*, Thunb. ♀. *Loc. cit.* p. 64, pl. 2, fig. 8.

♂. Light green with the edge of the crest pinkish red, edge of the lateral sinus of pronotum flavescent; face sparsely, labrum densely granulose; pronotum tectiform, not declivous at the junction of the anterior with the posterior lobe, the former is plainly closely serrulate, the sides are punctate and not granulate, the crest of the posterior lobe is closely undulate but not serrate in the posterior part, and the sides are sub-foveolate punctate; there is a blue-black vertical patch on the side of the fore part of the metanotum, and the five ocelli-like patches on the sides of the abdominal segments are conspicuous; the variolose punctures on the intermediate and posterior tibiae are more distinctly tuberculate than in *B. unicolor* and *B. immaculata*.

Length 47 mm.

Judging by the ♀ of *B. consobrina* we may consider *B. serrata* as the ♀ of *B. ocellata*. The type specimen seems to have retained the three lateral silvery bands on the abdomen, and lost those of the pronotum, but the description agrees in most respects with that of *B. consobrina*, except for the absence of the impression on the anterior lobe of the pronotum, which is not mentioned by Stål in his description.

Hab. Cape Colony (Worcester, Tulbagh).

BULLA CONSOBRINA, n. sp.

♂. Light green with the edge of the crest of the pronotum pink. It is probable that this species is often mistaken for *B. ocellata*, Thunb., assuming that the species I identify as such is the right one, but the anterior lobe of the pronotum is not so deeply incised at the junction with the posterior, is more plainly dentate serrate, and the sides are densely granular on the lower part, the granules being also numerous on the upper, and a few shiny ones are scattered on the fore part of the posterior lobe, which is closely reticulate; anterior and intermediate

femora tuberculate. The antennae are longer than in *B. ocellata* and as long as in *B. longicornis*.

This species differs from *B. intermedia* ♂ by the more tectiform pronotum and the presence of granules on the sides; and by having longer antennae than *B. longicornis*, in which the pronotum is also granular although the granules are much less numerous, and by the much more tectiform pronotum.

Length 40-53 mm.

♀. Green or greenish yellow, face rugose and granulose. Anterior part with closely verruciform tubercles; pronotum somewhat broadly tectiform, anterior lobe 5-dentate and with the four lateral sinuses very plain and having on each side of the crest a deep fossa-like impression—the sides of the anterior lobe are numerous verrucose, and there are similar verrucose granules in the anterior part of the hind lobe, the crest of which is occasionally slightly wavy; on each side of the pronotum are five raised, oblique silvery bands uniting with the humeral ridge which is very distinct to past the middle and is also silvery white, the edge of the lower border is white along the sinuation. The arcuate impression on the anterior part of the pronotum differentiates this species from that of any other ♀ *Bulla* known to me; but it is found also although not exactly of the same shape in a new species of *Pneumora*, described further on. Femora more or less sharply tubercular.

Length 39-46 mm.

Hab. Cape Colony (Pt. Elizabeth) J. Drege; (Rosmead Junction); (Kentani) Miss A. Pegler; (East London) R. M. Lightfoot.

BULLA INTERMEDIA, n. sp.

♂. Light green; antennae somewhat short, face very rugose but not granular; pronotum very highly arcuate and not obtuse at the junction of the fore and hind lobes, the former short, sub-serrulate and without well-defined lateral sulci; coriaceous and roughly plicate, the sides of the posterior lobe are closely punctate, the punctures being somewhat granuliform along the compressed part of the crest which is slightly wavy behind, but not in front; the metasternum bears a lateral, parallel brown patch reaching from the tegmen to the coxa: the lateral sinuation of the pronotum is somewhat pale flavescent; the ocellate spot on the abdominal segment is very little defined and occasionally absent; the anterior and intermediate femora are not distinctly tuberculate.

Length 41-42 mm.

Female unknown.

Hab. Cape Colony (Kowie). 3 ♂♂.

BULLA LONGICORNIS, Stål.

Rec. Orthopt. i, 1873, p. 139.

♂. Green, concolorous but with the very narrow border at the lateral situation of the pronotum briefly flavescent; antennae long, face with a few scattered granules; pronotum very highly arcuate and serrate from apex to base, the serration however being closer and sharper in the anterior lobe, the lateral folds being separated by two teeth from each other, the sides as well as the anterior part of the hind lobe bear scattered shining granules, and are not coriaceous except in the lower part, the hind lobe is deeply reticulate with the veins much raised, there is no lateral brown patch on the metanotum; the ocellate patches on the abdominal segments are not very well defined and are occasionally absent; anterior and intermediate femora bluntly tuberculate at base.

Length 48–53 mm.

♀. Head strongly granular from a short distance from the apex; pronotum much more highly arcuate than in any other species (♀ ♀), crest of anterior lobe very sharply dentate serrate, but the serration is continued, although not so closely set to the end; the hind fold of the anterior lobe is deeply impressed, the sides of the hind lobes are reticulate but there are on each side three slanting, not always distinct, slightly raised lines of a lighter hue than the background, reaching the humeral line which is produced to the apex, below this line are five others reaching the margin, these raised lines, which are nearly the same colour as the background, impart a leaf-like appearance; the median border of the lateral sinus bears a white patch; abdomen with three lateral superposed series of silvery patches; dorsal and ventral surface also with a median series of irregular silvery patches.

Length, adult, 51–60 mm.

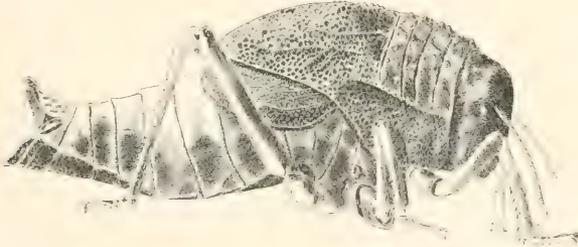
Hab. Natal (Durban) C. N. Barker, H. W. Bell-Marley, J. H. Bowker; (Maritzburg) A. Windham; Cape Colony (Port St. Johns) G. A. Shortridge.

The description of *P. membraciodes*, Walk. (Catal. Dermapt. Salt. Brit. Mus. iv, 1870, p. 800) seems to apply to *B. longicornis*. It is however made from a non-adult form, and the sculpture is apt to vary in the different stages of the instar: "Prothorax highly arched, extending nearly to the tip of the abdomen; fore part thinly and minutely tuberculate, with four transverse impressed lines and with eight minute crests; hind part with a contiguous keel, which has tubercles or very minute crests along the whole length. Fore femora tuberculate. Wings none. Length of the body 28 mm." This example was from

the collection of Gueinzus and is labelled "Natal." Gueinzus collected near Durban; and so far as is now known, *B. longicornis* is the only species occurring in this neighbourhood.

BULLA SUBALATA, n. sp.
(Fig. 1.)

♀. Olive green, with the crest pinkish-red but probably light green in life. A robust species. Head broad, smooth; antennae wanting pronotum tectiform but with the anterior lobe very sharply serrate, the posterior is almost in a line with the anterior and does not slant much behind, the crest is sharply serrate to three-fourths of the length, the anterior lobes are very deep, especially the hinder, the space between each fold having a double series of conical tubercles; the strongly reticulate upper side is sprinkled with small tubercles,



G. L. Birbell del.

FIG. 1.—*Bulla subalata*.

and the membranous, deeply reticulate tegmina are well developed, cover one-third of the width of the sides and reach as far as the hind point of the pronotum; abdomen nearly concolorous in the only example known to me, but a faint median line of spots is somewhat discernible; anterior femora weakly pitted, but not tubercular.

Easily distinguished from all the other species of *Bulla* by the small smooth head, the less tectiform pronotum, the presence of rudimentary yet well-developed tegmina in comparison with the other females of the species of *Bulla*. In the ♀ of *B. serrata* there is a rudiment of red tegmen, but it is extremely short and is quite hidden by the side of the pronotum.

Length 60 mm.

Hab. Natal (Richmond). Rev. Ward. ♀.

GEN. PNEUMORA, Thumb.

Vet. Ak. Handl. xxxvi, 1775, p. 254.

Linnaeus in 1758 described the type of the genus, *P. variolosa*.

Thunberg figured and described it anew in 1810; and he described the ♀ under the name of *P. spinulosa*; the figure he gave is sufficiently good to make the identity of the two as the sexes of one species certain. He described also another species, *P. maculata*, which is very distinct from *P. variolosa*, and I am adding another and equally distinct species. The three kinds now known seem restricted to the South-Western part of the Cape Colony.

Key to the Species.

MALES.

Median part of anterior lobe of pronotum with two high conical tubercles, the posterior one higher than the first and 3- or 4-dentate behind; vertex simple	<i>variolosa.</i>
Median part of anterior lobe of pronotum with one blunt sloping tubercle, 2- or 3-dentate behind; vertex with two conspicuous conical tubercles	<i>maculata.</i>
Median part of anterior lobe with a blunt transverse tubercle not dentate behind	<i>namaqua.</i>

FEMALES.

Anterior lobe of pronotum with three conical tubercles, the median bi- or trifold; face strongly tuberculate; pronotum irregularly splashed with numerous silver patches	<i>variolosa.</i>
Anterior lobe not cristate, face closely granular, a deep excavation behind the anterior lobe, pronotum with four well-defined bands of silver	<i>namaqua.</i>

PNEUMORA NAMAQUA, n. sp.

♂. Pale green with the crest of the pronotum and the legs flavescens, possibly pinkish in life; head small, face very closely granulate below the ocelli; antennae moderately long; pronotum tectiform, the anterior lobe below the level of the crest of the hind lobe, which is also slightly higher about the middle than the anterior part, and somewhat bluntly serrate along two-thirds of the length of the crest, the anterior lobe is divided from the posterior by a broad and deep transverse impression extending from the crest to the humeral angle, it bears a blunt, slightly post median tubercle, having a yellowish patch on each side, the whole surface is covered with closely set granules which invade also the anterior part of the sides of the hind lobe, which is roughly reticulate as far as a diagonal well-defined silvery yellow band extending from crest to lower margin, and less roughly reticulate behind this band; tegmina green but with a yellow band along the longitudinal veins; pectus and legs briefly pubescent,

abdomen with two superposed rows of ocellate patches on each side; fore and intermediate femora shallowly pitted.

Length 26 mm.

♀. Head closely granular from the vertex; pronotum moderately tectiform in the anterior lobe, and much less so in the posterior, the crest of which is bi-sinuate, but the anterior lobe is not cristate and has on each side at the junction with the hind lobe a deep vertical depression bounded in front by a smooth whitish-yellow band, another slanting band beginning a little past the median part of the pronotum reaches the outer margin, in front of the humeral ridge is a small patch of the same colour, and a horizontal short band is situated under this ridge, the whole surface is closely granular in the anterior part, deeply and closely pitted in the median, and much more weakly so in the posterior; abdomen with three longitudinal rows of large whitist flavescient patches narrowly edged with brown.

All the markings are doubtless silvery in life.

Length 21 mm.

Hab. Cape Colony. Namaqualand (Sprinbokfontein). G. A. Rainier; R. M. Lightfoot.

GEN. CYSTOCOELIA, Serv.

Ins. Orthopt. 1839, p. 713.

CYSTOCOELIA BOSCHIMANA, n. sp.

♀. Greyish flavescient with the crest of the pronotum, the humeral ridge and the legs ashy blue; whole face covered with closely set but not contiguous granules; pronotum tectiform, but the crest is moderately arcuate on the anterior lobe only, that of the posterior being distinctly sinuate in the anterior part, the anterior lobe and the first half of the posterior are closely granulate, the posterior deeply and irregularly punctate; on the upper sides are three subhorizontal cretaceous bands, the intermediate mixing sometimes with the posterior, and the border of the lower margin is banded with white from the apex to the median part; the horny, black reticulated tegmina are very short, reaching only the edge of the first abdominal segment which in addition to a row of silvery patches on the middle of the upper side have two on each side, the patches are more quadrate than elongated, but disappear on the three posterior segments, there are faint traces of a third lateral row as well as of a median ventral one. The impressions on the anterior tibiae are flavous, and not tuberculate.

This species is very distinct from the same sex of *Cystocoelia inanis*, Fabr. The shape of the pronotum is not unlike that of *Pneumora*

namaqua ♀ ; and the crest, which is much less conspicuously raised, is not continuously arcuate from tip to tip ; the humeral ridge is not as strongly defined by a series of sharp tubercles as in *Cystocoelia*, and the tegmina are very rudimentary. It is evidently a form of transition between *Pneumora* and *Cystocoelia*.

Length 52 mm.

Hab. Cape Province (Bushmanland). Henkries ; R. M. Lightfoot.

SHORTRIDGEA, n. gen.

Although in many characters the species included in this genus does not differ much from *Cystocoelia*, yet the general appearance in each sex is so unlike, that a new genus should be founded for its reception.

In the ♂ the pronotum is highly carinate, and very tectiform in the anterior part, the ridge overhanging the sides ; in the ♀ the pronotum is very highly carinate and the sides expanded in such a way as to greatly overhang the sides ; the tegmina and wings are short, and rudimentary.

SHORTRIDGEA MIRANDA, n. sp.

(♂ fig. 2, ♀ pl. xlii, fig. 2.)

♂. Green, with the crest of the pronotum slightly flavescent ; head smooth ; pronotum arcuate, a little more dehiscent in the anterior part which overhangs the much reduced anterior lobe which is not cristate and has only two distinct folds, the moderately sloping sides are strongly carinate for one-third of the length, the carina bearing a series of red granules, the edge of the saddle-like sides are much rounded, the carina is simple, the surface of the pronotum is foveolate reticulate, and there are two long and an accessory distinctly raised veins giving it a foliate appearance, here and there are scattered a few red granules ; the long, closely reticulated but not shiny tegmina have, towards the median part, a small, slightly arcuate, white patch ; the abdomen is totally concolorous ; the tibiae are impressed, but the round impressions are not tuberculate.

Length 63 mm. ; wings expanded 125 mm.

♀. Green, turning to greenish-yellow after death ; head quite smooth ; discoidal surface of the pronotum more distinctly reticulate on the flattened sides and also along the crest, which is simple, the disk is divided by a longitudinal rib or vein, the apex of the posterior lobe, which is truncate and higher there than the non-crested anterior lobe, is pinkish-white, and along the red-tuberculated humeral ridge runs a silvery line, developing into a large triangular patch of the same colour above and connected with the sinuation of the lower

border, the margin itself being narrowly white to a little beyond the end of the humeral ridge; the tegmina reach the fore border of the fifth abdominal segment, the wings being much shorter, and fall quite vertically, the venae radiales forming a kind of ridge along which are situated two triangular, medium-sized, white patches, the first above the nervure, the other below, but both abutting on it. On the

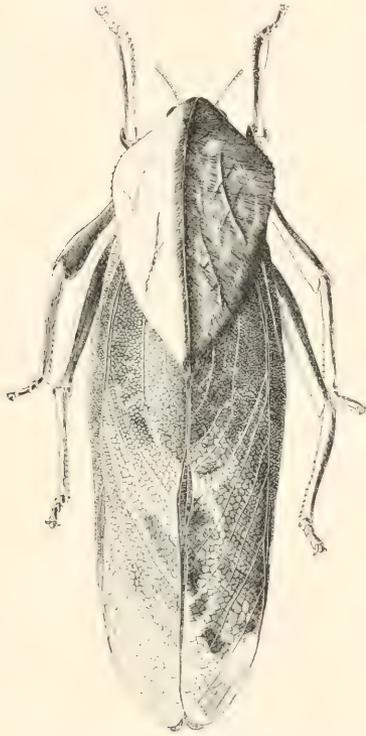


FIG. 2.—*Shortridgea miranda*. ♂.

abdomen are faint traces of two or three rows of silvery patches almost obliterated in my only example. Femora not distinctly tuberculate.

Length of body 89 mm., of pronotum 44 mm.; greatest width of pronotum 29 mm.

Hab. Cape Colony (Port St. Johns). ♂ and ♀. G. A. Shortridge. Zululand (Eshomé) ♂. A. J. T. Janse.

One wonders at this magnificent insect having escaped the attention of collectors.

FAMILY LOCUSTIDAE.

SUB-FAM. STENOPELMATINAE.

This Sub-Family is well represented in South Africa, where no less than nineteen species were recorded until lately. Several of these must, however, be sunk into synonymy. There is little doubt, for instance, that *Mimnermus portentosus*, Burm. = *M. monstrosus*, Herbst., and *Mimnermus prodigiosus*, Stål, may prove to be a small development of *M. monstrosus*. If, as I surmise, *Mimnermus puncticeps*, Pict. & Saus, was described from the specimens sent by me to the late H. de Saussure, the species will fall also in synonymy. I have not unfortunately here the part of the Mitheil. Schweiz. Ent. Gesel. in which it is described and figured, and the question of identity remains open. Among the species included in the genus *Onosandrus*, *O. saussurei* ♀ and *O. opacus* ♂, Brunn., both from Cape Town, must be taken to be the two sexes of *O. saussurei*, Brunn. There is one species only in the neighbourhood of Cape Town. Of the two species included in the genus *Borborothis*, *B. impicta*, Stål, is in all likelihood the same kind as *B. opaca*, Brunn., etc. All the other species, save *Maxentius kuhlkatzi*, Karn; *Carcinopsis fusca*, Brunn; and *Onosandrus fuscodorsalis*, Sjödst., are not, as yet, represented in the Cabinet. I am adding fourteen species, and I have two ♀ examples of *Mimnermini* which may prove ultimately to belong to a distinct species the ♂ of which is unknown.

The habitat of some of the species seems to be greatly restricted, especially among the *Mimnermini*. *Maxentius repens*, however, ranges from Salisbury to Delagoa Bay, and is also found in the Northern and Central Transvaal. It occurs also in Natal, but not in the Cape. On the other hand its congener *M. pallidus*, Wlk. (= *fuscofasciatus*, Stål), fairly abundant in the neighbourhood of Cape Town, is also to be found in the Transkei, but does not seem to occur further north or east.

These insects are nocturnal. In day-time they are found occasionally in a short shallow burrow, under a stone, tenanted by one individual only, whatever its sex. At night they are attracted by a light on the ground, and hop towards it. They cover a long distance at a leap, and inflict a very severe bite on the fingers of the captor, the female especially. The auditory organs are reduced to a minimum in certain species, yet the males of *Mimnermus monstrosus* and *Henicus promontorii* produce a fairly clear rasping noise by rubbing together their maxillae and also their mandibles, which they are always ready

to use to advantage. It is thus probable that their love-song is a gnashing of teeth.

This solitary existence, at least during the day-time, accounts probably for our lack of knowledge in the distribution of the species, but I still believe it to be restricted, and the number in kind comparatively small.

GEN. MAXENTIUS, Stål.

Oefv. Vet. Akad. Forh. xxxiii (3), 1876, p. 63.

MAXENTIUS CANUS, n. sp.

In spite of a less elongated appearance due to a more regularly globose abdomen this species may be included in the genus, from which it differs in having three sharp equi-distant spines in the upper side of the fore tibiae instead of two. In life it is almost semitransparent white, with the apical part of the spines and spurs slightly fuscous; the body is smooth, on the labrum and the maxillary palps are a few rigid setae; the abdominal edge of the sub-genital lamina, the legs, and tarsi are bristly, the hairs, especially on the legs, are stiff.

Length of body 35 mm., of pronotum 7 mm., of posterior femora and tibiae 17 mm., respectively.

Intermediate in form between *M. repens*, Stål, and the more elongated *M. fuscofasciatus*, Stål. The three first abdominal segments on the sides of the dorsal part are quite smooth.

The male example in the Collection was dug out from a depth, it is alleged, of several feet in the wet sand of the sea shore at Port Nolloth, Cape Province.

GEN. NASIDIUS, Stål.

Bih. Svensk. Akad. iv (5), 1878, p. 51.

The characteristics of the species on which Stål founded this genus are the enormously massive development of the head, the somewhat short antennae, which should really read: antennae as long or slightly longer than the body; fore tibiae with two spines on the middle of the upper side, and one at apex, and in the female a very short but robust ovipositor.

The presence of one or two spines at or near the median part of the fore tibiae seems in this case to vary specifically, for there is a species so closely related to the type species of the genus, *i. e.* *N. truncatifrons*, that, but for the difference in the number of spines, the males of the two species could be distinguished with difficulty.

Key to the Species represented in the Collection.

MALES.

- A². Frontal part ending in a strong tubercle. Mandibles greatly developed, clypeus simple.
- B⁷. Anterior tibiae with one median spine *truncatifrons*
- B¹. Anterior tibiae with two median spines.
 Body, minus the vertex, rufescent *mimus*
 Body, minus the vertex, quite black *monachus*
- A¹. Frontal part not tuberculated.
- B¹. Anterior tibiae with two median spines.
 Mandibles greatly developed, sides of clypeus strongly dentate *bechuanus*

NASIDIUS MIMUS, n. sp.

♂. Head as much developed as in the large examples of *N. truncatifrons*, but completely brick-red on the vertex, whereas in *truncatifrons* it is often ivory-white; the body is also less fuscous metallic; the two upper spines on the fore tibiae are strong and closely set.

♀. In the female the oviduct, although short, is a little longer than the labrum.

Long. corp. ♂ 43, ♀ 41 mm.

Length of body, ♂ 43 mm., ♀ 41 mm.; of hind femur, ♂ 19 mm., of ♀ 16 mm.; of ovipositor 11½–12 mm.

Hab. Cape Province (Transkei). H. P. Abernethy; F. C. Kolbe.
 1 ♂, 2 ♀ ♀.

NASIDIUS BECHUANUS, n. sp.

♂. Flavescent; head with a median infuscate patch, pronotum flavous with two transverse ill-defined but broad fuscous bands; abdomen fuscous metallic on the dorsal part, but flavescent on the ventral; legs flavescent, upper outer part of the hind femora slightly darker.

Head broad, fastigium not tuberculate between the antennae; mandibles strongly developed, somewhat compressed, bluntly tuberculate at base, strongly incurved at middle, somewhat dilated thence to the apex and with an inner triangular expansion before the five-dentate apex; labrum very broad at base and apex, and moderately deeply constricted slightly before the centre; the edge of the clypeus is prolonged laterally on each side in a triangular, sharply acuminate, sub-horizontal process not extending much beyond the genae, and not unlike the horns of a young ox; antennae concolorous, stramineous; the saddle-like pronotum is smooth, as is the rest of the body; the anterior

tibiae have two median spines, the intermediate two on the outer and three on the inner margin; the hind tibiae are one-fourth shorter than the femora, somewhat robust, and plainly incurved near the apex.

Length of body 28 mm.; of mandible 6 mm.; of posterior femur 15 mm.

Very different in general appearance from its congeneric species *N. truncatifrons*. The head, although large, is not as greatly developed, there is no tubercle whatever on the forehead, but the shape of the mandibles is the same, and the spines on the fore and intermediate tibiae, as well as the conical supra-anal lamina, are as in *N. truncatifrons*.

Hab. Cape Province (Vryburg District), J. M. Bain. 1 ♂.

NASIDIUS MONACHUS, n. sp.

♂. Very near *N. mimus*, but the colouring is different. The whole body and legs are shiny black, the vertex only is flavescent, with the genae and the whole tuberculated clypeus ferruginous red. Much smaller than *N. mimus*, and distinguished by the much more deeply vaulted clypeal part, which is developed in a triangular process overhanging the base of the clypeus; the genae are not as deeply corrugated; the fore tibiae have each two spines in the upper median part.

Length of body 21 mm.; of mandibles 7 mm.; of hind femora and tibiae 14 mm.

Hab. Southern Rhodesia (between the Limpopo and the Zambesi), T. Ayres. 1 ♂.

NASIDIUS FEROX, n. sp.

♀. Metallic flavescent with the prothorax fuscous in the centre, the hind border of all the segments more or less narrowly fuscous; head very robust, frontal part distinctly produced owing to a deep depression in front of the antennae into a broad raised triangle, the apex of which is the continuation of the fastigium, the outer angle of the clypeus is sub-dentate; the anterior tibiae have each two long spines in the inner part of the upper side in addition to the apical one; the spines of the intermediate and posterior tibiae are strongly developed; the ovipositor is somewhat short, and upcurved.

Closely allied to the ♀ of *N. mimus*, but the head is more massive, and the triangular raised part of the frons is more distinct; the legs are a little more robust, the hind femora are broader, and the spines of the legs are more robust; the ovipositor is also slightly shorter.

Length of body 38 mm.; of pronotum 8 mm.; of hind femora 21 mm.; of hind tibiae 19 mm.; of ovipositor 6 mm.

Hab. Southern Rhodesia (Motoppoes), R. Pillans.

GEN. HENICUS, Gray.

Mag. Nat. Hist. (2), i, 1837, p. 144.

HENICUS PROMONTORII, n. sp.

♂. Allied to *H. pattersoni*, Stoll, but light testaceous, with the abdominal segments somewhat fuscous on the upper side. It is, however, in the shape of certain parts of the head that the differences are noticeable. The labrum is longer, or a little longer but more diagonally truncate laterally at apex, and smooth instead of being striated on each side of the juxta-apical part; the mandibles are more slender and longer in proportion, the spine at the anterior part of the genae is sharp but short, being only about one-fourth of the length of those of *pattersoni*; the posterior margin of the genae is produced into a rounded lobe instead of a triangular sharp projection, and the head and body proportion is only half that of *pattersoni*.

♀. The female, which, unlike that of *Mimmermus*, has not quite the general appearance of *Onosandrus*, is much more slender than that of *H. pattersoni*, and much more lightly coloured.

This species is not very rare in the Cape Peninsula and its immediate neighbourhood, whereas I have seen hitherto a pair only of *H. pattersoni* (the head of the male of which Stoll has very truly delineated) from the Swellendam District.

Length of body 20–21 mm.; of mandibles (♂) 9–12 mm.; of ovipositor 20 mm.; length of hind femora and tibiae 19–20 mm., respectively.

Cape Province (Cape Peninsula). 6 ♂♂; 4 ♀♀.

BOCHUS, n. gen.

Head slightly broader than the pronotum; vertex of the normal form, fastigium very distinct; labrum very broad at the base, strongly constructed laterally, and broadly spatuliform at apex, covering the mandibles, which are short but very massive, and very strongly dentate; genae simple; pronotum cylindrical with the sides deflexed, but a little more quadrate than in *Nasidius*; sternal and coxal spines of the normal shape and size; supra-anal lamina (♂) sub-obtusely triangular; cerci sub-cylindrical, short, sub-genital lamina arcuate, slightly acuminate in the centre, styles short, lanceolate, (♀) ovipositor very short; legs robust, moderately long, all femora plainly compressed, the posterior ones hardly dilated at the base, being there very little wider than at apex, and having a deep longitudinal median sulcus

on the outer face, the upper part of which is only very indistinctly pinnate; there are no traces of auditory organs on the fore tibiae, which are armed with strong spines, and bear, on the upper side, in addition to the apical, two conspicuous ones situated respectively at the first and second thirds of the length; in the intermediate tibiae the position of the spines is 4 and 3; in the posterior 6-4.

The species for which this genus is founded is, in all likelihood, non-saltatorial, and is easily recognised by the very roughened surface of the whole head, especially in the anterior part.

BOCHUS CONTEMNENDUS, n. sp.

Fuscous, with the ventral part of the abdomen, the sides of pronotum and the knees lighter; antennae fuscous; vertex deeply and closely punctate; a small flavescent ocelliform macule in front of the fastigium, but less marked in the ♀; clypeus, base of labrum and anterior part of genae very roughly rugose punctate, mandibles short but very powerful, almost as broad as long, and powerfully dentate; pronotum and abdomen very finely aciculate, almost smooth; legs of the usual shape and with the usual spines, which are more developed, however, in the anterior than in the posterior; the hind tibiae are slightly curved; the very short ovipositor is almost vertical.

Length of body 35-36 mm.; of pronotum 10 mm.; of hind femora 19 mm.; of hind tibiae 17 mm.; of ovipositor 3 mm.

Hab. Transvaal, E. Hughes, ♂; Orange Free State (Smithfield), ♂, ♀, D. P. Kannemeyer.

FAKU, n. gen.

The species for which I propose this genus is distinguished from *Nasidius* by the much lesser development of the head and mandibles; the latter being short, robust, sharp at apex, strongly dentate and very much like those of the females of our South African *Mimnermi*. From *Bochus* it is distinguished by the more dilated proximal part of the hind femora. The supra-anal lamina is crumpled in my example, but the cerci and sub-genital lamina are as in *Nasidius*.

FAKU MINAX, n. sp.

♂. Fuscous bronze sprinkled with pale flavescent; mandibles fulvous, black at tip; head a little wider than the pronotum, but robust and slightly amplified in the genal part; vertex of the normal shape, fastigium with the usual carination, clypeus raised in the centre as a continuation of the fastigium, but not developed in a tubercle, the genae are simple, and only the clypeal part is very slightly

striolate; the well-developed labrum corresponds to the length of the strongly pluri-dentate simple mandibles that greatly resemble those of a female *Nasidius*; the anterior tibiae have one median spine situated about the centre of the upper part, in addition to the terminal.

Length of body 30 mm.; of mandibles 5 mm.; of hind femora 20 mm.; of hind tibiae 19 mm.

Hab. Cape Province (Dunbrody), J. A. O'Neil. 1 ♂.

SPELAEIACRIS, n. gen.

Head long, fastigium of the vertex bituberculate, disconnected from the frontal part, eyes very narrow, sub-reniform, strongly granular; antennae very slender, extremely long; palps very long, last joint scooped longitudinally towards the tip; pronotum sub-cylindrical on the upper side but somewhat deflexed laterally, a little longer than broad; supra-anal lamina ♂ triangularly acuminate; cerci very long, strongly serrate inwardly and with very long hairs (Pl. XLII, fig. 1*a*), sub-genital lamina straight, styles short, massive, acuminate at tip; ♀ supra-anal lamina triangular, cerci long, slender, compressed, grooved underneath at base, sharp at apex with a spiniform process there, and clothed with long hairs; ovipositor as long as the body and almost horizontal; legs extremely long and slender, no traces of auditory organ on the anterior; tarsi of anterior and intermediate legs only a little shorter than the tibiae, those of the posterior equal in length, anterior coxae armed with a strong spine, knees sharply spinose on each side, fore legs with one lateral and one apical spine; hind tibiae with a double series of closely set spines on the upper side from among which five are more developed than the others; the spurs are very long, being nearly half the length of the basal tarsal joint.

Evidently allied to *Dolichopoda*, Bol., but differing in several points.

SPELAEIACRIS TABULAE, n. sp.

(Pl. XLII, fig. 1, 1*a*.)

Light brown with the palps, labrum and legs lighter than the rest of the body; glabrous, but the palps, legs and tarsi are very briefly but thickly pubescent; the vertical head is as long as the pronotum, and the fastigium plainly bituberculate in both sexes; the pronotum, longer than broad, is very vertical laterally, and impressed there in the anterior part. In the ♂ the supra-anal lamina is prolonged in a broadly triangular process, moderately acute at tip; the cerci are long,

robust, clothed with long rigid bristles, and have inwardly seven saw-like teeth, and a spine-like process at tip; the sub-genital lamina is nearly truncate and the styles short, somewhat thick at base, and somewhat cylindrical towards the tip; in the ♀ the cerci end in a distinct spinous process, they are long, simple, clothed with long hairs, and grooved in the middle of the outer part; the ovipositor is the length of pronotum and abdomen taken together, somewhat straight but slightly recurved, the inferior valvulae are covered by the tip of the upper.

Length of body $8\frac{1}{2}$ – $9\frac{1}{2}$ mm.; of pronotum 2 – $2\frac{1}{2}$ mm. ♂; of cerci $2\frac{1}{2}$ – $2\frac{3}{4}$ mm. ♀; of ovipositor 8 – $8\frac{1}{4}$ mm.; of hind femur 11 – $11\frac{1}{2}$ mm.; of hind tibiae 13 – $13\frac{1}{2}$ mm.

Hab. Cape Town. Discovered in a series of deep chasms under the ground, entrance to which is gained by a small aperture in the side of a kopje, over the Wynberg Reservoir on the slopes of Table Mountain; alt. 2200 ft. The chambers have pools of water on the floors; the walls are damp; and perfect darkness prevails (F. Werts; R. Marloth; K. H. Barnard. 7 ♂♂; 3 ♀♀.)

GEN. ONOSANDRUS, Stål.

Bih. Svensk. Akad. iv (5), 1878, p. 51.

ONOSANDRUS MEDIOCRIS, n. sp.

♂. Vertex and upper side black with a metallic tinge, outer upper part of hind femora fuscous, genae, clypeus and labrum, legs and antennae flavescent. Anterior tibiae with one long, nearly median spine on the inner part of the upper side in addition to the apical; spines of the intermediate tibiae are of normal disposition and number, *i. e.* three to four; those of the hind legs number eleven and nine respectively, and the inferior margin of the strongly developed hind femora are closely denticulate from the middle to the knee.

Differs in size from *O. fasciatus*, Stål, in which the lower part of the hind femora are also denticulate, and in colouring, the upper part being concolorous.

Length of body 20 mm.; of pronotum $4\frac{1}{2}$ mm.; of hind femora 19 mm.; of hind tibiae 16 mm.

Hab. No record of locality or of donor, but probably from the Knysna (Cape Province).

ONOSANDRIDUS, n. gen.

I propose to include under a new genus such species of *Mimnermi* that have in nearly all respects the habitus and characteristics of *Ono-*

sandrus, but in which the fore tibiae in addition to the apical spine are armed with two conspicuous ones in the inner part of the upper side. The resemblance of the species known to me, which are all females, to female examples of *Libanasidus* and *Libanasa* is very great. The antennae are equally long. *Onosandrus puncticeps*, Pict. & Saus., will have to be included in this genus.

ONOSANDRIDUS DECEPTOR, n. sp.

♀. Fuscous aenescent; head livid flavescient, darker in the middle of the vertex, maxillae rufescent, black at apex; vertex and genae vaguely punctulate, the latter plicatulate in the anterior part, fastigium plainly carinulate laterally; antennae fuscous; pronotum fuscous, with a faint rufescent tinge, vaguely plicatulate and with a distinct median longitudinal line; abdomen finely aciculate, subaeneous, styles long, ovipositor upcurved, as long as the abdomen, and sub-genital lamina truncate, slightly emarginate; legs somewhat robust, the spines on the inner upper side of the anterior tibiae are long, the first one is situated at about one-third of the length from the base and the second slightly past the middle; on the intermediate tibiae these spines number three and three on one leg, but the number is normal, *i. e.* three and four, on the other, the well developed hind femora are simple underneath, the tibiae, provided with sharp spines, are only slightly shorter than the femora. Resembles the female *Platysiagon*; but the tibiae, especially the hind ones, are more robust and the spines longer and stronger.

Length of body 23 mm.; of pronotum 7 mm.; of hind femora 19 mm.; of hind tibiae 18 mm.; of ovipositor 16 mm.

Hab. Southern Rhodesia (Umtali), A. Bodong. 1 ♀.

ONOSANDRIDUS PICTIFRONS, n. sp.

♀. Head with the vertex red, anterior part black with a conspicuous yellow band continued from the apex of the fastigium to the edge of the clypeus, genae, labrum, mandibles and palpi flavous; vertex distinctly grooved longitudinally in the middle; antennae concolorous, flavescient; pronotum fuscous with a posterior transverse flavescient band edged with a black band of nearly equal width, the other segments either similarly banded or banded on the sides only, the surface nearly smooth; legs pale flavescient with the knees black, upper edge of femora and folds black; anterior tibiae with two sharp conspicuous spines in the inner part of the upper side in addition to

the apical one; the spines of the intermediate and posterior tibiae normal; hind femora simple underneath; ventral part of abdomen with a round black patch on each side; ovipositor upcurved, shorter than the abdomen; supra-anal lamina triangular, sub-genital truncate, slightly emarginate.

Length of body 20 mm.; of pronotum 5 mm.; of hind femora 14 mm.; of hind tibiae 13 mm.; of ovipositor? 6mm.

Hab. Transvaal (Nylstrom), A. Tucker. 2 ♂♂.

ONOSANDRIDUS PLEBEIUS, n. sp.

♀. Fuscous brown, shiny, clypeal part and genae olivaceous, mandibles and base of labrum sub-rufescent; pronotum and abdomen sub-metallic fuscous brown; abdomen flavous; anterior tibiae each with two conspicuous spines in the inner part of the upper side in addition to the apical one. The disposition of these spines and the shape of the intermediate and hind legs is as in *O. pictifrons*, from which it differs mostly in coloration. The ovipositor is somewhat wide at base, carried nearly vertically, upcurved and shorter than the abdomen.

Length of body 18 mm.; of pronotum 6 mm.; of hind femora 15 mm.; of hind tibiae 12 mm.; of ovipositor 7 mm.

Hab. Northern Transvaal (no exact locality), R. Hughes. 1 ♀.

GEN. PLATYSIAGON, Brun. n.

Verh. Zool. Bot. Ges. Wien. xxxviii, 1888, p. 292.

PLATYSIAGON SIGNATUS, Brun. n.

Verh. Zool. Bot. Ges. Wien. xxxviii, 1888, p. 292, pl. 7, fig. 23.

♀. The male alone was described by Brunner von Wattenwyl in 1888 (Monogr. d. Stenopelmat. u. Gryllaer. Z.B. Ges. B. xxxviii, Abh., p. 392, figs. 23, 23b). The colouring of the female is nearly the same as that of the male, but the sides of the prothorax have two much more distinct pale yellowish bands, and the abdominal segments are also much more broadly banded with pale yellow; the abdomen is more than twice as long as the thorax, and the strongly incurved ovipositor is as long as the abdomen; the sculpture and size of the hind femora are identical with those of the male.

Length of body 23 mm.; of hind femora 19 mm.; of tibiae 29 mm.; of ovipositor 16 mm.

Two ♂♂ and one ♀ from Lourenço Marquez (J. de Coster). Originally described from Tabora, East Africa.

PLATYSIAGON CAPICOLA, n. sp.

(Pl. XLIII, figs. 5, 5a.)

♂. A little smaller than my two male examples of *P. signatus*, but of the same build. Smooth, shiny, head pale flavescent, with two fuscous black bands on each side of the upper part of the vertex, both meeting at the back part of the eye, the two median ones are prolonged each in a short arcuate patch curving round the fastigium; antennae concolorous, but the first and second segments have a fuscous inner patch, immediately above the labrum, each side of which is fuscous, are two small central black patches; the mandibles are the length of the head, very robust, incurved, five and four dentate respectively, at apex, and moderately compressed; on the upper inner side of the base starts a sub-cylindrical robust horizontal spine curving slightly in the anterior third, and quite straight thence, sharp at apex, and extending as far as the inner tooth of the mandible when the latter is open; pronotum with two median broad longitudinal bands frayed vertically on the sides in two vertical patches which do not reach the margin; abdominal segments light metallic brown, splashed with somewhat seriated flavescent patches; but the two basal segments are only narrowly edged with brown, the greater part of the surface being straw-colour; posterior femora greatly dilated at the base, more or less tessellated with fuscous brown; anterior tibiae with one spine, somewhat median, on the upper side.

This species thus differs from *P. signatus* in the shape of the mandibles which, instead of being strongly dilated inwardly in the shape of a sharply edged lamina sharply truncate at apex, have instead a long, cylindrical, sharply acuminate projection nearly as long as the greatly developed mandible, which is also not so conspicuously bent inwardly from about the median part as in *P. signatus*, in which species the labrum is broader at base.

Length of body 22 mm.; of mandibles 7 mm.; of posterior femora 17 mm.; of posterior tibiae 17 mm.

Hab. Cape Province (East London). 1 ♂.

LIBANASIDUS, n. gen.

Form massive. Head not broader than the pronotum, which, however, is broad; fastigium of vertex much raised, very obtusely triangular; labrum very broad at base, much constricted laterally at middle; mandibles very robust, those of the ♂ with a long, robust, sharply acuminate, vertical process situated at about the median part; simple but equally robust in the female; antennae twice the length of

the body, genae simple; pronotum as broad as long; anterior tibiae with very distinct oblong foramina and with a conspicuous supra-median spine, the intermediate and posterior armed with long robust spines of the usual number; hind femora very strongly developed; (σ) supra-anal lamina acuminate rounded, cerci somewhat long, and with a long pubescence, moderately emarginate; (φ) cerci as in the σ , ovipositor upcurved, moderately slender, nearly as long as the abdomen.

Closely allied to *Libanasa*, Wlk., but differs by the armature of the head in the σ .

LIBANASIDUS VITTATUS, Kirby.

(Pl. XLII, fig. 4.)

Ann. Mag. Nat. Hist. iii (7th), 1899, p. 478.

Flavescent red with the base of the thoracic and abdominal segments broadly banded with fuscous black; head smooth in both sexes, and with the genae simple; the face is more yellowish than the vertex; the ocelli are represented by three lighter spots, on each side and in front of the sub-carinate fastigium; mandibles very robust, but of normal shape in the φ , while in the σ the median upper side is produced in a teretous vertical process, broad and thick at the base, sharply acuminate at tip and crossing the opposite at the points; the body is smooth and very shiny; all the spines of the legs are very much developed, the anterior tibiae have a median and a terminal spine.

Length of body 27–40 mm.; of maxillary process of σ 7–8 mm.; of pronotum 8–10 mm.; of hind femora 20–23 mm.; of ovipositor 15–18 mm.

In 1899 Kirby described, under the genus *Carcinopsis*, what appears to be the present species from two female examples from Barberton in the Transvaal.

Brunner, in 1888, described as *Carcinopsis* two South African species, for one of which, however, Walker had in 1869 founded the genus *Libanasa*. But in both Brunner's species, which are, I believe, represented in the Museum Collection, the head of the male is simple.

Hab. Transvaal (Barberton), H. de Beër; F. C. Kolbe; (Lydenburg), T. Ayres. 2 σ σ , 3 φ φ .

SUB-FAMILY HETRODINAE.

This sub-family is represented in the South African Region (bounded by the Zambesi and the Cunene River) by twenty-one species included in six genera, four of which are endemic. In spite of sinking several into synonymy, the proportion of species is greater in South Africa than in any area of similar dimensions in any part of the world.

They are such formidable-looking animals that natives and colonists alike are afraid of them. Thus among the natives of Northern Rhodesia *Enyaliopsis durandi* is greatly feared. A Native Commissioner writes: "The natives and others stand in dread of this insect. They inform me that it exudes a fluid which, coming in contact with any part of the body, forms a sore very much resembling the appearance of leprosy, and that to effect a cure takes some two or three months." This belief is, of course, groundless, but the fluid, a greenish liquid, is squirted to a short distance from a large cavity situated on the side of the prosternum. Having had occasion to



FIG. 3.

bottle a *Hetrodes* in a weak solution of ammonia, I found that the liquid had solidified into a hard waxy matter insoluble in alcohol.

Certain kinds are reported to attack harness and tents of travellers, etc., camping in the karroo. Dr. A. W. Rogers, Director of the Geological Survey of the Union, informs me that any cloth or wearing apparel left at night near the waggon is immediately attacked and partly destroyed. He has supplied me with a photograph showing certain individuals clinging to the tent of his travelling waggon (fig. 3).

They are more numerous in certain parts of South Africa than in others; thus *Hetrodes pupus* is somewhat rare in the neighbourhood of Cape Town, and seems to occur singly or in pairs; it is to be found in short herbage or in very low bushes. Its congener *H. namaquensis*

I found in fairly large numbers in Namaqualand, but always on bushes, not on the ground like *H. pupus*. The male invariably revealed its presence by a twice or three times repeated loud and piercing raspy stridulation when I was as far as three or four paces distant. It would then try to drop awkwardly to the ground, endeavouring at the same time to break its rapid descent by clinging by one or more legs to the twig or branch.

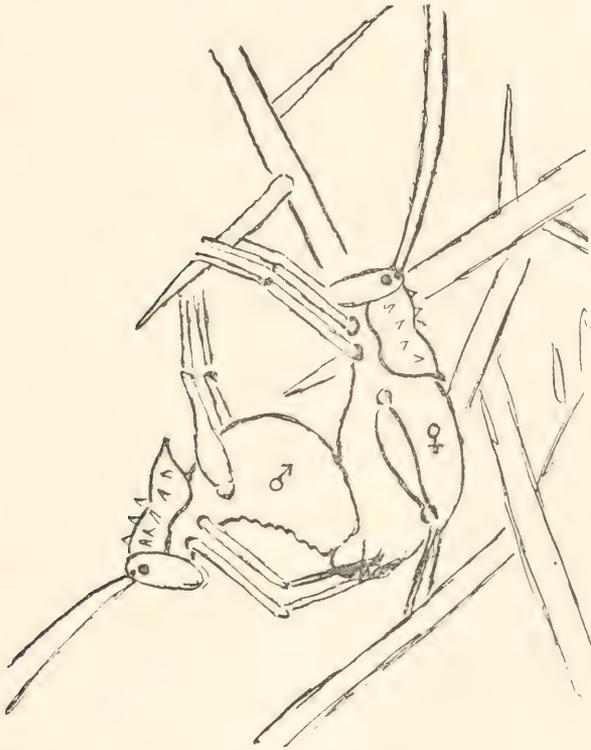


FIG. 4.

All the South African Hetrodinae make this noise when alarmed, or fearing danger.

They are mostly found in the plains where short grass or stunted vegetation occurs, and can thus be looked upon as deserticolous. They are not saltatorial, and their gait is very clumsy. They do not copulate on the ground but on bushes, stunted or not. The position assumed by the two sexes is peculiar, as shown by the sketch of a pair of *Acanthoproctus bechuanus* in coitū very kindly supplied me by Bro. J. H. Power. The male is underneath (fig. 4).

Nothing is known of the egg-laying. The great length of the ovipositor in *Hetrodes* would seem to indicate that the eggs are deposited at a fair depth in the soil, or on roots. In the other genera this ovipositor is very short, and the eggs, if laid in the ground, could only be left at the surface, for the obese abdomen would not allow of the telescopic elongation of that of an Acridid, which by this means reaches a depth of one to one and a half inches. It is, therefore, probable that, as in most *Locustinae*, the eggs are laid at the collar of roots or stems. The number of eggs in gravid females is from ten to fourteen; their length is 7 mm., the thickness $1\frac{1}{2}$ mm., and they are slightly bent (*Acanthoproctus cervinus*) or smaller (*Hetrodes pupus*).

The distribution in South Africa is now well known. The species of *Hetrodes* range from Seymour in the eastern part of the Cape to Namaqualand in the west, but keeping to localities along the sea-board where winter rains occur. The genus is not recorded from Natal, the Transvaal, or Rhodesia. *Acanthoplus* is found in Rhodesia, the Transvaal, Bechuanaland, and the Kalahari, as well as the sandy sea-board of Damaraland. *Enyaliopsis* inhabits Mozambique, the North-eastern Transvaal, Southern and Northern Rhodesia, but no species has been found in the Kalahari or West Coastal region. *Hemihetrodes* occurs only in Namaqualand and its confines. *Acanthoproctus* is restricted to the Cape Karroo and the northern parts of the Cape Colony, from Worcester to Bechuanaland. *Aphractia* is to be found only on the rare vegetation of sand dunes or their neighbourhood, extending on the West Coast from Angra Pequena to the Great Fish River, and perhaps beyond.

There is not much reason to believe that the number of the species will be materially increased. Some were separated, in spite of their strong specific resemblance, on characters drawn from the greater or lesser number of spines on the legs. These characters are, however, unreliable, as I have endeavoured to show in dealing with these species. Certain kinds are more plastic than others.

GEN. HETRODES, Fisch.

Ann. Soc. Ent. Fr. ii, 1833, p. 318.

This genus, founded on a long-known Linnean species, the synonymy of which is very intricate, includes a Syrian and Egyptian species, another from the Congo, and two, the locality of which is unknown. Walker added to *H. pupus*, Linn., two South African species, *H. abbreviatus* and *H. marginatus*.

Kirby, himself a maker of species on very slender grounds, admits

that the four species described by Walker do not admit of much distinction. *H. marginatus* is a ♂ in which the pronotum is greatly elevated and slightly indented on the right border. Walker's description mentions, however, the presence of five rows of tubercles on the dorsum, a character shared only by *H. pupus* and another species, *H. striaticollis*. According to notes which I took, long ago, at the British Museum, *H. marginatus* = *pupus*. The number of South African representatives of the genus is thus reduced to two, but I am adding two more. The habitat of the species is much more restricted in South Africa than those of the other genera. Thus *H. pupus* is restricted to the neighbourhood of Cape Town; *H. knysna* to the districts of George Knysna, Humansdorp; *H. namaqua* ranges from what is known here as the Karroo, to Namaqualand; *H. abbreviatus* seems to reach further east, as far as Seymour; but all the species are restricted to the Cape Province of the Union.

Key to the Species.

Dorsal part of abdomen with five rows of spines. Pronotum roughly coriaceous	<i>pupus</i> .
Pronotum with ray-like series of raised lines breaking sometimes into elongated tubercles	<i>knysna</i> .
Dorsal part of abdomen with two rows of spines. Hind dorsal part of pronotum somewhat sloping laterally, in ♂, intermediate femora with two spines underneath	<i>namaqua</i> .
Hind dorsal part of pronotum not sloping laterally in the ♂; intermediate femora without spines underneath	<i>abbreviatus</i> .

HETRODES KNYSNA, n. sp.

Pale testaceous; occasionally variegated with fuscous on the pronotum. Smaller than *H. pupus*; the disposition and number of spines on the prothorax are the same, namely, four on the fore border, four on the sides of the anterior part with four discoidal, six on each side of the hinder part, and two median ones in the hind border; the anterior dorsal part of the disk is scrobiculate instead of coriaceous as in *H. pupus*, and the posterior, instead of being also coriaceous, is covered with longitudinal, convex carinae breaking into elongated tubercles on the sides, the edge of the hind border is slightly indented in the ♂ between the two apical spines; the abdominal segments are covered with small, but very plain, round tubercles, and there are five longitudinal rows of spines; the median consists of seven spines, one on each segment, the outer row numbers only five spines, and between the median and the second, and occasionally between the second and the third, there are traces of another row; anterior femora with one

inner, intermediate with two outer, posterior with two outer and one inner tooth underneath, and five above, near the base, the teeth small, ovipositor somewhat recurved.

Length of body 33–38 mm.; of pronotum 13–17 mm.; of ovipositor 18 mm.; of hind femur 21–22 mm.; of hind tibiae 24–25 mm.

Hab. Cape Colony (Knysna); (George), M. Wilman.

HETRODES NAMAQUA, n. sp.

The species is very closely allied to *H. pupus*, L.; it seems to replace it at some distance from Cape Town, and may prove ultimately to be only a variety, but it is very constant; whereas in *H. pupus* the dorsal part of the abdominal segments bears five rows of spines, there are only three distinct ones in *H. namaqua*. The sculpture of the pronotum is more roughly coriaceous, and the hinder part of the pronotum is a little more convex in the ♂; the spines of the legs are always more robust than in *H. pupus*.

Length of body 31–45 mm.; of pronotum 13–14½ mm.; of ovipositor 13–15 mm.; of hind femur 23½–26½ mm.; of hind tibiae 25½–29 mm.

Hab. Cape Province (Uitenhage), S. D. Bairstow; Namaqualand (O'kiep, Springbokfontein), L. Péringuey.

HETRODES ABBREVIATUS, Walk.

Catal. Derm. Salt. Br. Mus. 2, 1869, p. 227.

The two examples of what I take to be Walker's species greatly resemble *H. knysna*, but apart from having three dorsal rows of spines on the abdomen instead of four, these segments are not granular, as in *H. namaqua*; the ovipositor is slightly broader in proportion to the size than in the other species. There are only three spines on the upper basal part of the hind femora.

Length of body 31–32 mm.; of pronotum 14–15 mm.; of ovipositor 14 mm.; of hind femur 19 mm.; of hind tibiae 19 mm.

Hab. Cape Colony (Seymour), L. Péringuey.

GEN. HEMIHETRODES, Pict.

Mém. Soc. Phys. Gen. xxx, 1888, p. 74.

H. peringueyi, Pict., is the same species as *H. bachmani*, Karsch. I collected the examples I sent to de Saussure in the very locality given by Karsch for his species.

It seems to be restricted to Namaqualand and its confines.

GEN. ACANTHOPROCTUS, Karsch.

Berl. Ent. Zeits. xxxi, 1888, p. 66.

This genus includes only two species, namely, *A. cervinus*, Haan (*A. militaris*, White, and *A. fortis*, Walk., being synonymous), and *A. vittatus*, Walk., with *A. capreolus*, Pict., and *A. howarthae*, Kirb., standing also in synonymy with the latter. I sent the specimen described and figured by Pictet, and the second synonymy is admitted by Kirby, who also states that *H. fortis*, Walk., and *cervinus*, Haan, are identical ("On the Family Hetrodidæ," A.M.N.H. 1889), but he enters them nevertheless as distinct species in his 'Synonymic Catalogue of Orthoptera' published in 1906. There can be no doubt as to the identity of *A. militaris*, White, with *A. cervinus*.

Both species seem restricted to the Karroo, Namaqualand, and the northern part of the Cape Province and Bechuanaland.

GEN. APHRACTIA, Kirb.

Ann. Mag. Nat. Hist. iii (7th ser.) 1899.

The genus includes two species: *A. diademata*, Stål, which was described and figured by Pictet as *Acanthoproctus ibex* (Mém. Soc. Phys. Genève. xxx. 1888, p. 72, pl. 3, figs. 31 and 31b), and *A. coronatus*, Karn. (Schulz. Reis. Orthopt. ii, 1910, p. 118, pl. 2, fig. 4).

Of the identity of *A. ibex* with *A. diademata* there can be no doubt, as the specimen described by Pictet was sent by me to the late Henry de Saussure. *A. crassipes*, Walk., is the same as *A. diademata*, teste Kirby.

We have five examples of *A. diademata* from Walfish Bay, and only two of *A. coronata* from Angra Pequena, quite close to the former locality. I am somewhat inclined to consider the latter as a slight varietal form of the former.

GEN. ACANTHOPLUS, Stål.

Ofv. Vet. Ak. Forh. xiii, 1873, p. 39.

In his 'Synonymic Catalogue of Orthoptera' (1906) Kirby enumerates no less than nine species of this South African genus, he being responsible for the addition of three new ones (Ann. Mag. Nat. Hist. iii (7 ser.) 1899).

The genus was created by Stål for *Hetrodes longipes*, Charp., a species from Benguela, which occurs also within the limit of the South African region—i. e. south of the Cunene River. In 1869 Walker published the description of two species, *A. pallidus* and *A. discoidalis*, which in

my opinion are one, for which I shall retain the name *discoidalis*. Brancsik, in 1894-95, made known two species, *A. speiseri*, a very distinct one, and another, *A. stratiotes*, which will probably fall into synonymy with *A. longipes*. Griffini, in 1897, described *A. jallae*.

The three species described by Kirby—*C. desertorum*, *germanus*, and *serratus*—are mainly differentiated by the number of spines along the groove of the upper side of the tibiae. This character is entirely illusory. Not only does it vary on the opposite legs of the same individual, but also in examples caught the same day and in the same spot.

I am adding four species which I consider to be very distinct; so that, in spite of the sinking in synonymy of six species, the representatives of this genus in South Africa now number eight. One of these, however, may be proved not to enter the South African region.

Table of Species.

A ³ . Pronotum with two median spines in the centre of the disk, and no spines in the anterior border.	
B ² . Femora armed with spines.	
A ² . Abdominal segments spinose; fore tibiae with one spine underneath; hind femora with two inner and one outer spine; three first abdominal segments with a sharp spine in the middle.	<i>loandae</i> .
Abdominal segments simple, fore tibiae with three spines in the inner side; intermediate with one inner, hind with three on each side underneath.	
B ¹ . All femora simple.	
Abdominal segments with a sharp median spine on the upper side	<i>bechuannus</i> .
Abdominal segments simple	<i>discoidalis</i> .
A ² . Pronotum without the two spines in the centre of the disk:	
Antennae and legs testaceous, concolorous	<i>speiseri</i> .
Antennae testaceous to within a short distance of the base, and black thence; tarsi black	<i>varicornis</i> .
A ¹ . Pronotum with two median spines in the centre of the disk, and two in the anterior border.	
Abdomen with one median row of spines	<i>jallae</i> .
Abdomen with three rows of spines	<i>armativentris</i> .

ACANTHOPLUS LONGIPES, Charp.

Orthopt. pl. 45.

A. stratiotes, Brancs., Jah. Ver. Trencs. Com. xvii-xviii, p. 259,
pl. 8, fig. 10a.

This species was described as a native of Benguela. In the figure given by Charpentier the number of spines on the underside of the fore

femur varies in the two figures there given. In one example (σ) from Angra Pequena, which I take to correspond to *A. longipes*, there are four teeth in the inner side of the groove underneath, but only one on the opposite leg; two and one in the intermediate respectively, and three and three in the posterior; this number, however, varies, for in one example from near the same locality the fore and intermediate femora are spineless, and the number reduced to two outer and one inner; the same thing occurs in another example from Bechuanaland, bordering on the Kalahari, but on the right femur only.

A. stratiotes seems to differ from the varietal forms here mentioned by having two spines on the fore and hind tibiae underneath, and not above the middle tibiae, as stated by Kirby (A.M.N.H. iii, 7th series, p. 143).

Hab. Damaraland (Angra Pequena; Lower Svakop) Kalahari, J. G. Alston. 1 σ ; 2 φ φ .

ACANTHOPLUS LOANDAE, n. sp.

Testaceous with a faint metallic tinge; prothorax as in *A. longipes*, that is to say with three lateral spines in the part of the pronotum, two in the posterior half and two in the centre of the hind margin the surface strongly coriaceous; abdomen with the hind part of the segments slightly plicate longitudinally, and having in the centre of the hind border of the first three, and sometimes four, abdominal segments, a long, sharp spine, slightly hooked backwards at tip; legs very long; anterior femora with two spines in the inner part of the groove underneath; intermediate with one or none; posterior with three. Number of lateral spines of fore and hind tibiae variable; those on the upper groove of the intermediate number three inwardly and two outwardly.

Length of body 31–41 mm.; of pronotum 17–18 mm.; of hind femur 24–27 mm.; of hind tibiae 25–30 mm.

Hab. Loanda. 1 σ ; 2 φ φ .

I have reasons to believe that, although labelled Loanda, these examples were obtained further south, at or near Mossamedes.

It is distinguished from *A. longipes* by the strong spines in the centre hind border of the three first abdominal segments; the fourth does occasionally bear a spine also.

ACANTHOPLUS BECHUANUS, n. sp.

Testaceous, and occasionally fuscous, but always with a slight metallic tinge; face with a broad transverse band reaching from side to side, but apt to disappear in dried specimens; frons, cheeks, and vertex sparsely punctate, the latter vaguely coriaceous; pronotum with

the usual four lateral spines, the two discoidal, and the two in the median part of the hind border, the whole surface is roughly coriaceous; abdomen with the first five segments bearing in the centre of the hind border a conspicuous spine slightly bending backwards at apex; the first, second, and third segments have, in addition, several very short longitudinal carinae; in one of my examples one of these folds, situated at a moderate distance from the central spine, has developed into a short spine on the three basal segments; legs long; fore tibiae with a row of seven spines in the inner and six on the outer side; groove of the upper side of the intermediate with four inner teeth, often reduced to two, and occasionally to one, and with one, and oftener no outer spine; inner and outer spines along the groove of the posterior tibiae very variable.

This species differs from *A. loandae*, in which the median border of the abdominal segments is also armed with one spine, by the smaller size, and the presence of longitudinal ridges on the same segments, and the total absence of spines on the underside of the femora.

Length of body 35-37 mm.; of pronotum 14-14½ mm.; of hind femur 20½-22 mm.; of hind tibiae 22½-24 mm.

Hab. Cape Colony (Kimberley), J. H. Power; Orange Free State; Transvaal (Potchefstroom), T. Ayres. 3 ♂♂; 5 ♀♀.

ACANTHOPLUS DISCOIDALIS, Walk.

Catal. Derm. Salt. Br. Mus. ii, 1869, p. 230.

I sink in synonymy with this species *A. desertorum*, Kirb.; *germanus*, Kirb.; *serratus*, Kirb.; and *pallidus*, Walk.

I have come to this conclusion after the examination of twelve examples collected on the same spot and at the same time, in which the number of inner and outer spines along the groove of the upper part of the intermediate tibiae were found to vary in all, and often also were not symmetrical in both limbs; and as the characters afforded by this number is the main one on which Kirby separated the species, as moreover I have variable examples from the very localities where his were collected, I feel justified in sinking the three in synonymy. Of *A. pallidus*, Walk., he himself states that it differs from *A. discoidalis* in "having the third joint of the antennae much longer than the second," but this character is not constant.

The range of this species in South Africa is extensive. Cape Colony (Graham's Town, ? King William's Town, Douglas); Bechuanaland, Luderitzburg, Walfish Bay, Windhuk. 8 ♂♂; 9 ♀♀.

ACANTHOPLUS SPEISERI, Brancs.

Jah. Ver. Trans. Com. xvii-xviii, 1896, p. 258, pl. 8, fig. 9.

This species is easily recognised by the absence of the two spines in the median part of the pronotum. In my examples the head and legs are green, the anterior part of the pronotum is dark green, and the hind part reddish pink, while the margin all round is straw-colour.

Originally described from Boroma, on the northern side of the Zambesi, this species is also found in Southern Rhodesia (Salisbury),

A. O'Neil, G. A. K. Marshall; (Queque), T. D. Bultitude. My examples are much smaller than those described by Brancsick, *i. e.* 28 mm. in length, against 37-45 mm. 2 ♂♂; 1 ♀.

ACANTHOPLUS VARICORNIS, n. sp.

Very closely allied to *A. speiseri*: the pronotum also lacks the two discoidal spines, and is not so constricted on the upper side; the femora also are simple underneath, and the inner part of the groove bears five distinct spines, the outer being without any, whereas there are two weak ones only on the inner side in *A. speiseri*, or even none at all. But whereas in *A. speiseri* the antennae are entirely testaceous, in *A. varicornis* they are testaceous as far as the 15th basal joints, the others being black; all the tarsi are also black, whereas they are testaceous in *A. speiseri*.

Length of body 18 mm.; of pronotum 12 mm.; of hind femur 13 mm.; of hind tibiae 15 mm.

Hab. Northern Rhodesia, H. Dorman. 1 ♂.

ACANTHOPLUS JALLAE, Griff.

Boll. Mus. Torin. xii, 1897, p. 290.

This species, like the one following, has two distinct median spines on the fore border of the pronotum, which is constricted in the middle and bears there two discoidal spines in the manner of *A. longipes*, etc.; the first five abdominal segments bear each in the hind border a long recurved spine.

I have not met with this species, which was probably collected in Barotseland.

ACANTHOPLUS ARMATIVENTRIS, n. sp.

Allied to *A. jallae*. The shape and disposition of the spines on the pronotum are alike, the two in the middle of the anterior border are very well defined; its distinctive character is in having three dorsal series of spines on the abdomen, a central one arranged on the hind border of segments 1-6; a lateral one disposed on segments 1-4, and

there are in addition one or two shorter spines on segments 3 and 4, at a very short distance from the supra-lateral row. The legs are very long, the femora spineless; the upper groove of the intermediate tibiae has two small inner spines (juv.), or the spines are quite obliterated in the adult. In two adults the coriaceous pronotum is very pale, and has a few small black dots between the second lateral and the discoidal spines, three between the two of the postero-lateral part, and two between the two discoidal spines. In a juvenile example the discoidal part of the pronotum is fuscous, and the posterior closely spotted with black granules.

Length of body (adult) 33–41 mm.; of pronotum 18 mm.; of hind femur 28 mm.; of hind tibiae 32 mm.

Hab. Northern Transvaal, H. Fry; Southern Rhodesia (Tuli), C. P. Lounsbury. 1 ♂; 1 ♀; 1 juv.

GEN. ENYALIOPSIS, Karsch.

Berl. Ent. Zeitschr. xxxi, 1887, p. 60.

Schaum described in 1853 as *Hetrodes petersi* a species for which Karsch founded the present genus ulteriorly. In spite of the excellent figure given in Peters' Reis. n. Mossamb. Insekten. pl. vii, fig. 7, there is some doubt still as to the identity of *H. petersi*; Gerstaeker described *E. ephippiatus* in 1869, and figured it in Deeken's Reis. in Ost. Afric. v, 1873, p. 119, pl. 7, fig. 7. Lucas in 1885 described a species from the Zambesi, *E. durandi*; and *E. bloyeti* from Kondoa, Equatorial Africa. Señor J. Bolivar in 1881 added a fifth species, *E. obuncus* from Angola.

In 1913 Dr. Y. Sjöstedt made known two other species, *E. matabensis* from Southern Rhodesia, and *E. carolinus* from German East Africa, between Tanganyika and Lake Albert Edward. I am adding three South African kinds to the total number, making it ten.

All these species are much alike in general appearance as well as in coloration, and the great difference in the size of adults makes it somewhat difficult to attach much importance to the sculpture of the pronotum. The number of spines in the fore and intermediate tibiae is, however, a good guide, if care be taken to eliminate certain aberrations, *i. e.* an additional, not always rudimentary spine in one of the tibiae, occasionally in the intermediate and posterior; but it is easy to notice the aberration by its asymmetrical position. In the fore legs, however, the number of spines is constant, and I found the two rows to be always symmetrical in the forty-three examples of this genus examined by me.

There is also a distinction which will help in the cases of females, namely the shape of the ovipositor, which is of two types :

A. Ovipositor very short, both upper and lower valves recurved at apex ; upper valve not vertically truncate and slightly longer than the recurved lower valve : *durandi*, *patruelis*.

B. Ovipositor well developed ; upper valve vertically truncate, sharply hooked at apex, and shorter than the sharply acuminate, horizontal lower valve : *petersi*, *matabelensis*, *transvaalensis*, *binduranus*.

Key to the South African Species.

GROUP OF *matabelensis*. FEMALE.

The two spines of the lateral anterior process of the pronotum long and greatly diverging.

Anterior tibiae with 5 spines, intermediate 5, posterior 5-17 ;
upper spine distant *petersi*.

Anterior tibiae with 5 spines, intermediate 5, posterior 4-17 ;
upper spine distant *binduranus*.

The two spines of the lateral process of the pronotum moderately long and not very diverging.

Anterior tibiae with 5 spines, intermediate 4-3, posterior 5-12 . *matabelensis*.

Anterior tibiae with 4 spines, intermediate 3-3, posterior 4-18 . *transvaalensis*.

GROUP OF *durandi*. FEMALE.

Anterior tibiae with 4 spines, intermediate 4, posterior 13-17 . *patruelis*.

Anterior tibiae with 5 spines, intermediate 5, posterior 5-17-20 . *durandi*.

ENYALIOPSIS PETERSI, Schaum.

Peters' Reis. Moss. v, 1862, p. 119, pl. 7, fig. 7.

I connect with this species six examples, of which four are full grown, two ♂♂ and two ♀♀ ; and 2 ♂♂ juv. or of minor development. In all of them the median spine of the hind border is well developed, but the two lateral ones are always much longer. This character is very clearly shown in the excellent figure given by Schaum. Some of the examples show a rudiment of tegmina under the pronotum. In this and the following species the lateral fore process of the pronotum is more sharply bi-spinose, the two spines greatly divaricating.

The formula of spines on tibiae is : fore, 5-5 ; intermediate, 5-5 ; posterior, 5-17. One of my examples has a 6th spine on the outer side of the hind femur between the apical 4th and 5th.

Length of body (adult) 41-43 mm. ; of pronotum $17\frac{1}{2}$ -18 mm. ; of hind femur $18\frac{1}{2}$ -19 mm. ; of hind tibiae 22-23 mm.

In the ♀ the edge of the truncate part of the upper valve is partly serrate, and the under part of the lower conspicuously so.

Hab. Southern Rhodesia, R. Pillans; Northern Rhodesia (Feira), S. Wehr; Mozambique (Beira), J. D. F. Gilchrist, P. Phillips; Zanzibar, M. Wilman. 3 ♂♂, 3 ♀♀.

ENYALOPSIS BINDURANUS, n. sp.

♀. Somewhat lighter-coloured than the other South African species of the genus, which have always a more or less dark bronze tinge; on that account the broad black lateral band of the pronotum, and the supra-lateral patch on the first abdominal segment, are more conspicuous than usual. The head is as in *E. petersi*; but the frontal spine is much more vertical than in any other South African species; the pronotum is also much narrower, but the spines are equally long, and the two of the lateral apical process less divaricating; the edge of the upper valve of the ovipositor is not serrate, nor is the lower part of the lower valve.

The formula of spines on tibiae is: fore, 5-5; intermediate, 5-5; posterior, 15-16, the upper one of the latter removed from the others.

Length of body 43 mm.; of pronotum 15 mm.; of hind femur 15 mm.; of hind tibiae 18 mm.

Hab. Southern Rhodesia (Bindura), D. Coghill. 1 ♀.

ENYALOPSIS MATABELENSIS, Sjösted.

Ark. f. Zool. 8, 1913, p. 12, pl. 3, figs. 3, 3a.

I have not yet met with this species, which Sjösted compares to *E. durandi*, but in which the valves of the ovipositor are of the type of those of *E. petersi*, *E. binduranus*, and apparently not serrate, thus resembling those of *E. binduranus*.

The formula of spines on tibiae is: fore, 5-5; intermediate, 4 (inside)-3 (outside); posterior, 5-12.

Hab. Southern Rhodesia (Matabeleland), teste Sjösted.

Length of body 32 mm.; of pronotum 16 mm.; of hind tibiae 18 mm.

ENYALIOPSIS TRANSVAALENSIS, n. sp.

Darker bronze than any of the South African species. In the shape of the spinous lateral process of the fore part of the pronotum it resembles *E. durandi* and *E. patruelis*—that is to say the blunter hind angle and the sharp spine are not much divaricating; the pronotum is broad, the spines are conspicuous but not quite as elongate as in *E. petersi*. The ovipositor is well developed, the scooped

edge of the upper valve is not distinctly granular, but the under part of the lower valve is closely granulo-serrate.

The formula of the tibiae is: fore, 4-4; intermediate, 3-3; posterior, 4-18, the upper one of the latter series far removed from the others.

Length of body 32-48 mm.; of pronotum 15-18 mm.; of hind femur $8\frac{1}{2}$ -18 mm.; of hind tibiae 14-21 $\frac{1}{2}$ mm.

Hab. Transvaal (Barberton), Dr. Randall. 1 ♂; 3 ♀♀.

ENYALOPSIS DURANDI, Luc.

Ann. Soc. Ent. Fr. 1884, p. 161, pl. 7, figs. 8-15.

Of the ten examples in the collection, seven are certainly adult, but their size is less than that of the preceding species. The spinous lateral fore process of the pronotum is very much like that of *E. transvaalensis*—that is to say the two points are not very divaricating; the sculpture of the pronotum is very deep and very rugose, but this character is often variable in examples from the same locality; the ovipositor is of a shape differing from that of the other species, except *E. patruelis*; it is shorter, the upper valve is not nodose at the top of the emargination, which is of sub-crescentic shape, the apex being gradually somewhat recurved and bluntly acuminate; the lower valve is arcuate and covered by the upper.

The formula of spines on tibiae is: fore, 5-5; intermediate, 5-5; posterior, 5-20.

Length of body 19-30 mm.; of pronotum 9-11 mm.; of hind femur 8-9 mm.; of hind tibiae 11-14 mm.

Hab. Southern Rhodesia (Insiza), G. French; (Umtali), A. Bodong; Mashonaland, R. Pillans; Northern Rhodesia (Kafue Valley), J. Drury. 7 ♂♂, 3 ♀♀.

ENYALOPSIS PATRUELIS, n. sp.

Hardly differing from *E. durandi* in general appearance. It reaches, however, a somewhat larger size, judging from the examples in the collection; but it is only by the number of spines on the tibiae that this species can be distinguished from the former. The ovipositor is of the same shape and size.

The number of spines on the tibiae are: fore, 4-4; intermediate, 4-3; posterior, 5-14-17.

Length of body 21-36 mm.; of pronotum 16-18 mm.; of hind femur 11-18 mm.; of hind tibiae 12-20 mm.

Hab. Amatongaland, J. de Coster; Southern Rhodesia (Insiza), G. French. 7 ♂♂, 2 ♀♀.

SUB-FAMILY DECTICINAE.

GEN. ARYTROPTERIS, Herm.

Verh. Zool. Bot. Ges. Wien. xxiv, 1874, p. 198. *

The species included in this genus seem restricted to the South African region. One was described by Serville as a *Thyreonotus*; two by Walker, also under *Thyreonotus*; a third, which has become the type of the genus, but which Kirby places in synonymy with one of Walker's species, was described and figured by Herman; and Pictet founded the genus *Thoracistus* for a fourth species. This genus, preserved by Kirby in his 'Synonymic Catalogue of Orthoptera,' is, however, pronounced by Brunner von Wattenwyl to be identical with *Arytropteris*. It may be mentioned, in passing, that there is a mistake in the enumeration of the figures in Pictet's Memoir, and that fig. 21 has nothing to do with the representation of *Thoracistus peringueyi* ♂; only the figures 21a and 21b are referable to this species. If it is assumed, as I do, that *A. basalis*, Walk. (Catal. Derm. Salt. Br. Mus. 2, 1869, p. 247) is the same species as *A. semiaeneus*, Serv. (Ins. Orthopt., 1839, p. 496), the genus would be restricted to three species, but there are no less than seven undescribed in the Museum Collection, raising thus the number to ten.

The livery of these insects is of a more or less deep straw-colour with a metallic tinge, turning sometimes to bronze; the sides of the pronotum are usually darker than the discoidal part, and edged sometimes with green; the ♂ is very much smaller than the ♀. The genus can be divided into two groups: one in which the pronotum, although with vertical sides, is somewhat amplified in the anterior part, and the second in which, the anterior part of the sides being less ampliate, the pronotum has more vertical sides. In the first group the two carinae of the underside of the femora have each a row of spines, in the second the inner carina alone bears spines the number of which varies, and thus permits of separation among species which in general facies resemble otherwise each other greatly.

Table of Species.

A ² . Hind femora with two rows of spines underneath.	
c ² . Pronotum amplified laterally in the anterior part.	
c ² . Sides of pronotum smooth.	
Aeneo-flavous, pronotum concolorous; pronotum of ♂ sharp at apex	<i>semiaenea.</i>
Aeneo-flavous, pronotum green laterally; pronotum of ♂ blunter and rounded at apex	<i>viridifer.</i>
Pronotum and abdomen conspicuously variegated	<i>irrorata.</i>

- c². Pronotum less amplified laterally in the anterior part; body entirely green; pronotum plainly sinuate laterally behind, sub-truncate at apex (♂) *peringueyi*.
- c¹. Sides of pronotum conspicuously granose.
 Apical part of pronotum acute *granulithorax*.
 Apical part of pronotum arcuately emarginate *excisa*.
- A¹. Hind femora with one row of spines underneath.
- c³. Five spines on the underside of the femur.
 Pronotum without aeneous lateral band, bluntly attenuate at apex, sides smooth *modesta*.
 Pronotum and body entirely bronze, the former more acuminate at apex, sides plicate *intricata*.
- c¹. One spine on the underside of the femur.
 Pronotum with an aeneous lateral band *plebeia*.
- c². Four spines on the underside of the femur.
 Pronotum faintly aeneous laterally and narrower and longer in ♂ than in the other species; hind femora partly green, hind tibiae roseate *pulchripes*.

ARYTROPTERIS IRRORATA, n. sp.

♀. Flavous, with three longitudinal fusco-aeneous bands on the vertex, and a short one behind each eye, frontal part concolorous; pronotum variegated with fusco-aeneous, the sides are smooth, plicated slightly in the anterior depression and with two or three rugae there, and the lower margin is somewhat rugosely tuberculate; the dorsal part of the abdominal segments is covered with closely set minute bronzy spots on white background, but the posterior part has a band of the same colour decreasing in width from the basal to the ultimate segment; abdomen and legs flavescent; the hind femora have an uninterrupted elongate fuscous outer patch along the upper side, and the knees and the ovipositor are fuscous; the spines of the two rows 7-6 are not very developed.

Length of body 28 mm.; of pronotum 16 mm.; of hind femur 22 mm.; of hind tibia 21 mm.; of ovipositor 18 mm.

Hab. Cape Colony (Clanwilliam), L. Péringuey.

Easily distinguished by the livery.

ARYTROPTERIS GRANULITHORAX, n. sp.

♂ ♀. Light bronze sprinkled all over, but especially on the upper surface, with minute darker bronze spots; anterior depression and posterior part of the declivous side of the pronotum, and also sides of the first and second abdominal segments fuscous bronze, two transverse, interrupted bands of the same colour in upper outer part of each hind

femur. In each sex the sides of the pronotum are conspicuously granulate and the outer margin plainly serrate, and the pronotum is, especially in the ♀, a little more amplified laterally at about one-third of the length, and more sharply acuminate at apex than in the other species of the genus. The anterior and intermediate tibiae have each four sharp spines underneath. The number of spines in the two rows on the underside vary, being 10-8, 9-8, and 8-7. The antennae from about a third of the length from the base are faintly annulate.

Length of body, ♂, 16 mm.; of pronotum 11 mm.; of hind femora 16 mm.; of hind tibiae 16 mm.; ♀, 29-30 mm.; of pronotum 15 mm.; of hind femur 31 mm.; of hind tibia 31 mm.; of ovipositor 26 mm.

Hab. Cape Province (Port St. John's), G. C. Shortridge.

ARYTROPTERIS EXCISA, n. sp.

♀. Similar to *A. granulithorax* in almost all respects, save that the pronotum is more emarginate laterally past the median part, and the apex, instead of being acuminate, has a broad crescent-shaped emargination, too regular to be accidental; moreover, the margin of the emargination and that of the sides is identical; the sculpture, antennae and disposition of the spines on the legs are the same as in *A. granulithorax*.

Length of body 30 mm.; of pronotum 14 mm.; of hind femora 31 mm.; of hind tibiae 31 mm.; of ovipositor 28 mm.

Hab. Cape Province (Port St. John's), G. C. Shortridge.

ARYTROPTERIS MODESTA, n. sp.

Greyish stramineous, speckled with numerous minute, very closely set bronze macules; the basal lateral abdominal bronze band is distinct; the anterior part of the pronotum is very little amplified, and is somewhat blunt at apex, and very slightly sinuate on each side there; the antennae are distantly annulated with fuscous from the basal third of the length; the spines of the legs are somewhat long and sharp, and there is only a single row of five spines under the hind femora, the outer ridge being simple. In the male the elytra are somewhat developed and plainly visible under the pronotum.

♂. Length of body 19 mm.; of pronotum 8 mm.; of hind femur 22 mm.; of hind tibia 23 mm.

♀. Length of body 22 mm.; of pronotum 8 mm.; of hind femora 22 mm.; of hind tibia 22 mm.; of ovipositor 14 mm.

Hab. Mozambique (Lourenço Marquez), J. de Coster.

ARYTROPTERIS INTRICATA, n. sp.

♀. Totally bronze, and with the anterior part of the sides of the pronotum weakly, yet distinctly irregularly plicate; this character distinguishes it from *A. modesta*, but the fastigium is also broader at the summit of the declivous part; the hind femora have a single row of five spines underneath.

This species cannot be mistaken for *A. semiaenea* or *viridifer* owing to the more deflexed sides of the pronotum, and also in having only one row of spines on the underside of the femora instead of two.

Length of body 20 mm.; of pronotum 10 mm.; of hind femur 23 mm.; of hind tibia $22\frac{1}{2}$ mm.; of ovipositor 15 mm.

Hab. Natal (Durban), J. H. Bowker.

ARYTROPTERIS PLEBEIA, n. sp.

♀. Greyish stramineous with a bronze band alongside the upper part of the deflexed sides of the pronotum, and a broad lateral dark bronze band along the sides of the abdomen; the inner part of the hind femora has a bronze band, and the outer only a faint trace of a similar one.

In general appearance, and also in identical sculpture of the anterior part of the deflexed sides of the pronotum, which is also weakly and irregularly plicate, this species closely approximates *A. intricata*, but the hind femora have only one spine situated at about the median part of the inner carina, instead of five as in *A. intricata*. It should be noted, however, that this spine is missing on the opposite femur.

Length of body, ♀, 21 mm.; of pronotum 10 mm.; of hind femur 23 mm.; of hind tibia 23 mm.; of ovipositor $12\frac{1}{2}$ mm.

Hab. Natal (Durban), J. H. Bowker.

ARYTROPTERIS PULCHRIPES, n. sp.

♂. Stramineous with a fusco-aeneous band on each side of the vertex and a faint one on the upper part of the deflexed side; abdomen sprinkled with minute fusco-aeneous spots; the basal lateral abdominal band is obsolete, hind femora green underneath and with a conspicuous black band on the upper outer side; hind tibiae plainly roseate; the pronotum and abdomen are longer and a little narrower than in the other species included in the second group of the genus, and the elytra are visible under the apex of the pronotum; in the anterior tibiae the upper spine on the outer upper side is wanting; and those on the single row under the femora number four.

Length of body, ♂, 24 mm.; of pronotum 12 mm.; of hind femur $22\frac{1}{2}$ mm.; of hind tibiae 20 mm.

Hab. Cape Province (Ceres), L. Péringuey.

UMTATA, n. gen.

Allied to *Arytropteris*, but the fastigium is narrower and more acute, and the shape of the pronotum, as well as the prominent membranous elytra which the pronotum cannot effectually conceal, distinguish at once the male from the similar sex of *Arytropteris*. It should be noted, however, that in some of the species belonging to the second group of the last-named genus, the elytra are slightly visible near the apical part of the pronotum. The fore tibiae are as in *Arytropteris*, that is to say, they have no apical spine on the outer or inner margin, and bear two spines each, the first situated near the auditory cavity, the other at the second third of the length; anal segments, cerci, and sub-genital lamina of the same type as those of *Arytropteris*.

UMTATA MUSICUS, n. sp.

(Pl. XLII, fig. 6.)

♂. Straw-colour, shiny, head smooth, frontal part quite vertical and dotted on the frons and clypeus with a few very short stiff bristles; pronotum sub-carinate on each side of the disk for about half its length with the sides depressed for the same distance, but sub-plane from the centre to the apex, the posterior part being oblong, and therefore very little attenuated, the lateral depression is closely granulate, the outer margin is vaguely serrulate along the depression, but the remaining part is smooth; the membranaceous elytra are very convex, and so developed as not to permit of the pronotum covering the abdomen, which is only slightly shorter than the former. Legs long, posterior femora broadly dilated at the base, spines of all the tibiae strong; the spines of the coxae very conspicuous; anterior tibiae with two well-developed spines, one near the auditory groove, the other situated at two-thirds of the length; the disposition of the spines on the intermediate tibiae is 2-3; both fore and middle femora have four spines underneath, and there are two rows, of eight and nine respectively, under the posterior; supra-anal lamina truncate, the angles sharply acuminate, styles short, thick, curving inwards, sub-genital lamina triangularly scooped at apex, and tri-carinate underneath; cerci short, sub-cylindrical.

Length of body 28 mm.; of pronotum 18 mm.; of hind femur 30 mm.; of hind tibia $28\frac{1}{2}$ mm.

Hab. Cape Province (Port St. John's), G. C. Shortridge.

AROEGAS, n. gen.

Vertex somewhat convex, the fastigium prolonged triangularly, attenuate rounded at tip and overhanging the frontal; antennae slender; pronotum oblong, twice as long as broad, not grooved, saddle-shaped, wider across the centre than at apex or base, broadly rounded behind, and covering only the base of the first abdominal segment; no wings; abdomen as long as the head and pronotum; prosternum simple; coxae with a short sharp spine; anterior and intermediate tibiae moderately long, the former with an ovate tympanum; fore tibiae with three spines underneath on each side, posterior with a double series above, simple underneath, femora simple; supra-anal

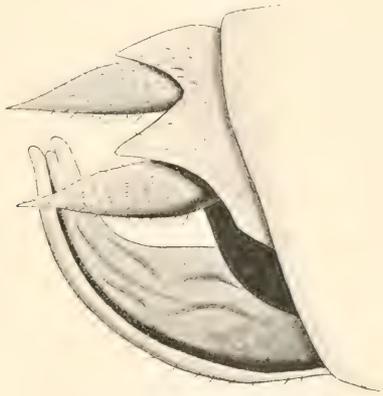


FIG. 5.—*Aroegas nigroornatus*, ♂.

lamina ♂ deeply scooped with the angles sharply dentiform; cerci short, thick, tapering into a sharp point; sub-genital lamina very long, deeply and broadly grooved in the centre, narrowed from the median part to the apex; this narrowed part is very strongly recurved, bluntly trifid at apex, and fits, when at rest, in the scooped-out space of the supra-anal lamina.

The general facies is that of *Arytropteris* of the *pulchripes* type, but it is easily distinguished from this genus by the presence of well-developed tympanum, and the shorter fore and intermediate legs. The shape of the sub-genital lamina is very singular. I find no traces of styles in the only example in the Collection.

AROEGAS NIGROORNATUS, n. sp.

♂. Straw-colour, with the antennae fusco-annulate, a conspicuous broad arcuate black band on the top of the declivity of the anterior

part of the pronotum, a lateral patch on each abdominal segment, and a median on the two ultimate segments. Head not deeply inserted on the pronotum as far as the eyes, smooth, but with the cheeks vaguely punctate; vertex produced in a broad triangle slightly blunted at apex; pronotum saddle-shaped, the sides very declivous anteriorly and a little compressed there, slightly convex above but nearly plane and oblong behind; there is a faint longitudinal median line visible from apex to the middle, two fainter diagonal short impressed lines in the disk, but no traces of transverse sulci; the anterior tibiae are somewhat inflated above owing to the development of the auditory cavity, and the intermediate have each an outer row of four short spines, including the apical, which is not much developed; the intermediate have two spines on the outer part of the upper side; the hind tibiae have a double series of well-developed closely set spines on the upper side, and are simple underneath; the femora are all simple, the hind ones are strongly developed.

Length of body 14 mm.; of pronotum $7\frac{1}{2}$ mm.; of hind femur 13 mm.; of hind tibiae 12 mm.

Hab. Transvaal (Barberton), Dr. Randall.

SUB-FAM. MECOPODINAE.

ZITSIKAMA, n. gen.

Head half as long as broad; fastigium free, sloping in front, grooved longitudinally in the centre; antennae very long and very slender; basal joint very large; eyes ovoid, bulging; last joint of palpi slightly clubbed at tip; pronotum slightly longer than broad, saddle-shaped, narrowly marginate, the two anterior sulci very plainly indicated but laterally only, the posterior is nearly obsolete; sternum without spines; tegmina of male short, truncate at apex, deeply reticulated, veins highly raised, the wings atrophied; tegmina of female reduced to a rudimentary rounded process; legs long, slender; all the tibiae deeply sulcate above and on each side and spinose above and below; auditory drum very distinct, elongate ovate; all femora spinose underneath and with a conspicuous spine on each side of the knees; ovipositor short, sabre-shaped and much recurved.

ZITSIKAMA TESSELLATA, n. sp.

(Plate XLII, fig. 3.)

Sub-flavescent with more or less regular pattern of dark bands and spots, more regularly tessellate on the face; the antennae are closely ringed with fuscous, and the legs similarly annulated; the

saddle-shaped pronotum is somewhat ampliate rounded laterally in the anterior part, and the hind margin is straight; with the exception of the face, the body is opaque and very finely aciculate; the cerci are thick, sub-cylindrical and sharply tapering towards the apex; the supra-anal plate is sharply triangular; the ovipositor is sabre-shaped, much recurved, nearly four times as long as the width of the base; anterior tibiae with a double row of six spines each, including the terminal; but in the non-adult stage these spines are reduced to four, and even to two, one below the drum and the other at apex; intermediate tibiae with two rows of ten and eight respectively, posterior tibiae closely spinose along their whole length; anterior and intermediate femora simple; the hind ones, which are well developed at the base, have each a double series of twelve spines.

Length of body, ♂, 12 mm.; of pronotum $2\frac{3}{4}$ mm.; of hind femur $14\frac{1}{2}$ mm.; $15\frac{1}{2}$ mm.; hind tibiae 17 mm.

Length of body, ♀, 15–22 mm.; of pronotum $2-4\frac{1}{3}$ mm.; of hind femur 17–25 mm.; of hind tibiae 18–28 mm.; of ovipositor 6–7 mm.

Hab. Cape Province (Knysna), W. F. Purcell.

SUB-FAM. CONOCEPHALINAE.

GEN. XIPHIDION, Serv.

(Ins. Orthopt. 1839, p. 505.)

Key to South African Species.

- Wings longer than the body *X. aethiopicum*; *X. iris*; ? *X. caudale*.
 Wings shorter than the body, fastigium sharply conical.
- ♂. Cerci conchiform.
 Cerci short, bispinose *restiorum*.
 Cerci less convex, unispinose; fastigium blunt at apex *parvulum*.
- ♂. Cerci cylindrical, acuminate.
 Cerci not sharply acuminate, inner tooth short *bechuanense*.
 Cerci very sharply acuminate.
 Head and pronotum somewhat short *rhodesianum*.
 Head and pronotum very long *longiceps*.

XIPHIDION RESTIORUM, n. sp.

(Text-figs. 6 and 7.)

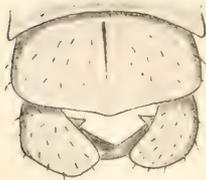
♂. Brownish red, with two conspicuous pallid patches in the frontal part in front of the eyes; pronotum with two lighter bands on each side of the disk, the lateral margin broadly pale flavescent; antennae and legs brownish red; fastigium sharply pointed, almost hastate; pronotum hardly longer than broad; tegmina very short, reaching barely the second abdominal segment, membranaceous, slightly flavescent, the veins strongly defined; abdomen maculated with flavous

laterally; supra-anal lamina sub-angular in the centre, the cerc conchiform, broadly scooped inwardly and having there a short spine near base, and a stronger one on the lower inner part of the scooped-

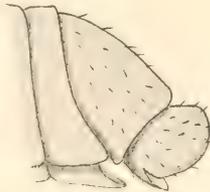


FIG. 6.—*Xiphidion restiorum*.

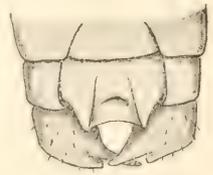
out cercus; the smaller inner tooth of the right cercus is nearer the base than in the opposite side; the sub-genital lamina is short, and deeply arcuately incised. Anterior tibiae with a double row of nine spines underneath.



From above.



Side view.



From below.

FIG. 7.—*Xiphidion restiorum*.

Length of body 12 mm.; of pronotum $2\frac{1}{2}$ mm.; of tegmina $2\frac{1}{4}$ mm.; of hind femur 11 mm.; of hind tibia 10 mm.

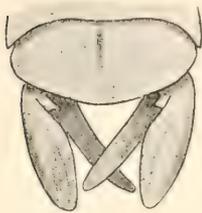
♀. Apterous, twice the size and length of ♂; ovipositor straight, longer than body.

Hab. Cape Colony (Cape Town), J. C. Bridwell; (Hottentot's Holland), K. H. Barnard.

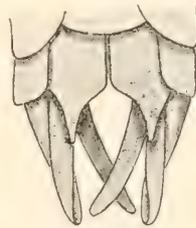
XIPHIDION PARVULUM, n. sp.

(Text-fig. 8.)

♂. Allied to *X. restiorum*. Lighter in colour, and with the tegmina slightly longer, since they reach the base of the third segment. The main difference is, however, in the shape of the cerci, which are patelliform, short, but more flattened outwardly and very slightly dentate at the base, while the inner spine or process is long, very much curved, and is set on the inner side of the base (fig. 8, view from above); the supra-anal lamina does not project in the centre. Anterior tibiae with a double row of six spines.



From above.



From below.

FIG. 8.—*Xiphidion parvulum*.

Length of body 10 mm.; of pronotum 2 mm.; of tegmina 3 mm.; of hind femur $5\frac{1}{2}$ mm.

Hab. Cape Province (Cape Town), J. C. Bridwell; L. Péringuey.

XIPHIDION BECHUANENSE, n. sp.

♀. Light straw-colour with a median bronze band starting from the point of the fastigium reaching the base of the pronotum, continued on the median dorsal part of the abdomen right to the apex, and edged on each side by a yellowish-white narrower band; fastigium compressed but blunt at apex; antennae darker than the body or legs; tegmina reaching only the apical margin of the first abdominal segment; anal segment ampliate rounded laterally, sub-truncate at apex and a little emarginate in the centre, cerci robust, short, curving inwards, and truncate at apex; the tooth of the right longer than that of the left, both somewhat short; sub-genital plate deeply arcuate emarginate. Anterior tibiae with a double row of five spines.

Length of body 12 mm.; of pronotum $2\frac{3}{4}$ mm.; of tegmina 2 mm.; of hind femur and tibiae 11 mm. respectively.

Hab. Bechuanaland, H. M. Oakley.

XIPHIDION LONGICEPS, n. sp.

♂. Pale greenish with a pink median band running from the vertex to the base of the pronotum; wings green, antennae, legs, and cerci pink; abdomen maculated with pink and green. The head and pronotum are longer than in the other South African species known to me, and are also more parallel; the tegmina reach the median part of the fourth abdominal segment, the cerci are robust, and nearly as long as the two abdominal joints preceding, horizontal, gradually tapering from the middle to a sharp point, and plainly grooved longitudinally for the same distance, the right outwardly, the left inwardly; the spines are robust, horizontal, and at right angles to the lobe, crossing each other at rest. The three basal joints of the antennae are somewhat thick.

Length of body (cerci excl.) 23–25 mm.; of pronotum $4\frac{3}{4}$ mm.; of cerci $2\frac{1}{2}$ –3 mm.; of hind femur and hind tibia 14 and 12 mm. respectively.

Hab. Southern Rhodesia (Salisbury), D. Dodds.

XIPHIDION RHODESIANUM, n. sp.

♂. Light testaceous with a tinge of green; a median pinkish-brown band runs from the vertex to the base of the pronotum, and there is another much narrower band running laterally from behind the eye to the edge of the pronotum, the two bands being separated by a broad yellowish interval; abdomen with a broad dorsal slightly infusate band and a lateral one also divided by a lighter interval; tegmina flavescent, cerci darker; head shorter than the pronotum, fastigium projecting, narrow, parallel, truncate, rounded at tip; pronotum one-fourth longer than broad; tegmina reaching only the base of the fifth abdominal segment; the cerci are horizontal, long, sub-cylindrical, but tapering to a sharp point where they are slightly impressed lengthways, each is provided with a strong, sharp inner tooth, of identical length and slightly curved at tip. Anterior tibiae with five spines underneath.

The livery is not unlike that of *X. longiceps*, but this species is easily recognised by the reduced length of the head; the cerci are a little shorter, less deeply impressed longitudinally, and the inner spines are slightly more hooked.

Length of body 15–15 $\frac{1}{2}$ mm.; of pronotum 3 mm.; of cerci 1 $\frac{1}{4}$ mm.; of hind femur and hind tibiae 12 $\frac{1}{2}$ mm. and 11 $\frac{1}{2}$ mm. respectively.

Hab. Southern Rhodesia, D. Dodds.

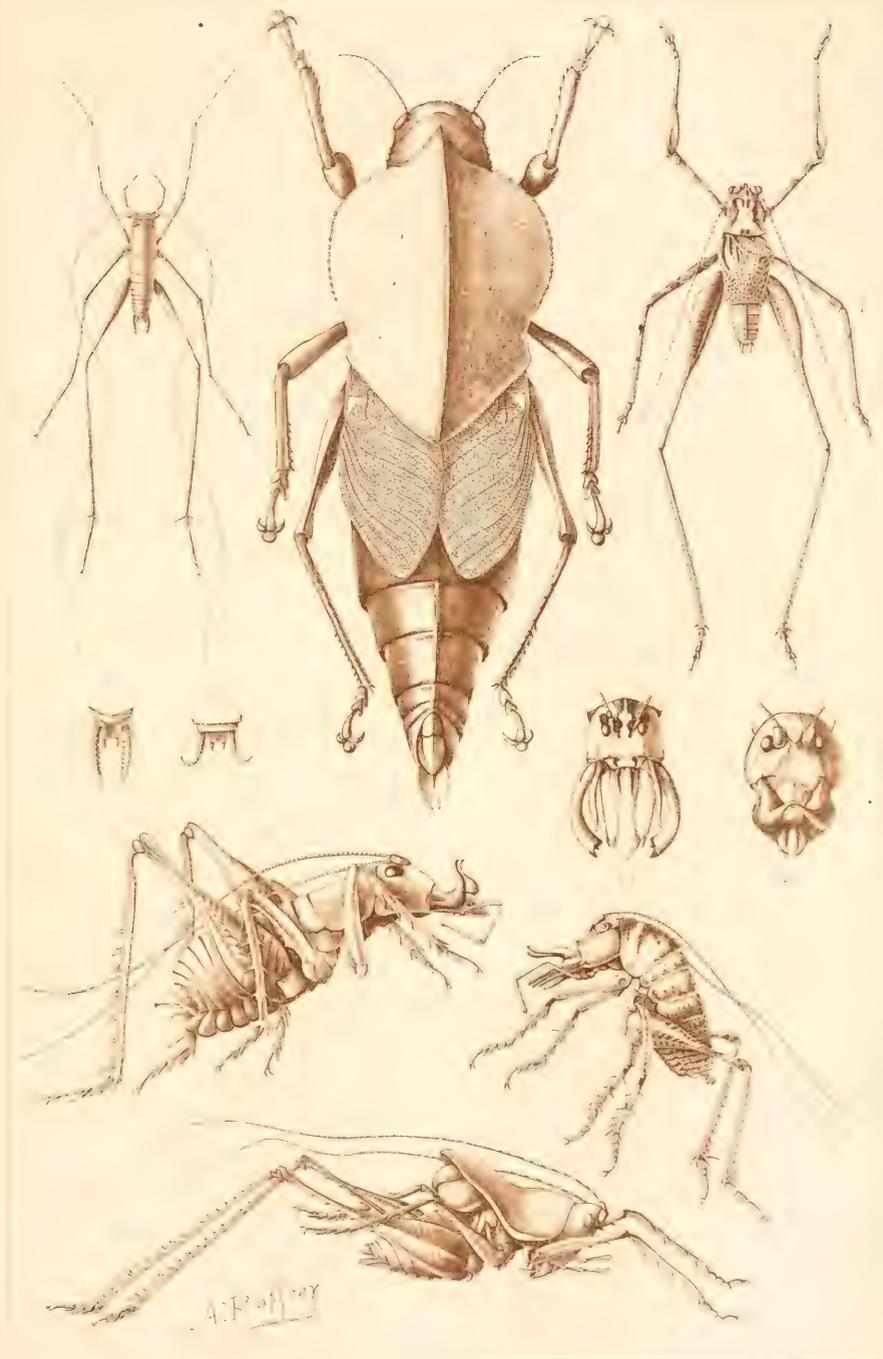
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EXPLANATION OF PLATE XLII.

- 1, 1a, b. *Spelaeiacris tabulae* ♂.
2. *Shortridgea miranda* ♀.
3. *Zitsikama tessellata* ♂.
- 4, 4a. *Libanasidus vittatus* ♂.
- 5, 5a, 5b. *Platysiagon capicola* ♂.
6. *Umtata musicus* ♂.



7.—*Description of a New Species of Stomoxys (Diptera) from South Africa.*—By Dr. J. VILLENEUVE.

GEN. STOMOXYS, Geoffr.

STOMOXYS TRANSVITTATA, n. sp.

Sat laete cinerea ; fronte quam oculo latiore ; thoracis dorso maculis duabus, et, pone suturam, vitta transversa lata atque postice dentata, atris ; abdomine vitta medio-dorsali limboque segmentorum apicali nigris. Palpis flavis pedibusque brunneis, tarsis nigris, tibiis basi plus minusve testaceis. Long. $6\frac{1}{2}$ mm.

Frons with parallel sides, its width hardly equals that of the eye seen from above. Median band wide, very dark black, showing in front of the ocellary ground a narrow but somewhat deep emargination continued in a fine ashy line. Orbital part narrow, not shiny, ashy white, genae similar and with a whitish sheen ; epistome with a dark sheen ; peristome linear. Antennae black, moderately white, 3rd joint nearly four times as long as the 2nd, which is very short, arista dark. Palpi cylindrical, yellow ; reaching the anterior edge of the mouth, pipette shiny black. Thorax light cinereous, with intense black markings, resembling in this respect certain species of *Limmophora* ; in front are two spots in the shape of an upturned axe ; behind the suture and connected with it is a wide transverse band reaching the base of both wings, the anterior edge is straight, the posterior twice emarginate, a fine ashy line intersects this band in the centre. Scutellum blackish, with an ashy spot on each side of the apex. Abdomen ashy on the first segment which is edged with black behind and on the sides, and with a median black line ; the other segments are grey ; segments 2 and 3 bear a medio-dorsal band and a wide posterior band narrowed in the centre, these bands are black ; segment 4 shows to the right and left of the median part a longitudinal dark reflection. Wings hyaline, halteres pale yellow. Legs brown, tarsi black, tibiae testaceous in the proximal third part of the length ; this colour often stretches along the external border.

Natal. Durban, Natal (H. W. Marley). 2 ♀ ♀ sent by Dr. L. Péringuey.

The fine black pattern impinging clearly in the ashy white of the thorax and frons (the latter being moreover wider and shorter) seems sufficient to separate our two ♀ examples from *S. omega*, Newst. ♀, with which I compared them. It is possible, however, that they may prove to be a variety of the said *S. omega*, especially if the ♂ showed the ciliation of the anterior tarsi which is a peculiarity of *S. omega*.

8.—*On Some of the Scoliidae, mostly Elidinae (Hymenoptera), in the South African Museum.*—By ROWLAND E. TURNER, F.Z.S., F.E.S.

FAMILY SCOLIIDAE.

SUBFAMILY ELIDINAE.

GENUS MYZINE Latr.

In addition to the species mentioned below, there still remain four or five new species of males in the Museum, but as they are usually represented by a single specimen and show few distinctive characters I have not thought it well to describe them. There appear to be a very large number of species of this genus in South Africa, and many more remain to be described. Unfortunately the females are difficult to collect, and the sexes have only been connected in three or four cases. In South Africa the females show much better specific characters than the males.

1. MYZINE RUFIFRONS Fabr.

Larra rufifrons Fabr., Entom. System. ii, p. 222, 1793, ♀.

Hab. Estcourt, Natal; M'fongosi, Zululand.

2. MYZINE ABDOMINALIS Guér.

Meria abdominalis Guér., Rev. de Zool. ii, p. 365, 1839, ♀.

Plesia continua Cam., Rec. Albany Mus. i, p. 299, 1905, ♂.

Hab. Dunbrody; Mossel Bay; Stellenbosch, Garies, Namaqualand.

The female from Garies has the head black, as is often the case, and the abdomen somewhat infuscated, but I think it is only a colour variety. *Meria hottentota* Sauss. seems to be a synonym.

3. MYZINE CRUENTA sp. n.

♀. Nigra; mandibulis flagelloque fusco-ferrugineis; abdomine segmentis secundo tertioque macula magna alba utrinque, quarto apice,

quinto sextoque rufis; alis fusco-hyalinis, venis nigris; segmento mediano ruguloso.

Long. 13 mm.

♀. Head rectangular, about half as broad again as long, smooth and shining, with a few scattered punctures, a deep sulcus reaching from between the antennae to half way to the anterior ocellus; posterior ocelli situated on the sides of large depression, further from the eyes than from each other; eyes rather large, separated from the posterior margin of the head by a distance equal to about half their own length; scape smooth above, clothed with long yellowish hairs beneath. Pronotum shining, with sparse, large, more or less elongate punctures, about twice as long as the scutellum. Pleurae coarsely but rather sparsely punctured, the sides of the median segment finely obliquely striated. Dorsal area of the median segment closely rugulose, verging into fine oblique striae near the sides, the posterior slope transversely rugulose. Abdomen shining, sparsely and finely punctured, with sparse whitish pubescence on the sides. Second cubital cell present, triangular, the side on the cubitus shorter than the others. Stigma large, situated near the middle of the costa.

Hab. Umhlali, Natal. (*Barnard.*)

This is nearest to *M. rufifrons* Fabr., but is a less robust species, and differs in the sculpture of the median segment, which is smooth in the middle with a longitudinal sulcus in *rufifrons*, rugulose without a sulcus in *cruenta*; also in the narrower shape of the triangular second cubital cell, and in the colour of the head and apical segments of the abdomen. The second recurrent nervure is almost straight in *cruenta*, but strongly bent inwards towards the cubitus in *rufifrons*.

4. MYZINE PALLIDIPES sp. n.

♀. Nigra, mandibulis, segmento abdominali sexto, femoribus tibiisque fusco-ferrugineis; clypeo, tegulis tarsisque pallide ferrugineis; pronoto rufo; segmentis dorsalibus 2-4 macula alba utrinque; alis hyalinis, pallide infumatis, venis pallide fuscis; segmento mediano transverse striato, in medio longitudinaliter canaliculato.

Long. 7 mm.

♀. Head subrectangular, a little broader than long, smooth and shining, without a frontal sulcus; eyes large, elongate-ovate, separated from the posterior margin of the head by a distance scarcely equal to their own breadth. Thorax shining, with a few scattered punctures on the mesonotum and scutellum; pronotum twice as broad as long, with a row of small setigerous punctures on the anterior margin. Pleurae

sparsely punctured, and clothed with long greyish pubescence; sides of the median segment smooth below, indistinctly obliquely striated above. Median segment transversely striated, with a deep longitudinal sulcus, a narrow space on each side of the sulcus smooth and shining, the posterior slope transversely striated. Abdomen shining with a few small punctures, the sides sparsely clothed with whitish pubescence. Second cubital cell very small and narrow, the petiole of the cell more than half as long again as the cell itself; second recurrent nervure strongly bent inwards towards the cubitus.

Hab. Capetown. April.

In colour this resembles *sublevis* Turn., but differs strongly in the sculpture of the median segment, in the presence of the second cubital cell, and in the strongly curved second recurrent nervure. It differs from *umbratica* Turn. in the sculpture of the median segment, the colour of the pronotum, and the longer head.

5. MYZINE LIMATA Sm.

Meria limata Sm., Cat. Hym. B. M. iii, p. 81, 1855, ♀.

Hab. Kimberley. Cape.

6. MYZINE CAPICOLA Turn.

Myzine capicola Turn., Trans. Ent. Soc. London, p. 734, 1912, ♂.

Hab. Hex River. Cape.

The single specimen in the South African Museum bears the MS. name *Meria caffra* Sauss.

7. MYZINE RUFINODIS Turn.

Myzine rufinodis Turn., Trans. Ent. Soc. London, p. 392, 1910, ♂.

Hab. Hex River; Henkries, Namaqualand, Cape.

One of the Hex River specimens bears the MS. name *Meria africana* Sauss.

There is some variation in the development of the yellow apical band on the first dorsal segment and in the yellow mark on the apex of the clypeus, both being obsolete in the Namaqualand specimen.

8. MYZINE EURYGASTER sp. n.

♂. Niger, albopilosus; mandibulis macula basali, pronoto margine posteriore fascia angusta interrupta, segmento dorsali primo fascia angusta apicali, segmentis 2-6 dorsalibus et ventralibus fascia angusta

bisinuata lateribus dilatata, femoribus apice, tibiis supra, tarsisque, articulo apicali excepto, flavis; alis hyalinis, venis fuscis.

Long. 16 mm.

♂. Head and thorax closely and rather strongly punctured, median segment rugosely punctured, all rather thickly clothed with long white pubescence; abdomen finely and more sparsely punctured, thinly clothed with much shorter pubescence. Clypeus broad, the anterior margin almost straight; eyes widely but distinctly emarginate. Antennae stout, of about equal thickness throughout, a little longer than the head, thorax and median segment combined. Pronotum no longer than the scutellum, the anterior margin straight and distinctly raised. Scutellum subcarinate longitudinally; median segment steeply sloped posteriorly. Abdominal segments broad, the petiole short, first segment rounded at the base, segments 2-6 slightly constricted at the base; the apical incision of the seventh dorsal segment large, nearly as broad at the apex as deep, the lateral processes of the incision narrow and pointed, flattened above, the apex smooth, the base rather deeply grooved longitudinally. Second abscissa of the radius longer than the third; first recurrent nervure received beyond two-thirds from the base of the second cubital cell; second beyond one-third from the base of the third cubital cell, curved outward in the middle; second transverse cubital nervure almost straight.

Hab. Durban; Umvoti, Natal.

This approaches more nearly to the male of *rufifrons* than to any other described species, but has distinctly longer antennae, a shorter clypeus, and a somewhat broader and shorter abdomen; the colour of the clypeus and anterior margin of the pronotum is different, and the yellow abdominal bands narrower. The apical joint of the flagellum is blunt at the apex, not distinctly truncate as in *rufifrons*. The position of the second recurrent nervure is also different.

9. MYZINE PINGUIS sp. n.

♂. Niger, robustus; clypeo, macula post oculos, pronoto linea utrinque angulis anticis posticisque, postscutello macula, segmento dorsali primo linea apicali utrinque, segmentis dorsalibus et ventralibus 2-6 fascia angusta apicali utrinque interrupta, segmento dorsali septimo macula, tegulis, femoribus apice tibiisque supra flavis; tibiis subtus tarsisque testaceis; mandibulis ferrugineis; alis hyalinis, venis testaceis.

Long. 9 mm.

♂. Head and thorax coarsely and closely punctured, median

segment rugose; abdomen deeply but rather sparsely punctured. Clypeus shallowly punctured, very short and broad, almost transverse at the apex. Antennae not very stout, as long as the abdomen, the eyes oval, not emarginate. Pronotum shorter than the mesonotum, the anterior margin straight, not much narrowed posteriorly, the posterior margin not strongly arched. Scutellum large, a little longer than the pronotum; median segment shorter than the scutellum, abruptly truncate posteriorly. Petiole very short, first abdominal segment almost as broad as the second; segments 2-6 rather strongly constricted at the base. All the segments very short and broad. Seventh dorsal segment very shallowly incised at the apex, the incision much broader apically than deep, the sides of the incision in the form of short, blunt spines. Aculeus long and strongly recurved. Second abscissa of the radius distinctly longer than the third, radial cell a little shorter and blunter at the apex than in most species of the genus, third transverse cubital nerve curved outwards in the middle, the second straight, the third cubital cell almost as long on the radius as on the cubitus, the second recurrent nervure received near the middle.

Hab. Sebakwe, Rhodesia. November 1901. (*D. Dodds.*)

In the robust form, the structure of the median segment and of the apical dorsal segment, this approaches the Algerian *M. roussellii* Guér. In that species the eyes are longer and show a trace of emargination on the inner margin, the antennae are shorter and stouter towards the apex, and the shape of the third cubital cell is quite different.

10. MYZINE KLUGI Westw.

Meria klugi Westw., Proc. Zool. Soc. London, iii, p. 53, 1835, ♀.

Myzine nigrita Turn., Trans. Ent. Soc. London, p. 391, 1910, ♂.

Hab. O'okiep; Matjesfontein.

A specimen from M'fongosi, Zululand, has the first abdominal segment a little narrower, but does not seem to differ otherwise.

MYZINE TRANSVAALENSIS Cam.

Plesia transvaalensis Cam., Ann. Transvaal Mus. ii, p. 119, 1910, ♂.

This is near *politissima* Turn., differing in the more distinct puncturation of the abdomen; the deeper emargination of the clypeus; the much more strongly raised anterior margin of the pronotum; the position of the second recurrent nervure, which is nearer to the base of the third cubital cell in *transvaalensis*; and the narrower and more acute processes of the seventh dorsal segment. The scape is yellow beneath in *politissima*, black in *transvaalensis*.

MYZINE IMMACULATA Cam.

Myzine (Meira) immaculatus Cam., Ann. Transvaal Mus. ii, p. 117, 1910, ♀.

This species belongs to the group with no second cubital cell. The stigma is small; and the sulcus on the median segment distinct, much narrowed towards the apex. The frontal sulcus is faint, almost obsolete. The species is easily distinguished from other described species by the ferruginous legs and absence of red or white colouring.

GENUS ELIS Fabr.

SUBGENUS MESA SAUSS.

1. ELIS (MESA) PERINGUEYI SAUSS.

Plesia (Mesa) peringueyi Saussure, Grandidier: Hist. Madagascar, xx, p. 245, 1892, ♀.

Hab. O'okiep, Namaqualand, Cape. September.

2. ELIS (MESA) XANTHOCERA Gerst.

Myzine xanthocera Gerst., Arch. f. Naturg. xxxvii, p. 353, 1870, ♀; Gerstaecker, v. d. Decken. Reise in Ost-Afrika, Gliederthiere, p. 339, t. 14, fig. 5, 1873.

Hab. M'fongosi, Zululand; Kloof, Natal.

This species has a wide range on the coast of East Africa.

3. ELIS (MESA) ADELOGAMIA Turn.

Plesia (Mesa) adelogamia Turn., Ann. & Mag. Nat. Hist. (8) i, p. 503, 1908, ♀.

Hab. Smithfield, Orange Free State; Pt. Shepstone, Natal.

4. ELIS (MESA) AURIFLUA Turn.

Elis (Mesa) auriflua Turn., Proc. Zool. Soc. London, p. 705, 1912, ♀.

Hab. Kimberley, Cape; Smithfield, Orange Free State; M'fongosi, Zululand.

5. ELIS (MESA) RUFICEPS Sm.

Myzine ruficeps Sm., Cat. Hym. B. M. iii, p. 75, 1855, ♀.

Elis (Mesa) ruficeps Turn., Ann. & Mag. Nat. Hist. (8), vii, p. 304, 1911, ♀ ♂.

Hab. Durban and Pt. Shepstone, Natal.

Subspecies DIAPHEROGAMIA SAUSS.

Hab. M'fongosi, Zululand.

6. ELIS (MESA) HETEROGAMIA SAUSS.

Plesia (Mesa) heterogamia Saussure, Grandidier: Hist. Madagascar xx, p. 244, 1892, ♀.

Hab. ♀ Comoro Island. ? ♂ Delagoa Bay, Mozambique.

7. ELIS (MESA) HOTTENTOTA SAUSS.

Plesia (Mesa) hottentota Saussure, Grandidier: Hist. Madagascar xx, p. 245, 1892, ♀.

Hab. Stellenbosch; Malmesbury; Hex River, Cape.

Specimens which I refer to this species with some doubt, show considerable colour variation; the Hex River specimens having the two apical segments and the apex of the fourth red, of which colour there are only faint traces in other specimens. In one specimen the apical antennal joint is ferruginous, not yellow as in Saussure's description, but in others does not differ from the rest of the flagellum. The wings are not clouded towards the apex. Otherwise the specimens answer well to the description.

8. ELIS (MESA) LONGIVENTRIS TURN.

Elis (Mesa) longiventris Turn., Proc. Zool. Soc. London, p. 712, 1912, ♂.

Hab. Hex River; Ceres; Dunbrody; Cape.

9. ELIS (MESA) SPOLIATA TURN.

Elis (Mesa) spoliata Turn., Proc. Zool. Soc. London, p. 711, 1912, ♂.

Hab. S.W. District, Cape Colony.

10. ELIS (MESA) RETICULATA CAM.

Plesia reticulata Cam., Rec. Albany Mus. i, p. 300, 1905, ♂.

Hab. Klerksdorp, Transvaal; Estcourt, Natal.

11. ELIS (MESA) RUFOFEMORATA CAM.

Plesia rufofemorata Cam., Rec. Albany Mus. i, p. 298, 1905, ♂.

Hab. O'okiep, Namaqualand, Cape.

This is very near *spoliata* Turn., but the pubescence is much longer and more dense, the abdomen more closely punctured and the serration

of the hind tibiae more distinct, in addition to considerable colour differences. The emargination of the apical tergite is deeper in *spoliata*.

SUBFAMILY SCOLIINAE.

GENUS SCOLIA.

SCOLIA (TRIELIS) PERINGUEYI sp. n.

♀. *Nigra*, nigro-hirsuta; mandibulis, flagello tarsisque fusco-ferrugineis; alis fusco-coeruleis.

Long. 19 mm.

♀. Median portion of the clypeus with three parallel longitudinal carinae, the space between the carinae irregularly longitudinally striated. Antennae inserted almost as far from each other as from the eyes, the scape smooth beneath, flattened and sparsely punctured above, the frontal prominence rounded at the apex between the antennae, the lateral carinae above the base of the antennae oblique and strongly marked, the space between them rugose and hirsute; ocellar space smooth and shining, with a few scattered punctured. Thorax coarsely punctured and hirsute, especially on the pronotum and pleurae; mesonotum more sparsely punctured, the middle of the scutellum smooth and shining; median segment short, punctured-rugose, hirsute in the middle; abdomen shining, finely and sparsely punctured, more coarsely on the ventral surface, both dorsal and ventral segments with apical ciliae of coarse black hairs, the apical dorsal segment densely clothed with coarse fusco-ferruginous setae. Legs clothed with long black hairs, spinose, calcaria of hind tibiae spatulate. Third cubital cell almost pointed on the cubitus, the length on the radius equal to fully three-quarters of the length of the second transverse cubital nervure; second cubital cell petiolate.

Hab. Beaufort West. Cape.

This belongs to the group of *stigma* Sauss. and *punctum* Sauss. and is most nearly allied to *braunsi* Turn., differing in the spatulate calcaria, and the denser pubescence which is wholly black, not cinereous on the sides of the thorax and abdomen as in *braunsi*, the ciliae on the ventral segments in that species being whitish instead of black. Superficially the resemblance to *Myzine klugi* Westw. ♀ is very close. Described from a single female.

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9.—*A New Species of Tachino-Oestrid from South Africa (Diptera).*

—By Dr. J. VILLENEUVE.

(With three text-figures.)

RONDANIOOESTRUS n. gen.

This genus (σ) is distinguished by the following characters.

I. *Head*.—Three remote ocelli. Eyes with a short, scattered pubescence, separated on the vertex by hardly a third of the diameter of the eye, but not bulging forward on each side of the antennae, so that the cordiform cavity of the latter is somewhat shallow; the head is divided by a medio-vertical blunt and little bulging ridge which disappears on the facial groove. The latter is long, little narrowed, bound on each side by a border bearing towards the upper part a large vibrissa, and below four or five spaced supplementary ones (fig. 1). The profile is almost semicircular; the eyes are elongate, nearly vertical, and the peristome is narrower than one-fourth of the height of the eye. The antennae are inserted very little below the median part of the eye, and are wholly showing; they are short, with the 3rd joint rounded at tip and about equal in length with the third. The 2nd joint of the antennal cheta is elongate, the 3rd is rigid and thickened at base. The epistome is reclining, and the frons bulges a little. The buccal opening is small, with a short proboscis, palps still shorter (fig. 2).

II. *Chaetotaxy*.—Setae numerous, long on the thorax and on the outer face of the tibiae, erect and short on the abdomen. Thorax: Acrostical setae complete, three pairs in front of the suture and three pairs behind; dorsocentral setae 2 or 3 + 3; humeral 3; posthumeral 2, the second set slightly above the presutural seta; intraalar 2, one immediately behind the suture, the other in front of the postalar callus; no intraalar seta in front of the suture. Abdomen: Median excavation of first segment leaving behind a moderately broad fold carrying a median pair of marginal setae, the other segments with a pair or two of irregularly set discal setae, and a pair of median marginal. The marginal setae are set a little in front of the hind border on every segment. Head: One pair of long, vertical, crossed, inner setae; the frontal setae stop in front towards the base of the second antennal joint; no ocellary setae.

As in all the Tachino-Oestrids known to me,* the sternopleural thoracic setae = 1 + 1; the convex scutellum bears three marginal setae on each side, the median are almost equal and crossed; in the

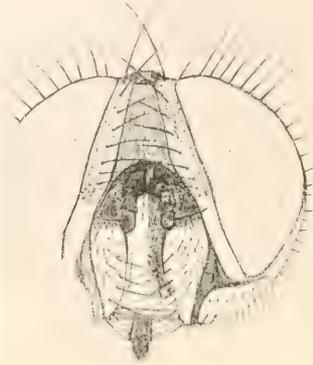


FIG. 1.

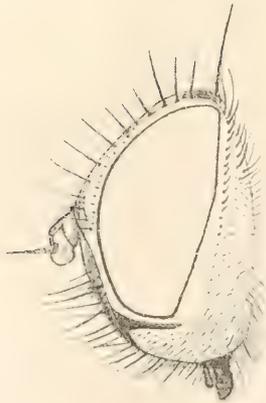


FIG. 2.

anterior tarsi, which are longer than the tibiae, the claws in the ♂ hardly reach the last joint. If it is stated that in these Tachinarid

* Sur quatre formes nouvelles se rapportant aux "Oestridae dubiosae E.B. (Tachino-Oestridae Vill.)." Villeneuve in *Ann. Mus. Nat. Hung.*, 1914, xii, p. 445.

flies there is a broad medio-ventral band formed by the uncovered sternites the lateral sides of which are concealed in the end of the fold of the tergites, it becomes easy to locate the Tachino-Oestridae in the Rhinophorinae group of Girschner, the new genus *Rondaniooestrus* coming next to *Rondania*, Rob. Desv.

III. *Neuration*.—The wings have a real prolongation which is somewhat short, however, on the 4th nervure; the 1st hind cell is petiolate (fig. 3).



FIG. 3.

RONDANIOOESTRUS APIVORUS, n. sp.

♂. Griseus, thorace nigro-quadrilineato, abdomine atro-variegato, antennis pedibusque testaceis, alarum nervo 5^o atque nervis transversalibus externis fusco limbatis.

Long. 8 mm.

Orbits grey, narrower than the frontal band, which increases in width from back to front and is brown ferruginous in colour; genae and epistome ashy white or light grey, facial convex folds as well as the anterior part of the epistome with a testaceous sheen, the rest greyish with the depression of the median folds ferruginous. Antennae testaceous, 3rd joint slightly dark, cheta black. Body grey, the insertion pore of the setae with a black circle; thorax with the shoulders as well as a dot in the centre of the postalar callus testaceous; it bears four black dorsal lines, the median shortening after the suture, the lateral interrupted in semi-colon shape; scutellum wholly grey; abdomen with a dull sheen slightly metallic on the median part of the first segments; on certain light there are discernible ill-defined darkish hind bands and darker black squares situated on the sides of the abdomen and the centre of segment 3. The hypopygium instead of

being convex and projecting is deeply set in the ventral face of the last segment, the abdomen being depressed in the only example I have seen. The last sternite is deeply and broadly scooped in front of the genital armature. Legs light testaceous like the coxae and the trochanters. Femora ashy fuscous on the upper side, this coloration extending obliquely on the basal half of the anterior and posterior sides. Last two tarsal joints blackish. Wings slightly greyish, the transverse apical and postical nervures as well as the fifth longitudinal broadly umbrate. Squamae whitish with a broad, apical, dirty white band limited inwardly by a slender brownish line. Halteres testaceous. One ♂ from Port Elizabeth, Cape Province, alleged to have been bred from a honey-bee. (J. W. FitzSimons.) This biological indication is the more interesting that nothing was hitherto known of the habits of the Tachino-Oestrid Diptera.

10.—*A Contribution to the Study of the South African Higher Myodarii (Diptera Calyptratae) based mostly on the Material in the South African Museum.*—By Dr. J. VILLENEUVE.

(With eight figures in the text.)

It is intended to deal here with undescribed or little known species occurring in this region; the others will be dealt with later in another communication.

The material which I have been able to examine was supplied by the Vienna Museum, the Entomological Research Committee of London, and the South African Museum of Cape Town. I here tender my thanks to Dr. Zerny and to G. A. K. Marshall, Esq., who have been kind enough to send it to me, and generously allowed me to retain duplicates. Dr. L. Péringuey, Director of the South African Museum, has been particularly active and obliging in forwarding numerous sendings of Tachinidae. Thanks to his efforts our knowledge has been considerably increased, and I cannot sufficiently express my gratitude. Lastly, Dr. J. Bequaert has collected several kinds at Durban, Natal, and Port Elizabeth, Cape Province. They are intended for the Congo Museum at Tervueren, Belgium.

There have been criticisms on the ultra-division of certain genera including numerous species, on the ground that it leads to too constricted sections. On the contrary, we approve and adopt this method, although it compels us to create again new genera. It proceeds, in fact, from the analytical method by inducing more precision; it limits research, and makes study easier, and it appears to us to lead to incontrovertible advantages on practical lines. The study of the African Myodarii is not without difficulties. Some palaeartic species inhabit Africa also, and are there subjected to quite different influences of latitude and temperature. Are they new species or varieties? Such question arises somewhat often. Thus *Phorinia Verritus* Walk. seems to be our *Phorinia aurifrons* Rob. Desv. with a different coloration varying on the frons and thorax from ashy-grey to golden bronze, and with a reduction of the discal abdominal setae. This lessening in length of the abdominal setae is found also in African examples of

Pachylophthalmus signatus Meig. *Voria ruralis* Fall. (*setosa* B. B. type) shows somewhat often some ciliae at the root of the 5th nervure of the wing, etc., but the most embarrassing instance is to be found in species with very variable coloration, such as *Rhinia apicalis* Wied., *R. nigricornis* Macq., and *R. testacea* Rob. Desv., which one would take for varieties of one kind if certain ♂ individuals were not pilose on the thorax and scutellum, whereas in others this pilose covering is reduced to the same degree as in the ♀. One meets also with examples of the common *Tachina fallax* Meig. in which the eyes are distinctly hairy (var. *pseudofallax* Villen.). I have seen also a ♂ of *Tricholyga sorbillans* Wied. in which the hairiness of the eyes is short and scattered, although the example is perfectly well preserved.

FAM. TACHINIDAE.

SUB-FAM. TACHININAE.

GEN. DEJEANIA Rob. Desv.

DEJEANIA NIGRAPEX, n. sp.

A robust species. Same coloration as *D. bombylans* Fab., from which it differs in several characters: abdomen with the three first segments entirely yellow and totally without discal setae; fourth segment black and bristling with prickly hairs except on a narrow, yellow, barren anterior band; wings uniformly greyish without any rufous band towards the base; palps yellowish, thick all along the length, covered with small black hairs without long setae, they reach the end of the proboscis, which is shiny black; antennae and chaetae dark brown; second joint of the chaeta little elongated, plainly shorter than in *D. bombylans*. Sternopleural setae = 1 + 1; no fine setae on the genae; no orbital setae in the ♂.

Length 15–16 mm.

1 ♂ and 1 ♀ from "Cape of Good Hope," Vienna Museum.

PLEROPELETERIA, n. sub-gen.

A pair of discal setae a little in front of the marginal setae on segments 2 and 3 of the abdomen in the manner of the sub-genus *Chaetopeleteria* B. B. The ♂ has several orbital setae. On the genae there is an entire row of erect setae in front of the eyes and as well developed as the frontal setae, the latter belonging to the ascending

type of Hough, form above the insertion of the antennae an arc of circle situated between the orbital setae and the genae.

PLEROPELETERIA PERINGUEYI, n. sp.

Pleropeleteria peringueyi resembles *Chaetopeleteria popelii* Portsch. and is of the same colour. It differs, in addition to the sub-generic characters given above, by the somewhat wider frons; in the genae the width from top to bottom is equal. Antennae and chaetae blackish; legs entirely black. The thorax bears 4 dorso-central setae behind the suture.

Length 11 mm.

A ♂, from Cape Town, sent by Dr. L. Péringuey.

GEN. MICROPALPUS Macq.

MICROPALPUS CAFFER, n. sp.

Resembles so much *M. prohecate* Speis., that the examples belonging to the Hofmuseums, Vienna, have been wrongly identified with it by Speiser himself. It differs by: (1) The presence on the second and third abdominal segments of sharp bristles interpolated on one side with the discal setae and on the other with the marginal; (2) the presence on the medio-ventral region of robust bristles on each segment, as in *Dejeania* Rob. Desv. The antennae are dark rufous, the legs are testaceous, including the tarsi, which are provided in the ♂ with long claws and yellowish pulvilli.

The size is that of *M. prohecate*, the abdomen, which is also without medio-dorsal band, is a little wider and more massive, the colour varies from yellowish testaceous (Natal) to mahogany red (Nyassaland). Examples from Tanganyika are brownish red, and have smoky wings and somewhat brownish tarsi.

Several examples. Natal. Durban (H. W. Bell-Marley), S. Afric. Museum; Nyassa, Mt. Mlanje (S. A. Neaves), Entom. Research Commission; Tanganyika region (Grauer), Vienna Museum.

MICROPALPUS PARCESETOSUS, n. sp.

Elongate; characterised by the small number of frontal setae and by its sexual dimorphism, the ♂ having the facies of *M. angulicornis* Speis., the ♀ resembling altogether *M. frater* and *M. lithosiophaga* Rond.

♂. Face whitish, orbits yellowish, antennae blackish, third joint wide, partly obscure rufous; proboscis as usual, palps comparatively

developed, a little longer than the terminal hair, testaceous. Surface of the peristome and higher occiput without small black setae. The somewhat short frons has 1 pair of long vertical inner crossed setae, 2 ocellary setae diverging in front, and on each side developed ascending frontal, 2 or 3 reduced transfrontal, and 2 setae under the insertion of the antennae. Thorax ashy yellow with the usual obscure bands: 3, sometimes 4 dc.; st. = 2 + 1; pteropleural seta like the anterior sternopleural. Scutellum partly rufous. Abdomen testaceous-yellow, 1st segment wholly black above, but only in front on the sides; a black medio-dorsal band, partly hidden by the light ashy down, runs across the 2nd segment and expands in a triangle on the 4th segment, the rest of the segment and the hypopygium being red. The 2nd segment has no discal seta, the 3rd has a pair. Legs testaceous, marked on the anterior face of the femora with a black spot at their insertion, and with another near the knees assuming often the shape of a small band; the tibiae are more or less darkened on the external side, the tarsi are black. Claws and pulvilli hardly elongate. The colour of the legs recalls that of *M. affinis* Cort.

♀. Ashy white, orbit greyish, scutellum rufous at apex; abdomen sectioned by transverse bands having a black sheen; end of last segment widely red. Legs of the same colour as in the ♂, the anterior tarsi dilated. Antennae narrower and more elongate.

In the two sexes, the 1st nervure of the hyaline wing is naked, and the 3rd is finely ciliate close to the small transverse nervure.

Length 8-10 mm.

N.W. Rhodesia (Chilanga); Nyassaland, Mt. Mlanje (S. A. Neave) Entom. Res. Comm.; Cape Town, Graham's Town, bred from *pupae*. S. Afric. Museum.

GEN. TACHINOMIMA Br. & Berg.

TACHINOMIMA LAXICEPS, n. sp.

Elongate; blackish on the thorax and scutellum, the latter partly dull reddish. Abdomen moderately shining, testaceous red; 1st segment black in the hollow; 4th black in the two posterior thirds, having a pruinose whitish band on the anterior, or sometimes of the same colour as the other segments and black at the end only. A medio-dorsal band, sometimes entire, sometimes stopping at the end of the 2nd segment, sometimes also almost totally obliterated, unites or tends to unite the two black extremities of the abdomen. Legs black

with the tibiae partly testaceous; anterior claws of the ♂ elongate; anterior tarsi moderately dilated in the ♀. Wings somewhat greyish, the third nervure is ciliated moderately far, to some distance of the small transverse nervure, the posterior transverse nervure is slightly sinuose, set very near the cubitus of the fourth nervure and lying in the prolongation of the apical nervure. Squamae whitish, halteres dark testaceous towards the base. The abdomen bears a pair of discal setae on segments 2 and 3; venter with long, moderately robust black setae on the sternites. Thorax with 3 dorso-central setae, 2 + 1, sternopleural setae strong and long, especially the hind one; pteropleural seta like the latter.

The head is the characteristic part of this species. The vertex is wider than the eye in both sexes, the frons is bulging, the genae are developed, the peristome is twice the length of the genae and has a few long black setae bending forward planted on its surface. Proboscis black, very long, thinned as in *Trachinomima* B. B.; palps rudimentary and looking like small spindles shorter than the terminal hair. Antennae moderately long and blackish, the second joint of the chaetae more elongate than in *T. longinostris* Macq. Superior part of occiput without small black setae. In the two females at my disposal (the setae are broken in the ♂), there are 2 vertical setae, the inner of which is directed backwards, and a prevertical seta turning outwards. The frontal setae extend down the genae to close to the eye; they number 3 or 4 and are scattered, outwardly with them are small black setae situated in front of the orbital setae and scattered on the genae instead of assuming there the fasciculate arrangement obtaining in *Trachinomima* (due, doubtless, to the greater width of the frons, which would account for the scattering of the setae).

Length 13 mm.

Hab. Cape Town. S. Afric. Museum; Cape of Good Hope (Vienna Museum); Natal. Entom. Res. Com.

PLAGIOCOMA, n. gen.

Fig. 1.

This genus is in fact a *Micropalpus* the genae of which bear several rows of long ciliae continuing those that cover the orbital region. I have seen one female only captured at Port Elizabeth (Cape) by Mr. J. Bequaert. The anterior tarsi are somewhat strongly dilated, and the abdomen does not exhibit the characters assigned by Brauer and Bergenstamm to their genus *Chaetophthalmus*.

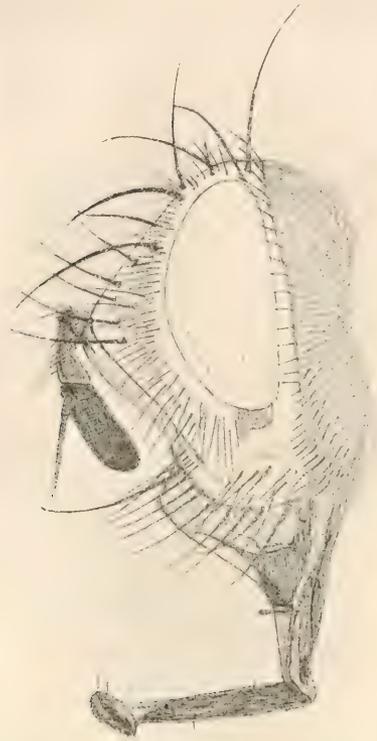


FIG. 1. ♀.

PLAGIOCOMA CRASSISETA, n. sp.

A robust species. Head with red background, covered with a whitish indumentum, frontal band rusty red; frons projecting and as broad as the diameter of the eye; orbits, genae and peristome broad. Owing to the narrowing of the hind part of the frons the vertex is only the width of one eye. Antennae black, moderately long, the apex rounded at its anterior angle; chaeta also black, thickened to the end, the second joint short. Proboscis little elongate, as usual; its second segment a little longer than the first, deflexed, black, labella also black. Palps very short, thickened, bearing very small black hairs. The frontal setae include inner crossed vertical setae, and less long inner ones, 1 prevertical seta turned outwards, and 1 pair of developed ocellary setae; 3 frontal setae set in an arcuate row below the inser-

tion of antennae are noticeable. The upper occiput is without small black setae; but the surface of the peristome bears long setae. Thorax black, with 4 dark bands and 3 dc.; scutellum and shoulders testaceous, a band of this colour surrounds the tergum except in front. Sternopleural = 2 + 1; pteropleural, as developed as the anterior and inferior sternopleural. Abdomen moderately wide, dark red testaceous obscured by a weak ashy pruinose down, bands with whitish or obscure sheen according to the light; segments 2 and 3 with a pair of discal; strong marginal setae are visible on the medio-ventral region of all the segments. Legs black with the tibiae partly testaceous. Wings hardly tinged with grey; 3rd nervure with 5-6 ciliae at the base, the transverse posterior nervure, inserted very near the cubitus of the 4th, is arcuate at the base only, then straight and reclining in the prolongation of the apical nervure. Squamae whitish; halteres testaceous.

Length 13.5 mm.

GEN. STOMATOMYA Villen.

STOMATOMYA METALLICA, n. sp.

Resembles wonderfully *Campylochaeta glauca* Karsch. = *metallica* Bez. Differs by the long claws of the anterior legs in the ♂, the long, crossed, more or less erect setae of the scutellum, and by the wings provided with a costal spine and having an appendage to the cubitus of the 4th nervure. The coloration is metallic-blue mingled with violet; wings hyaline, squamae white, halteres dark, testaceous at base; legs wholly black.

The chaetotaxy is the same as in *Campylochaeta glauca*; there are no ciliae where the frontal setae end, and the pair of discal setae on the 2nd and 3rd abdominal segments are variable, and often mixed with other small erect setae. The size is the same, the facies a little more robust.

Length 8-11 mm.

Southern Rhodesia, Salisbury (Dept. of Agric.), bred from the caterpillar of a Noctuid moth of the genus *Athetis*; Natal, Durban (H. W. Bell-Marley); M'fongosi, Zululand (W. E. Jones); S. Afric. Museum.

GEN. STURMIA Rob. Desv.

STURMIA (CROSSOCOSMIA VIX) AURIFRONS, n. sp.

There is in Africa a group of species in the ♂♂ of which the pulvilli and claws are elongated (the latter are often truncate), the

two first abdominal segments are without median marginal setae (or if there are some on the second segment they are slender and decumbent). These characters do not, however, obtain in the ♀♀, which show median setae slender on the first segment, and well developed on the second. This leads to the group *Blepharipoda* B. B., *sensu stricto* represented in the African fauna by a very large number of species difficult of distinction or of good characteristic description.

S. aurifrons is widely spread in Southern and Tropical Africa. The head is yellowish, bright golden on the frons and occiput; thorax opaque or bronzy flavescent, sectioned by 4 black, narrow lines, the outer one semi-colon shaped; the scutellum is of similar hue, the background being partly rufescent. The background of the abdomen is reddish, easily noticeable laterally, the first segment appears to be black, the following segments show each a dark posterior band, and a bright ashy one in front, the latter is intersected by a medio-dorsal black band. In the ♂ the third segment carries on the ventral side an obscure spot covered with appressed black hairs and situated on each side of the median line. The wings are greyish, light brown at the base and along the anterior border, the hue becoming thinner beyond the small transverse nervure. Squamae whitish-yellow or dirty white; halteres testaceous, the club fuscous. Legs black, the tibiae more or less ferrugineous in the centre. Antennae blackish; the second joint obscurely testaceous, the third twice and a half as long as the second. Palpi dark at the base, yellow, and thickened towards the apex.

The ♀ is of the same colour as the ♂, but the abdomen is opaque and the bands are wider and more densely ashy.

Chaetotaxy: frontal setae rather short, and not reaching in front the apex of the second antennal joint, which is a little elongated; there are often black ciliae below the end of the genae. In addition to the crossed frontal setae, one counts on each side 2 ascending frontal, 2 setae on the vertex, the outer being slender in the ♂ and thickened in the ♀; ocellary setae absent but distinct in the ♀, which bears two orbital ones. There are a few small black setae above the large vibrissae, but none on the upper occiput at the back of the ciliae. Thorax: dc. = 4; st. = 2 + 1. Abdomen: segments 1 and 2 void of marginal setae in the ♂; segment 1 with 2 weak median, segment 2 with 2 median, valid and erect in the ♀, and similar to those forming the complete row always found on segment 3.

Wings: Costal spine most minute; 2-3 ciliae above and under at the base of the third longitudinal nervure. Cubitus of the fourth nervure straight, the apical transverse arcuate, the posterior transverse little flexed and distant from the cubitus.

Length 10–13 mm.

A good number of individuals from Nyassaland, Mt. Mlanje (S. A. Neave); some from Uganda; one from Sierra Leone (J. J. Simpson); one from Zululand, M'fongosi (W. E. Jones); S. Afric. Museum, etc.

STURMIA (BLEPHARIPODA) SEMITESTACEA, n. sp.

This species is in size and general appearance like the European *S. sylvatica* Fall. It belongs to a group of *Sturmia* in which the ♂ has short fore claws, and the second abdominal segment is provided with two marginal setae as much developed as in the ♀. It is distinguished by: (1) the development of the ocellary setae which in length and robustness approximate the inner vertical seta, and the same obtains for the ascending frontal setae; (2) the colour of the abdomen; the first segment is blackish above and under; the second and third are light testaceous red veiled by a greyish white down in the ♂, denser than usual in the ♀, edged with black behind and crossed by an obscure medio-dorsal band; fourth segment thickly ashy white. The ♂ bears a large, black, ovate latero-ventral spot (resulting especially from the compressed shape of the abdomen in the ♂♂ of this group; there are cases where this ovate spot is thrown out laterally) resting on the hind border of segment 3, and covered with appressed and closely set hairs; another small and triangular patch is discernible on the same level on segment 2. The scutellum rufous, with a dusting of ashy grey thicker on the ♀, and with two weak setae moderately long and crossed at apex. Thorax ashy grey with the usual black lines: dc. = 4; st. = 2 + 1, sometimes 2 + 2. Head whitish; orbits slightly ashy, wider than the frontal band, which is black; width of vertex: ♂ = $\frac{1}{5}$ of the eye; ♀ = $\frac{6}{5}$ of the eye. Genae bare, as wide as the orbits; peristome as wide as the prominence of the frons in front of the eye. On each side are two ascending setae, the others reach the end of the second antennal joint, which is testaceous, and the third is about four times as long and blackish. Above the larger vibrissae are small reclining setae reaching beyond the lower third of the epistome. Upper occiput without black setae behind the ciliae. Palps cylindrical, yellow. Wings somewhat greyish, cubitus of the fourth nervure almost straight, and with a short dark reflection in the form of an appendage; apical transverse weakly arched; posterior transverse little wavy, situated far from the cubitus; costal spine absent; three ciliae at the base of the third nervure above and below. Squamae whitish; halteres testaceous. Legs black; the tibiae sometimes testaceous in the centre; hind tibiae with long ciliae together

with a long median seta underneath which the ciliae are a little shortened.

Six examples from the S. Afric. Museum. 1 ♀ from Nyassaland (Dr. J. E. S. Old), Entom. Res. Comm.

STURMIA (BLEPHARIPODA) ANGUSTIFRONS, n. sp.

Belongs to the same group as the preceding species, and is likewise remarkable owing to the ocellary setae and the ascending frontal setae. It is characterised by its small size (10–12 mm.) and its less wide shape; by the narrow frons ($\frac{1}{2}$ eye to vertex in the ♂, $\frac{2}{3}$ in the ♀) having lateral, parallel borders little jutting out, with orbits less wide than the frontal band. The result is that the genae being of the same width as the orbits, and the peristome as broad as the protuberance of the frons, a larger development of the eyes follows. The two apical crossed setae of the scutellum are very long and robust. Face with a white sheen, orbits slightly bluish; antennae black, moderately narrow, third joint hardly four times the length of the second; chaeta pubescent. The occiput bears at its median part a row of small black setae behind the ciliae, but these setae seldom reach the upper part. Palps blackish, thick and yellowish at tip. Labella testaceous. Thorax obscure, sprinkled with ashy grey, with four fine black lines, the scutellum partly red; dc. = 4; st. = 1 + 1 + 1, the intermediate slender. Abdomen: First segment darkish; the others with a white band ashy grey in front, and a black band not definitely separated behind. In the ♂ the second segment and the anterior portion of the third is reddish, and the latter bears on the ventral side a rounded, deep black spot covered with decumbent closely set black hairs. Wings tinted with light brown at the base and along the anterior border as well as in the proximity of the longitudinal nervures. There are two ciliae at the base of the third nervure. Cubitus of the fourth nervure blunt, straight or a little obtuse, the apical transverse vein weakly arched, the posterior S-shape, and remote from the cubitus. Squamae creamy-white; halteres testaceous. Legs black with the tibiae sometimes brownish-red; the posterior with moderately equal ciliae and a median seta.

In the only ♀ example seen, the wings are hyaline, and the sides only of the second abdominal segment are reddish.

Natal, Durban, 4 examples (H. W. Bell-Marley), S. Afric. Museum.

STURMIA (ARGYROPHYLAX) DILABIDA, n. sp.

This species has with *S. atropivora* R. D., which also occurs at the Cape, several characters in common, viz.: head broad, with 2 rows of frontal setae; antennae of similar shape; 4 stenopleural setae; 6 marginal setae on the third abdominal segment.

It differs by the ocellary setae which are inserted on each side of the inner ocellus (it is in front of the ocellus in *S. apivora*); by a row of small black setae situated at the back of the ciliae on the upper occiput (they are wanting in *S. atropivora*); by the antennal chaeta, which thickens as the one half only; by the colouration, which is light ashy, slightly flavescent; thorax with 4 narrow black lines, the outer ones semi-colon-shaped; abdomen less massive, narrower, thin and transversely banded with black, the last segment broadly black at apex. The hind part of the orbits and the ocellary space also ashy flavescent. Scutellum partly reddish. Palps cylindrical, blackish, arcuate and often reddish at the tip. Wings with the cubitus of the 4th nervure straight or hardly obtuse, the apical curved near the cubitus only, the hind transverse sinuose at base and thence nearly straight, remote from the elbow; costal spine wanting, one single cilia at the root of the 3rd nervure. Squamae whitish; halteres dark, testaceous at base. Legs black, fore claws of the ♂ moderately elongate; hind tibiae ciliate, and with a median interposed seta. The chaetotaxy is the same as for *S. atropivora* R. D.

Length 8 mm.

Natal, Durban, S. Afric. Museum.

GEN. SERICOPHOROMYA Aust.

The genus *Sericophoromya* Aust. includes species which differ from the genus *Winthemia* R. D. only by their larger size (about 12 mm.), and especially by the minute claws of the anterior tarsi of the ♂; the abdomen is yellowish red on the first two segments, a medio-dorsal black band crosses the second segment; this band is sometimes narrow (*S. marshalli* n. sp.), but oftener it becomes a triangular spot (*S. quadrata* Wied.; *S. claripilosa* Aust.; *S. ruficrura* n. sp.). The thorax is noticeable owing to the abundant flavescent, woolly villosity, always to be found on the pleurae, but invading thence the tergum, scutellum, and abdomen in *S. quadrata* Wied.; or restricted on the dorsal side to the hind border of the thorax, the scutellary calluses and the sides of the scutellum in *S. claripilosa* Aust., in which it extends to the ventral surface of the abdomen and on the sides, and also on the inferior edge of the femora.

In the first-named species the vibrissae ascend the facial ridges in the manner of the *Phoroceratidae*, whilst in *S. claripilosa* and the other species there are only a few reclining small setae above the large vibrissae. The abdomen in *S. quadrata* and *S. claripilosa* reaches its greater width at the second segment; segments 3 and 4, through being united, form a blackish cone edged by a narrow white or grey band on the anterior part of segment 3. In *S. marshalli* and *S. ruficrura* the sides of the abdomen are about parallel, and segment 4 is short and transverse, at least in the ♂, because the abdomen of the ♀ assumes the conical shape.

SERICOPHOROMYA MARSHALLI, n. sp.

This species, as also the one following, is so near *Winthemia*, owing to the parallel shape of the abdomen, the lanuginose villosity limited to the pleurae, the short and directed forwards (descending) frontal setae, and by the absence of marginal setae on the two first abdominal segments in the ♂, that they might be mistaken for that genus. The legs are entirely black as in *S. claripilosa* Aust.; the characters already mentioned above separate the two as well as the colour of the abdomen, which is testaceous red on the first two segments and also on the anterior half of the third; the rest is black, and the extremity of the last segment is red in the ♂, and often black in the ♀, which has a short scooped oviduct. The median excavation of segment 1 is black, and from it begins a medio-dorsal band crossing segment 2; this band, usually even and somewhat narrow, is often wider in the ♀ and rarely assumes the triangular shape. The last three segments bear an anterior band of ashy down. The tergum is dusted with flavescent and has four black lines; the scutellum is testaceous and more obscure at base. The head is of the same shape as the other species, and has a yellowish indumentum; the hairs on the genae are pale, whereas they are black in *S. claripilosa*. Wings hyaline; narrower and hardly reaching the apex of the abdomen in the ♂.

Natal, Durban (H. W. Bell-Marley), S. Afric. Museum; Umgeni Riv., Gold Coast, Ahuri (W. H. Patterson); Uganda (C. C. Gowdey); British East Africa (G. Pugh); Nyassaland, Mt. Mlanje, where it was captured by S. A. Neave in company with *S. clarissima* Aust. Entom. Res. Comm.; Madagascar and Tananarive (Lamberton).

I call this species after Mr. G. A. K. Marshall. I had already described it in a note on the Higher Myodarii collected in Madagascar, and which was to be published abroad, but of which I heard nothing since the beginning of the war.

SERICOPHROMYA RUFICRURA, n. sp.

This species has not to my knowledge been met with as yet in South Africa, but its great resemblance to *S. marshalli*, all the characters of which except the colour of the legs, which are testaceous with the tarsi blackish, justifies its inclusion here. The tibiae are fuscous towards the proximal third, and sometimes further. In *S. ruficrura* the medio-dorsal black band of the second abdominal segment is broad and more or less trapezoid in shape.

Several examples from Nyassaland, Mt. Mlanje (S. A. Neave), and one from the Gold Coast, Ahuri (W. H. Patterson), Entom. Res. Comm.

GEN. CARCELIA Rob. Desv.

CARCELIA ANGULICORNIS, n. sp.

The study of the African species of the genus *Carcelia* E. D. is more difficult than that of the palaeartic species, because usually the tibiae are black like the rest of the legs, or at least are very dark. If to this is added a tendency to individual variation, the division of the species is full of snares, and almost impossible unless there is an abundance of material. Nor easier it is to connect them with other known species, and to be sure that a species is not simply a variety due to climatic influences. I have therefore postponed the study of the moderately large material I have, and restrict myself at present to a single well-characterised species, *C. angulicornis*, n. sp.

The typical examples come from Southern Nigeria, Oshogbo (J. T. G. Mayer). The frons in the ♂ measures $\frac{2}{3}$ of the length from the eye to the vertex, and hardly more in the ♀; the nearly parallel borders diverge a little forward where the frons is moderately projecting. The genae are narrow, especially below, and the peristome is quite linear. The yellow palps are clubbed. The antennae are remarkably long, covering the whole epistoma as far as the mouth (the third joint is 7 times as long as the second); they are black and bear a very long and fine chaeta thickened and slightly pubescent in the proximal third. The shape recalls that of the genus *Hemimacqwartia* B. B., of which it is said: "Antennae supra medium oculorum . . . articulus secundus brevis, tertius longissimus, latus, basi crassior, antice ad basin convexus" (Brauer and Bergenstamm, par. 3, p. 101). In the ♂ the antennae are very characteristic; in the ♀ the third joint is seldom as much thickened or as convex at the base. The orbits are ashy yellow, especially in the ♂, wider in front than the

frontal black band, narrower behind (δ) or of equal width (♀). Thorax ashy with a wash of flavescent and with the four usual black bands; scutellum dark, testaceous on its free border. Abdomen black, the three last segments with an ashy pruinose band not clearly defined and intersected by a narrow black line. The wings are somewhat greyish in the δ , moderately clear in the ♀ ; the cubitus of the fourth nervure is at right angle; the apical transverse arched above the cubitus, then straight; the posterior transverse oblique, little flexed, moderately removed from the cubitus; two or three ciliae at the base of the third nervure above and under; no costal spine. Squamae white with a tinge of yellow; halteres dark, testaceous at base. Legs black, with the tibiae sometimes brownish red. Fore claws of δ moderately elongated.

Chaetotaxy: 2 ascending frontal setae (sometimes 3 in the δ); 3 spaced setae going beyond the insertion of the antennae, the last one situated below the antennal chaeta; 2 long ocellary setae turned forwards; 1 long and robust inner vertical seta turned backwards, 1 external vertical turning outwards, short and weak in the δ , more developed in the ♀ . Thorax with 4 dorso-central setae and 2 + 1 sternopleural. Scutellum with 3 long marginal and a pair of apical, crossed setae, the setae developed, not erect. Abdomen: segments 1 and 2 with 2 median marginal setae, segment 3 with a row of 8; all these setae erect. No discal setae; segment 4 bristling with short setae in its terminal half or more. Higher occiput without small black setae at the back of the ciliae; 3-4 small reclining setae above the great vibrissae, which are long and robust. The hind tibiae are somewhat regularly ciliate with a small median seta. Length 8-10 mm.

In addition to examples from Southern Nigeria, I have received 2 typical ♀ ♀ from Nyassaland, Mlange, collected the one by H. Brown, the other by S. A. Neave.

The South African examples differ a little from those above cited by the slightly wider frons, the frontal setae, 2, seldom 3, of which impinge on the genae, but in any case they are not spaced, and consequently do not reach beyond the antennal chaeta. The hind transverse of the wing is more sinuose; the base of the third nervure often bears 5 ciliae. The examples are all ♀ ♀ ; some, hatched, are greyish with the squamae whitish, but in all the antennae are normal.

Sensu stricto, this species, owing to its sternopleural setae, is an *Exorista*; nevertheless, I include it in the genus *Carcelia* on account of its other affinities. It inhabits the same region as *Carcelia evolans* Wied., which it greatly resembles. *C. angulicornis* is elongated and

narrower; *C. evolans* belongs to the large-bodied group, and has only 1 + 1 sternopleural setae.

GEN. EXORISTA Meig.

EXORISTA PILIPES, n. sp.

Fig. 2.

A species which ought to be in a genus by itself. It has 2 sternopleural setae as in the genus *Carcelia* R. D., but the head is different

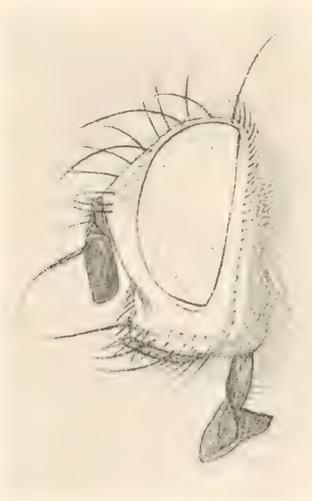


FIG. 2. ♀.

and resembles that of the genus *Blepharipoda* B. B. Peristome wide, as is also the projection of the frons, antennae short, great vibrissae inserted a little above the buccal opening. In the ♂ the anterior tibiae are villose inwardly, the villosity is very long in the median part.

Exorista pilipes has the habitus and coloration of the palaeartic *E. glauca* Meig. Head white with chalky sheen; frons nearly equal in the two sexes, equal to half the diameter from the eye to the vertex; frontal band as broad as the orbits. Frontal ciliae somewhat slender, projecting little beyond the insertion of the antennae, and hardly reaching the middle of the second joint; 3 or 4 ascending frontal on each side; 1 pair of ocellary setae, well developed but moderately

slender, pointing forwards; 1 pair of long, vertical, crossed, inner setae; no external vertical setae. Antennae black, moderately broad; joint 3 about $3\frac{1}{2}$ times as long as joint 2; chaeta black, long, attenuate at apex, thickened in its first third. Palpi black. Upper occiput with whitish villose hairs and without small black setae at the back of the ciliae. Thorax with 4 obscure bands, the median shortened, the lateral interrupted, 4 dorso-central setae. Scutellum rufescent, dark at base; the crossed apical setae as well developed as the marginal. Abdomen: segments 1 and 2 with 2 median marginal setae, segment 3 with a complete row of 8-10 setae. No discal setae. Hypopygium hidden. Wings hyaline; cubitus of nervure 4 straight or sub-acute; apical transverse arched after the cubitus, then straight, long in the ♂, less so in the ♀; posterior transverse more or less sinuose, distant from the cubitus. No costal spine, 3-4 ciliae at the base of the 3rd nervure. Squamae whitish; halteres obscure, testaceous towards the base. Legs black; hind tibiae with the setae unequal and distant; claws of ♂ very long.

Length 10-12 mm.

Several examples from Natal, Durban (H. W. Marley); S. Afric. Museum; Uganda (C. H. Marshall); Sierra Leone (J. J. Simpson); Southern Nigeria (J. J. Simpson), Entom. Res. Comm.; Belgian Congo (my collection); 1 ♂ from Madagascar. The examples from Uganda are dark grey with the scutellum non-rufous, of the same colour as the thorax; among those from Southern Nigeria is a ♀ with a lilac sheen on the head. Of the Congo examples, 1 ♂ has a slightly yellowish head, and the villosity of the occiput is flavescens.

GEN. CATAGONIA Br. & Berg.

CATAGONIA SUBDISTINCTA, n. sp.

Differs from the palaeartic *C. aberrans* Rond. by the frontal setae descending on the genae to the number of 3 or 4 as far as the antennal chaeta or further underneath; no ciliae at the terminal. In *C. aberrans* there are two setae only on the genae, not projecting beyond the level of the lower end of the 2nd antennal joint, and also fine ciliae below these setae. Moreover in *C. subdistincta* the frontal band is less broad and the scutellum more rufous on its free border. The other characters of the two species are identical.

Two ♂♂ from Natal, Durban (H. W. Bell-Marley), S. Afric. Museum.

GEN. NEMORAEA Rob. Desv.

NEMORAEA CAPENSIS, Schiner.

Schiner has described under this name a good species which does not belong to the genus *Nemoraea* because the cubitus of the 4th nervure has no prolongation, and that there are 3 sternopleural setae; this last character removes it from *Winthemia* R. D. and from *Sericophoromya* Aust. Schiner's species bears on the tergum the 3 normal pairs of acrostical setae in front of the suture; it is therefore not a species of *Ernestia*. It most nearly approximates the genus *Chaetolyga* Rond., Gieschn. s. strict., but the hairiness of the genae is found, in Schiner's type, only on the upper part, whence it descends a little along the facial ridge. In two other Cape examples this hairiness is wanting, or is reduced to some ciliae under the frontal setae. One of these (♂) belonging to the Vienna Hofsmuseums, bears the label "*dasyops* Wied.," but does not correspond to Wiedeman's description: "on the pleurae the hairiness is blackish; the legs are black with the tibiae brownish red, etc." To these characters must be added that *C. capensis* Sch. bears 2 pairs of vertical setae, no ascending frontal setae; 4 dc. on the thorax; 4 long median spaced marginal setae on the 2nd abdominal segment; claws of all tarsi elongate.

GEN. ZENILLIA Rob. Desv.

ZENILLIA SORDIDA, n. sp.

Similar in coloration to *Antistasea fimbriata* Bish; the size is also the same; but it is plainly allied to *Zenillia barbata* Rond., from which it differs in small details only. Black, little shining, weakly sprinkled with ashy on the thorax seen from behind, when there are discernible 4 black lines, with the median ones much spaced. On the abdomen, segments 2 and 3 have a wide, but little defined, similar ashy band narrowing on the 4th. Width of the frons equal almost to $\frac{1}{2}$ that from eye to vertex; the orbits and also the peristome have a bright steel-grey sheen; the frontal opaque brown band is very wide in proportion to the orbits; the dark cinereous genae are narrow; the peristome is about $\frac{1}{6}$ of the width of the eye. Palpi and antennae black, in the latter the 2nd joint is elongated, the 3rd is hardly 3 times as long as the 2nd; chaeta black, 2nd joint a little elongated. Epistome greyish-blue. Upper occiput with small black setae behind the ciliae; the facial ridges bear on $\frac{2}{3}$ of their lower part slender, closely set setae erect in front as in *Z. barbata* Rond.; the frontal setae, more robust in

front, descend irregularly to the level of the antennal chaeta; on each side are 1 long, ascending frontal, and 1 similar inner vertical; the pair of ocellary setae, thrusting forwards, have the same development as the others. The thorax bears 4 dc.; st. = 2 + 1. On the entirely black scutellum are discal erect setae and 3 long marginal on each side, the apical are crossed and slightly bending upwards; in addition there is a pair of long and slender, closely set setae between the 1st and 2nd marginal. Abdomen with marginal and discal setae; with the latter are intermixed numerous shorter and weaker ones. Wings greyish, darkened towards the base. Cubitus of 4th nervure obtuse; apical transverse oblique and almost straight; posterior transverse, S-shape, remote from the angle; 1st posterior cell of the wing narrowly open next to the apex of the wing; 2 ciliae at the base of the 3rd nervure; costal spine absent. Squamae dirty yellow; the upper small, the lower broad; halteres testaceous, the club dark. Legs black; anterior claws of ♂ moderately elongate.

Length 7 mm.

Natal, 1 ♂, Durban (H. W. Bell-Marley), S. Afric. Museum.

ZENILLIA (PALES?) ILLITA, n. sp.

The type is a ♀, 9 mm. long, the head white with a silvery sheen, orbits somewhat ashy grey, flavescens behind, frons rather narrow ($\frac{3}{5}$ the width from eye to vertex) with a broad blackish frontal band. Thorax and scutellum ashy grey; the former with 4 black lines, the latter more or less rufescent on the hind edge. 1st and 4th abdominal segments wholly black, the last moderately shiny, segments 2 and 3 light ashy grey with dark sheen. Wings greyish, fuscous at the base and towards the fore border, the nervures fuscous; cubitus of 4th nervure obtuse, nearly straight, blunt at apex; the apical transverse moderately arcuate, posterior transverse nearly straight. Squamae dirty white, halteres dark, testaceous at base. Legs black. Antennae black, moderately robust, a little shorter than the epistome, 3rd joint barely reaching the length of the 2nd; cheta very long, black, thickened in the basal third, the second joint distinct, but short. Palpi thick in their terminal half, black but with the apex more or less rufescent. Peristome $\frac{1}{7}$ of the width of the eye.

Chaetotaxy: 1 inner vertical ascending seta; 3 slender ascending frontal on each side; 2 frontal setae below the insertion of the antennae and little projecting beyond the middle of the 2nd joint; vibrissae weak, spaced, the superior reclining, not ascending beyond the 3rd superior part of the facial ridges. Higher occiput without little black

setae behind the ciliae. Two orbital setae; a pair of long ocellary setae pointing forwards. Thorax: 4 dc.; st. 2 + 1. Scutellum with 4 marginal setae, the apical as much elongated as the others and crossed. Abdomen: segment 1 with 4 median marginal setae, the external weak; segment 2 with 2 median; segment 3 with a row of 8 setae. No discal setae with the exception of a few short, irregularly disposed setae on segment 3. Wings: no costal spine; 2 ciliae at the base of the 3rd nervure.

Natal, 1 ♂, Durban, S. Afric. Museum.

I have 2 ♂ examples, one from the Gold Coast (W. H. Patterson), the other from Northern Nigeria (J. W. Scott Macfie), which I would identify with this species if the hind tibiae were not densely and regularly ciliate and bore a median seta; they have besides 1 + sternopleural setae and no discal. On segments 2 and 3 of the abdomen are a broad ashy opaque band in front and a narrow black band behind; on segment 2 is a black medio-dorsal line as in the ♀, little visible and evanescent on segment 3. These ♂ ♂ vary also individually; in one, the two first segments are bare; in the other, the palps are partly testaceous. If it were found later that they belong to a distinct species I propose for it the name *Zenillia bicincta* n. sp. If not, the ♀, owing to its incipient discal setae, would be a new proof that the genus *Ctenophorocera* B. B. lacks validity.

I have received from Dr. L. Péringuey 3 ♀ ♀ obtained from hatching, which seem to be the palaearctic *Pales pavidus* Meig.; one has only marginal setae on the abdomen (*Ctenophorocera* B. B.), another has 2 short discal setae on segment 3, while in the third these discal setae are well developed (*Pales* R. D.). It follows that in the last-named genus, certain species undergo a reduction affecting not only the length but also the number of the setae. So far as the vibrissae are concerned what is true of *Pales* is also true of *Zenillia* R. D., because in these two genera the separation is not definite, they include extreme forms whereas there are intermediate forms, and as in the ♂ the vibrissae ascend usually higher than in the ♀, one can be led to the absurd conclusion that each of the sexes standing by itself will be included in a different genus. Pandellé is therefore justified in accepting the genus *Zenillia* R. D. only, which moreover has the priority.

PROZENILLIA, n. gen.

I propose this genus for a species having the same coloration as the preceding, the scutellum broadly rufous and the wings hyaline with

the cubitus of the 4th nervure often with a weak umbrate line. The distinctive characters are: the minute anterior claws in the ♂, and the presence of 2 + 2 sternopleural setae. Abdomen without discal setae. Antennae very long, robust, covering the whole of the epistome; 2nd joint very short, 3rd 7 to 8 times as long as the 2nd; antennal chaeta much elongate; 2nd joint distinct; 3rd joint thickened in the basal third, thence slender. Erect, equal, moderately long vibrissae ascend above the great one as far as the centre of the facial ridges.

PROZENILLIA DISTANS, n. sp.

Black, moderately brilliant on the abdomen; segment 2 with a light ashy anterior band interrupted in the centre and obliterated before reaching the sides; segment 3 with a similar band, but wide and nearly entire, being incised in the centre only; segment 4 wholly shiny black; 2 median marginal setae on the two basal segments. Scutellum with 4 marginal setae, the apical moderately developed and crossed. Colour of thorax and head same as in the preceding species, the first with 4 dc. Frons wider (width equal to $\frac{2}{3}$ of the distance from the eye to vertex in the ♂); 1 outer vertical seta; 1 long, ascending inner vertical seta; 2 ascending frontal on each side, and a pair of ocellary setae thrusting forwards and equally long and robust; 3 frontal setae somewhat spaced below the insertion of the antennae and plainly descending lower than the chaeta. Upper occiput with small black setae at the back of the ciliae. Antennae and palpi black, the latter arcuate and thickened at end. Legs black; hind tibiae (♂) with a row of moderately closely set setae which at first increase from above to below, then regularly diminish in length, this row has a longer seta in the centre. Wings with pale nervures at base; cubitus of the 4th nervure straight or a little obtuse; apical transverse nearly straight and moderately oblique, posterior transverse, slightly flexuose, removed from the angle. Costal spine absent; 2 strong ciliae at the base of the 3rd nervure. Squamae whitish with a yellowish slender border; halteres testaceous, club blackish.

Natal, Durban (H. W. Bell-Marley), S. Afric. Museum.

CHAETOLYDELLA, n. gen.

Fig. 3.

Facies of the genus *Lydella* R. D., owing to its elongated and cylindrical shape; wing with the cubitus of the 4th nervure at right angle or subacute, and provided with a long prolongation as in *Tachina* Meig.; 3rd nervure ciliated to near the small transverse.

The eyes have scattered hairs, and are about equally distant in the two sexes (width $\frac{2}{5}$ that from eye to vertex in the ♂, and $\frac{1}{2}$ in the ♀). The ♂ bears, like the ♀, 2 orbital setae and the claws of the anterior tarsi project little beyond the length of the last joint. Thorax: sternopleural setae = 1 + 1; dorso-central = 3; acrostical setae complete. Scutellum with 4 marginal setae, the apical shorter and weaker, crossed. Abdomen with marginal setae only. Legs long. Head raised; frons moderately convex; epistome oblique below and behind, eyes oblique below and in front; peristome wide (width equal to $\frac{1}{3}$ or $\frac{2}{5}$ that of the eye) and short. Antennae inserted in

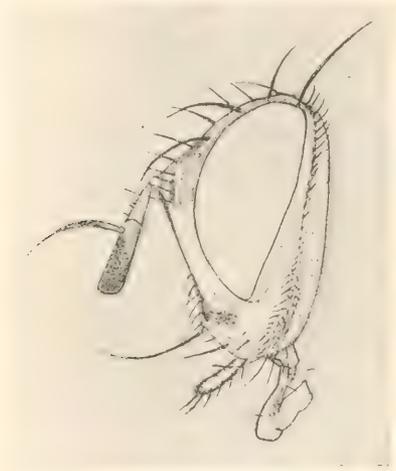


FIG. 3. ♂.

front of the median part of the eyes, more or less shortened above the mouth; 2nd joint elongated, 3rd nearly $2\frac{1}{2}$ the length of the 2nd; antennal cheta moderately long, slightly pubescent, with the 2nd joint distinct but short. Great vibrissae very long, situated on the level of the buccal border, a few short setae ascend along the facial ridges to above the inferior angle of the eye; 1 pair of weak but somewhat developed ocellary setae; 1 inner vertical, 1 prevertical turning backwards and outwards; in front the frontal setae project beyond the insertion of the antennae to the number of 1-2 only. Higher occiput with small black setae towards the median part, and somewhat far beyond the ciliae, these small setae are sometimes wanting. The peristome bears frequently a strong discoidal seta.

CHAETOLYDELLA NATALENSIS, n. sp.

Face with whitish sheen; antennae testaceous, more or less darkened on the 3rd joint; antennal chaeta dark, thickened at the base; palpi moderately thick, pale testaceous; proboscis not elongated, fleshy, with thick labella, wholly testaceous. Orbits equal in width (σ) or wider (φ) than the blackish frontal band, ashy like the thorax and the scutellum; thorax with 2 black dorsal bands, remote from each other and duplicated in the inner side with a narrow line of the same colour; shoulders and free edge of the scutellum rufescent. Abdomen testaceous red and with a broad black medio-dorsal band slightly hidden by pruinose down forming undefined transverse bands with whitish sheen. Segment 1 of abdomen deeply excavated and bare; segment 2 with 2 marginal median setae; segment 3 with an entire row; segment 4 with 2 complete rows, the one discal, the other subapical. Hypopygium retracted, testaceous, the forceps dark. Wings hyaline in the basal half with the nervures yellowish, greyish beyond the middle with the nervure surrounded by a broad brownish border; no costal spine. Squamae cream colour, halteres pale testaceous like the coxae, the rest of the legs bright testaceous except the tarsi, which are black.

The φ is distinguished from the σ not only by its somewhat wider frons and the minute claws of the tarsi, but also by its darker colour; the black band of the abdomen spreads broadly as far as the sides. Length 12-13 mm.

Many examples from the Cape; Natal, Durban (H. W. Bell-Marley; W. Haygarth); Transvaal, S. Afric. Museum; Nyassaland, Mt. Mlanje (S. A. Neave), Entom. Res. Comm.

LYDELLINA, n. gen.

Fig. 4.

I identify as *LydeLLina caffra* Macq. a series of examples varying in size according to localities, and having the abdomen as described and figured by Macquart; but, contrary to Macquart's statement, the face has a border of small, spaced setae ascending more or less high. Nevertheless, I think I am justified in preserving the name of the species, because these setae vary in number, and are even absent in small individuals from the Gold Coast. The characters of the new genus are as follows:

In both sexes the eyes are about equally distant. On the frons are 2 orbital setae; its width at the vertex equals $\frac{4}{5}$ of that of the eye

in the ♂, and 1 in the ♀. The ♂ is recognisable by the elongated claws of the fore tarsi; the narrow black band of segment 3 of abdomen in the ♀ is replaced by a broad, moderately shiny band bearing on the lateral ventral side (the venter is a little compressed in this species), a patch of black, closely set, decumbent hairs corresponding to the ventral patches of the genus *Argyrophylax* B. B.

Thorax ashy slightly flavescent, with 4 dark lines, the lateral line comma shape. Acrostical setae complete; 4 dorso-central setae; 2 + 1 long sternopleural setae. Scutellum with the free edge

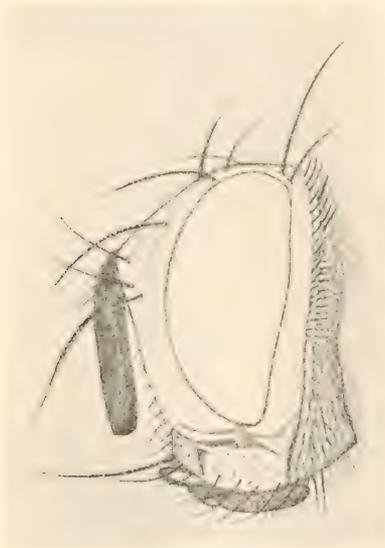


FIG. 4. 2.

reddish, and with 5 marginal setae, of which the apical, weaker and shorter, are crossed. Abdomen: segment 1 deeply excavated and with 12 weak median marginal setae; segment 2 with 2 more robust median marginal; segment 3 with a complete row of long, spaced setae; no discal setae on any of these segments; apex of segment 4 very obliquely truncate.

LYDELLINA CAFFRA ? Macq.

The head is moderately high and white; the ocellary region is pale or golden flavescent; the orbits are also more or less flavescent behind, with a blackish sheen; their width is about equal to the black frontal

band. Antennae black, long, covering almost the whole of the epistome; 2nd joint very short, 3rd, 7-8 times as long as the 2nd, but sometimes less in the ♀; antennal chaeta long and fine, black, thickened at the base, slightly pubescent. Palpi robust, black, as is also the proboscis, which is thick and not elongated. The frontal setae include: 1 pair of ocellary setae directed forwards, well developed, and even robust in the ♀; on both sides 1 pair of vertical setae, the outer ones short, and 2 ascending frontal. Forward, 2 frontal setae reach beyond the insertion of antennae as far as the end of the 2nd joint. Above the very long great vibrissae, short and reclining facial setae ascend generally as far as the centre of the epistome or a little beyond. Upper occiput with a row of small black setae behind the ciliae. Wings slightly greyish or yellowish-grey; no costal spine; 4-6 ciliae at the base of the 3rd nervure. Cubitus of the 4th nervure a little obtuse and blunt; posterior transverse hardly flexuose, distant from the cubitus. Squamae whitish; halteres testaceous, club dark. Legs black; tibiae often reddish-brown; the posterior with unequal setae.

Length 7-13 mm. The small examples (7 mm.) are from the Gold Coast.

Cape Town (L. Péringuey); Natal, Durban (F. Leigh), S. Afric. Museum; Nyassaland.

GEN. PEXOPSIS Br. & Berg.

PEXOPSIS PYRRHASPIS, n. sp.

Wholly ashy grey; scutellum partly pale rufous; abdomen with weak, dark beams on segments 2 and 3 which bear behind an obscure band, segment 1 blackish and deeply excavated, segment 4 bright shining red in the terminal half, which is bristling with black setae moderately robust and disposed on 2 rows. Segments 1 and 2 with 2 erect, median, marginal setae; segment 3 with a row of spaced robust setae.

Head high, greyish white, moderately opaque; frons projecting, about as wide as the diameter of eye to vertex; orbits becoming in front wider than the dark frontal band; face somewhat reclining, facial ridges exposed, projecting, yellowish and with small, closely set setae immediately above the great vibrissae, the latter inserted slightly above the buccal opening. Peristome as wide as $\frac{2}{3}$ of the height of the eye. The broad genae often bear sparse ciliae at the very top as in *Viviania* B. B. Antennae long and narrow, but nevertheless shorter

than the epistome; 1st joints testaceous, 3rd more or less fuscous, and 6-7 times the length of the 2nd; the dark chaeta, which is hardly as long as the antenna, is thickened as far as the end, and the 2nd joint is very short. Palps testaceous; proboscis short. One long, inner, ascending vertical seta, and another short, vertical, external; 2 frontal ascending on each side; ocellary setae as much developed as the frontal; 2 frontal setae descend below the insertion of the antennae as far as the level of the chaeta in the direction of the eyes. Thorax barred with 4 obscure lines, the external semi-colon shape; 4 dc.; st. = 2 + 1; acrostical setae complete. Legs blackish, knees testaceous, tibiae more or less light reddish-brown, posterior with somewhat equal setae with a long median. Wings hyaline; cubitus of the 4th nervure straight, blunt at tip, with the apical nervure moderately arched; the posterior transverse almost straight, distant from the cubitus; 5-6 strong ciliae at the base of the 3rd nervure; costal spine minute. Squamae whitish; halteres testaceous.

2 ♀♀ Cape Colony, Kimberley (Bro. J. H. Power), S. Afric. Museum; Nyassaland (J. E. S. Old), Entom. Res. Comm.

This species is closely allied to *P. femoralis* Bez.

GEN. TACHINA Meig.

TACHINA DUPLARIA, n. sp.

This species, which varies from 5 mm. (♀) to 9 mm. ♂, is moderately shiny black with 3 whitish circles on the abdomen; scutellum wholly fuscous; thorax sprinkled with white and having the usual black lines, and with the 4 dorso-central setae. Second abdominal segment with 4 median marginal setae (♂), or 2 only (♀), ♂ with a wide blackish frontal band; the narrow orbits are flavescent together with the upper part of the genae, where the frontal setae, numbering 4, descend at least as far as the centre of the epistome; in the ♀ the orbits, almost as wide as the frontal band, are reduced to 2 spaced ones. In the inferior third only the facial ridges bear small reclining setae. The antennae are elongate without reaching, however, the inferior end of the epistome; they are black and the 3rd anterior joint is about 4 times the length of the 2nd (♂), or sometimes less (♀). The obscure palps are rufescent on the edge in the ♂, yellow in the ♀. In the ♂ the hypopygium bears below a brush of bright rufous or pale hairs; at the end of the abdomen is a narrow curette-shape gouge. Wings greyish white with a costal projecting spine, and 4-5 ciliae at the base of the 3rd nervure. Squamae whitish.

Natal, Durban (H. W. Bell-Marley), 1 ♂, S. Afric. Museum; Nigeria; and Nyassaland, Mt. Mlanje, ♂ and ♀, Entom. Res. Comm.

This species must not be mistaken for *T. decidua* Pand., which I have received also from Cape Town. In the ♂ of the latter, the head and orbits are ash white, the latter are as wide as the narrowed frontal band; the hypopygium has no rufous hairs under the forceps.

GEN. TRICHOLYGA Rond.

TRICHOLYGA IMPEXA, n. sp.

In the collection of the Hofmuseums of Vienna is a ♂ example collected on December 15th, 1896, by Dr. H. Brauns at Uitenhage, Cape Colony. In this ♂, the 1st segment of the abdomen is fuscous, segment 2 flavescent or whitish and intersected by a black medio-dorsal line; on segment 3, which is twice as long as the 1st, is a narrow ashy line running along the anterior border and interrupted in the centre, the remainder of the segment is at first moderately bright black with a faint coppery tinge, and after that darkened by very numerous moderately long hairs, closely set and appressed; segment 4 short and black, shining as if varnished. Hypopygium retracted and without a brush of rufous hairs under the forceps. Thorax ashy grey, slightly flavescent, barred with the usual 4 lines; 4 de., st. = 2 + 2. Scutellum wholly fuscous. Head ashy white, orbits with a flavescent tinge; 4-5 long, spaced frontal setae descending on the genae as far as the middle of the epistome or a little beyond; 3 shorter but rigid setae hang over the large vibrissae. Antennae long, brownish; 3rd joint 4 times the length of the 2nd; the 2nd joint of the similarly coloured antennal chaeta elongate. Palpi yellow, a little infuscate in their outer face. Wings ample, hyaline, pale yellow at the base; 2 ciliae at the base of the 3rd nervure; no costal spine. Squamae somewhat yellowish, halteres obscure, testaceous at base. Legs black.

Length 9 mm.

I have received from M. J. Bequaert a ♂ of the same species from the Congo. It differs merely in the palpi, being fuscous and rufous at apex, and in having a wide posterior band on the 2nd abdominal segment.

MYXARCHICLOPS, n. gen.

This genus belongs to the section *Baumhaueria* B. B. Frons very wide in both sexes (more than twice the diameter of the eye). In addition to having the frontal setae crossed, the orbits are planted with

2 rows of robust, erect setae, one of which, situated at the back of the external row, is longer and turning outwards, and parallel with the outer vertical seta. Two ocellary setae directed outwards and slightly in front. On the genae the 3 rows of the above-mentioned fronto-orbital setae descend convergingly above the antennal chaeta as far as the upper third of the epistome. At the end follow 2-3 small setae situated near the eye, erect or slightly bending forwards. The epistome is somewhat reclining and the buccal border projects as in *Masistylum* B. B.; on the facial ridges is a row of well-developed and moderately even vibrissae ascending as far as the end of the fronto-orbital setae. The inferior vibrissae reach the edge of the buccal border. The peristome is as wide as one-quarter of the height of the eye. Antennae a little shorter than the epistome; 3rd joint about 4 times the length of the 2nd; chaeta no longer than the antennae and thickening until its terminal third; 2nd joint distinct, but short. The pipette is moderately long, thin and deflexed; palps well developed, thickening towards the apex. The ♂ differs from the ♀ in having a single, long, orbital seta directed forwards. On the thorax the acrostical setae are complete; 4 dorso-central setae behind the suture; sternopleural setae = 2 + 1. On the scutellum are 2 rows of rigid setae, and on each side 4 marginal, the apical ones of which are crossed and half upturned. Abdomen: segment 1 wholly excavated, with 2 median marginal setae; the same on segment 2; segment 3 with a complete row; segments 2 and 3 with uneven irregularly set setae; segment 4 covered with setae. Hypopygium of ♂ retracted. Wings with the 1st hind cell closed or shortly petiolate, sometimes semi-open, cubitus of 4th nervure straight with an umbrate prolongation caused by a dark reflection visible only in certain light; 3rd nervure ciliate at base as far as the small transverse, or nearly so; no costal spine. Legs robust; anterior claws and pulvilli of ♂ minute.

MYXARCHICLOPS CAFFER, n. sp.

A small ashy grey species with whitish sheen on the genae and peristome; orbits slightly flavescent, a little wider than the black frontal band; epistome dark testaceous like the basal part of the antennae, the 3rd joint of which is brownish. Palps yellow, buccal border rufescent. Abdomen: 1st segment black, the others with an ill-defined posterior black band. Wings greyish, pale at the base, nervures fuscous; posterior transverse slightly flexuose, moderately distant from the cubitus. Squamae whitish; halteres yellowish with the club fuscous. Legs black, posterior tibiae with somewhat uneven setae, especially in the ♂.

Length 6-7 mm.

Cape Town (L. Péringuey), S. Western District, S. Afric. Museum ;
Natal, Mooi River (C. Wroughton), Entom. Res. Comm.

MYXARCHICLOPS (?) MACULOSUS, n. sp.

A single example which seems to be a ♀. I include it provisionally in the genus owing to the bad state of preservation of the frontal setae. The frons is, as in the preceding species, broad with a median blackish band. The grey orbits, as wide as the frontal band, are bare near the eyes, where they are shiny black ; there are noticeable 1 posterior frontal seta turned outwards, and 3 robust, orbital setae directed forwards. The head is swollen as in *Gonia*, with the genae wide, a little broader above than below, where they are as wide as the peristome. The robust ocellary setae are disposed transversely ; 4 frontal setae disposed in a very arcuate row ending near the eyes descend on the genae ; immediately under are 2-4 erect setae disposed in a vertical row somewhat fan-shaped and preceded by sparse ciliae, in the manner of the preceding species. Epistome slightly reclining, and hardly projecting at the mouth ; along the facial ridges, which are straight and testaceous, are somewhat reclining vibrissae ascending to the upper fifth. Antennae narrow, very long although abbreviated above the mouth, testaceous ; 3rd joint fuscous towards the apex, and from 6 to 7 times as long as the 2nd ; cheta moderately long (*i.e.* as long as or very little more than the antenna), thickening towards the apex and blackish, with the 2nd joint elongated and a little bent on the 3rd. Palpi filiform, yellow. Proboscis as in *M. caffer*.

M. maculosus is a robust species like the palaeartic *Gonia*, and bright opaque ashy grey. The colour of the abdomen leads to its identity : segments 2, 3, and 4 with 2 large well-established black spots situated on the hind border of each side of the median line, and continued laterally as far as the venter by a thin black line. Discal setae uneven and irregular, 2 marginal median setae on segments 1 and 2 ; an interrupted row in the centre between the black spots on segment 3. Thorax with 4 narrow black bands ; acrostical setae in right number in front of the suture ; 4 dorso-central setae ; sternopleural = 2 + 1. Scutellum partly rufescent, with 3 marginal and 1 apical, robust but broken setae on each side. Wings more or less greyish, pale at the base, and with a median costal spine. Third nervure with some spaced robust ciliae at the base ; cubitus of 4th nervure bent at right angle with an umbrate prolongation ; apical central soon arched and inclined ; 1st hind cell narrowly open before the apex of the wing ; posterior

transverse sinuous, moderately distant from the above-mentioned cubitus. Squamae whitish; halteres yellowish, club fuscous. Legs black; tibiae often brownish-red.

Length 12 mm.

Cape Colony, Springbokfontein (R. M. Lightfoot), S. Afric. Museum.

TRIXOCLEA, n. gen.

Fig. 5.

This genus is founded for a species with a bright violaceous metallic tinge belonging to the section *Trixa* B. B. The head is that of a

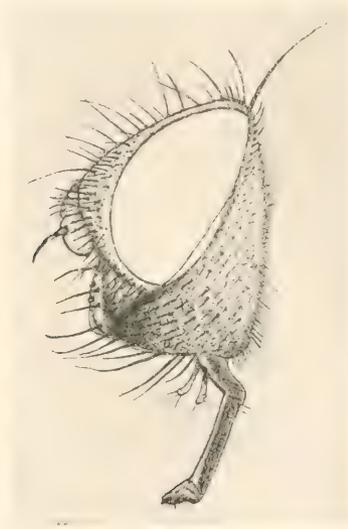


FIG. 5. ♂.

Trixa Meig. with the eyes bare and a little distant; the short palps and the general facies recall *Fortisia* B. B. and *Loewia* Egg.; the wing is that of *Zeuxia* Meig., having the 1st posterior cell with a long petiole, and the 4th nervure prolonged beyond the cubitus. Genae with an oblique row of small rigid setae, at the back of which are numerous ciliae disposed on two irregular rows; the frontal setae descend as far as the half of the 2nd antennal joint. Thorax with two pairs only of acrostical setae in front of the suture, the hind pair is wanting; 4 descending setae; sternopleural = 2 + 1. Scutellum with 5 long marginal setae, the apical of which are crossed. Abdomen with segment 1 bare, the excavation limited by a border behind; segments

2 and 3 with 2 median marginal setae. Claws with the anterior claws of ♂ moderately elongated.

TRIXOCLEA METALLICA, n. sp.

Has a broad purple sheen round the thorax, forming bands on the tergum, covering almost the whole of the scutellum, the anterior half of the abdomen, the sides and the whole venter: a colouring which is doubtless variable. The genae are ashy white, the orbits and the occiput are slightly violaceous, green or purple. Antennae and palps testaceous; antennal chaeta fuscous with the first two joints distinct but short. Proboscis thin, deflexed, mostly wholly black. Wings clear, yellowish at the base and along the anterior border, where the nervures, which elsewhere are black, are yellow; no costal spine; 5-6 ciliae at the base of the 3rd nervure. Squamae whitish, halteres testaceous, the club fuscous. Legs robust, black.

One ♂. Zululand, M'Fongosi (W. E. Jones), S. Afric. Museum.

PARARONDANIA, n. gen.

Antennae testaceous, short, projecting little beyond the epistome, joints 2 and 3 equal, 3rd blackish. The chaeta is also black, thickened at the base, the 2 first joints distinct, but short. Palpi cylindrical, testaceous, dark at apex. Frons a little wider than the eye, with the sides parallel, and having a brownish median band twice wider than the orbits, which are grey and bear 2 orbital setae. The ashy white face is somewhat constricted by the eyes, and shorter than the frons; genae and peristome narrower than the orbits. The lower border of the eyes is on the level with the buccal, the great vibrissae is inserted a little above it and surmounted by two small setae. No frontal setae except one projects beyond the insertion of antennae. Wings similar to the genus *Styloneuria* B. B.; cubitus of 4th nervure obtuse; 1st hind cell with a short petiole reaching almost to the apex of the wing; right posterior transverse equi-distant from the cubitus and the small transverse; costal spine long and projecting; 1-2 ciliae at the base. Squamae whitish; halteres wholly yellow. The face narrower than the frons, as well as the narrowed epistome, the absence of setae on the scutellum, and the neuration of the wings, are characteristic of the genus, and separate it sufficiently from *Rondania* R. D.

PARARONDANIA MULTIPUNCTATA, n. sp.

♀. A small, pretty opaque grey species marked with round, well-defined patches, namely: 4 on the thorax, 2 in front of the suture,

separated by 2 parallel black lines, 2 behind the suture, and 8 on the abdomen, 2 on each segment; in addition there is a quite lateral spot on segments 2 and 3. Legs brown, trochanters and intermediate and posterior tibiae testaceous. Frons with two vertical setae on each side; 1 pair of well-developed ocellary setae. Thorax with the acrostical setae complete in front of the suture; 3 long dorso-central setae; sternopleural setae 2 + 1, the antero-inferior piliform. Scutellum with 1 lateral seta and 1 long and diverging subapical; no apical setae. Abdomen: segment 1 very thick at the back of the moderately deep excavation, and with 2 median marginal setae; segments 2 and 3 with a complete marginal and 2 discoidal rows, the latter continued right and left by smaller and weaker setae set in a regular line.

Length 3 mm.

1 ♀, Cape Colony (George), S. Afric. Museum.

THELAIROSOMA, n. gen.

Fig. 6.

Same shape as *Thelaira*; head nearly similar. Differs: (1) by the absence of discal setae on the abdomen; (2) the naked 1st nervure of the wings; (3) the presence of 2 + 1 sternopleural setae.

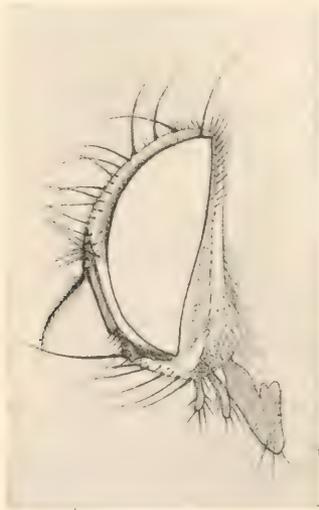


FIG. 6. ♂.

THELAIROSOMA FUMOSUM, n. sp.

♂. Head white; the width of the vertex¹ is $\frac{1}{3}$ that of the eye; the black frontal band broadens in front, and is there wider than the orbits; proboscis, palps and antennae black, antennal chaetae black and short, plumose; frontal setae descending on the genae as far as the apex of the 2nd antennal joint. Thorax pruinose white with 2 broad dorsal bands prolonged on the pruinose scutellum; the latter with a pair of apical, crossed setae; thorax with 4 dorso-central setae. Abdomen black; segments 2, 3 and 4 with a moderately broad whitish band in the anterior part; segments 2 and 3 more or less tinged with reddish on the sides; 1 pair of median marginal setae on segments 1 and 2. Wings fumose along the anterior border, and round the cells which are thinned on the level of their insertion and more so at their end. Two ciliae at the base of the 3rd nervure. Squamae whitish; halteres testaceous, the club obscure. Legs black; claws of anterior tarsi elongated.

The ♀ resembles the ♂; the frons is a little wider and bears 2 orbital setae; the anterior tarsi are slightly dilated and the claws very minute; the abdomen has no reddish marks on the sides.

Length 7–11 mm.

Natal, Durban, several examples (H. W. Bell-Marley), S. Afric. Museum; Nyassaland, Mt. Malanje, numerous examples (S. A. Neave); Gold Coast, Abura (W. H. Patterson), Entom. Res. Comm.; N.W. Tanganyika, 1 ♂ (Grauer), Hofmuseums, Vienna.

SUB-FAM. DEXIINAE.

GEN. ERIOTHRIX Meig.

ERIOTHRIX EXPERRECTUS, B. B. in Litt.

Of this species I saw 3 ♂ only, the characters of which can be resumed as follows: Species oblonga; thorace nigro; abdomine flavotestaceo, paululum albo-pruinoso, vitta media nigricante atque setosis numerosis instructa. Alis hyalinis, spina costali sat valida et erecta, nervo 4° post cubitum appendiculato, cellula 1, a saepe clausa atque breve petiolata. Pedibus brunneis, unguibus omnibus in ♂ elongatis. Capite albido-micante; orbitis angustis; vitta frontali lata atque ferruginea; antennis testaceis, articulo 3°, atricante secundo non longiore. Palpis flavis; haustello corneo, porrecto.

Length 9–10.5 mm.

Cape of Good Hope.

The resemblance of this species to the genus *Eriothrix* is only superficial. On the testaceous scutellum obscure at the base are 4 long and robust marginal setae, the apical crossing each other; the thorax with 3 dc. has in front 2 pairs of acrostical setae only, the hind one is wanting; on the other hand there are 3 complete pairs at the back of the suture. Sternopleural setae = 2 + 1. On the vertex there is only the pair of inner, crossed, vertical setae, and a pair of postvertical well developed and arching forwards; the width of the frons at this level is $\frac{1}{6}$ of the eye, and its narrowness is the cause of the triangular shape of the frontal band; the frontal setae reach the inferior third of the 2nd antennal joint, which is elongated; the 3rd joint is not dilated and equal in dimension to the 2nd. The black cheta is thickened at its basal half; the length is scarcely $1\frac{1}{2}$ that of the antenna; the 2nd joint is distinct but short. The cylindrical palps do not reach the buccal border, while the somewhat thin and horny proboscis reaches a little beyond it. The moderately wide epistome is about $\frac{2}{5}$ that of the eye. Higher occiput with 1-2 rows of small black setae behind the ciliae, eyes hairy. The 1st segment of the abdomen is deeply excavated and bare; the other segments bear 2 or more pairs of setae gathered on the black medio-dorsal band, which does not reach the apex; the apex of the 4th resumes the uniform testaceous yellow tint, which is also that of the hypopygium. Wings hyaline, nervures almost entirely pallid; cubitus of the 4th V-shape, and with a short, real prolongation as long as the petiole of the 1st posterior cell; hind transverse S-shape; base of the 3rd nervure with 6 ciliae; costal spine projecting; squamae whitish; halteres dark. The petiolate posterior 1st cell, and the projecting costal spine induced Brauer and Bergenstamm to include this species in the genus *Eriothrix* Meig.; but it is evident that all the other characteristics militate against this opinion, and lead to the genus *Erestia* R. D. The external shape of the hypopygium (unprepared) seems to confirm this conclusion; in a fourth ♂ example which I just examined the 1st hind cell of the wing is broadly open.

PYRRHOSIELLA, n. gen.

Fig. 7.

Eyes bare, distant, the width of the frons at the vertex is $\frac{2}{3}$ that of the eye. No ocellary setae, no external vertical setae; 1 orbital seta only directed forwards; the frontal ascending setae number 3, 1-2 advancing on the genae as far as the middle of the 2nd antennal club. Head high; face vertical, a little concave, with long antennae, the 3rd

joint of which is 5-6 times the length of the 2nd. Palps short, not projecting much beyond the half of the buccal opening; proboscis moderately thin, usually deflexed. The great vibrissae are set on the level of the buccal border. Genae and peristome narrow. Thorax with 2 pairs only of acrostical setae; the 2nd pair (intermediate pair) in front of the suture, the hind pair in front of the scutellum. Three dorso-central setae; sternopleural = 1 + 1. Scutellum with only 2 long marginal setae, one lateral, short and weak, the other subapical, long, robust and diverging, no apical setae. Abdomen: All the segments, even the ultimate, with long and erect marginal setae only;

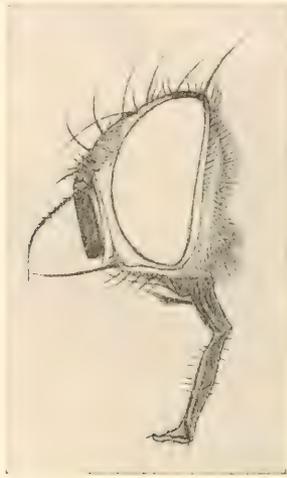


FIG. 7. ♀.

segments 1 and 2 with 2 median setae; segments 3 and 4 with a complete row; segment 1, elongate and thinned in front, thickens behind the mediocre excavation. Wings with the 1st hind cell open to the apex of the wing; the cubitus of the 4th nervure is obtuse and more or less rounded; apical transverse straight, then bent parallel to the 3rd nervure; posterior transverse distant from the cubitus; lastly the 3rd nervure is ciliated often to the neighbourhood of the small transverse. Inferior squamae very developed and with a visible border. Legs long; anterior tarsi longer than the tibiae and slender; anterior claws minute.

To sum up, the genus would fall in *Atylostoma* B. B. (see the detailed description of the genus by Brauer and Bergenstamm (Kat.

Palaearc. Dipt., 1, p. 138), if the frons did not bear an orbital seta in both sexes, which is the main characteristic of the new genus *Pyrrhosiella*.

PYRRHOSIELLA CINGULATA, n. sp.

P. cingulata is a black species. Head white, but shining black on each side of the vertex; antennae and chaeta black, the latter slightly pubescent, long and fine and thickened beyond the first third; palps thinned towards the apex, brownish; proboscis black. Thorax with a thick white indumentum on the pleurae, slight on the tergum where 2 undefined black bands fused behind the suture are visible. Scutellum black. Abdomen black with 3 white bands prolonged under the venter, on which is also a white band under segment 1. Wings greyish or brownish; hind transverse straight and nearly perpendicular; no costal spine. Squamae whitish; halteres entirely yellow. Legs black, a band of white indumentum on the external face of the thighs. This species is widely spread in Africa, from the Tropics to the South. The body is as elongated as that of the *Ocyptera*. The two sexes are quite alike and can be recognised by the examination of the genitalia only.

Length 8-9 mm.

Two examples from Natal, Durban (H. W. Bell-Marley), S. Afric. Museum; French Congo (E. Roubaud); Belgium Congo (J. Bequaert); Sierra Leone (J. J. Simpson); Gold Coast (W. H. Patterson); Nigeria (Dr. Ingram, T. F. G. Mayer, J. W. Scott-Macfie); Nyassaland, Mt. Malanje (S. A. Neave).

ASBOLEOLA, n. gen.

I deem it useful to describe here 2 species common in the tropical region, and the affinities of which with the precedent genus are manifest. The general characters are identical; the difference is in the less raised head, and shorter antennae; the width of the frons in the ♂ measures half that of the eye, and there are no orbital setae; that of the ♀ is a little wider and there are 2 orbital setae. Fourth abdominal segment with a row of small discal setae. First posterior cell opening in front of the apex of the wing. The anterior claws of the ♂, instead of being very short, are as long as the ultimate tarsal joint, or reach slightly beyond. The species are of larger size and form a group belonging to the section *Pseudodeixidae degeeriaeformis* Br. & Berg. *Pyrrhosiella* belongs to the same group.

ASBOLEOLA ELEGANS, n. sp.

♂. Head white; orbits fuscous behind, more or less tinted with flavescens golden in front, a coloration which spreads on the genae; peristome greyish blue. Thorax with the tergum somewhat shiny black, like the scutellum; shoulders and pleurae with a whitish indumentum. Abdomen with the 2 first segments dark opaque, somewhat shiny on the last ones; segments 2 and 3 reddish on the sides and on the venter; a wide, cream-white, very thick band on the anterior part of segment 3, narrowed on segment 2, slightly greyish blue and not very noticeable on segment 4. Wings moderately ample, clear at base, then soon infuscate along the nervures; posterior transverse a little oblique, weakly sinuose. Squamae whitish, the inferior with a thick white or yellowish border. Halteres wholly yellow. Legs long and black.

♀. Facies and colour of *Pyrrhosiella cingulata*, but distinguished from it by the larger size, the 2 orbital setae, the fuscous nervures of the wings and the small discal setae on the 4th abdominal segment.

Length 10–11 mm.

Nyassaland, Mt. Mlanje (S. A. Neave). Numerous examples.

ASBOLEOLA ANGUSTIPENNIS, n. sp.

I have seen ♂♂ only of this species. They differ from the preceding species merely by the longer and very narrow wings, which are more uniformly smoky, with the more oblique apical and posterior transverses, and by the abdomen, which is black, without trace of red on segments 2 and 3.

Length 11–12 mm.

The validity of this species is not well established; in a ♂ from Ruvenzori, collected by Dr. J. Bequaert, the abdomen is that of *A. angustipennis*, and the wings those of *A. elegans*. It is probable that the genus *Asboleola* is also represented in South Africa.

Belgian Congo (J. Bequaert); Sierra Leone (J. J. Simpson); Uganda, Entebbe (C. C. Gowdey).

GEN. PHOROSTOMA, Rond.

PHOROSTOMA RUTILANS, n. sp.

Several ♂ examples with the facies of the palaeartic *Gymnodexia triangulifera* Zett; but with 2 + 1 sternopleural setae, and the abdomen reddish and without black triangular spots. Segments 1 and

4 obscure, segments 2 and 3 covered with pruinose, moderately thick bright ashy grey down sectioned by a black, medio-dorsal black line. On segment 2 a bare, reddish posterior band with obscure sheen, impinges on the pruinose down on each side of the median line, advances to the neighbourhood of the anterior border, and forms there 2 changing, ill-defined spots visible only in certain light. On the sides the colour is pale red on the first 3 segments, which on the venter side are edged behind with brownish and clothed with a thick whitish pruinose down; 4th segment wholly obscure. Head as in *Phorostoma subrotundatum* Rond.; and with the antennae also obscure-testaceous at the base; palpi testaceous. Thorax ashy and with the same bands; wings identical, 4 dorso-central setae on the thorax; 1 pair of long, median marginal setae on abdominal segment 2; segment 1 bare. Legs black; anterior claws equal in length to that of the last tarsal joint; posterior tibiae moderately regularly ciliate with a long median black seta.

Length 9–11 mm.

Several ♂ examples from Natal, S. Afric. Museum.

OXYMEDORIA, n. gen.

Fig. 8.

This new genus is founded on a black species annulated with white on the abdomen, and belonging to the same group of *Pseudodexiidae degeeriaeformis*.

♀. The proboscis long, thin, directed forwards, palps a little thickened and projecting in front of the mouth. Face oblique and slightly concave; frons prominent; genae growing linear below, like the peristome. Antennae elongate, with a long and fine chaeta thickening towards the base and carrying ciliae longer than the diameter at its widest part. Two orbital setae; 1 pair of vertical setae, the inner crossed with that of the opposite side; 1 single frontal seta above the insertion of the antennae; ocellary setae wanting, or piliform. Thorax with 2 pairs only of short and weak acrostical setae as in *Pyrrhosiella*; 3 dorso-central setae; sternopleural = 2 + 1, the antero-inferior weak, in addition to the lateral seta and the long subapical setae the scutellum bears a pair of less long, crossed apical ones. Abdomen similar to that of the preceding species, but with a pair of discal setae on segments 2 and 3. On the 4th, the example has one discal seta only; this seems to point to the marginal setae alone being constant. Wings with a costal, projecting, moderately long spine, the cubitus of the 4th nervure obtuse and sub-rounded; the posterior cell open almost to the apex of

the wing. One long cilia at the base of the 3rd nervure; posterior transverse distant from the cubitus.

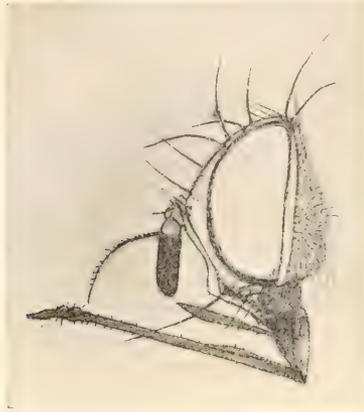


FIG. 8. ♀.

OXYMEDORIA PALPATA, n. sp.

Head white; frontal band black, narrow, width of vertex equal to $\frac{2}{5}$ of that of the eye; antennae black, a little ferruginous at base; palps and proboscis brown. Thorax with a whitish indumentum, thick on the shoulders and the pleurae, slight on the thorax, where are seen 2 black bands in front of the suture and uniting behind. Scutellum and abdomen black, the latter with a white anterior band on segments 2 and 3, but interrupted in the centre; segments 1 and 2 reddish on the venter and the sides. Wings slightly whitish, and more deeply so along the anterior border. Squamae whitish; halteres wholly yellow. Legs brownish black.

One ♀, North Nigeria, Oshogbe (Dr. T. F. G. Mayer), Entom. Res. Comm.

GEN. *OCYPTERA* Latr.

OCYPTERA FLAVIBASIS, n. sp.

Antennae short, hardly projecting beyond the middle of the epistome; wings wholly fuliginose, yellowish at the base only; abdomen light testaceous yellow, black at the base, on the hind third of the penultimate segment, and on the whole of the last, which has a pruinose whitish border. On segment 2 the median marginal pair of setae is

inserted towards the centre of the segment, and has thus become discal; 2 marginal median setae on segment 3; no discal setae on any of the segments. Head white with a broad blackish frontal band; antennae and proboscis black, the latter not elongate. Thorax black, slightly whitish pruinose above, but densely on the pleurae; tergum with the usual dark bands, 2 dorso-central setae beyond the suture; sternopleural = 1 + 1. Scutellum with a long lateral seta, and weak, apical, crossed ones (the larger of 2 ♂ examples bears also a short and weak lateral seta in front.

Wings with the cubitus of the 4th nervure obtuse and without appendage; the apical transverse straight; the posterior transverse distant from the cubitus and sinuose; the small transverse equal to the mediastinal cell of the wing. Squamae white; halteres testaceous. Legs black; anterior claws of ♂ moderately elongate.

Length 7-9 mm.

Two ♂ ♂, Transvaal, Barberton (H. Edwards); Zululand, M'Fongosi (W. E. Jones), S. Afric. Museum.

SUB-FAM. SARCOPHAGINAE.

GEN. APODAERA Macq.

APODAERA NATALENSIS, n. sp.

Head slightly yellowish, but with a white sheen on the face; frontal band wide, honey colour; orbits narrow; width of vertex equal to $\frac{2}{3}$ of that of the eye; antennae yellow, nearly filling the whole cavity, 3rd joint hardly 4 times the length of the 2nd; chaeta yellow, black at tip; palps yellow. Five orbital setae; 1 isolated vibrissa. Thorax ashy flavescent; the free border of the scutellum pale testaceous; abdomen testaceous red, the last 3 segments marked with 3 large black maculae. Legs of the same colour as the abdomen, base of anterior and intermediate femora blackish; last joints of tarsi infuscate. Wings clear; nervures pale at base; halteres whitish.

Length 5 mm.

Natal, 1 ♀, Durban, S. Afric. Museum.

APODAERA DISPAR, n. sp.

Head white; frontal band honey colour, narrower than the orbits; width of vertex equal to the diameter of an eye. Antennae yellow, stopping at the inferior third of the cavity; 3rd joint barely reaching the length of the 2nd; chaeta yellow, black at apex; palpi yellow.

Five orbital setae; 1 isolated vibrissa. Thorax iron grey with thick whitish indumentum on the pleurae, pruinose on the tergum. Scutellum as on the tergum. Abdomen black, moderately shiny, with a white band on the anterior part of segments 2 and 3, narrow on segment 4. Wings clear, nervures pale at the base; squamae whitish. Legs black; knees, anterior tibiae in their basal half, and intermediate and posterior wholly testaceous; posterior face of femora with whitish indumentum.

Length $5\frac{1}{2}$ mm.

Cape Colony, Algoa Bay (H. Brauns), Hofmuseums, Vienna.

GEN. CRATICULINA Bezzi.

CRATICULINA TAENIATA, n. sp.

Head with dark orange sheen varying according to light, antennae and chaeta black; palpi yellow. Thorax ashy flavescent, like the scutellum, the free border of which is whitish or reddish. Abdomen testaceous yellow; 4th segment black, shiny in its hind half, obscure grey and opaque in front; 3rd with a white shiny black hind band; 2nd with a similar but narrower band. In addition a black medio-dorsal band partly concealed by the pruinose down crosses segments 2 and 3, and joins again the excavation of the first, which is blackish. Legs wholly black. Wings clear, nervures pale at base; squamae whitish.

Length $5\frac{1}{2}$ mm.

One single example, seemingly a ♀, Zululand, M'Fongosi (W. E. Jones), S. Afric. Museum.

GEN. MILTOGRAMMA Meig.

MILTOGRAMMA HELVUM, n. sp.

Several examples (♂ and ♀) in the collection of the Hofmuseums of Vienna. The ♂♂ are labelled "*caffra* Wied. in litt."; the ♀♀ "*helva* B. B." It is a distinct species, easy to recognise owing to the light yellow abdomen, and the segments 2 and 3 bearing 6 black spots, the median of which are near each other, obscure, and often almost obliterated, the lateral are wider spaced and shiny; segment 4 with only 3 spots. In the ♀ the abdominal spots are narrowed and evanescent. Scutellum of the colour of the abdomen, often rufous on the free border; thorax more ashy with 4 obscure bands replaced by 3 at the back of the suture. Head yellowish-white: frontal bands

nearly orange, wider than the orbits; width of vertex = $\frac{1}{3}$ that of the eye. Antennae yellow, reaching only the lower $\frac{1}{4}$ of the cavity; 3rd joint hardly twice the length of the 2nd; antennal chaeta black; strongly thickened at the base; palpi yellow. The inferior level of the eyes is plainly below the anterior buccal border. Legs brownish; in the ♂, the joints of the anterior tarsi bear a small internal seta.

Length 7-8 mm.

Cape of Good Hope.

GEN. SETULLA Rob. Desv.

SETULLA FASCIATA Meig.; OBSCURIOR, ANGUSTIFRONS, n. vars.

The facies of the African representatives of this species is somewhat variable. The red colour of the sides disappears almost totally on the abdomen of the ♂ ♂; the orbits are golden yellow, as is also the upper part of the genae; the antennal chaeta is so elongate as to project occasionally beyond the antennae; the latter is often short, and the great vibrissae are then a little more raised. These remarks apply also to examples from the coast of Malabar, although in the ♂ ♂ the abdominal sides remain more or less broadly reddish. These variations do not justify making a new species, but one must see in the African and Asiatic forms a variety which I call "*obscurior*," the more so that on the side of the thorax the tergum becomes obscure at the back of the suture, and the scutellum wholly black, so that the dark lines so well defined in the palaeartic *S. fasciata* are only visible in the anterior part of the tergum.

Two other examples, a ♂ from South Africa, and 1 ♀ from the Belgium Congo represent another variety, *i.e. angustifrons*. Here the frons is narrower; the orbits, which are white like the face, are wider than the narrow frontal band, or at most equal in width. The antennae are of normal length.

GEN. HOPLOCEPHALELLA Vill.

HOPLOCEPHALELLA GRISEA, n. sp.

The ♂ is at once recognised from *H. signata* Vill.: (1) by its smaller size and more slender build; (2) by the different coloration of the thorax and scutellum, the latter being black and the dark grey thorax bearing 5 black bands; (3) by the ashy white head, with the frons hardly equal to $\frac{2}{3}$ the distance from eye to vertex, and not much broadening in front, so that on the whole it is narrower; the frontal

blackish band is as wide as the orbits. Antennae and palps black; antennal chaeta brownish red in the centre, the ciliae short, about equal to the thickening of the chaeta at the base. Abdomen light ashy; 1st segment black, the others with 3 series of long triangular black spots; on the venter is a row of large rectangular spots on each side of the median line. Legs black; wings hyaline; squamae whitish.

The ♀ resembles completely the same sex of *H. signata*; in both the thorax and the scutellum are light ashy grey, on the first are 3 dark bands the median of which is continued on the second; the hairs on the eyes are short; the abdomen bears the same spots as in the ♂, but they are less developed, and the spots on the venter are always in the shape of an elongated triangle. In *H. signata* ♀ the frons is broad and moderately convex; the orbits are of the same width as the frontal band.

A ♂ received from the Belgium Congo differs by the frontal bands diverging backwards; the antennal chaeta thickened as far as the centre and simply pubescent. The thorax is light ashy grey with 3 dark lines, the 2 lateral of which are indistinct as in *H. grisea* ♀. The scutellum is also light ashy, but the abdomen is similar to that of *H. grisea* ♂. This example may be abnormal; the frontal lunule is set very deeply in the frons, and there is pair of weak ocellary setae.

HOPLOCEPHALINA, n. sub-gen.

I find it necessary to make a new section in the genus *Hoplocephala* for a species having, as in *Hoplocephalella*, frontal setae complete and directed in the same manner, and the abdomen marked in both sexes with 3 rows of black triangular spots. In *Hoplocephalina* there is a total absence of acrostical setae on the thorax, except for a weak pair in front of the scutellum; the hairiness of the genae is crossed by an oblique row of setae, short on the upper part but increasing in length on the lower, and reaching almost that of the frontal setae. Eyes villose; frons wide, without ocellary setae in the ♂, but with a well-developed pair in the ♀; frontal band of about the same width in both sexes, a little narrower than the orbits in the ♂, twice narrower in the ♀.

HOPLOCEPHALINA MACULOSA, n. sp.

Ashy grey in both sexes; the abdomen, as usual, is depressed in the ♀. Thorax with 4 lines in front, replaced behind by 3, the median of

which is continued on the scutellum. The venter is moderately shiny black in the ♂, ashy on the greater part and without spots in the ♀. Head greyish in the ♂, whitish ashy in the ♀; antennae, palpi and legs black. Wings hyaline, and conforming to *Hoplocephalopsis*; the costal spine is projecting.

Length 9–10 mm.

Natal, 9 examples, Durban (H. W. Bell-Marley), S. Afric. Museum.

HOPLOCEPHALA MACULOSA, var. PUBERA, n. var.

The genus *Hoplocephala* Macq. contains numerous kinds with all kinds of facies in the ♂; but almost uniformly ashy with rows of triangular black spots on the depressed abdomen in the ♀; as shown by sundry new sub-genera established by me. As a result of this the determination of the ♀ ♀ is difficult; and as for the ♂ ♂, especially in the sub-genus *Hoplocephala s. strict.*, the varieties are not easy of recognition. There appear to be species with naked eyes; I have seen one such case, a ♂ from Entebbe, Uganda. It might be mistaken for *H. maculosa*, yet it is distinct owing to the genae with sparse and short hairs, and the weak setae of the oblique row; the median black spot of the 3rd abdominal segment is replaced by 2 black parallel bands set close to each other. On the ventral side, the presence is noticeable of a long pilosity which starting from the posterior border of segment 3 and from the sides of segment 4, is directed towards the median line of the latter and forms there an elongate tuft in front of the genitalia.

GEN. HOPLISA Rond.

HOPLISA NOVICIA, n. sp.

Similar to *H. xanthocephala* Bez. and of the same size; differs only by the head. The latter seen in profile is broader than high; the peristome is almost half less wide; the antennae are wholly black; the orbits are greyish blue, the genae whitish ashy, the median frontal band and the medians orange yellow.

Transvaal, Barberton, 2 examples (H. Edwards), S. Afric. Museum; Cape of Good Hope, 1 example, Hofmuseums, Vienna. I have several examples of *H. xanthocephala* Bez. from Cape Town, S. Afric. Museum.

FAM. ANTHOMYIDÆ.

SUB-FAM. MUSCINÆ.

GEN. PYRELLIA Rob. Desv.

PYRELLIA NUDISSIMA Loew, AURANTIACA, n. var.

Differs from the typical form by the violet with purpurine sheen of the thorax and scutellum; the abdomen wholly testaceous orange, the antennae, palpi and legs brownish red, but the latter are black at the knees and on the tarsi, and the hyaline wings having an anterior black border which fills first the mediastinal cell, becomes interrupted, and reappears as far as the 1st posterior cell inclusively after making a notch beyond the apex of the 2nd longitudinal nervure.

One ♀, Natal, Durban (W. Haygarth), S. Afric. Museum.

PYRELLIA NUDISSIMA Loew, LIMBATA, n. var.

Near the preceding variety comes another ♀ from the Belgium Congo communicated by Dr. J. Bequaert.

Similar to the typical form, but the wings show a broad anterior border extending on the space included between the edge of the wings and the 3rd longitudinal nervure, and ending in the 1st posterior cell.

GEN. MUSCA, Lin.

MUSCA NATALENSIS, n. sp.

According to the Authors the ciliation of the 3rd nervure to beyond the small transverse nervure on the inferior face of the wings belongs exclusively to *Musca lusoria* Wied. It is not so, however, and there are other species which share this characteristic, namely *M. aethiops* Stein (although it is not mentioned by the author); *M. pattoni* Aust.; and also the larviparous species mentioned by Roubaud under the name of *M. corvina*, and which, after comparison with hatched examples, seems to me to be a varietal form of *M. pattoni*, etc. I know also of two African species in which this ciliation occurs; they both belong to the group of the genus *Musca* in which the thorax has two wide black bands only. The first is described here as *M. natalensis*.

Size and shape of *M. lusoria*; head similar; thorax and scutellum shiny black; a white median band on the tergum, which after the

suture narrows and disappears before reaching the scutellum. On the sides is another whitish band, broad from the shoulders to the suture and narrow behind. Abdomen testaceous yellow; excavation of segment 1 black, a narrow medio-dorsal similarly coloured band springs from it, crosses the segment, spreads a little upon the first incision in the shape of a thin black line, intersects further the 2nd and 3rd segments, being either whole or reduced to a triangular spot on each, and ends in a transverse black line on the 3rd incision.

On each side of this band there exists an elongated spot with white sheen; on segment 4, the absent black band is occupied by 4 spots with whitish sheen. Hypopygium black. Wings as in *M. lusoria*; squamae fulvous. Wings as in *M. lusoria*, halteres fulvous. Legs black, robust, anterior claws moderately elongated.

Four ♂♂, Natal, Durban (H. W. Bell-Morley, W. Haygarth), S. Afric. Museum.

MUSCA CONGOLENSIS, n. sp.

This is the second species mentioned above, and founded on a ♂ example.

Smaller and less robust than *M. natalensis*; the facies is almost wholly that of *M. humilis* Wied. (= *angustifrons* Thoms.). It differs from the latter by the spaced ciliae of the 3rd nervure on the inferior side of the wing which are situated beyond the small transverse nervure; it differs also from *M. natalensis* by the abdomen, similar to that of *M. humilis*; that is to say, the 1st segment is wholly black above. *M. congolensis* ♂ is also noticeable by its very elongated anterior claws and by the apical part of the protarsus of the intermediary legs, which is gradually thickened on the inner side.

One ♂, Belgium Congo (J. Bequaert).

Signor Bezzi has endeavoured to give a table of the African species of the genus *Musca* (Boll. Labor. Zool. Gen. and Agr. vi, 1911, p. 85, Portici) from the descriptions alone of ancient authors. I may be allowed to point out how little reliance is to be placed on the interpretation of these descriptions, too often common-place, by mentioning that *M. albomaculata* Macq. type ♀ = *M. dorsomaculata* Macq. types ♂ — ♀ = *convexifrons* Thoms. One ♂ and one ♀ labelled *M. rufiventris* (No. 73) in Macquart's handwriting are the same species. They bear a blue label, denoting their African origin, and thus doubtless differ from *M. rufiventris*, described by Macquart as a Brazilian species.

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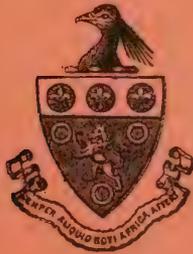
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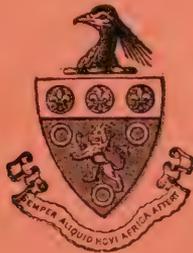
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