ANNALS

OF THE

SOUTH AFRICAN MUSEUM

VOLUME XVII.

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SOUTH AFRICAN MUSEUM

W. H. O.
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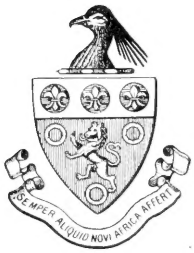

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1.—*Descriptions of South African Micro-Lepidoptera.* — By E. Meyrick, B.A., F.R.S.

The following species are described from specimens forwarded to me through the kindness of Dr. L. Péringuey; the types are in the South African Museum.

PTEROPHORIDAE.

Gen. TRICHOPTILUS Walsgh.

Trichoptilus viduus, n. sp.

♂ ♀. 14–15 mm. Head and thorax fuscous with some whitish scales. Palpi fuscous, apex of joints white. Abdomen ochreous-grey, with lateral row of white spots. Forewings cleft to middle, segments slender; fuscous irrorated with darker; a blackish dot in disc at $\frac{1}{4}$, and two transversely placed at base of cleft; narrow irregular white transverse bars on both segments at $\frac{1}{3}$ and $\frac{2}{3}$ of their length: cilia grey mixed with blackish towards base, with white spots on margins of markings and above and below apex of each segment, on dorsum with blackish scale-projections between these, tornal white patch largest. Hindwings dark fuscous, third segment grey irrorated with dark fuscous; cilia fuscous, on dorsum with a rather small blackish scale-projection at $\frac{2}{3}$ and a few white scales before this.

Cape Colony, Hottentots Holland Mts., 4000 ft., Caledon (H. K. Barnard); two specimens.

Gen. PTEROPHORUS Geoffr.

Pterophorus illutus, n. sp.

♀. 21 mm. Head and thorax whity-brownish, face infuscated. Palpi slender, fuscous. Abdomen pale brownish, dorsally suffused with whitish towards base. Forewings with first segment narrow, pointed, second nearly equal, termen extremely oblique, sinuate; pale brownish-ochreous, sprinkled with dark fuscous towards costa and dorsum as far as cleft; a dark fuscous dot in disc at $\frac{1}{3}$; an oblique mark of dark fuscous suffusion on base of cleft, edged with some whitish suffusion on edge of cleft; a dark fuscous mark on costal edge beyond base of cleft, preceded and followed by whitish suffusion on costal edge; a dark fuscous dot on costa midway between this and apex, and one close beneath apex; a streak of dark brown suffusion irrorated with blackish running through middle of second segment and expanded along termen: cilia fuscous, becoming pale greyish-ochreous externally on termen. Hindwings and cilia dark grey.

Natal, Durban, in March (W. H. Bell-Marley); one specimen.

TORTRICIDAE.

Gen. EPICHORISTA Meyr.

Epichorista niphosema, n. sp.

♂. 15–16 mm. Head, palpi, and thorax rather dark fuscous, somewhat mixed with white. Antennal ciliations 1. Abdomen dark grey, anal tuft white. Forewings elongate, costa gently arched, apex obtuse, termen slightly rounded, oblique; rather dark fuscous; markings formed by undefined irregular white suffusion, viz. some cloudy marbling towards costa on basal third, a fascia from before middle of costa to middle of dorsum, furcate dorsally, and a less-marked fascia from $\frac{2}{3}$ of costa to tornus: cilia white, with a fuscous subbasal line. Hindwings white, sprinkled with grey in disc, towards costa, and along terminal edge, and suffused with dark grey towards apex; cilia snow-white.

Cape Colony, Hottentots Holland Mts., 4000 ft., Caledon (Barnard); two specimens.

EUCOSMIDAE.

Gen. SPILONOTA Steph.

Spilonota sinuosa, n. sp.

♀. 17–18 mm. Head, palpi, and thorax fuscous. Abdomen grey.

Forewings elongate, rather narrow, posteriorly slightly dilated, costa gently arched, apex obtuse, termen nearly straight, oblique; light brown; costal edge dotted with fuscous and dark fuscous, with four small fuscous spots on posterior half; dorsal area irregularly clouded with fuscous and mixed with dark fuscous, appearing to form very undefined darker blotches towards middle and before tornus; a bisinuate black streak from middle of disc to apex, thickest beyond its middle, with a slender branch running from the thickening to termen below middle: cilia grey mixed with darker and sprinkled with whitish points. Hindwings and cilia grey.

Natal, Durban (Marley); two specimens. I am now disposed to think that I was wrong in referring any African examples to *ejectana*, and that they may perhaps have been the present or an allied species.

GELECHIADAE.

Gen. GELECHIA Zell.

Gelechia triscelis, n. sp.

♀. 17 mm. Head white. Palpi white, base of second joint and two bands of terminal joint black. Thorax white, shoulders and a narrow dorsal stripe widely furcate posteriorly black. Abdomen whitish. Forewings elongate, rather narrow, costa gently arched, apex pointed, termen very obliquely rounded; white; markings black; a small mark on base of costa; an oblique triangular spot beyond this, its apex just touching anterior angle of a trapezoidal blotch on dorsum before middle; a semioval spot on costa before middle; an elongate spot in disc beyond middle, with a dot beneath its anterior extremity; a spot on costa at $\frac{2}{3}$, and a small spot on tornus opposite; small spots in middle of termen and on costa before apex: cilia grey (imperfect). Hindwings and cilia grey.

Natal, Durban, in April (Marley); one specimen. Singularly distinct and conspicuous.

Gelechia sarcographa, n. sp.

♂. 16 mm. Head ochreous-whitish. Palpi ochreous-whitish, extreme base of second joint dark fuscous, anterior edge of terminal joint dark fuscous except towards base. Thorax dark grey, with a broad whitish-ochreous dorsal stripe edged on sides with black. Abdomen grey. Forewings elongate, narrow, costa gently arched, apex obtuse-pointed, termen very obliquely rounded; dark grey, somewhat mixed

with pinkish towards costa; a broad blackish streak from base of dorsum to fold at $\frac{2}{5}$ of wing, marked anteriorly with a pale ochreous dot, and cut posteriorly by an oblique pale ochreous mark which is continued by a similar dull rosy-pink mark to costa at $\frac{4}{5}$: cilia grey sprinkled with blackish towards base. Hindwings rather dark grey; cilia grey.

Cape Colony, Dunbrody, in March (Fath. A. Vogt); one specimen.

Gen. PARAPSECTRIS Meyr.

Parapsectris anxia, n. sp.

♂. 13 mm. Head and thorax whitish-ochreous. Palpi white, basal half of second joint dark fuscous, terminal joint as long as second. Abdomen grey, two basal segments whitish-ochreous. Forewings elongate-lanceolate, acute; whitish-ochreous; costal and terminal edge finely irrorated with black: cilia grey suffused with whitish-ochreous towards base and sprinkled with black specks. Hindwings grey, darker posteriorly; cilia grey.

Cape Colony, Prince Albert, in December (S. H. Haughton); one specimen.

Gen. POLYHYMNO Chamb.

Polyhymno multifida, n. sp.

♀. 9 mm. Head ochreous-whitish. Palpi ochreous-whitish, second joint marked above with blackish towards base, terminal joint with anterior edge blackish. Thorax dark fuscous with three ochreous-white dorsal stripes and two others on patagia, central one narrowest. Abdomen grey, beneath white. Forewings elongate, rather narrow, costa slightly arched, apex produced, pointed, termen concave, very oblique; dark fuscous; markings ochreous-white; a fine streak along costa from base to middle, thence running very obliquely to near middle of termen, posteriorly receiving at acute angles two oblique streaks (first postmedian) from above fold; streaks from base just above and below fold, upper posteriorly finely bifid, its lower branch finely connected with postmedian streak, lower shorter; a slender subdorsal streak from base to an oblique thick streak which almost touches base of postmedian streak, thence running along fold to termen; a slender dorsal streak throughout; a fine acute oblique streak from $\frac{2}{3}$ of costa to just by apex of preceding costal streak; apical prominence suffused with ochreous: cilia white, on costa with three oblique dark fuscous lines, beneath apex with a black basal dot. Hindwings grey; cilia light grey.

Zululand, Mfongosi (W. E. Jones); one specimen.

Gen. DICHOMERIS Hübn.

Dichomeris aulotoma, n. sp.

♂. 20 mm. Head whitish, face and centre of crown tinged with fuscous. Palpi white, second joint with long dense tuft beneath and rough projecting scales towards apex above, dark fuscous except along apical edge, terminal joint with anterior edge dark fuscous. Antennal ciliations 1. Thorax white, patagia fuscous. Forewings elongate, narrow, costa slightly arched, faintly sinuate towards middle, apex pointed, termen faintly sinuate, very oblique; rather dark fuscous; a white streak along costa from base nearly to $\frac{1}{3}$, and a subcostal streak from beyond extremity of this to costa before apex; a white subdorsal streak rising from base of dorsum and running to termen beneath apex, posteriorly somewhat ragged: cilia fuscous, white on extremity of both streaks and towards base on lower part of termen. Hindwings and cilia grey.

Cape Colony, Capetown, Rondebosch; one specimen, dated November, 1868. This interesting and very distinct species is nearly allied to the European *marginella*.

OECOPHORIDAE.

PICROGENES, n. g.

Head with appressed scales, sidetufts small; ocelli present; tongue developed. Antennae $\frac{5}{6}$, in ♂ moderately ciliated and also clothed with pubescence above, basal joint moderate, with pecten. Labial palpi long, curved, ascending, second joint reaching base of antennae, thickened with appressed scales, rough towards apex beneath, terminal joint much shorter than second, thickened with scales, somewhat loose anteriorly, pointed. Maxillary palpi very short. Posterior tibiae clothed with long hairs above. Forewings with 2 and 3 approximated from angle, 4 absent, 7 and 8 stalked, 7 to termen, 11 from middle. Hindwings 1, elongate-ovate, cilia 1; 3 and 4 stalked, 5 rather approximated to 6, 6 and 7 parallel.

Near *Heterozyga*.

Picrogenes bactrospila, n. sp.

♂. 15 mm. Head, palpi, thorax, and abdomen whitish-ochreous. Forewings elongate, rather narrow, costa moderately arched, apex

pointed, termen extremely obliquely rounded; whitish-ochreous, with a few scattered dark fuscous scales, costal $\frac{2}{5}$ suffused with fuscous; stigmata black, plical rather beyond first discal, second discal represented by a short fine longitudinal line: cilia whitish-ochreous. Hindwings grey-whitish; cilia ochreous-whitish.

Cape Colony, Cape Town, in December (Dr. L. Péringuey); one specimen.

DOXOMERES, n. g.

Head with appressed scales, sidetufts somewhat raised; ocelli present; tongue short. Antennae (broken) in ♂ rather shortly ciliated, basal joint moderate, without pecten. Labial palpi long, recurved, second joint reaching base of antennae, thickened with appressed scales, somewhat rough beneath, terminal joint much shorter than second, roughened with scales anteriorly, acute. Maxillary palpi very short. Forewings with 1*b* furcate, 2 and 3 stalked from angle, 7 absent, 11 from middle. Hindwings 1, elongate-ovate, cilia $\frac{3}{4}$; 3 and 4 connate, 5 parallel to 4, rather widely remote from 6 towards base, 6 and 7 nearly parallel.

Perhaps allied to *Elaeonoma*.

Doxomeres diaxantha, n. sp.

♂. 13 mm. Head, palpi, and thorax yellow-ochreous, tip of palpi dark fuscous. Antennal ciliations $\frac{2}{3}$. Abdomen whitish-ochreous. Forewings elongate, rather narrow, costa gently arched, apex obtuse, termen obliquely rounded; yellow-ochreous: cilia concolorous. Hindwings and cilia whitish-ochreous.

Transvaal, Lydenburg, in January (Kroeger); one specimen.

Gen. CRYPTOLECHIA Zell.

Cryptolechia tetrasticta, n. sp.

♀. 18 mm. Head, palpi, and thorax pale ochreous, terminal joint of palpi shorter than second. Forewings elongate, costa moderately arched, apex pointed, termen very obliquely rounded; pale ochreous; stigmata black, plical rather beyond first discal, an additional dot midway between second discal and tornal margin; a few dark fuscous specks on costal margin towards apex: cilia pale ochreous. Hindwings rather pointed, whitish-ochreous; cilia whitish-ochreous.

Natal, "Durban," in September (Marley); one specimen.

Cryptolechia xanthosarca, n. sp.

♂. 27 mm. Head grey, face centrally suffused with whitish, hairs of crown forming two projecting tufts between antennae. Palpi rosy, upper part of second joint, and terminal joint except apex suffused with grey. Thorax grey, slightly crimson-tinged. Abdomen grey. Forewings elongate, moderate, posteriorly dilated, costa moderately arched, apex obtuse, termen rounded, rather oblique; light dull crimson-purplish, costal edge suffused with light crimson; an irregular suffused light yellowish patch extending along dorsum from near base to about $\frac{2}{3}$, and reaching about $\frac{2}{3}$ across wing, ground colour darker above this; discal stigmata represented by faint darker suffusion, plical by a small suffused pale dull crimson spot within the yellow patch: cilia light dull crimson. Hindwings dark grey; cilia grey.

Transvaal, Johannesburg, in February (Feltham); one specimen. Allied to *roseoflavida*, but much larger, duller, and less distinctly marked.

AREOCOSMA, n. g.

Head smooth; ocelli present; tongue developed. Antennae $\frac{4}{5}$, in ♂ simple, basal joint very elongate, without pecten. Labial palpi moderate, curved, ascending, second joint hardly reaching base of antennae, with appressed scales, slightly rough beneath, terminal joint half second, scaled, acute. Maxillary palpi rudimentary. Posterior tibiae clothed with hairs above. Forewings with 2 from near angle, 7 and 8 stalked, 7 to costa, 11 from before middle. Hindwings under 1, ovate-lanceolate, cilia over 1; 3 and 4 connate, 5–7 nearly parallel; in ♂ with long dense subcostal hairpencil from base covered by forewings.

Allied to *Diocosma*.

Areocosma orsobela, n. sp.

♂. 13 mm. Head and palpi ochreous-whitish. Thorax whitish-ochreous, faintly rosy-tinged, with central and lateral stripes tinged with grey. Abdomen grey-whitish. Forewings elongate, rather narrow, costa moderately arched, apex acute, termen faintly sinuate, extremely oblique; rather dark brownish-grey; a rather broad straight whitish-ochreous median streak partially tinged with rosy from base to apex, with a fine black dash on its upper margin at $\frac{2}{5}$ (probably representing first discal stigma); a whitish-ochreous line suffused with pale rosy along basal third of dorsum; some whitish-ochreous suffusion, slightly rosy-tinged, extending along dorsum from beyond middle to tornus: cilia greyish, mixed with dark fuscous towards

base, at apex with whitish-ochreous bar. Hindwings whitish, round margin of cell especially towards middle of wing irregularly sprinkled with dark grey; subcostal hairpencil whitish-ochreous; cilia ochreous-whitish. Forewings beneath with an irregular whitish-ochreous patch extending over cell, surrounded with dark grey suffusion.

Cape Colony, Hottentots Holland Mts., 4000 ft., Caledon (Barnard); one specimen.

Gen. DIOCOSMA Meyr.

Diocosma molybdela, n. sp.

♂. 14 mm. Head ochreous-white. Palpi white, anteriorly suffused with rose-pink, second joint rough-scaled beneath towards apex. Thorax ochreous-white with two minute rose-pink dots on anterior edge, and a slender fuscous bar before posterior extremity. Abdomen ochreous-whitish. Forewings elongate, costa gently arched, apex tolerably pointed, termen rounded, rather strongly oblique; pale whitish-yellowish; costal edge rose-pink; a dark ferruginous-fuscous line from $\frac{1}{4}$ of costa to dorsum near base, followed on dorsal half by a triangular patch of three suffused white spots, beyond which is a spot of fuscous suffusion on dorsum; costal area from $\frac{1}{4}$ to $\frac{3}{4}$ suffused with fuscous, marked with eight blue-leaden-metallic dots arranged in two rows, lower margined with scattered black scales; within this a pale yellowish triangular spot on middle of costa, its edges marked by slender brown lines extended to dorsum and enclosing a triangular space suffused with white, preceded by two leaden-metallic dots edged with some black scales, lower one raised, and followed by one dot in disc and a white patch beneath this; apical area beyond this forming a pale yellow patch with a dark brown streak running round costa and termen, marked on termen with several blue-leaden-metallic partially connected dots: cilia pale yellow, on costa rose-pink suffused with leaden-grey towards base, on termen dark rosy-grey at base, towards tornus pale rosy-grey. Hindwings ochreous-whitish; cilia whitish-yellowish.

Cape Colony, Dunbrody, in January (Fath. A. Vogt); one specimen.

Gen. THYESTARCHA Meyr.

Thyestarcha acrogypsa, n. sp.

♂. 12 mm. Head whitish. Palpi whitish-ochreous, terminal joint half second. Thorax whitish-ochreous, shoulders with a reddish-ochreous spot. Abdomen ochreous-whitish. Forewings elongate,

rather narrow, costa anteriorly moderately, posteriorly slightly arched, apex pointed, termen faintly sinuate, very oblique; glossy light ochreous, suffused with deep reddish-ochreous on costal half and towards termen; extreme costal edge white towards middle: cilia ochreous-yellowish, above apex reddish-tinged. Hindwings and cilia whitish-ochreous; a long ochreous-whitish hairpencil lying along costa beneath forewings.

Cape Colony, Laingsburg, in July (R. M. Lightfoot); one specimen.

XYLORYCTIDAE.

Gen. EPIMACTIS Meyr.

Epimactis sandycopa, n. sp.

♀. 19 mm. Head white. Palpi whitish tinged with crimson, especially on terminal joint. Thorax white with faint rosy tinge. Abdomen whitish. Forewings elongate, moderate, costa moderately arched, apex rounded-obtuse, termen rounded, little oblique; 3 and 4 stalked; whitish-grey-ochreous tinged with rosy; costal edge pale crimson; a slender light rosy-fuscous streak along basal fourth of dorsum; first discal stigma minute, dark fuscous; an irregular rosy-brownish fascia from costa beyond middle to dorsum before tornus, attenuated and anteriorly indented in middle, undefined posteriorly and followed by some scattered rosy and fuscous scales; a narrow rosy-brownish fascia round apical portion of costa and upper part of termen, broadest at apex and attenuated to extremities: cilia white, with a few rosy-fuscous scales at base. Hindwings and cilia whitish.

Natal, Durban, in December (Leigh); one specimen.

COPROMORPHIDAE.

Gen. COPROMORPHA Meyr.

Copromorpha aeruginea, n. sp.

♀. 17 mm. Head whitish-ochreous, forehead with a bar of dark fuscous irroration. Palpi whitish-ochreous irregularly irrorated with blackish. Thorax whitish-ochreous, spotted on shoulders and posteriorly with dark fuscous. Abdomen dark grey, basal segment whitish-ochreous. Forewings elongate, posteriorly dilated, costa anteriorly gently, posteriorly moderately arched, apex obtuse, termen slightly

rounded, rather oblique; dark fuscous, mixed with prismatic and coppery-metallic scales; various small irregular obscure pale ochreous spots raised posteriorly, viz. two oblique series of three each towards base, one beneath middle of costa, two transverse series of three or four each beyond this, an irregular striga from tornus reaching half across wing and a rather oblique one from costa opposite, these two last and an apical mark tinged with ferruginous-orange; a pearly-whitish longitudinal streak from middle of disc to upper part of tornal striga interrupted by these spots; an irregular whitish streak preceding lower part of costal striga and continued by some dots towards tornus: cilia fuscous (imperfect). Hindwings rather dark fuscous; cilia pale fuscous, with darker subbasal shade.

Natal, Durban, in April (Marley); one specimen.

GLYPHIPTERYGIDAE.

Gen. GLYPHIPTERYX Hübn.

Glyphipteryx idiomorpha, n. sp.

♂. 15 mm. Head and thorax dark purplish-fuscous. Palpi blackish, second joint with two and terminal joint with one whorl of very finely white-tipped scales, terminal joint white posteriorly towards apex. Abdomen dark grey. Forewings elongate, costa gently arched, apex obtuse, termen almost straight, oblique; dark purplish-fuscous; markings whitish; a straight narrow slightly oblique fascia before middle, and another at $\frac{2}{3}$, its posterior edge prominent in middle; a transverse mark from costa before apex; a short longitudinal mark towards termen in middle; a streak along termen throughout, narrowly interrupted in middle: cilia ochreous-whitish, with two dark fuscous lines. Hindwings and cilia rather dark grey.

Cape Colony, Hottentots Holland Mts., 4000 ft., Caledon (Barnard); one specimen. A quite peculiar species.

SCYTHRIDAE.

Gen. SCYTHRIS Hübn.

Scythris erudita, n. sp.

♂. 13 mm. Head yellowish-bronzy. Palpi whitish. Thorax whitish-ochreous. Abdomen ochreous-whitish, segments laterally

marked with black at base, anal tuft ochreous-yellowish. Forewings elongate-lanceolate, acute; glossy whitish-ochreous; plical and second discal stigmata black: cilia whitish-ochreous. Hindwings with 4 and 5 stalked; light grey; cilia light greyish-ochreous.

Rhodesia, Bulawayo (H. C. Pead); one specimen. Allied to *melanopleura*.

HYPONOMEUTIDAE.

MOROTRIPTA, n. g.

Head shortly rough-scaled; ocelli present; tongue rudimentary. Antennae (broken) in ♂ simple, basal joint moderate, without pecten. Labial palpi rather long, curved, subascending, second joint thickened with dense scales, dilated beneath and forming a short apical projection, terminal joint hardly half second, somewhat thickened with scales, pointed. Maxillary palpi obsolete. Posterior tibiae with appressed scales. Forewings with 1*b* furcate, 2 and 3 stalked from angle, 7 to termen, 11 from middle. Hindwings 1, narrowly elongate-ovate, cilia over 1; 3 and 4 approximated from angle of cell, 5 rather curved, parallel to 4, transverse vein very oblique inwards from 5 to 6, 6 and 7 long-stalked.

Possibly related to *Gymnogramma*, though dissimilar in appearance.

Morotripta fatigata, n. sp.

♂. 12 mm. Head and thorax light grey suffused with white. Palpi grey, terminal joint white. Abdomen whitish-grey. Forewings elongate, narrow, costa gently arched, apex obtuse, termen very obliquely rounded; fuscous, suffusedly irrorated with white; stigmata large, cloudy, darker fuscous, plical obliquely beyond first discal: cilia light fuscous mixed with whitish. Hindwings and cilia light grey.

Rhodesia, Bulawayo (H. C. Pead); one specimen.

ZYGOGRAPHA, n. g.

Head shortly rough-haired; tongue short. Antennae $\frac{3}{4}$, in ♂ shortly ciliated, basal joint moderate, without pecten. Labial palpi moderate, porrected, loosely scaled, terminal joint shorter than second, hardly pointed. Maxillary palpi obsolete. Posterior tibiae with appressed scales. Forewings with 2 from angle, 7 to termen, 11 from middle, secondary cell defined. Hindwings 1, elongate-ovate, cilia $\frac{3}{4}$; 2–7 separate, 5 and 6 somewhat approximated towards base.

Zygographa asaphochalca, n. sp.

♂. 15 mm. Head, palpi, and thorax dark fuscous, finely speckled with whitish, appearing grey. Abdomen whitish-grey. Forewings elongate, costa moderately arched, apex tolerably pointed, termen faintly sinuate, rather strongly oblique; light violet-grey sprinkled with dark fuscous; markings suffused, light brassy-ochreous-yellowish; blotches on basal fifth of costa and dorsum, latter confluent with a curved transverse fascia at $\frac{1}{3}$, not reaching costa; some indistinct suffusion towards dorsum beyond middle, and a spot on tornus; transverse blotches in disc at $\frac{2}{3}$ and towards termen; a median streak of white suffusion from base, interrupted by the yellowish markings but becoming broader and more distinct posteriorly, where it forms irregular white patches between them: cilia grey mixed with white (imperfect). Hindwings and cilia grey.

Cape Colony, Hottentots Holland Mts., 4000 ft., Caledon (Barnard); one specimen.

GRACILARIADAE.

Gen. ACROCERCOPS Wallgr.

Acrocercops praegemina, n. sp.

♂. 8 mm. Head, palpi, and thorax white, patagia fuscous. Abdomen light grey. Forewings very narrowly lanceolate, long-pointed; fuscous, towards apex and along termen suffused with brownish-ochreous; three triangular white dorsal blotches edged with a few black scales, first two reaching more than half across wing, first at $\frac{1}{4}$ of wing, slenderly produced along dorsum to base, connected with costa by a slender bar, second median, third smaller, tornal; three white black-edged costal dots, first between first two dorsal blotches, second opposite median blotch, third rather before tornal; a fine rather oblique white black-edged line at $\frac{5}{6}$ of wing; a white apical spot partly in costal cilia, edged with black and cut transversely by a black strigula: cilia otherwise grey, with a white spot on terminal extremity of anteapical line. Hindwings grey; cilia light grey.

Cape Colony, Capetown, in May (Lightfoot); one specimen.

LYONETIADAE.

Gen. HIEROXESTIS Meyr.

Hieroxestis indiscreta, n. sp.

♀. 18–19 mm. Head, palpi, and thorax bronzy-ochreous. Abdomen light greyish-ochreous. Forewings narrow-lanceolate, apex produced, acute; bronzy-ochreous: cilia pale ochreous. Hindwings brassy-whitish-ochreous, more whitish towards base; cilia whitish-ochreous.

Cape Colony, Capetown, in January; two specimens.

NEPTICULIDAE.

Gen. NEPTICULA Heyd.

Nepticula porphyreuta, n. sp.

♂. 4 mm. Head orange-yellow, collar white. Antennae dark grey, eyecaps white. Thorax shining purplish-grey. Abdomen dark grey. Forewings lanceolate; light shining bronzy-grey mixed with purplish; a narrow slightly oblique silvery white fascia at $\frac{2}{3}$; apical area beyond this wholly deep purple: cilia dark grey, round apex suffused with deep purple on basal half, with a silvery-white basal dot on dorsal extremity of fascia. Hindwings and cilia dark grey.

Natal, Durban (Marley); two specimens.

TINEIDAE.

Gen. TINEA Lin.

Tinea obnoxia, n. sp.

♂. 22 mm. Head whitish-ochreous. (Labial palpi broken.) Antennae dark fuscous. Thorax dark purplish-fuscous. Abdomen fuscous. Forewings elongate, narrow, costa gently arched, apex obtuse, termen rounded, rather strongly oblique; dark purplish-fuscous: cilia rather lighter. Hindwings rather dark purplish-bronzy-fuscous; cilia greyish, whitish-tinged towards tips.

Cape Colony, Dunbrody, in March (Fath. A. Vogt); one specimen. Allied to *oenopis*, but larger, and at once distinguished by the dark antennae.

EPALEURA, n. g.

Head with short loosely appressed hairs, rather rough on crown; ocelli present; tongue absent. Antennae $\frac{3}{5}$, in ♂ moderately ciliated, basal joint moderate, with rough pecten of scales. Labial palpi short, porrected, loosely scaled, terminal joint shorter than second, obtuse. Maxillary palpi absent. Posterior tibiae with appressed scales. Forewings with 1*b* furcate, 2 from angle, 4 and 5 connate, 7 absent, 11 from before middle. Hindwings 1, elongate-ovate, cilia $\frac{1}{2}$; 3 absent, 4 and 5 rather approximated, 6 and 7 rather approximated.

Allied to *Sapheneutis*.

Epaleura salaria, n. sp.

♂. 16 mm. Head white. Palpi grey, mixed with whitish. Thorax grey sprinkled with white. Abdomen whitish-grey. Forewings elongate, costa gently arched, apex obtuse, termen obliquely rounded; light ochreous-grey suffusedly irrorated with white: cilia similarly coloured. Hindwings whitish-grey; cilia ochreous-whitish.

Cape Colony, King William's Town (Lightfoot); one specimen.

CATHALISTIS, n. g.

Head clothed with rough projecting hairs; tongue short. Antennae $\frac{1}{2}$, in ♂ pubescent-ciliated, basal joint short, without pecten. Labial palpi moderate, straight, porrected, loosely scaled, terminal joint shorter than second, tolerably pointed. Maxillary palpi moderate, filiform, folded. Posterior tibiae clothed with rough hairs above. Forewings with 1*b* furcate, 2 from angle, 7 to termen, 11 from $\frac{1}{4}$. Hindwings 1, elongate-ovate, cilia $\frac{2}{5}$; 2 widely remote, 3 from angle, 3–7 tolerably remote, 3 and 4 as branches of lower parting-vein, transverse vein inwardly oblique from 5 to 7.

Cathalistis orinephela, n. sp.

♂. 26 mm. Head whitish, face and palpi whitish-grey. Thorax and abdomen grey-whitish. Forewings elongate, rather narrowed anteriorly, costa gently arched, apex obtuse-pointed, termen faintly sinuate, rather strongly oblique; grey, suffusedly irrorated with whitish: cilia whitish. Hindwings whitish-grey; cilia whitish.

Cape Colony, Hottentots Holland Mts., 4000 ft., Caledon (Barnard); one specimen.

Gen. MELASINA Boisd.

Melasina indigena, n. sp.

♂. 20–21 mm. Head, palpi, antennae, thorax, and abdomen dark fuscous; palpi very short, slender, rough-haired at base; antennal pectinations 5. Forewings elongate, moderate, costa moderately arched, faintly sinuate in middle, apex obtuse, termen slightly rounded, rather oblique; dark fuscous, very obscurely darker-strigulated: cilia fuscous. Hindwings dark fuscous; cilia grey, with dark fuscous subbasal shade.

Cape Colony, Hottentots Holland Mts., 4000 ft., Caledon (Barnard); two specimens.

PARAPTICA, n. g.

Head loosely rough-haired; ocelli absent; tongue very short. Antennae $\frac{3}{5}$, in ♂ somewhat stout, simple, basal joint moderate, with strong pecten. Labial palpi long, porrected, clothed with long dense loosely-projecting scales, joints concealed. Maxillary palpi obsolete. Posterior tibiae clothed with very long fine hairs above. Forewings with small tufts of scales on surface; 1*b* furcate, 2 from angle, 3 and 4 approximated at base, 7 and 8 stalked, 7 to costa, 11 from before middle. Hindwings 1, elongate-ovate, almost pointed, cilia $\frac{4}{5}$; 2–4 parallel, 5 and 6 nearly approximated at base, 7 parallel.

Allied to *Hapsifera*.

Paraptica concinerata, n. sp.

♂. 20–23 mm. Head white. Palpi white, irrorated externally with dark fuscous. Thorax white, sprinkled with blackish, shoulders with spot of blackish suffusion. Abdomen light fuscous, anal tuft pale greyish-ochreous. Forewings elongate, narrow, costa gently arched, apex tolerably pointed, termen very obliquely rounded; white finely irrorated with dark fuscous, appearing greyish; markings formed of black irroration with more or less light brown suffusion; a mark beneath costa near base, and an oblique mark beneath this in disc; a dot beneath fold at $\frac{1}{4}$ of wing, and several along costa; stigmata represented by irregular roundish spots, plical slightly beyond first discal; a slightly curved transverse line towards apex; some marginal dots round apex and termen: cilia whitish irrorated with grey and blackish. Hindwings grey; cilia whitish-ochreous-grey.

Cape Colony, Dunbrody, in January and March (Fath. A. Vogt); two specimens.

Gen. AMYDRIA Cl.

Amydria peloplaca, n. sp.

♂. 21 mm. Head whitish-ochreous. Palpi whitish, externally suffusedly irrorated with dark fuscous except at base and apex of joints, second joint with numerous lateral bristles, terminal joint about half second. Thorax grey, patagia ochreous-whitish except towards shoulders. Abdomen pale greyish-ochreous. Forewings elongate, rather narrow, costa gently arched, apex obtuse, termen very obliquely rounded; 7 and 8 short-stalked in one wing only; grey suffused with dark fuscous, tending to form streaks on veins; an oval patch of ochreous-brown suffusion occupying posterior third of cell, an elongate patch beneath cell throughout, and some undefined suffusion between veins beyond cell: cilia whitish-ochreous irrorated with dark fuscous on basal half, and barred with fuscous on outer half. Hindwings grey, darker posteriorly; cilia whitish-grey, with basal third fuscous and lighter fuscous postmedian shade.

Natal, Knysna (Dr. L. Péringuey); one specimen.

LAMPRONIADAE.

SINDONOPHORA, n. g.

Head loosely haired; ocelli absent; tongue absent. Antennae $\frac{1}{2}$, in ♂ very shortly bipectinated, fasciculate-ciliated, basal joint short, stout. Labial palpi rather short, subascending, loosely scaled, terminal joint shorter than second, obtuse. Maxillary palpi obsolete. Posterior tibiae with appressed scales. Forewings with 1*b* furcate, 2 from angle, 7 to apex, 9 absent, 10 from near end of cell, somewhat curved, 11 from middle. Hindwings 1, ovate, clothed with hair-scales, cilia $\frac{2}{5}$; 3 and 4 slightly approximated, 5 absent, 6 and 7 somewhat approximated.

Sindonophora leucozona, n. sp.

♂. 14–15 mm. Head, palpi, and thorax fuscous mixed with white. Forewings elongate, posteriorly dilated, costa moderately arched, apex obtuse, termen slightly rounded, oblique; rather dark purple-fuscous; a rather straight white median fascia; a small white spot on costa about $\frac{3}{4}$: cilia white. Hindwings and cilia snow-white.

Cape Colony, Table Mountain, bred from larvae feeding on lichens (Dr. Marloth); two specimens. A very remarkable form of much interest.

ADELIDAE.

Gen. CEROMITIA Zell.

Ceromitia mitrata, n. sp.

♂ ♀. 22–23 mm. Head whitish, with a band of fuscous suffusion between antennae. Palpi grey-whitish, labial moderate, slender, hairy towards base, maxillary slightly shorter. Antennae greyish. Thorax grey-whitish, shoulders with a grey spot mixed with black. Abdomen grey-whitish. Forewings elongate, rather narrow, costa gently arched, apex obtuse, termen rounded, rather strongly oblique; veins all separate; light ochreous-grey, suffusedly mixed with whitish, and strewn with small scattered dark grey or blackish strigulae; extreme base of costa black; a small black longitudinal mark beneath costa near base; rather large black dots in disc before ⅓ and at end of cell: cilia whitish, sometimes tinged with greyish-ochreous towards base. Hindwings with 5 and 6 connate; light grey, with purple reflections; cilia grey-whitish.

Cape Colony, Capetown, in September and December (Lightfoot); two specimens. Most like *elongatella*, but without the two distinct dark spots on costa posteriorly of that species.

PROTOTHEORIDAE.

This new family is constituted for the following remarkable genus; it is a third family of *Micropterygina*, intermediate between the *Hepialidae* and the *Micropterygidae*, and distinct from both. In 1895 I wrote of the family *Hepialidae*: "It stands more conspicuously isolated than any other group of *Lepidoptera*, for although it is without doubt a terminal development from the *Micropterygidae*, the gap between them is considerable; exotic genera, whilst differing in various details, are remarkably uniform in the more important peculiarities of structure, and do not at all tend to bridge the gap" ('Handbook of British Lepidoptera,' p. 798). This has remained true up to the present, so far as I am aware. The insect here described, however, does in my judgment stand almost exactly midway in the gap, inclining in some respects to one family and in some to the other, and showing, moreover, some leaning towards the early African forms of true *Tineidae*, which not improbably marks a real genetic connection; it is therefore

of extreme interest, and encourages the hope that further links may be discovered in the mountains of the most southerly region. Search should be made for such forms (which may perhaps be of Trichopterous appearance), especially in winter or early spring, at elevations of 3–5000 ft., and amongst vegetation of primitive types, particularly Conifers.

PROTOTHEORA, n. g.

Head with very short rough scales, sidetufts longer, spreading, face short (so that palpi originate unusually near antennae); ocelli small; tongue rudimentary, consisting of two very short curved diverging filaments. Antennae under $\frac{1}{3}$, thick towards base, tapering, flattened, moderately and evenly ciliated ($\frac{1}{2}$) on both edges. Labial palpi moderate, porrected, somewhat drooping, clothed with dense loosely appressed scales attenuated to a point at apex, joints concealed. Maxillary palpi obsolete. Thorax with large rough erect tuft at posterior extremity, patagia very short, forming small erect tufts just behind shoulders. Abdomen rather slender, in ♂ with rather thick anal tuft and strong curved double diverging uncus, claspers slender, terminating in long fine upcurved hooks. Legs rather long, slender, middle tibiae with two short apical spurs, posterior tibiae thinly haired above, with median and apical pairs of short spurs. Forewings with dorsum and termen nearly evenly curved, but tornus slightly marked, dorsal margin ciliated like termen to near base, with strong membranous prominence at base (jugum); 1*b* basally long-furcate, 1*c* distinct, 2 from angle of cell, 2–6 parallel, transverse vein angulated outwards on 3 and inwards between 3 and 4, forked internal vein rising out of lower margin of cell at $\frac{1}{3}$, lower fork running to angle between 3 and 4, upper nearly to 5, 7 and 8 rather shortly stalked, 8 to termen, 9 and 10 long-stalked, 9 to just above apex, 11 from about middle of cell, 12 from cell near base, running to $\frac{3}{4}$ of costa, connected with costa by bar near base and emitting a short oblique additional vein (13) to costa about middle of wing. Hindwings 1, narrowly elongate-ovate, cilia $\frac{1}{2}$, costa near base with a broad flat tuft of long stiff obliquely projecting hairs resting in notch formed by jugum of forewings; neuration nearly as in forewings, but 1*b* obsolete, 1*a* and 1*c* distinct, transverse vein slightly angulated inward on 4, outward on 5, inward between 5 and 6, internal vein rising from base of wing, lower branch running to 4, upper to angle between 5 and 6, 12 without median branch.

PROTOTHEORA PETROSEMA, n. sp.

♂. 18–25 mm. Head, palpi, and thorax dark fuscous finely irrorated with white. Abdomen grey, segmental margins whitish. Forewings narrow-elongate, costa slightly arched, apex obtuse, termen very obliquely rounded; rather light fuscous; costal edge dark fuscous, with three or four small indistinct spots; a very irregular thick white median streak from base with two irregular prominences above alternating with two beneath, posteriorly dilated and running to costa before apex, where it encloses two small spots of ground colour, edged with dark fuscous in disc and posteriorly, or sometimes wholly suffused and obliterated with dark fuscous, remainder of wing sometimes obscurely marbled with whitish irroration: cilia greyish, with two broad darker shades sprinkled with dark fuscous. Hindwings grey; cilia pale greyish, sometimes with two broad darker shades.

CAPE COLONY, Capetown, in May (Lightfoot); Hottentots Holland Mts. 4000 ft., Caledon (Barnard); five specimens. Seemingly very variable in colouring.

INDEX.

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

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

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

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

MALACOSTRACA.

Brachyura.

Tribe OXYRRHYNCHA.

Family INACHIDAE.

Gen. ACHAEOPSIS, Stimpson.

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

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

Achaeopsis thomsoni (Norman).

Plate XC.

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

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

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

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

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

Gen. HYASTENUS, White.

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

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

Hyastenus uncifer, Calman.

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

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

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

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

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

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

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

Locality. Umsunduzi River, Pietermaritzburg. No. 228.

MACRURA ANOMALA.

Tribe GALATHEIDEA.

Family GALATHEIDAE.

Gen. GALATHEA, Fabricius.

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

Galathea intermedia, Liljeborg.

1851. *Galathea intermedia*, Liljeborg, Ofvers. Vet. Akad. Forhandl., p. 21.
1888. „ „ Bonnier, Contrib. Faune Marine de Wimereux, p. 44.
1894. „ „ A. M.-Edwards et Bouvier, Camp. Sci. Monaco, Fasc. 7, pt. 1, pp. 79, 81, pl. 8, figs. 1–10.
1900. „ „ A. M.-Edwards et Bouvier, Crust. Décap. Travailleur et Talisman, p. 277.

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

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

MACRURA GENUINA.

Tribe THALASSINIDEA.

Family AXIIDAE.

Gen. CALOCARIS, Bell.

Calocaris alcocki, McArdle.

Plate XCI.

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

Tribe ERYONIDEA.

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

Family ERYONIDAE.

1910. *Eryonidae*, Stebbing, Ann. S.A. Mus., vol. 6, pt. 4, p. 377.
1914. „ Selbie, Fisheries, Ireland, Sci. Invest., pt. 1, p. 8.
1916. „ de Man, Siboga Exp., vol. 39a^2, p. 1.

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

GEN. POLYCHELES, Heller.

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

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

POLYCHELES DEMANI, n. sp.

Plate XCII.

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

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

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

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

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

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

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

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

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

Gen. STEREOMASTIS, Bate.

1888. *Stereomastis*, Bate, Rep. Voy. Challenger, vol. 24, pp. x, 154.

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

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

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

STEREOMASTIS NANUS (S. I. Smith).

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

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

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

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

Tribe PENAEIDEA.

Family PENAEIDAE.

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

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

Gen. AMALOPENAEUS, S. I. Smith.

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

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

Amalopenaeus elegans, S. I. Smith.

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

This attractive species has been amply illustrated by the three authors above mentioned, and also by Lo Bianco and Riggio, whose figures I have not seen. The length appears rarely to exceed 30 mm., but Kemp mentions a specimen of 38 mm. The South African specimen is 33·5 mm. long. After 16 years in formalin there are still spots of a rich blue on the first four pairs of peraeopods, some less vivid on the first antennae, purplish on the stalks of the golden yellow eyes, with the mouth organs darkly red and the carapace covering a lighter red substance, its own rostrum and probably all the rest of it being pellucid.

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

Gen. PENAEUS, J. C. Fabricius.

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

PENAEUS INDICUS, Milne Edwards.

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

The specimens which I refer to this species have a thelycum corresponding with that which Bate figures in the Ann. Nat. Hist., ser. 5, vol. 8, pl. 12, fig. 5 *vp.*, 1881. They are far smaller than the length of about 6 in. with which Milne Edwards, or 8 in. with which Alcock, credits the species, one of them having a total of 64 mm., the other of about 60 mm., in the former the carapace being 43·5 mm. long, in the latter 39 mm. The larger specimen has 7 dorsal teeth on the rostral carina, the seventh very far from the apex, the ventral teeth being 5 in number. In the other case there are 8 dorsal teeth and only 3 widely spaced ventral. In each case 3 of the teeth are behind the base of the eye-stalk. The characters answer to Alcock's statement, "This is an extremely variable species, especially in respect of the length of the rostrum, which in young individuals projects far beyond the tip of the antennal scales, whereas in adults it is often not longer than that of *P. monodon*." In 1888 Spence Bate retains the species, but is inclined to believe it an over-toothed variety of *P. monodon*, with which he further identifies *P. semisulcatus*, de Haan. In 1892 de Man described and figured a variety *longirostris*, which he retains in his "Siboga" treatise, 1911–1913.

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

Locality. Umgeni River, Durban. A 1191.

GEN. SOLENOCERA, Lucas.

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

SOLENOCERA AFRICANUS, n. sp.

Plate XCIIIA.

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

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

The female, 70·5 mm. long, has the carapace 22·5 mm., and the pleon 48 mm. in length, from the apex of the rostrum to the cervical groove measuring 13·5 mm., the faintly continued carina to the end of the carapace accounting for 9 mm. The third to the sixth pleon-segments are all carinate, the sixth scarcely as long as the fifth; the sulcate telson closely agrees with that of *S. comatus*, its lateral processes being much stronger than those shown for *S. melantho*, de Man, and rather further from the apex than in *S. siphonoceros*. The slightly incomplete flagella of the first antennæ are 32 mm. long. In the male, which was about 53 mm. in length, these flagella were 26 mm. long, the carapace 18 mm. The apex of the rostrum, acute in the female, is slightly damaged in the male specimen. The flagella of the first antenna bear witness alike to their importance as a generic character and as constituents of a respiratory tube by their persistence years after death in springing back, when released from separation, to reform the tube. In the petasma the shorter inner lamina differs from all the forms above compared by its bidentate apical crook, but something similar, though not the same, is seen in *S. agassizii*, Faxon.

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

Tribe CARIDEA.

Family PALAEMONIDAE.

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

Gen. LEANDER, Desmarest.

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

Leander pacificus, Stimpson.

Plate XCIIIb.

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

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

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

The two pairs of antennae agree closely with those of *L. peringueyi*. In the first pair the longer flagellum is 28 mm. long, its companion in brief attachment to it being about 6·5 mm. in length, while the free flagellum is 19 mm. long, The flagellum of the second antennae I make out to be 56 mm. in length.

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

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

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

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

Family OPLOPHORIDAE.

Gen. ACANTHEPHYRA, A. Milne-Edwards.

Acanthephyra brachytelsonis, Bate.

Plate XCIV.

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

Family NEMATOCARCINIDAE.

Gen. NEMATOCARCINUS, A. Milne-Edwards.

Nematocarcinus parvidentatus, Bate.

Plate XCV.

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

SCHIZOPODA.

Order Mysidacea.

See General Catalogue of S.A. Crustacea, p. 395, and add

1912. *Schizopoda,* Hansen, Mem. Mus. Comp. Zoöl. Harvard, vol. 35, p. 175.

Family LOPHOGASTRIDAE.

Gen. GNATHOPHAUSIA, von Willemoes Suhm.

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

Gnathophausia zoea, Suhm.

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

Ortmann and Hansen agree in making *G. willemoesii*, Sars, a synonym of *G. zoea*, to which Hansen adds *G. sarsii*, Wood-Mason, already regarded by Ortmann as merely a variety of *G. zoea*. In the specimen here assigned to that species "the outer spine of the antennal squama projects" rather considerably "beyond the end of the lamellar lobe," but not nearly so much as shown for *G. longispina* of Sars. This feature may probably be subject to considerable variation. The supra-orbital spine, antennal spine, and branchiostegal expansion answer the figure given by Sars. The total length from the apex of the rostrum to the end of the telson is 66 mm. The rostrum, apparently complete, is 25·5 mm. long, the whole carapace from apex of rostrum to the end of the hinder process being 56·5 mm. in length.

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

ISOPODA.

Tribe FLABELLIFERA.

Family EURYDICIDAE.

Gen. CIROLANA, Leach.

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

Cirolana cranchii, Leach.

1818. *Cirolana cranchii*, Leach, Dict. Sci. Nat., vol. 12, p. 347.
1890. „ „ Hansen, Vid. Selsk. Skr., ser. 6, vol. 5, pp. 321, 341, pl. 3, figs. 3–3*l*.

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

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

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

AMPHIPODA.

Tribe GAMMARIDEA.

Family LYSIANASSIDAE.

Gen. ICHNOPUS, A. Costa.

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

Ichnopus macrobetomma, n. sp.

Plate XCVIa.

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

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

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

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

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

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

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

Family METOPIDAE.

Gen. METOPA, Boeck.

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

Metopa rotundus, n. sp.

Plate XCVIb.

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

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

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

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

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

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

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

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

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

ENTOMOSTRACA.

Copepoda.

Tribe CALIGIDEA.

Family CALIGIDAE.

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

Gen. ACHTHEINUS, C. B. Wilson.

1908. *Achtheinus*, Wilson, Proc. U.S. Mus., vol. 35, p. 450.
1911. „ Wilson, Proc. U.S. Mus., vol. 39, pp. 630, 632.

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

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

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

Achtheinus dentatus, Wilson.

Plate XCVII.

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

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

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

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

The specimens measured varied betweed 5·5 and 6·5 mm. in length for the females, with egg-strings about three times as long; the male was a little over 3 mm. in length.

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

Family LERNAEIDAE.

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

Gen. LERNEAENICUS, Lesueur.

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

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

Lerneaenicus medusaeus ?, Wilson.

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

On a small fish, which Dr. Gilchrist informed me he had named *Scopelus argenteus*, there occurred a parasite displaying a genital segment and neck, together 6·5 mm. long, with egg-strings not quite double that length. The very short neck, sharply bent, left the remainder of the animal immersed between the gills of the fish, but so firmly embedded in its tissues that very patient endeavours produced no intelligible result, except such as might well correspond with that described

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

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

INDEX.

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

EXPLANATION OF PLATES.

PLATE I. (Crustacea, Plate XC.)

Achaeopsis thomsoni (Norman).

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

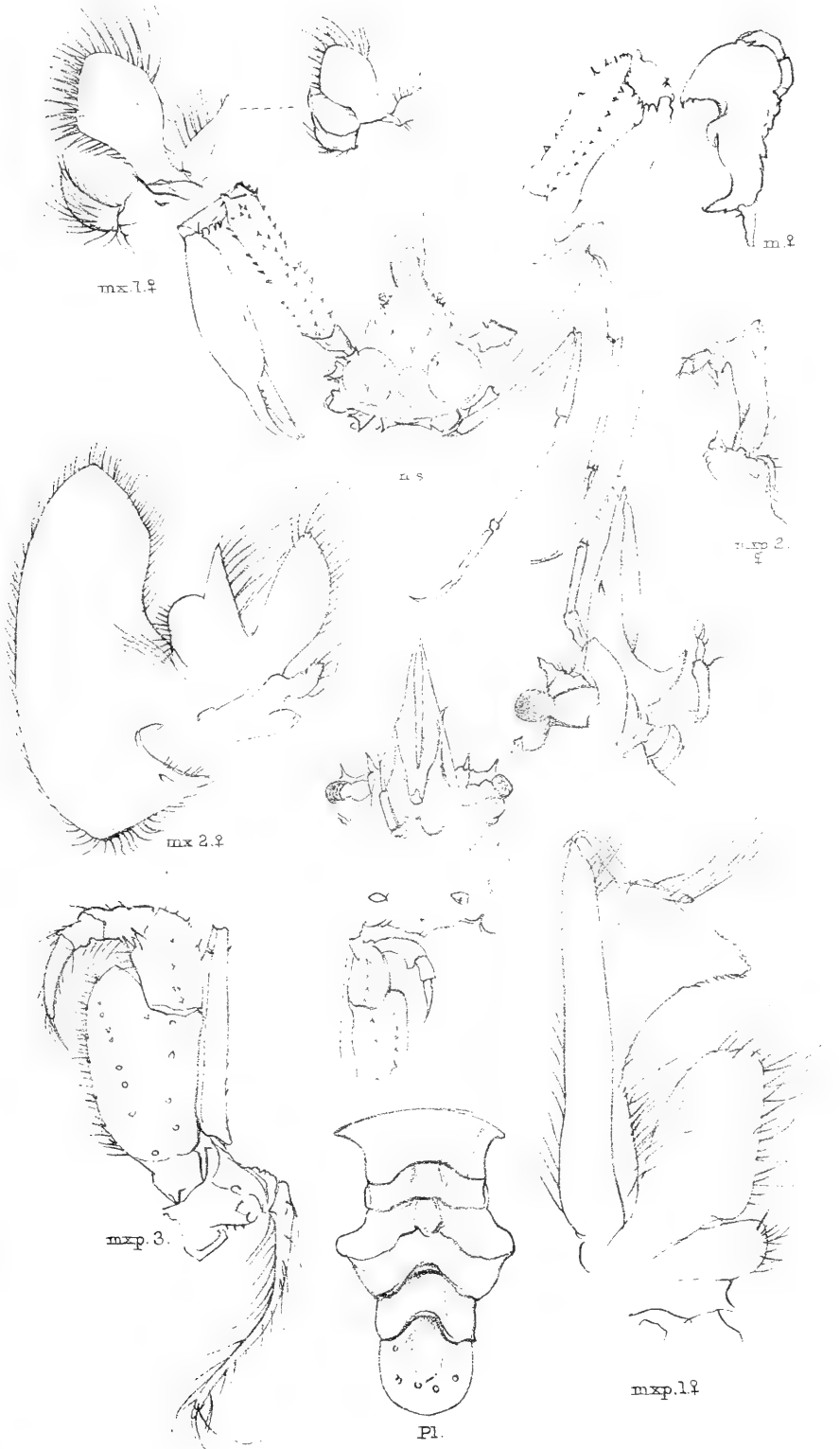
Pl. The pleon flattened out.

The remaining figures are from a female specimen.

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

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

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



Del. T.R.R. Stebbing.

Adlard & West, Newman, lith.

ACHÆOPSIS THOMSONI (Norman)

PLATE II. (Crustacea, Plate XCI.)

Calocaris alcocki, McArdle.

n.s. Specimen in lateral view, natural size; fourth peraeopod missing on that side, as also flagellum of second antenna and one of the flagella of the first.

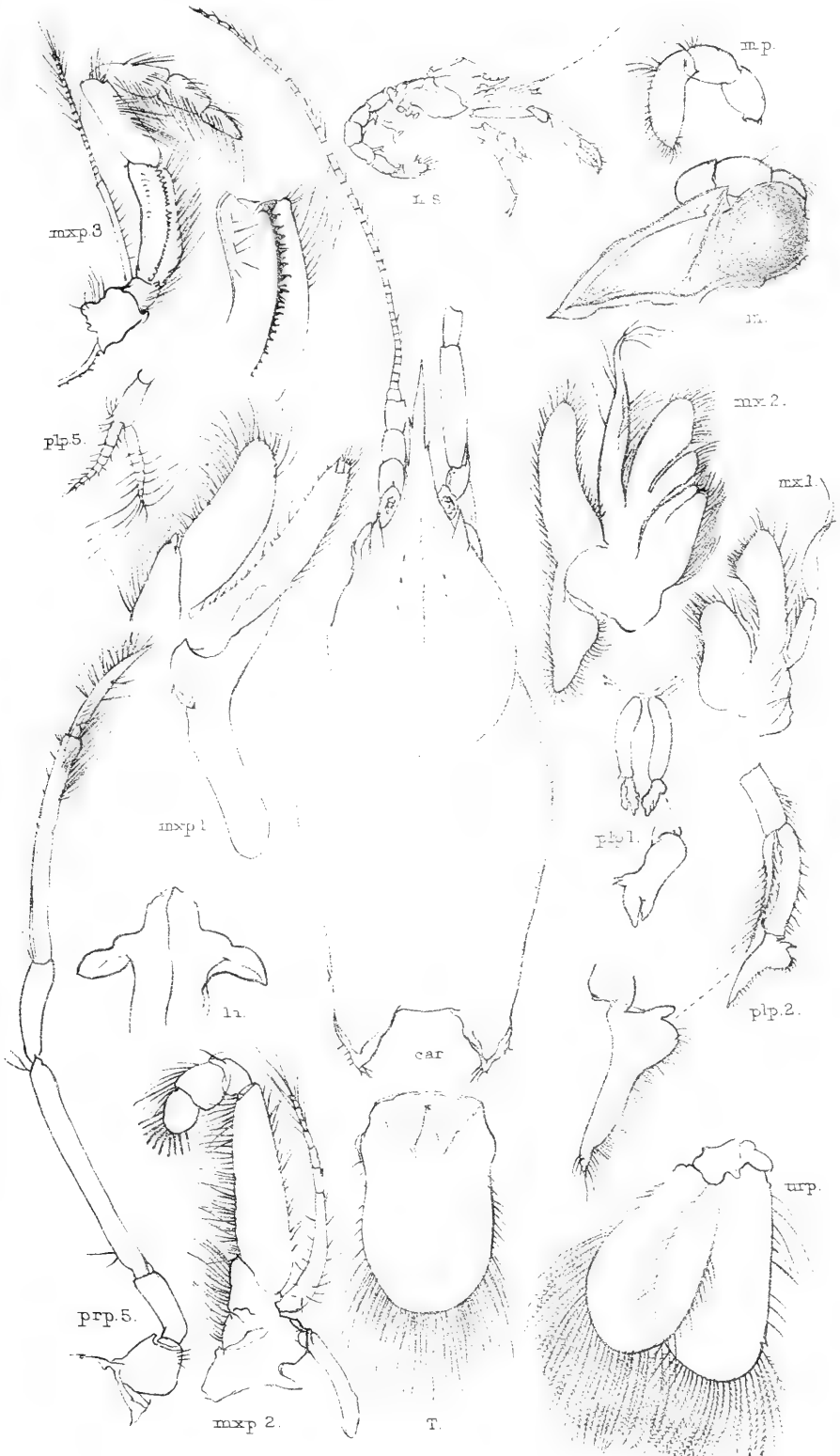
car. Dorsal view of carapace much enlarged, with first antenna on the left, second on the right, both imperfect; eyes partially seen.

T., urp. Telson in dorsal view, and one of the uropods.

m., mp. One of the mandibles and palp of the other.

l.i., mx. 1, mx. 2, mxp. 1, mxp. 2. Lower lip, first and second maxillae, first and second maxillipeds.

mxp. 3, prp. 5, plp. 1, plp. 2, plp. 5. Third maxilliped, fifth peraeopod, first, second, and fifth pleopods. For considerations of space these parts are less highly magnified than the others, except in regard to the extra figures showing the dentate margin in the third maxilliped and the peculiar apical joints of the first and second pleopods.



Del. T.R.R. Stebbing.

CALOCARIS ALCOCKI, Mc Ardle.

Adlard & West, Newman, lith

PLATE III. (Crustacea, Plate XCII.)

Polycheles demani, n. sp.

n.s. Female specimen in dorsal view, natural size; flagella of the antennae curtailed by want of space, the frontal and telsonic parts slightly fore-shortened, the epimeral parts of the pleon a little expanded from their natural aspect.

th. Thelycum.

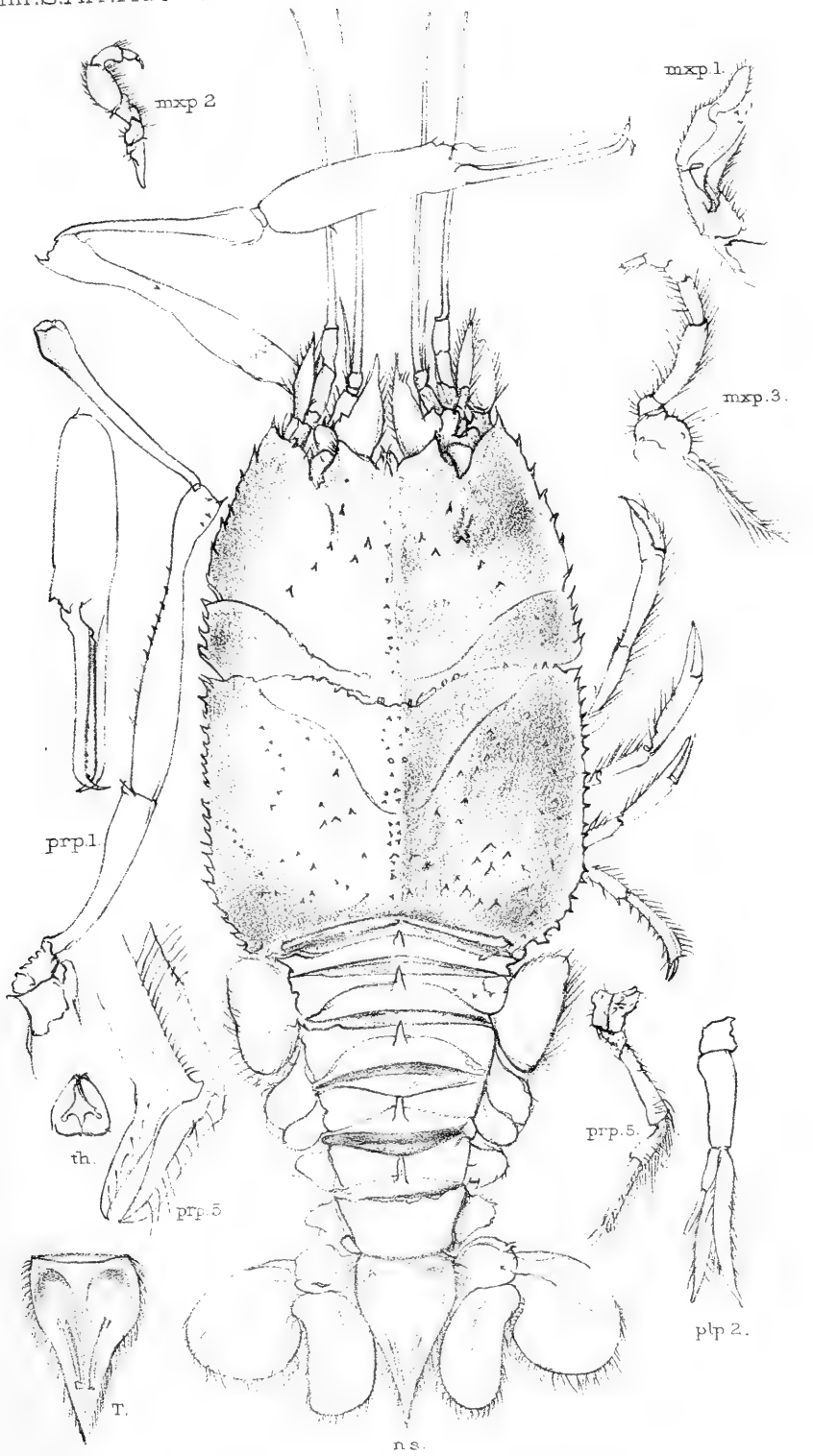
T. The telson. This and all the other separate parts of natural size, except the terminal part of the fifth peraeopod.

mxp. 1, 2, 3. First, second, and third maxillipeds.

prp. 1. First peraeopod, the chela detached, for considerations of space.

prp. 5. Fifth peraeopod on the right, with terminal portion on the left magnified.

plp. 2. Second pleopod.



Del.T.R.R.Stebbing.

POLYCHELES DEMANI, *n sp*

Adlard & West, Newman lith

PLATE IVB. (Crustacea, Plate XCIIIB.)

Leander pacificus, Stimpson.

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

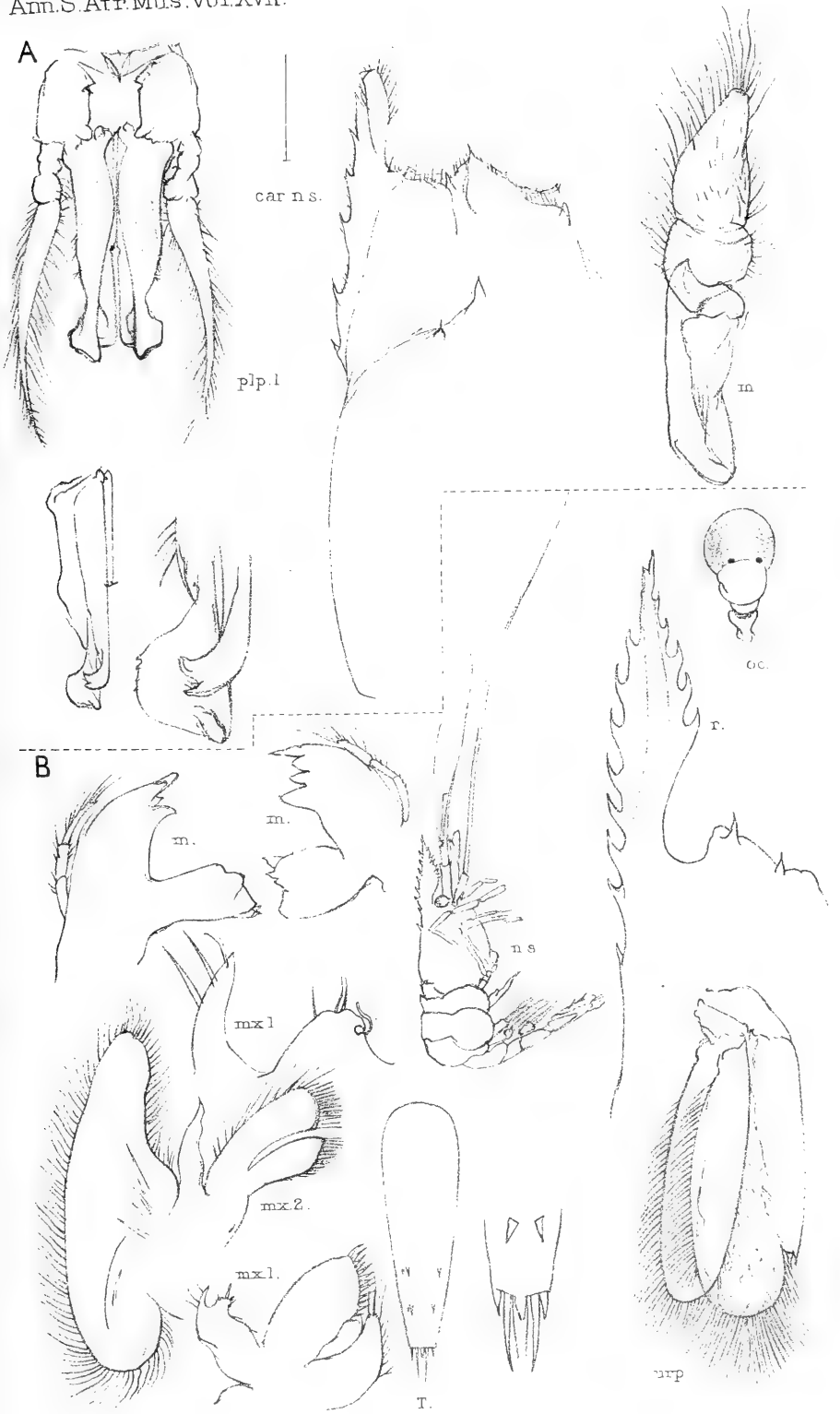
r. The rostrum and adjoining part of carapace magnified.

oc. One of the eyes.

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

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

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



Del. T.R.R. Stebbing.

SOLENOCERA AFRICANUS, *n.sp*

LEANDER PACIFICUS, Stimpson.

Adlard & West, Newman lith

PLATE V. (Crustacea, Plate XCIV.)

Acanthephyra brachytelsonis, Bate.

car. Rostrum and front of carapace in lateral view enlarged.

T. Telson in dorsal view, enlargement uniform with that of the carapace.

a.i. Apical portion of the scale of the second antennae, without its fringing setae, magnified to the same scale as the following figures.

m.m. The mandibles from the inner or upper surface.

mx. 1, mx. 2. First and second maxillae with one of the spiculate setae of the first more magnified.

mxp. 1, mxp. 2. First and second maxillipeds.

mxp. 3. Antepenultimate joint of the third maxillipeds.

Del. T.R.R. Stebbing.

Allard & West, Newman, lith.

ACANTHEPHYRA BRACHYTELSONIS. *Bate.*

PLATE VI. (Crustacea, Plate XCV.)

Nematocarcinus parvidentatus, Bate.

car. Part of carapace in lateral view, on a lower scale of enlargement than other parts.

T. Telson in dorsal view, with higher magnification of the spiniferous part.

a.i. Apical part of the scale of the second antenna.

m. One of the mandibles.

mx. 1, mx. 2. The apical plate of the first maxilla and the corresponding part of the second.

mxp. 1, mxp. 2, mxp. 3. The first, second, and third maxillipeds, the third on account of its great length less highly magnified than the other mouth organs, but the terminal spine more highly instead of less.

plp. 1, plp. 2. The first and second pleopods, the second with higher magnification of the male appendage and retinaculum.

urp. One of the uropods.

Del. T.R.R. Stebbing.

Adlard & West, Newman, lith.

NEMATOCARCINUS PARVIDENTATUS, *Bate*.

PLATE VIIa. (Crustacea, Plate XCVIa.)

Ichnopus macrobetomma, n. sp.

n.s. Line showing actual length from head to third pleon segment across the bent specimen, as shown in the adjoining figure.

a.s., a.i. First and second antennae, the flagella only in part.

m., mxp. One mandible and half the maxillipeds.

gn. 1, gn. 2. The first and second gnathopods, with higher magnification of the finger of the first, of the hand and finger of the second.

urp, T. Third uropod, with tip of exopod more highly magnified, and dorsal view of the telson.

Plate VIIb. (Crustacea Plate XCVIb.)

Metopa rotundus, n. sp.

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

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

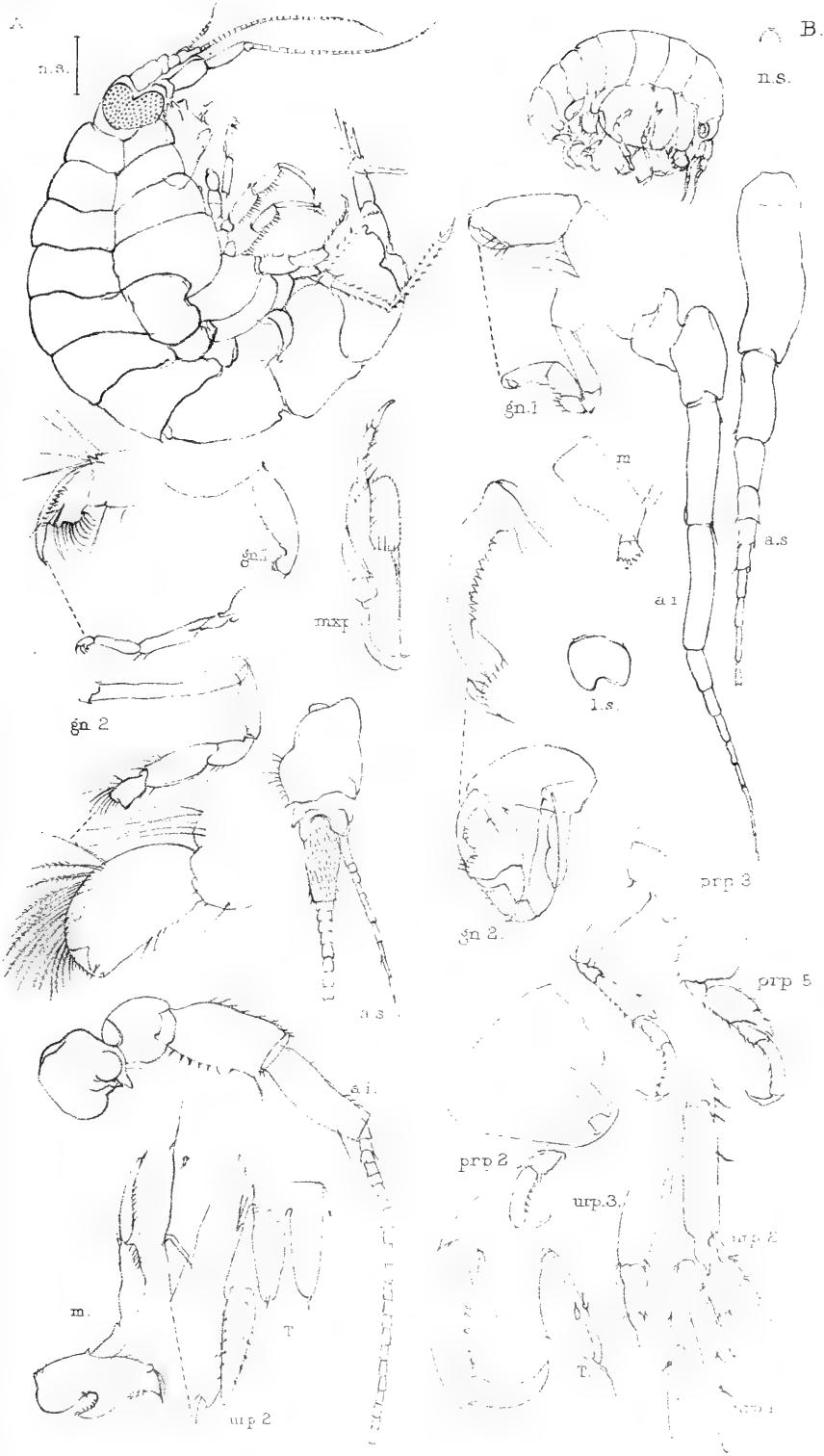
l.s., m. Upper lip and mandible (the palp broken).

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

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

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

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



Del. T.R.R. Stebbing.

Adlard & West, Newman lith.

ICHNOPUS MACROBETOMMA, *n. sp.*

METOPA ROTUNDUS *n. sp.*

Plate VIII. (Crustacea, Plate XCVII.)

Achtheinus dentatus, Wilson.

n.s. ♀. Line indicating natural size of female specimen shown in dorsal view, with egg-strings incomplete. The following parts, in the upper half of the plate, of uniform magnification on a higher scale, were taken from the same specimen (except d.l.).

a.i. Second antenna.

mx. 2. Second maxilla.

ped. 1, 2, 3, 4. First, second, third, and fourth feet, the expanded segment of the third and of the fourth incomplete.

a.l. Anal laminae.

d.l. Dorsal laminae, from a different specimen, detached from the carapace to show the small lateral laminae "covering the bases of the second legs" (Wilson), in connexion with the two following pairs of foliaceous laminae.

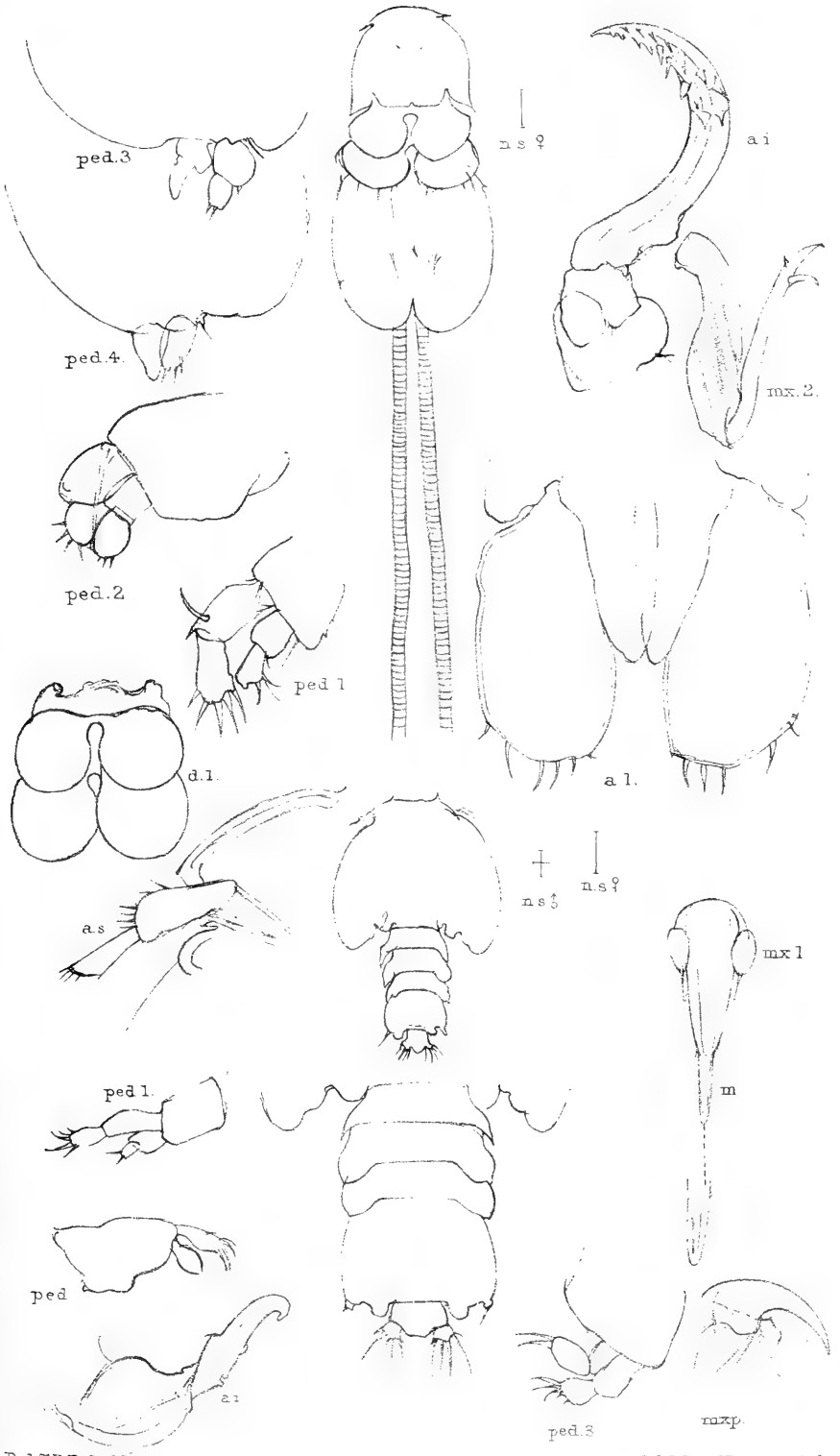
n.s. ♂, n.s. ♀. Lines indicating natural size of male specimen shown in dorsal view, and of the female specimen to which it was attached. The following figures, uniform in magnification with the details of the female, are taken from the male.

a.s., a.i. First antenna in position, and second antenna.

m., mx. 1. Mouth-tube, with first maxillae and mandibles, the latter with additional magnification.

mxp. Part of maxilliped.

ped. 1, ped. 3, ped. The first and third feet, and a foot which is probably the fourth.



Del. T.R.R. Stebbing

Adlard & West, Newman 11th

ACHTHEINUS DENTATUS, *Wilson*.

3.—*New Geometridae (Lepidoptera) in the South African Museum.*—By Louis B. Prout, F.E.S.*

Sub-Fam. HEMITHEINAE.

Gen. ALLOCHLORODES, gen. nov.

Face smooth. Palpus very short, 2nd joint shortly rough-scaled beneath. Tongue vestigial. Antenna in ♂ less than one-half forewing, bipectinate to near apex with rather short branches (in ♀ merely serrate?). Pectus somewhat hairy. Femora glabrous. Hindtibia in ♂ not dilated, with terminal spurs only. Abdomen not crested Wings with scaling opaque, not glossy. Frenulum wanting.

Forewing with costa straight except close to base and apex, termen smooth, oblique, gently curved, tornus not very pronounced; cell about one-half, DC^3 deeply incurved, SC^1 from cell, anastomosing with C, SC^2 shortly stalked with SC^{3-5}, rather steep, anastomosing strongly with SC^1, R^2 from much before middle of DC, M^1 widely separate from R^3.—*Hindwing* with costa long, apex rounded, termen smooth, moderately convex, straighter posteriorly, tornus moderate; cell one-half, DC^3 incurved, becoming oblique, C anastomosing with SC to scarcely one-half cell, SC^2 stalked, R^2 from well before middle of DC, M^1 rather widely separate.

Type of the genus: *Allochlorodes elpis*, sp. nov.

May be placed between *Allochrostes* Prout and *Xenochlorodes* Warr., having nearly the subcostal venation of the latter, the separation of M^1 even wider than in the former, with which the palpus nearly agrees. The anastomosis of C of the hindwing is much less strong than in either, and the shape and facies more suggest the *Omphax* group.

1. Allochlorodes elpis, sp. nov.

♂. 27 mm. Face, palpus and upper and inner sides of fore and middle legs rufous. Vertex and antennal shaft white. Occiput and thorax above green. Body and legs otherwise dirty white.

* *The types are in the South African Museum.*

Forewing green, apparently nearly as in *Xenochlorodes beryllaria* Mann (a little faded); a single white line, interrupted between the veins and apparently not reaching costal margin, at R^1 scarcely 2 mm. distant from termen, more oblique than termen and very gently curving, reaching hindmargin just over 3 mm. from tornus; dots on veins, very slightly darker than ground-colour, accompanying this line proximally.—*Hindwing* white, with faint tinge of green.—Forewing beneath paler green, posteriorly whitish, base of costa reddish; hindwing beneath as above.

Cape, Kalk Bay, April, 1904 (R. M. Lightfoot).

A very worn ♀, Clanwilliam, October, 1901 (Mrs. Marchant), seems also to belong here, rather smaller, slightly narrower, C of hindwing anastomosing still more shortly than in ♂.

Sub-Fam. STERRHINAE.

Gen. SCOPULA Schrank.*

2. Scopula flexio, sp. nov.

♀. 23–25 mm. Face and palpus reddish brown. Vertex white. Collar ochreous brown. Thorax and abdomen dirty white; fore and middle legs more mixed with brownish.

Forewing not very broad, costa somewhat shouldered at base, apex pronounced, termen oblique, nearly straight, at tornus curved; white, in places (especially in median area) with coarse but rather sparse fuscous dusting; lines brown, irrorated with fuscous; antemedian fine, from before one-third costa, very acutely angulated outward in cell, then very oblique inward to one-fourth hindmargin, sometimes slightly sinuous; median thicker, from costa much beyond middle, slightly out-bent subcostally, then almost straight to hindmargin slightly beyond middle; postmedian from costa rather near apex, on the veins dentate outward and marked with fuscous dots, between R^1 and R^3 incurved, behind M^2 more feebly incurved; a pure white line distally to this; subterminal line quite near termen, white, almost straight, bounded proximally and distally by a narrow brown-grey shade; terminal interneural dots strong, slightly elongate.—*Hindwing* with costal margin long, apex rounded; SC^2 and R^1 connate; white, with feeble indications of median and postmedian lines and

* *Acidalia* Tr., nom. praeocc.

double subterminal shade; terminal dots weaker than on forewing.—Both wings beneath (especially hindwing) feebly marked, forewing slightly suffused in proximal half; fringe of forewing more noticeably brown-tipped than above.

Cape, Dunbrody, January, 1914 (Rev. A. Vogt), type; September, 1913, paratype in coll. L. B. Prout.

Will certainly belong to the sub-genus *Pylarge* H.-Sch. (♂ hindleg with terminal spurs). Distinguished from *picta* Warr. (Nov. Zool. iv, 62), and its ab. *fulvilinea* Warr.) (Ann. S. Afr. Mus. x, 483), which share with it the brown face, by the flexuous postmedian line. A good deal larger than ♀ *picta*.

3. Scopula tenuiscripta, sp. nov.

♂. 25 mm. Face and palpus blackish. Vertex and antennal shaft white (antennae broken). Collar ochreous. Thorax and abdomen whitish, slightly irrorated with light brown. Legs ochreous to whitish, the forecoxa fuscous in front; hindtibia without spurs, but not dilated; hindtarsus very slightly longer than tibia.

Forewing with apex pointed, termen fairly straight, oblique, very slightly more so in posterior half than in anterior; creamy white, slightly more ochreous at costal edge, irroration light brown, very fine and sparse; lines brown, very fine; antemedian oblique, almost obsolete; median beyond the cell-spot, oblique outward at first, strongly bent about SC^5–R^1, then oblique inward, almost obsolete; postmedian from nearly four-fifths costa, excurved at first, then nearly parallel with termen, slightly sinuate inward between the radials; discal dot small, black; terminal line very fine, brown, marked except in its posterior part with small black interneural dots; fringe somewhat irrorated and very feebly spotted.—*Hindwing* with termen angled at R^3; without antemedian line; median almost crossing cell-dot, but escaping it by a slight bend inwards at this point; postmedian faint anteriorly, slightly excurved, but not angled in middle, oblique outward from fold to abdominal margin; terminal black dots less sharp than in forewing.—Forewing beneath, except from hindmargin to fold, more ochreous, proximally with very slight smoky suffusions; first line wanting, cell-dot minute, terminal dots obsolete, the rest as above. Hindwing beneath slightly more ochreous-tinged than above, without median line, postmedian nearer termen, more crenulate, especially in middle part.

Transvaal, Barberton, June, 1912 (H. Edwards).

Gen. PTYCHOPODA Steph.

4. Ptychopoda lipara, sp. nov.

♀. 27 mm. Face and upperside of palpus black. Vertex and antenna whitish. Collar light brown. Thorax, abdomen, and legs concolorous with wings, forefemur and foretibia partly darkened. Abdomen robust.

Forewing rather broad, costa slightly arched, apex not acute; glossy, pale ochreous-grey, with slight fleshy tinge (less reddish than in *eugeniata* Mill., nearly as in deeply coloured examples of *sylvestraria* Hb. = *straminata* Tr.), the dark irroration red-brown, sparse and very fine; first line obsolete; discal mark sharp, slightly longer than broad; median shade slender, brownish, not strong, well distal to the cell-mark, incurved between M^1 and SM^2; postmedian line indicated by a slightly sinuous row of vein-dots, as in *eugeniata* Mill.; subterminal line very faintly indicated by a slight (almost inappreciable) darkening of the rest of the distal area; fringe with small but sharp proximal dots at vein-ends.—*Hindwing* with termen smooth, even; as forewing, with discal dot not elongate, median shade here vague, apparently bending closely round it on the proximal side. Forewing beneath similar, at hindmargin paler; hindwing more whitish, with discal dot slightly elongate, postmedian line of dots and those of fringe feeble.

Natal, Durban, January, 1903 (G. F. Leigh).

This may be rather near *oranaria* Bang-Haas (Iris, xx, 79, t. 3, p. 16), from S. Oran, which is only known to me from the description and figure, but the new species is rather larger, ampler-winged (forewing rather more rounded), less reddish in tone, more weakly dusted.

Gen. PALAEASPILATES Warr.

5. Palaeaspilates mansueta, sp. nov.

♂. 34 mm. Differs from the only hitherto known species, *inoffensa* Warr. (Nov. Zool., i, 370), as follows: *Forewing* with costal margin straighter in middle, apex less pointed, termen not sinuous in anterior half; colour paler, light yellow-grey, the irroration very fine, postmedian row of dots developed throughout, almost parallel with termen (at 2 to 2·5 mm.), the dark line or shade which accompanies it in *inoffensa* almost entirely obsolete.—*Hindwing* with the feeble postmedian line (slightly better developed on the underside) also nearly

parallel with and much nearer to the termen (2 mm. distant at apex, 3 mm. in middle). The discal dots are larger than in most *inoffensa* and that of the hindwing rather better developed; but this character varies in *inoffensa*.

Cape, Bushmanland, 1896 (G. Alston).

Sub-Fam. LARENTIINAE.

Gen. ORTHOLITHA Hübn.

6. Orthalitha peringueyi, sp. nov.

♂ ♀. 32 mm. Head and thorax dirty white, mottled with brown and fuscous; palpus with little white except on the first joint. Antennal pectinations 3–4 times as long as diameter of shaft. Abdomen grey-brown, more variegated beneath than above.

Wings glossy.—*Forewing* white, the ground-colour almost entirely obscured by irroration and mottlings of fuscous and light brown, chiefly remaining as fine edgings to the basal and median areas, interrupted traces of other transverse lines and some spots and vein-streaks in median area; middle of costa sometimes noticeably pale; a narrow brown band about 2 mm. from base, strongly excurved; the white lines which bound the median area double, their remoter elements more interrupted; median area with a narrow brown band at each side, the proximal from about one-third costa to beyond one-third hindmargin, forming an outward angle in the middle and here marked with blackish on the bifurcation of M and M^2, the distal from beyond two-thirds costa to about two-thirds hindmargin, forming a small outward curve near costa and a rather strong lobe at R^3, then retracted to M^2, thence perpendicular or slightly oblique outward to hindmargin; subterminal line formed of white interneural dots; a very short oblique dark mark from apex; termen with pairs of elongate black dots, sometimes more or less connected by a fine interrupted line; fringe chequered.—*Hindwing* light brown-grey, with a pale double postmedian line, which is angled outward behind R^3, incurved posteriorly and directed towards tornus at hindmargin; traces of interrupted whitish subterminal line, clearer and whiter at tornus; fringe weakly chequered.—Forewing beneath brown-grey, with small dark discal dot and pale double postmedian line; between this and the subterminal rather browner; subterminal and terminal lines and fringe nearly as above. Hindwing beneath sharply marked; whitish with fuscous irroration, small dark discal dot, darkened veins distally

hereto, forming conspicuous dark dots on a fine line which precedes the white double postmedian band; distal area corresponding to that of forewing, but with the band proximally to the subterminal dots stronger.

Cape, Hout Bay, near Cape Town, May, 1901 (W. L. Sclater). Type in coll. S. Afr. Museum, others from the same source in coll. Brit. Mus. et coll. L. B. Prout.

The mottled appearance, dotted subterminal line and well-marked hindwing distinguish this species at a glance.

7. Ortholitha punctiscripta, sp. nov.

♂. 30 mm. Face somewhat rough-scaled, but without projecting cone; ochreous, narrowly marked with fuscous above and rather more broadly below. Palpus little longer than diameter of eye, first and second joints rough-scaled, third minute, concealed; fuscous. Antenna pubescent,' beneath strongly lamellate, with close teeth at least as long as diameter of shaft. Vertex, thorax, and abdomen concolorous with wings. Foreleg darkened on upper- and innerside (middle and hindlegs lost).

Forewing not very broad, termen smooth, slightly curved, strongly oblique; whitish grey, in places slightly shaded with ochreous, and with minute and sparse (proximally, especially along the costa, rather denser) fuscous irroration; sub-basal line fuscous, bent in cell, then oblique inward; antemedian and postmedian very fine and slight, but accentuated by strong dots on the veins; antemedian from nearly one-third costa to beyond one-third hindmargin, very slightly excurved; postmedian from about two-thirds costa, vertical at first, slightly incurved between the radials, oblique inward from M^1 to M^2, then slightly sinuous to hindmargin; 3 or 4 still fainter wavy lines in median area, strongest at costa, and some faint dark shading near termen, especially in anterior half; lines between sub-basal and antemedian and between postmedian and distal dark shading represented by pairs of conspicuous vein-dots; discal dot minute; terminal line inclining to form pairs of dark dots or dashes at each vein.—*Hindwing* rather narrow, apex round-prominent, termen smooth, slightly sinuous, the convexity coming about the middle; slightly paler than forewing, the markings analogous but rather weaker, the dots of the postmedian line and of the first of the pair beyond it the most conspicuous, leaving rather noticeable the narrow pale intervening band. —Underside similarly but more weakly and confusedly marked.

Type, without locality label, in coll. S. Afr. Mus.

The coloration and dotted markings recall some Palaearctic Larentiids, notably *Calostigia multistrigaria* Haw. or sharply-marked *Euphyia intersecta* Stgr.

Gen. LARENTIA Tr.

8. Larentia diplocampa, sp. nov.

♀. 31 mm. Face without projecting cone; fuscous with some pale admixture. Palpus shortish; as face, the first joint entirely pale beneath. Vertex, thorax and abdomen concolorous with wings.

Forewing with termen only very faintly waved; DC biangulate, though not as strongly as in hindwing, R^1 stalked, R^2 from slightly behind middle of DC; wood-brown, shaded with cinnamon and with irregular, coarse, fuscous irroration; costal edge somewhat dotted with fuscous; lines dark fuscous, rather fine, not well defined; antemedian at somewhat beyond one-third, apparently angled outward at cell-fold, then sharply oblique inward, vertical and somewhat thickened across M, again oblique inward for a short distance behind, then nearly vertical (a little sinuous) to hind margin; somewhat thickened on crossing SM^2; sinuous lines and irroration proximally to this line prevent its being well differentiated; a fairly distinct line in median area, about 1·5 mm. from the antemedian, approximately parallel with it in anterior part, curved *outward* at submedian fold; succeeded distally by a narrow pale median space; postmedian line at rather beyond two-thirds, markedly lunulate-dentate, bilobed between R^3 and M^2, slightly inbent at R^2, inbent at M^2; 2 or 3 feebler lines in median area proximally to this, nearly parallel with it but less bilobed; pale band beyond postmedian not conspicuous; proximal boundary-line of terminal area almost parallel with postmedian: some weaker crenulate lines between this and termen; a short oblique mark at termen close to apex; terminal dark line somewhat interrupted at veins and folds (fringe wanting).—*Hindwing* prominent at end of SC^2; termen waved; paler than forewing: a dark discal dot, rather weak postmedian line (excurved about R^2–M^2, slightly incurved posteriorly) and still weaker traces of one or two other lines.—Forewing beneath greyish, proximal part unmarked, postmedian lines present, feeble posteriorly; a slight brownish subterminal band in anterior half, pale-edged distally, especially between SC^5 and R^1. Hindwing beneath more strongly marked than above.

Cape, Cape Town, April, 1913 (P. C. Keytel).

Size, shape and colouring (though this is rather less bright) recall *Ortholitha ferridotata* Walk., but the discocellulars are different, the lines differently formed, white lines wanting, underside less brown.

Gen. EUPITHECIA Curt.

9. Eupithecia rediviva, sp. nov.

♂. 17–18 mm. Palpus 1¾ times diameter of eye, rather heavily scaled, third joint small, deflexed. Antennal ciliation minute (one-fourth diameter of shaft). Head and body concolorous with wings; crown of head paler; abdomen with dorsal ridge and crests pale.

Forewing pale cinereous, faintly tinged with liver-colour; about nine very fine transverse wavy or denticulate lines, parallel with termen, mostly indistinct and more or less interrupted; the four proximal usually very indistinct, in part obsolescent, the four distal slightly better expressed; median area somewhat clearer, its single line weak, less denticulate than the others, passing distally to a distinct black discal spot; costal area slightly dark-shaded; terminal line very faint. —*Hindwing* rather paler, with one or two very weak denticulate lines parallel to, and near, termen and the beginnings of three or more equally weak (or weaker) ones on abdominal margin; discal dot small and inconspicuous.—Underside of forewing more grey-suffused in costal half; of hindwing more dark-speckled, especially basally and costally; of both wings with distinct discal dot and two rather thick and diffuse, but weak lines between this and termen, parallel with the latter.

Transvaal, Pilgrim's Rest (Miss L. Schunke). Others from Haenertsburg, December 5th–9th, 1909 (C. J. Swierstra), in coll. L. B. Prout et coll. Transvaal Mus. and Watervalonder, November, 1910, in coll. A. J. T. Janse et coll. L. B. Prout. Mentioned and figured in Ann. Trsv. Mus. iii, 208, t. 12, f. 33, as provisionally a form of *atomaria* Warr.; rather narrower, more brownish grey, more weakly marked, terminal line more slender, more interrupted, the other lines finer, less broken, that succeeding the outer "rivulet" band of both wings not (as in *atomaria*) appreciably recurved towards tornus, discal dot of hindwing more distinct, palpus with third joint rather less elongate, more deflexed.

10. Eupithecia subconclusaria, sp. nov.

♂ ♀. 20–22 mm. Similar to the smaller specimens of *inconclusaria* Walk. (List. Lep. Ins. xxiv, 1242), but with the following differences: Antenna of ♂ more thickened, with the ciliation much less than one-half the diameter of the shaft (in *inconclusaria* almost as long as diameter of shaft). Second abdominal tergite more strongly darkened. Body and wings in general paler, the hindwing almost white. Wings rather less extremely elongate, apex of forewing rounded.

Forewing with median area narrower, the angulated postmedian line closely succeeding the discal dot, which is sometimes extended along the curved cross-vein and forms with the thickened bend of the postmedian a rude ocellus; dark markings of distal area weakened, especially the subapical costal patch.—*Hindwing* with a conspicuous discal dot.—Both wings beneath without dark subterminal band.

Cape, Kalk Bay, February, 1904, and April, 1891 (R. M. Lightfoot). Both sexes in coll. S. Afr. Mus. et coll. L. B. Prout, the type dated February, 1904, and all the other examples worn.

11. Eupithecia licita, sp. nov.

♂ ♀. 19–22 mm. Also rather similar to *inconclusaria* or to the preceding, but rather broader-winged and somewhat more glossy. ♂ antenna nearly as in the preceding, the ciliation even more vestigial. Abdominal crests very minute.

Forewing with apex rounded as in *subconclusaria*, termen less extremely oblique; variable in tone (greyer, browner or tinged with sand-colour); markings also rather variable, never very strong; the lines of proximal area usually starting from noticeable costal strigulae and marked by dots on the veins; median area sometimes as narrow as in *subconclusaria*, but then with the black cell-dot placed nearer to its *proximal* border; its borders generally rather less oblique, the antemedian rather better defined, more regularly curved, rather thick, often slightly strengthened on the veins; postmedian less acutely bent, the dark markings on the radials generally less conspicuous, sometimes almost obsolete; cell-dot often set in a whitish ring.—*Hindwing* longer than in *subconclusaria*, broader than in *inconclusaria*, thus not presenting quite the normal *Eupithecia* aspect; as white as in *subconclusaria*; cell-dot wanting above, present beneath.

Cape, Clanwilliam, November, 1899 (R. M. Lightfoot), 5, including the type; Montague, November, 1902 (W. F. Purcell), 2 ♀ ♀.

12. Eupithecia subcanipars, sp. nov.

♂. 22 mm. Face scarcely tufted. Palpus moderately stout, over $1\frac{1}{2}$ times as long as diameter of eye. Head and thorax concolorous with forewing, the palpus more fuscous; abdomen more rufous than hindwing.

Forewing with costa very slightly arched, from before middle to near apex straighter, apex round-pointed, termen slightly curved, strongly oblique; pale grey, closely irrorated with rufous, leaving an ill-defined grey area along cell and beyond it to postmedian line and

behind it proximally (obliquely bounded about from one-third hind-margin to origin of M^2); on the grey area are placed some fuscescent dots which tend to form (or suggest) oblique lines; cell-dot sharp, little elongate; postmedian line vague, accentuated on the veins from R^3 to M^2, oblique outward from beyond three-fifths costa, angled at R^1, then about parallel with termen; the usual bisected pale band distally to the postmedian weak, especially at costal end; subterminal line hoary, not very sharp, strongly dentate anteriorly, then nearly straight to submedian fold (with minute teeth outwards on the folds), finally oblique to tornus; terminal line feeble, interrupted at the veins; fringe with a fine pale line at base and again slightly pale beyond middle.—*Hindwing* with costa rather straight, apex round, prominent, termen very slightly waved, not very strongly convex; pale grey, tinged with rufous; cell-dot small but sharp; distally hereto very faint alternations of paler and darker shadings suggest thick lines or slender bands; the abdominal margin darkened; terminal line and fringe as on forewing.—Forewing beneath less variegated, the costal margin rather more noticeably spotted. Hindwing beneath rather better marked than above, curved dark postmedian and subterminal lines being rather more clearly expressed.

Transvaal, Pilgrim's Rest (Miss L. Schunke).

The colours of the forewing are nearly as in variegated forms of *pimpinellata* Hb., but their distribution very different, more suggesting the arrangement of *sophia* Butl. or *sinicaria* Leech; *celatisigna* Warr. (*perculsaria* Swinh.) has much in common with the new species, but is smaller, darker, less hoary proximally, the discal dots less developed.

13. Eupithecia subterlimbata, sp. nov.

♂ ♀. 21–24 mm. Head and upperside of body green, dotted and spotted with brown or fuscous; underside and anal extremity pale ochreous grey, abdomen in dark specimens a good deal irrorated with fuscous. Palpus nearly twice as long as diameter of eye; pale greyish ochreous, much mixed with fuscous. Antenna in ♂ with slender sessile fascicles of cilia, fully as long as diameter of shaft. Abdominal crest developed, pale grey, mixed with fuscous. Foreleg above and on innerside strongly darkened, except at ends of joints.

Forewing moderately broad; pale dull green, variably (but always more or less strongly) irrorated with fuscous or reddish-brown, or even light, bright ferruginous; markings fuscous; basal patch slight or obsolete; subbasal band little bent, lines between this and median area vague; median area rather broad, variable, always more or less

markedly red-brown or fuscous, often with darker clouding in middle of posterior half; antemedian line sinuous, at posterior end oblique outward, sometimes strongly darkened and thickened from cell-fold to hindmargin; cell-dot small; postmedian line sinuous, rather oblique outward to R^3, here lobed, posteriorly incurved; the narrow green band beyond vaguely bisected except between radials, where its proximal half is almost white: distal area with ill-defined dark lines and spots, and traces of an interrupted lunulate pale subterminal, proximal to which a pair of dots between the radials (oftenest confluent) and a spot between M^2 and SM^2 are more or less noticeable; termen with pairs of not very conspicous dark dots; fringe pale greyish-ochreous, dark chequered.—*Hindwing* pale ochreous grey, suffused, except on the narrow postmedian band, with darker grey, a border of about 2 mm. width darkest; cell-dot small; terminal dots and chequering of fringe weak.—Both wings beneath pale ochreous grey, weakly marked except at distal margin, which bears a conspicuous dark border of about 2 mm. width, that of forewing constricted in the middle and sometimes almost interrupted, at least with a pale terminal spot behind R^3; cell-dots often fairly sharp.

Natal, Durban, Umbilo and Victoria District, in coll. S. Afr. Mus., coll. L. B. Prout, coll. A. J. J. Janse, etc.; type ♂, Durban, in coll. S. Afr. Mus.

This species has long been known to me, but although some specimens are marked "bred," none are in perfect condition. It is, however, so easily recognised that, now that I have a series before me, I do not hesitate to publish it. It resembles some forms of the variable *Coenotephria prasinaria* Warr. (Nov. Zool. viii, 13; x, 273), except in the structure. Probably near the species which I determine as *cidariata* Guen. (Spéc. Gén. Lép. x, 357, t. xi, f. 9), but distinguished by the dark borders beneath and by the antenna, which in that species bears pairs of short, fasiculate pectinations.

Gen. CHLOROCLYSTIS Hb.

14. Chloroclystis (Gnamptomia) muscosa tumefacta, subsp. nov.

♂ ♀. 17–20 mm. Smaller than *muscosa muscosa* Warr. (Nov. Zool., ix, 508), from British East Africa, forewing with the costal swelling and hair-tuft proximally to the "nibbled out" portion stronger; coloration duller; antemedian line not so crooked; hindwing more sharply marked, much like that of *marmorata* Warr. (Nov. Zool., vi, 38).

Natal, Victoria district (W. D. Gooch), type in coll. S. Afr. Mus. Also from Durban in various collections.

Gen. CONCHYLIA Guen.

15. Conchylia lamellata, sp. nov.

♂. 30 mm. Head and body white, somewhat mixed with brown. Palpus more brown, quite short, not extending as far as frons. Antenna thick, merely lamellate, with minute ciliation.

Forewing very glossy white, with slender brown markings; costal streak thread-like at base, gradually widening from before middle of wing, in distal part bounded by front of areole and SC^4; a slender longitudinal stripe from base, bounded anteriorly by cell-fold, becoming still slenderer distally, where it joins the outer stripe in front of R^2; outer stripe thread-like at apex, then broadening slightly, straight and oblique to M^2 at 2 mm. from termen, here obtusely bent, thence very faintly sinuous, very gradually approaching hindmargin, finally running along behind SM^2 and not quite reaching base; a brown terminal line; fringe proximally brown, distally white.—*Hindwing* white.—Forewing beneath smoky, the markings obsolescent. Hindwing beneath as above, the costal edge slightly smoky.

Cape, Port Elizabeth, 1900 (O. West).

Very similar to *nitidula* as figured in Cramer (Pap. Exot. iv, 240, t. 399 N),* but distinguished by the ♂ antenna, etc. Should be referred to the sub-genus *Callythria* Weym. (type *alternata* Warr., Nov. Zool. viii, 209; *argenteofasciata* Weym., Deutsch. Ent. Zeit. 1908, p. 512), but probably *Conchylia* will have to sink to *Lithostege* Hb., in which case the non-pectinate section will stand as name-typical, with *Callythria* as synonym, the pectinate as sub-genus *Conchylia* Guen. The glossy scaling and distinctive pattern are scarcely generic, especially as *Conchylia irene* Prout (Nov. Zool. xxii, 336) and *Lithostege decorata* Warr. (Ann. S. Afr. Mus. x, 23) and *sesquifascia* Prout (Ann. Trsv. Mus. iii, 262) in some respects furnish intergrades.

16. Conchylia actena, sp. nov.

♂. 29 mm. Face and palpus light brown. Crown white. Antenna apparently nearly as in the preceding (somewhat damaged with

* I have seen no example agreeing with this figure in having the outer stripe obsolete at apex, but provisionally (following Warren in Tring Mus.) refer to *nitidula* an otherwise similar species, with shortly pectinate ♂ antenna, which occurs in Cape Colony and Natal; in any case the figure clearly shows the pectinate antennae.

mould, in any case not pectinate). Thorax light brown, mixed with white. Legs (especially the foreleg) partly infuscated. Abdomen light brown-grey.

Forewing white, glossy, but not so intensely as in the *nitidula* group; no markings except two slender (scarcely over ·5 mm.) brown bars, both slightly roughened at their edges, or at least tending to be feebly dentate outward on the veins; first from SM^2 at 3·5 mm. from base, very oblique to cell-fold near end of cell, then slender along the fold to the cross-vein, where it forms a small, irregular spot; second from SM^2 at tornus, very slightly curved in the opposite direction to termen, ending in a point at SC^4 close to apex; fringe concolorous.—*Hindwing* light brown-grey, unmarked; fringe white.—Forewing beneath smoky, the lines traceable; fringe white. Hindwing beneath as above, or very slightly paler.

Cape, Fraserburg, April 1885 (E. G. Alston).

Superficially very near *irene* Prout, which has the antenna pectinate with branches about two-and-a-half times diameter of shaft.

Sub-Fam. GEOMETRINAE.

Gen. MICROLIGIA Warr.

17. Microligia intervenata, sp. nov.

♂. 30 mm. Structure about as in *dolosa* Warr. (Nov. Zool. iv, 124), face perhaps less strongly tufted (but somewhat abraded), wings slightly longer and narrower. Face brown, white below. Palpus mixed brown and white, the white predominating below. Vertex white. Thorax and abdomen white, mixed with brown.

Forewing glossy white, with light brown markings, consisting of more or less broad, chiefly interneural, longitudinal streaks; first streak subcostal, almost reaching the costal margin from the end of C to SC^3, where it terminates; second streak commencing beyond middle of cell, becoming trifid distally, the first branch running between R^2 and R^3, the second between R^1 and R^2, the third obliquely forward to termen near apex; two shorter streaks between R^3 and M^2, reaching termen; a long one behind M and M^2 from base to termen, tapering posteriorly, another branching from this at base and running behind the fold and another close to hindmargin (behind SM^2).—*Hindwing* pure white.—Forewing beneath pale brownish, the white parts of upper side weakly indicated. Hindwing beneath white.

Orange Free State, Smithfield, 1910 (Kannemeyer).

A pretty species, superficially recalling *Pseudomaenas alcidata* Feld. The genus *Microligia* seems only to differ from *Argyrophora* Guen. (type *trofonia* Cram.) in that R^3 and M^1 of the hindwing are not stalked, and is perhaps scarcely tenable.

Gen. PSEUDOMAENAS, nom. nov.

Agrammodes Warr., Ann. S. Afr. Mus. x, 27 (1911), nec Uhler (1895).

18. Pseudomaenas oncodogramma, sp. nov.

♀. 35 mm. Head and body concolorous with wings; palpus more brown. Antenna minutely ciliated.

Forewing shaped and coloured about as in *anguinata* Feld. (Reise Novara, Lep. Het. t. 129, f. 1), light violet-grey, costally slightly more brownish; sparse black sprinkling; markings black, narrowly and inconspicuously edged with light brown; a large triangle arising at hindmargin close to base, its anterior side over 4 mm. long, the apex entering the cell, its posterior side 5 mm., just crossing SM^2, its distal side 3 mm.; a large, somewhat comma-shaped mark in the cell, its broad, distal end crossing the discocellulars; a postmedian band not reaching costa, its proximal edge shaped nearly as in *anguinata* but more oblique posteriorly, its distal edge strongly sinuous, angled inwards on M^2, so that the band gradually widens in the middle and is constricted at the angle; a very fine whitish line distally to this band, as in *anguinata*; an oblique dash close to apex; terminal line not or scarcely interrupted.—*Hindwing* almost unmarked, a very faint sinuous postmedian line discernible in some lights.—Underside almost unmarked.

Transvaal, Pilgrim's Rest (Miss L. Schunke).

An interesting link between *anguinata* Feld. and *intricata* Walk. (List Lep. Ins. xii, 814 = *maculipennis* Wllgren., Svensk. Akad. Handl. v (4) 72 = *callistege* Feld. t. 132, p. 29), though nearer to the former.

Gen. HEBDOMOPHRUDA Warr.

19. Hebdomophruda crenilinea, sp. nov.

♀. 34 mm. Closely similar to *apicata* Warr. (Nov. Zool. iv, 101), from Natal and Cape Colony, of which species it may even conceivably be a local modification. Middle segments of abdomen strongly infuscated dorsally.

Forewing slightly less pale, only differing essentially in that the oblique black line and its accompanying shades are markedly waved or crenulate throughout instead of straight; in addition, some extremely fine black lines, faintly discernible in *apicata*, are more noticeable, one curving backward and inward from the cell-dot, another running out from this to a very acute angle on R^1, touching the anterior brown shade, then running obliquely inward and sinuous, parallel with the stronger black line and again touching the anterior brown shade on M^1 and on M^2; the curved white line distally and posteriorly to the oblique line and shades (often fairly conspicuous in *apicata*, though not noticed in Warren's description) is purer and rather broader, hence very conspicuous.—*Hindwing* also less pale and with the faint lines sinuous.

Orange Free State, Smithfield (Kannemeyer), type in coll. S. Afr. Mus.; Maseru, Basutoland, April 11th, 1902 (R. Crawshay), a larger (37 mm.), duller ♀ in coll. Brit. Mus.; a worn ♂ without locality, nearer to the latter in size and apparently in coloration, in coll. L. B. Prout.

The ♀ antenna is shortly bipectinate.

20. Hebdomophruda errans, sp. nov.

♂. 24–29 mm. Also near to *apicata* and especially (in the crenulate postmedian line) to *crenilinea*. Antenna of ♂ with the pectinations somewhat shorter (scarcely over twice diameter of shaft, against thrice in *apicata*) and stouter. Abdominal dark shading more posteriorly placed.

Forewing with termen more waved, cell slightly longer still, M^1 arising close to R^3 (in *crenilinea* rather widely separate); antemedian line expressed, in places thickened (especially at costa), oblique outward from one-fourth costa or rather beyond, biangulate in cell and on M (**W**-shaped), then very oblique inward to one-fifth hindmargin; cell-mark vague, elongate; postmedian line rather more proximally placed, crossing M^1 near the cell (in *crenilinea* midway between cell and termen), throwing out small dashes proximally on the veins; the dark shades proximally to this line fairly strong, at least in posterior part of wing, but ill-defined, no dark line or shade distally; an oblique dark cloud on hindmargin midway between postmedian line and tornus or rather nearer the latter.—*Hindwing* with termen rather strongly and irregularly crenulate, a rather conspicuous tooth at end of R^3; postmedian line sharply defined from abdominal margin about to R^3, scarcely crenulate, obsolete anteriorly; at abdominal margin

the beginning of another line proximally hereto.—Forewing beneath with costal margin rather more strongly spotted.

Cape, Fraserburg, April, 1885 (E. G. Alston), type in coll. S. Afr. Mus; Bushmanland, 1897 (Schlechter), paratype (rather pale and more yellowish-brown, crippled in one hindwing) in coll. L. B. Prout.

Gen. DREPANOGYNIS Guen.

21. Drepanogynis pero, sp. nov.

♀. 33 mm. Head and palpus red-brown, mixed with black; 3rd joint of palpus distinct. Antennae lost, the few joints which remain not pectinated. Thorax pale fleshy ochreous, above strongly mixed with red-brown; abdomen pale, strongly dotted with black.

Forewing not very broad, termen rather irregularly and weakly subcrenulate, very slightly excised between apex and R^1; SC^2 anastomosing at a point with SC^{3+4}; very pale fleshy ochreous (whitest in cell and just beyond postmedian line), irrorated with red-brown and sparsely with black; veins more ochreous; lines black, throwing out short vein-dashes into the median area; first from two-sevenths costa to little beyond one-fourth hindmargin, very deeply excurved; postmedian parallel with termen, at 3·5 mm. distance, minutely lunulate-dentate; median area for the most part more shaded with red-brown, leaving a conspicuous pale patch bounded anteriorly by M–R^3, posteriorly by M^2 and distally by the postmedian line; subterminal line fine, somewhat interrupted, whitish, deeply lunulate-dentate, accompanied proximally by dark spots or wedges between the veins; termen with black vein-dots; fringe with dark intersecting line (damaged).—*Hindwing* rather paler; a dark postmedian line present, strongest at abdominal margin, bent at R^1 but fading out anteriorly; weak dark subterminal shading.—Both wings beneath pale fleshy-ochreous, with scattered dark irroration, minute discal dot and fine postmedian line, that of the hindwing reaching costa; forewing in addition with very slight suffusions in median area.

Cape, Clanwilliam, November, 1899 (Lightfoot).

The absence of the ♂ leaves the affinities somewhat doubtful. The coloration recalls the South American genus *Pero*—notably *variaria* Walk.

22. Drepanogynis leptodoma, sp. nov.

♂. 32 mm. Head, palpus, breast and upperside of foreleg reddish. Collar brown. Thorax above pale grey, strongly irrorated with red-brown; abdomen pale.

Forewing shaped nearly as in *admiranda* Warr. (Nov. Zool. xii, 406), the distal margin posteriorly slightly more oblique; colouring as in *admiranda*, rather more glossy, with more distinct (though fine and sparse) greyish transverse strigulae, the ochreous costal edge narrower and less bright, the fringe not ferruginous in proximal half; first line from little beyond one-fourth costa, gently curved (not angled) between costa and SM^2, even slightly oblique *outward* from SM^2 to hindmargin; cell-spot as in *admiranda*; postmedian line from costa 2 mm. before apex, parallel with termen at first, then very gently incurved, reaching hindmargin at scarcely more than 2 mm. from tornus; distal area slightly more whitish; terminal line fine.—*Hindwing* with apex and termen slightly more rounded than in *admiranda*; more whitish than forewing, without dark irroration or strigulation; a small cell-dot; the beginning of a fine postmedian line 1·5 or 2 mm. from tornus, curving away from termen but soon becoming very faint or obsolete; a fine terminal line.—Forewing beneath more reddish, especially anteriorly, the costal margin ochreous, with dark reddish strigulation; antemedian line obsolete, cell-dot and postmedian feeble. Hindwing beneath irrorated with ochreous and in places with reddish; cell-dot feeble; a scarcely discernible, slightly sinuate postmedian line, nearer to cell-dot than to termen.

Transvaal, Pilgrim's Rest (Miss L. Schunke).

Probably nearest to *devia* Prout (Ann. Trsv. Mus. x, 210), but paler, more slenderly built, more glossy. Antennal pectinations moderate, about as in the allies.

Gen. ASPILATOPSIS Warr.

23. Aspilatopsis orthobates, sp. nov.

♀. 36 mm. Structure (unless of the antennae, which are lost) as in *antennaria* Guen. Both wings (especially the hindwing) somewhat narrower. Head and body pale grey-brownish with a slight tinge of buff; abdomen darker beneath.

Forewing whitish grey, with dark olive-grey, largely confluent strigulation and very sparse fuscous irroration; inner marginal area from base to postmedian line suffused with light brown; the two dark lines distinct, edged with whitish on their reverse sides; antemedian from nearly one-third costa, strongly oblique outward, acutely angled in middle of cell, then oblique inward and straight to well before one-third hindmargin; postmedian straight, oblique, from costa close to apex to well before two-thirds hindmargin; a small black discal dot.—*Hindwing* slightly paler, darkening a little at distal margin, especially

in apical region; no appreciable markings.—*Forewing* beneath somewhat more smoky than above, cell-dot and postmedian line present but not very sharp, the latter placed as above from hindmargin to R^3, then running parallel with termen to costa 3·5 mm. from apex (further from apex than in *antennaria*).—Hindwing beneath more strongly irrorated than above (except at abdominal margin), with a cell-dot and a curved postmedian line, approximately parallel with termen, nearer to cell-spot than to termen, evanescent at abdominal margin.

Transvaal, Pilgrim's Rest (Miss L. Schunke).

On account of the shape, the straight lines, etc., I do not think this can be a form of the variable *antennaria* Guen.; an extremely worn ♂ with the same data had, however, apparently the fulvous tone of the latter, so that colour cannot be added to the points of differentiation.

Gen. SICYODES Warr.

24. Sicyodes pulverea, sp. nov.

♀. 30 mm. Head and body concolorous with wings; palpus, crown and front of thorax more heavily irrorated. Antenna merely serrate, not pectinate.

Forewing with apex blunter than in typical *Sicyodes*, termen less oblique, not noticeably subcrenulate nor gibbous; stalk of SC^{1-2} connected with C, SC^2 anastomosing with SC^{3-4}; vinaceous buff, with base of costa darkened and with scattered blackish dusting; no appreciable markings except an exceedingly faint discal dot and a postmedian line from about two-thirds costa faintly indicated in some lights, slightly angled outward near costa, then about parallel with termen; distally hereto a very narrow pale interval (merely indicated by the absence of irroration), beyond which the terminal area appears, in some lights, a little darker than the rest of the wing; termen with dark interneural dots not very sharp, becoming still feebler posteriorly; fringe concolorous.—*Hindwing* similar, with the postmedian markings apparently rather further from termen, but scarcely discernible.—Underside similarly coloured, virtually without markings.

Cape, Kalk Bay, February, 1904 (R. M. Lightfoot).

A rather anomalous and very inconspicuous species, the shape and aspect more suggesting a *Petelia* than a *Sicyodes*, the venation not quite typical.

25. Sicyodes subochrea, sp. nov.

♀. 28 mm. Structure in most respects as in the preceding, antennal serration rudimentary, C of forewing free, SC^2–R^1 of hindwing stalked.

Head and thorax concolorous with forewing, slightly more mixed with ochreous on collar and front of thorax; abdomen more strongly mixed with ochreous.

Forewing fawn colour, with vague olive-grey irroration; lines very indistinct, merely suggested by confluence of the irroration; antemedian at one-third, slightly angled outward on M (at origin of M^2), accompanied proximally at SC and M by very inconspicuous pale spots; a median shade discernible on middle of hindmargin; cell-mark darker, extending the full length of DC^{2-3} and about half as broad as long; postmedian line slightly nearer to termen than to cell-spot, rather more excurved in middle than termen, accompanied distally by slight indications of a row of pale spots, the most conspicuous at costa.—*Hindwing* much more ochreous, with the beginning of a rather thick darker line at abdominal margin 2 mm. from tornus. Both wings beneath glossy ochreous, the hindwing unmarked, the forewing more tinged with flesh-colour and with the costal edge minutely dark-strigulated and the cell-mark of upperside feebly reproduced.

Orange Free State, Smithfield (Kannemeyer).

A damaged ♀ (palpi broken, antennae lost, one forewing much torn) from Annshaw (Miss F. Barrett), in coll. Brit. Mus., apparently belongs to the same species, and shows that it is somewhat variable, not always so markingless. In this the forewing is more irrorated with light brown, especially from the middle to the postmedian line, forming here a kind of vague band; the costal margin shows dark dots indicating the position of the lines; the postmedian line is rather better expressed, somewhat angled inward close to costa and outward about R^1, and is followed distally by some ill-defined spots between R^2 and M^2, which also show on underside; the hindwing shows traces, from abdominal margin to R^1, of curved postmedian line or shade.

Gen. AXIODES Warr.

26. Axiodes dochmoleuca, sp. nov.

♂ ♀. 25–30 mm. Head and body concolorous with wings. Antennal pectinations in ♂ moderate, just over 3 times the diameter of the stout shaft; in ♀ scarcely (the inner series not) longer than diameter of shaft.

Forewing with costal concavity well marked, apex not extremely sharp, termen only quite moderately crenulate; SC^3 in ♀ present, though sometimes only separating from SC^4 quite close to apex; very light violet-grey, slightly suffused with light brown and with a few

scattered blackish scales; veins ochreous brown; a blackish streak from base along fold (not reaching antemedian line), throwing out a slighter streak along SM^2; antemedian line blackish, from one-fourth or two-sevenths costa, very oblique outward to M at origin of M^2 (but indented or accompanied by a proximal dash behind SC), from M very oblique inward and slightly sinuous to before SM^2, very oblique inward to hindmargin; postmedian very slightly crenulate, from R^1 about 2·5 mm. from termen, slightly incurved about M^2 to fold, bluntly or moderately toothed outward between fold and SM^2; a fine whitish line accompanying the postmedian distally; a broad (over 1 mm.) oblique white or whitish streak from apex to end of cell, underlined (at least in its distal part) with blackish; subterminal line pale, very ill-defined distally, where the ground-colour is paler than proximally; an irregular blackish patch between it and the posterior sinus of postmedian line; termen with blackish lunules; fringe dark-mottled.—*Hindwing* with termen weakly crenulate, rather more strongly about SC^2 and R^1; grey-brown, slightly darker distally than proximally; a vague pale postmedian line, curving a little towards tornus posteriorly.—Both wings beneath pale grey-brown or brown-grey, with traces of paler postmedian line; forewing with costal edge somewhat dotted with fuscous; hindwing with a distinct discal dot.

Cape, Kenilworth, May, 1901 (W. L. Sclater).

I have described as typical the form which prevails at Cape Town, and which I have also seen from Basutoland, Johannesburg, etc.; but the species seems to be very variable in the expression of the markings, the dark mottlings, etc. When, as in the name-type, the white apical streak entirely obliterates the postmedian line it is very sharply characterised, but often (Annshaw and sometimes Deelfontein) this streak is less sharply white and the line continues across it. Always, however, it is very easily distinguishable from the allied *inangulata* Warr. (Nov. Zool. xii, 408) by the very much less angulated postmedian line.

Gen. APHILOPOTA Warr.

27. Aphilopota phanerostigma, sp. nov.

♂ ♀. 42–44 mm. Form and aspect of *interpellans* Butl. (Ann. Mag. Nat. Hist. (4), xvi, 417), of which it may possibly even prove a local race. Head and body concolorous with wings.

Forewing drab, with a tinge of fawn-colour and with scattered dark

irroration; cell-dot large, black, long-oval; lines scarcely indicated except by blackish dots on the veins; antemedian from one-fourth costa to beyond one-fourth hindmargin, somewhat excurved anteriorly; postmedian from before three-fourths costa, curving inward so as nearly to touch the cell-mark on R^3, then nearly vertical to hindmargin. —*Hindwing* similar, sometimes slightly paler; first line wanting; postmedian slightly curved, but generally placed near the cell-mark.—Underside paler, with very feeble dark irroration; cell-dots present; postmedian dots present, but generally indistinct.

Salisbury, 1915 (Dr. M. Melle), type in coll. S. Afr. Mus.; also in coll. Brit. Mus. from the same district.

Gen. HEMEROPHILA Steph.

28. Hemerophila absurda, sp. nov.

♂. 32–35 mm. Face with appressed scales; fuscous. Palpus short; fuscous. Tongue slight. Antenna bipectinate apparently to apex (extreme tip lost), with long, rather slender branches. Vertex, thorax and abdomen concolorous with wings. Hind tibia not dilated.

Forewing with apex rather sharp, termen not crenulate; SC^1 anastomosing at a point with C, SC^2 from cell, free; light brown, slightly ochreous, irrorated and strigulated with fuscous, parts of the median and distal areas remaining slightly clearer; lines blackish; antemedian slightly thickened, especially behind M and near hindmargin, arising on costa before one-third, curved outward at first, indented between R^3 and M^1, strongly oblique inward and slightly sinuous to before one-fourth hindmargin; postmedian mostly rather slender, but thickened about R^3–M^1, arising on costa at five-sevenths, acutely angled outward about R^1, then oblique and slightly curved inward, reaching hindmargin about three-fifths; a blackish cell-dot; an extremely vague band of dark shading distally to the postmedian, slightly strengthened between the radials and near hindmargin; termen with slightly elongate blackish dots (or short dashes) between the veins.—*Hindwing* with termen not crenulate, but in anterior half appreciably undulate; first line wanting; postmedian not very sharply expressed, placed little beyond the cell-dot, somewhat crenulate, fairly direct or very slightly sinuous, posteriorly slightly oblique outward; some very slight shadings indicating the position of the subterminal line; terminal marks weak.—Underside with the cell-dots strong, somewhat enlarged, especially that of the hindwing, otherwise more weakly marked, the antemedian line of forewing suggested by a darkish

costal spot, the postmedian indicated (rather more sharply on the hindwing) by short dashes or teeth on the veins.

Cape, Montague Baths, November, 1902 (W. F. Purcell), type in coll. S. Afr. Mus.; paratype in coll. L. B. Prout.

Gen. LARENTIOIDES, gen. nov.

Face not protuberant, with appressed scales. Palpus rather short, moderately stout, closely scaled; 3rd joint quite short. Tongue present. Antenna in ♂ simple. Pectus moderately hairy. Thorax not crested. Abdomen in ♂ moderately slender, not crested, basal cavity without spine; hindtibia (lost), therefore evidently without hair-pencil.

Forewing without fovea; rather narrow, costal margin nearly straight, apex bluntly pointed, termen scarcely waved, gently curved, strongly oblique; cell one-half, DC^3 incurved; C free, SC^2 from cell, anastomosing strongly with SC^1 and afterwards with SC^{3+4}, forming a double areole, R^2 from slightly before middle of DC, M^1 separate.—*Hindwing* rather narrow, costa elongate, apex rounded, termen moderately crenulate, tornus nearly square (the extremity rounded off); cell one-half, DC very slightly curved; C closely approximated to SC to beyond middle of cell, then rapidly diverging, SC^2 separate, R^2 wanting, M^1 well separate.

Type of the genus: *Larentioides cacothemon*, sp. nov.

Akin to the Oriental genus *Hirasa* Moore, differing in the much narrower, less crenulate wings, the double areole, longer approximation of C of hindwing to SC and secondarily in the non-dilated hindtibia of the ♂.

29. Larentioides cacothemon, sp. nov.

♂. 33 mm. Face and palpus dark fuscous. Vertex, thorax, and abdomen grey, irrorated with fuscous, which tends to form on each abdominal tergite a pair of very vague spots.

Forewing rather glossy grey, with a slight violaceous tinge and with sparse fuscous and blackish irroration; lines fuscous, not very strong, but blackened with spots or dots on the veins; antemedian from two-fifths costa to one-fourth hindmargin, angulated outward in cell and at submedian fold (shallowly **W**-shaped); median well beyond the slightly elongate black cell-mark, about 1 mm. from the postmedian and approximately parallel therewith, apparently diverging at costa, where, however, it is almost obliterated; postmedian very oblique and sinuous, from beyond five sixths costa, very gently incurved between

radials and more markedly in posterior part, reaching hindmargin little beyond the middle; some weak dark shadings in distal area, in part giving the impression of a less oblique continuation of the postmedian line from M^1 to hindmargin; dark terminal line not very sharp, slightly interrupted at the veins.—*Hindwing* concolorous, at costal margin paler and feebly marked; median and postmedian lines approximated, wavy or somewhat sinuous, the former only, the latter chiefly, pronounced towards abdominal margin, here nearly parallel with termen, anteriorly somewhat receding; cell-mark scarcely indicated; some weak submarginal shades; terminal line as on forewing. —Underside very feebly marked.

Cape, Carnarvon, January, 1910 (J. Drury).

The unique example is unfortunately in poor condition, but easily recognisable by the structural characters combined with the facies, which recalls some narrow-winged Algerian *Hemerophila* or *Boarmia atlanticaria* Stgr., etc.

Gen. PERIDELA Warr.

30. Peridela punctilinea, sp. nov.

♂. 30 mm. Face not tufted, whitish ochreous with dark speckling. Palpus (broken in type) rather short, mostly pale, with some dark speckling on sides and above. Crown somewhat ochreous. Antennal pectinations little longer than diameter of shaft. Thorax and abdomen concolorous with wings. Hindtibia dilated, with hair-pencil, abdominal spine developed.

Forewing with fovea moderate; SC^{1-2} coincident, free (type) or touching C at a point (paratypes); whitish brown, tinged with ochreous on the veins and about the lines; irroration and strong costal dots or strigulae dark fuscous; lines dark fuscous, thickened at costa; antemedian oblique outward from two-sevenths costa, strongly curved in cell, then very oblique inward and slightly sinuous; median slight, except at costa, nearly parallel with termen, very slightly curving away at costa; postmedian about 3 mm. from termen, nearly parallel therewith from hindmargin to R^1, here bent, running vertically to costa; composed of rather large vein-dots, those on R^2 and SM^1 (fold) generally smaller; cell-spot elongate; some slight dark shading proximal to the almost obsolete subterminal line; terminal dots strong, somewhat elongate.—*Hindwing* with termen somewhat irregularly waved, slightly emarginate between the radials, very slightly prominent at R^3; lines not thickened at costa; antemedian wanting;

median slightly incurved between the radials, crossing the strong cell-dot; postmedian from beyond two-thirds costa to abdominal margin near tornus, continuous, though accentuated by large vein-dots, incurved between the radials, strongest about R^3–M^1; distal area nearly as on forewing.—Underside more suffusedly irrorated; first line of forewing wanting, postmedian dots of both wings connected by a line and closely succeeded distally by a moderately broad, distally ill-defined brown band, suffused in places with purplish fuscous; a brown terminal line, somewhat thickened between the veins.

Bechuanaland, Gaberones, 1916 (Marshall), type; two paratypes, from Ovampo Land, in coll. Brit. Mus.

31. Peridela birecta, sp. nov.

♂. 28 mm. Palpus one-and-a-half times the length of diameter of eye. Antennal pectinations fully three times as long as diameter of shaft, giving place, after about 36 joints, to mere teeth. Head and palpus very pale ochreous brown, irrorated with ferruginous. Collar somewhat ferruginous. Thorax above vinaceous buff, with a few dark scales. Abdomen paler.

Forewing with the venation apparently somewhat variable, subcostal veins in the type crowded, SC^{1-2} apparently coincident and anastoming slightly or connected with C (in the three Bloemfontein examples, as is usual in the allied *butaria*, not crowded, SC^1 arising out of C, not touching SC^2); white or whitish, tinged with yellow; an isabelline or slightly fawn-coloured, fuscous-dotted patch from base nearly to first line; lines dark fuscous; first from costa before one-third, slightly excurved at first, then vertical to hindmargin; median line from middle of costa to hindmargin at three-sevenths, obtusely angled between the medians, straight before and behind; space between first and median lines concolorous with basal patch, darkened about DC and behind submedian fold; postmedian line from two-thirds costa, excurved anteriorly and forming a very slight inward curve between R^3 and hindmargin; nearly interrupted between radials, otherwise thick, posteriorly with some dark shading proximally; distal area isabelline or fawn-coloured, separated from postmedian by a white line; subterminal white line distinct, rather thick, very slightly sinuous but not lunulate, posteriorly curving outward nearly to tornus: some fuscous spots proximally to the subterminal; an oblique pale shade from apex across subterminal line; terminal line broken into dots or dashes, not very sharp.—*Hindwing* almost wholly pale, with a minute discal dot and indications (chiefly in abdominal region) of postmedian line and cloudy submarginal and marginal bands (in the Bloemfontein

specimens the submarginal band more complete); terminal line interrupted, not very sharp.—Both wings beneath with similar but weaker markings.

Cape, Namaqualand (Worden), O'okiep, September 22nd, 1886, type in coll. S. Afr. Mus.; Orange Free State, Bloemfontein (H. F. Wilson), 3 in coll. Brit. Mus.

Near *butaria* Swinh. (Tr. Ent. Soc. Lond., 1904, p. 510), but distinct in the shape of the median line and especially very different in the markings of the distal area.

Gen. TEPHRINA Guen.

32. Tephrina abnormata, sp. nov.

♂. 29 mm. Face brown. Palpus whitish-brown, 2nd and 3rd joints with darker admixture. Vertex light brown; occiput fawn-colour. Antenna brown; the pectinations rather short (scarcely over twice diameter of shaft) and stout, well ciliated at the tips. Collar somewhat ochreous. Thorax above mostly fawn-colour, beneath light brown. Hindtibia not dilated. Abdomen light brown.

Forewing with fovea; SC^1 arising from C, free; whitish brown, in places (most decidedly in entire distal area) shaded with fawn-colour; irroration wood-brown; costal margin, especially in median area, rather more ochreous brown, with fuscous dots or minute strigulae; lines brown; antemedian rather thick, oblique outward from before one-fourth costa, roundly bent in cell, minutely indented behind M, vertical to about one-third hindmargin; discal dot rather large, black; median line rather thick, not very sharp, bent outward distally to the cell-spot, then almost straight to just beyond middle of hindmargin; postmedian line 3 or 4 mm. from termen, nearly parallel therewith (almost inappreciably incurved about the fold) from hindmargin to R^1, anteriorly somewhat curving proximal; termen with small black dots between the veins.—*Hindwing* with termen a little subcrenulate from SC^2 to R^3, smooth posteriorly; first line wanting; cell-dot smaller, postmedian line less convex than termen, towards abdominal margin slightly curving distad.—Underside much warmer in coloration, the ground-colour being more ochreous, irrorated and shaded (especially on the distal area of hindwing) with a mere ferruginous shade; first line wanting, the others weaker than above, the median, especially on hindwing, ferruginous-ochreous; cell-dots present; terminal dots obsolescent.

Natal, Durban, February, 1914 (W. Haygarth).

Recalls *Discalma normata* Walk. (= *parallelaria* Walk.) in general facies and coloration; apart, however, from the ♂ antenna, it may be distinguished at a glance by the anteriorly curved postmedian line; cell-dots larger and stronger (variable, however, in *normata*).

Gen. DISCALMA Meyr.

33. Discalma arcifera dubia, subsp. nov.

♂. 30 mm. Differs from *arcifera arcifera* Hmpsn. (Proc. Zool. Soc. Lond. 1910, p. 469, t. 39, f. 3), from N. E. Rhodesia (and a quite similar ♂ from Ruo Valley, Portuguese East Africa), as follows: Ground-colour less rufescent, with stronger dark irroration; the oblique common line finer and darker, followed distally on each wing above and beneath by a thick, dentate dark line arising near apex and diverging gradually from the oblique line.

North Ovampo Land, 1890–91 (H. W. Eriksson).

As the apex of the forewing is more falcate, this may well prove a distinct species, but the rest of the structure and the facies agree so absolutely that I hesitate so to regard it.

Gen. GONODONTIS Hb.

34. Gonodontis stictoneura, sp. nov.

♂. 37 mm. Head and body concolorous with wings, the face dark-mixed, the palpus infuscated on the outer side. Antennal pectinations long for the genus (over 3 times diameter of shaft).

Forewing with termen not crenulate, scarcely waved; pale greyish ochreous, with scattered (sometimes very weak) dark irroration; lines weak, especially the antemedian, which arises at two-fifths costa and is markedly excurved, but is scarcely traceable except by a slightly pale line which accompanies it proximally and by three black vein-dots, those on M (at origin of M^2) and SM^2 large and conspicuous; postmedian marked with smaller dark vein-dots, arising at four-fifths costa, nearly straight to R^3, here angled, its posterior half forming a regular curve, with the convexity directed proximad; a slight pale line accompanying the postmedian distally; cell-mark strong, ocellated, showing a slight tendency to break up into dots; termen with small interneural dots.—*Hindwing* paler, with a similar but rather less intense cell-mark and faintly discernible, angulated postmedian line, beyond which is a vague, narrow whitish band; terminal dots obsolescent.—Both wings beneath with the ocellus strong, the angulated

postmedian line present, dotted on the veins, and a (sometimes almost obsolete) fuscous submarginal band.

Cape, Hout Bay (W. L. Sclater), type in coll. S. Afr. Mus.; paratypes from the same locality and Kalk Bay in coll. Brit. Mus. et coll. L. B. Prout.

Possibly a local race of the Abyssinian *integraria* Guén. (Spec. Gén. Lép. ix, 166), which I only know from Guéné's description and Oberthur's figure (a ♀, Et. Lep. ix, fig. 1903), but with the postmedian lines appreciably different from those of both Guéné's species, the large, conspicuous ocellus of the hindwing above distinctive, etc.

Gen. PARECLIPSIS Warr.

35. Pareclipsis onus, sp. nov.

♂. 34 mm. Face without projecting cone; palpus apparently short (head somewhat crushed); antenna rather strongly lamellate; structure otherwise agreeing with *punctata* Warr. (Nov. Zool. vii, 97). Head and body concolorous with wings.

Forewing with costal margin slightly sinuous, apex round-pointed, termen oblique, curved towards middle, becoming more oblique behind; SC^2 anastomosing at a point with SC^{3+4}; glossy, broccoli-brown, with minute rather sparse and very inconspicuous blackish-grey irroration; a rather large (nearly 1 mm. diameter), roundish, not very sharply defined grey-black discal spot beyond middle; a very faint line of small grey vein-dots passing midway between this and termen, nearly parallel with the latter but with a very slight curve inward between R^1 and SM^2.—*Hindwing* paler, in some lights appearing almost whitish; cell-dot smaller than on forewing; postmedian dots almost entirely obsolete, faintly discernible near abdominal margin, more proximally placed than on forewing.—Forewing beneath slightly paler than above, at least posteriorly; cell-spot and postmedian line of dots reproduced, the latter slightly more distinct anteriorly. Hindwing beneath rather less white than above; cell-dot reproduced; postmedian line of dots distinct throughout.

Cape, Cape Town, June, 1872.

Gen. OBOLCOLA Walk.

36. Obolcola cacoctenes, sp. nov.

♂. 28 mm. Structure of *ferrorubrata* Walk. (List Lep. Ins. xxvi, 1670), except as noted; thus differing from typical *Obolcola* in the

elongate wings, long cells and presence of SC^1 of forewing, widely free. Head and body concolorous with wings. Antennal pectinations very much shorter than in *ferrorubrata*, only 2–3 times as long as diameter of shaft; rather slender, well separated.

Forewing not quite so narrow as in *ferrorubrata*, termen towards apex not quite so oblique; light brown, with some slightly rufescent shadings and with scattered dark irroration; costal edge dark-dotted; lines exceedingly faint, placed as in *ferrorubrata*, the median quite fine, the postmedian dots minute; a small black cell-dot; termen with small, weak, dark dots.—*Hindwing* almost uniform grey, with a slight purplish tinge; cell-mark very faintly indicated in rather darker grey.—Underside as in pale examples of *ferrorubrata*, the forewing, except at costal margin, being glossy and feebly marked, the costal margin and the entire hindwing more mixed with ochreous, strongly irrorated; cell-marks present but not strong.

Cape, Wynberg, October, 1862.

Except for size and structure, might have been taken for a striking ab. of *ferrorubrata* of the least rufous form and with the characteristic broad median shade almost obsolete.

Gen. PETELIA H.-Sch.

37. Petelia pseudognophos, sp. nov.

♂♀. 33 mm. Structure of *strigata* Warr. (Nov. Zool. iv, 103 = *crassata* Warr., op. cit. xi, 477), the face being without projecting tuft and the palpus short for the genus; C of hindwing rather farther from SC, connected by a slight bar near base. Head and body coloured nearly as wings, the face, palpus and fore- and middle-legs slightly darkened, the vertex slightly pale.

Forewing not quite so broad as in *strigata*, termen more oblique; rather glossy grey, somewhat mixed or clouded with light brown and with moderately strong, scattered blackish irroration; lines rather vague, formed of massed brown irroration, from costa at about one-fifth, two-fifths and two-thirds, nearly parallel, all bent strongly outward before middle, inward about middle, outward behind and more or less indented on SM^2; cell-dot small, black; subterminal line indicated by a series of fairly large but not very sharply defined whitish vein-spots, proximally edged by some blackish irroration; the spots at R^2 and R^3 weaker, more proximally placed: termen with rather large black interneural dots, slightly extending into grey dashes; fringe almost unicolorous.—*Hindwing* similar, with two instead of three

brown lines, the second scarcely beyond the middle; a small white spot instead of a black dot on the discocellulars.—Both wings beneath glossy pale grey, with black discal dot and very faint suggestions of fairly straight antemedian and postmedian line, a slightly paler band distally to the latter; termen with elongate black interneural marks.

Cape, Cape Town, May, 1913, and December, 1911 (P. C. Keytel), type ♂ and a ♀ in coll. S. Afr. Mus.; Kalk Bay, June, 1904 (Davidson), paratype in coll. L. B. Prout.

Certainly allied to *strigata* Warr., but with very different facies, superficially recalling a *Gnophos*; the markings bear also a striking resemblance to those of the North American *Ixala desperaria* Hulst, and the face and palpus may demand the removal of both *strigata* and *pseudognophos* to Hulst's genus, if that is tenable. The group (the genus *Deilinia* of Meyrick and Hampson) is almost cosmopolitan, though nowhere very rich in species.

INDEX.

4.—*On Some South African Avicularliidae (Arachnida). Families Migidae, Ctenizidae, Diplotheleae, and Dipluridae.*—By R. W. E. Tucker, B.A., *Assistant.*

(With Plate IX and Thirteen Text-figures.)

Family MIGIDAE.

Gen. MOGGRIDGEA, O. P. Cambr.

The separation of *M. seticoxa*, *coegensis*, and *nigra* by Hewitt (Ann. Trans. Mus., vol. 5, No. 2, p. 92) under the heading (a^1) "*Coxa II with a distinct posterobasal group of shorter and more densely crowded (often spiniform) setae inferiorly*" seems doubtful. Purcell, in his description of *M. coegensis* (Ann. S. Afr. Mus., vol. 3, pt. 4, p. 72), mentions "Coxa II with a much smaller and scarcely distinct group (formed of 6–8 setae placed closer together than elsewhere"); and in the type specimen the approximation of the bristles is scarcely a distinct group. Of the other members, *nigra* has no such group, and *seticoxa* has only a very slight approximation of bristles, as in *coegensis*; it may be advisable therefore to merge the *seticoxa-coegensis* group with the *quercina-microps* group, with the posterobasal group of bristles on Coxa III as the distinguishing character, making the presence of a few extra bristles basally on Coxa II a subsidiary specific guide.

Moggridgea quercina, Sim.

1903. Simon, E., Ann. Soc. Ent. Belg. vol. 47, pt. 1, p. 22.
1903. Simon, E., Hist. Nat. des Araign. vol. 2, p. 881.
1903. Purcell, W. F., Ann. S. Afr. Mus. vol. 3, pt. 4, p. 73.
1915. Hewitt, J., Ann. Transv. Mus. vol. 5, No. 2, p. 91.

An adult ♀ specimen (No. B. 1364) taken from nest on a Mahogany Umkahla tree in Durban by H. W. Bell-Marley, September, 1915. This specimen is so closely allied to *M. quercina* that it has been referred to that species.

Apart from the size, the few differences which present themselves seem insufficient to separate it specifically from the above.

It undoubtedly comes in the same group as *quercina*; in size it more nearly approaches *M. intermedia* (Hewitt). From the descriptions, both *M. intermedia* and *M. microps* (Hewitt) seem so closely related to *M. quercina* that they may well prove to be local forms of a wide-spread tree-inhabiting species.

The nest of the above specimen consists of a roomy chamber (sufficient in size for the spider to turn in), built in a hollow of the bark, coloured to resemble the latter, and decorated with lichen, etc.; the door is similar and fairly strongly built, and has a bevelled edge, which fits well down on to the rim of the tube, which is also hard and bevelled.

Measurements of specimens.—Carapace 6·5 long; 5·5 wide. Length 18 mm.

MOGGRIDGEA PERINGUEYI, Sim.

1903. Simon, E., Ann. Soc. Ent. Belg. vol. 47, pt. 1, p. 23.
1903. Simon, E., Hist. Nat. des Araign. vol. 2, pp. 878 and 881.
1903. Purcell, W. F., Ann. S. Afr. Mus. vol. 3, pt. 4, p. 73.
1915. Hewitt, J., Ann. Transv. Mus. vol. 5, pt. 2, 92.

Specimens.—♂ (No. 8328) Houwhoek, Cal. Div. (W. F. Purcell, 8/1900). ♀ (B779) Houwhoek. (R. M. Lightfoot, 7/10).

♂. *Colour.*—Carapace very dark mahogany brown; almost black in appearance; abdomen black; spinners, lung operculae, and genital plate lighter brown; sternum and coxae pale brown, coxae of pedipalps reddish-brown. Legs with dark femora, but lighter from patellae onwards.

Carapace.—Equal in length to tibia and $\frac{5}{6}$ of metatarsus of 1st leg, and to tibia and $\frac{4}{5}$ metatarsus of 4th leg; densely granular. Fovea deep and strongly recurved.

Eyes.—Front row lightly recurved; medians nearly their own diameter apart, laterals broadly oval, much larger than medians, and more than their own long diameter from latter and from anterior margin of carapace. Posterior row recurved; much narrower than anterior row, and with the eyes small and flat; medians and laterals subequal, well separated, and situated opposite the gap between anterior medians and anterior laterals.

Labium and coxae of pedipalps and legs muticous.

Chelicerae with 4 teeth down each side of groove. Posterior sternal sigilla long, broad oval, and well separated from margin; situated between 2nd and 3rd coxae.

Legs.—Tarsi short, swollen, scopulated, and unspined. Metatarsus I with 6 strong spines down each side surface, and with a few other

smaller ones. Metatarsus II similar, but with the spines weaker and more irregular; both are unscopulated, but metatarsus II has a few scattered hairs on under surface distally. Metatarsus III spineless but bearing stiff setæ and a small patch of scopular hairs distally; metatarsus IV with neither spines nor setae, slightly swollen distally, tapering towards base and curving upwards; under surface entirely and densely scopulated, save for small tapering basal portion.

Pedipalps hardly distinguishable from *M. terricola.*

Measurements.—Chelicerae to end of abdomen, nearly 12 mm. Carapace 6 mm. long, 5·7 mm. wide. 1st leg 15·5, 4th leg 16·5 mm. long.

A ♂ (No. 7813) from Brandvlei, Worc., appears referable to this species; it differs from the Houwhoek ♂ in that the legs are unicolorous and longer relatively to the carapace, the latter being identical in measurements with *M. peringueyi*; eyes, palp, scopulation, and metatarsus IV are the same; the spination is slightly stronger, and cephalic portion of carapace smoother and more reticulated than in *peringueyi.*

Nine ♀ ♀ and jv. (No. B1555–6) from Beaufort West are practically identical in appearance and characters with the Matjesfontein specimens, and there is no doubt that the species extends also to the above locality.

Moggridgea latus, n. sp.

Specimens.—Nine ♀ ♀ (types) and 32 jv. (No. 150,082), taken by Dr. W. F. Purcell from an old mud wall at Caledon; 7/10.

This species is very closely allied to *M. peringueyi*, and with the advent of the male it may prove to be a very distinct local variety; the main distinction being in the ocular area and in general size.

Colour.—Carapace and legs infuscated brown; abdomen dark purplish black above in adults, and testaceous below; the upper surface bearing traces of testaceous spots and markings. In younger specimens (seen in spirits) the abdomen has distinct testaceous markings bringing out oblique lines down the abdomen; the anterior, darker half of the abdomen usually has 4 testaceous spots forming a square, and a continuation of light spots down each side; in some, black oblique infuscations on a light surface make the principal pattern, and in others the testaceous spots, somewhat elongated, on a dark ground.

Carapace.—General proportions much as in *peringueyi, i. e.*, width nearly equal to length, and length equal to patella, tibia, and $\frac{1}{3}$–$\frac{1}{2}$ metatarsus of 1st leg, and subequal to tibia and metatarsus of 4th

leg; width of carapace reaches to centre of anterior eyes in *latus*, and not so far in *peringueyi*; fovea, etc. as in latter.

Eyes.—Ocular area at least $2\frac{1}{2}$ times as wide as long; in *peringueyi* it is only twice as wide as long. Anterior row with their hind margins in a straight line, and their anterior margins procurved; medians small and about a diameter apart; laterals very large and separated from medians by a distance at least equal to the space occupied by both medians. Posterior row very slightly recurved, almost as wide as anterior row; medians oval, oblique, larger than laterals, and their own long diameter from the latter.

Coxae muticous; rest of characters as in *peringueyi*; the comb on metatarsus IV is less compact and of longer, finer spines; also sternal sigilla are larger and deeper than in the latter.

Measurements.—Largest specimen: chelicerae to end of abdomen 25·3 mm.; carapace 10 mm. long and 9 mm. wide.

Moggridgea terricola, Sim. (Text-fig. 1).

1903. Simon, E., Ann. Soc. Ent. Belg. vol. 47, pt. 1, p. 22.
1903. Simon, E., Hist. Nat. des Araign, vol. 2, pp. 878 and 881.
1903. Purcell, W., F., Ann. S. Afr. Mus. vol. 3, pt. 4, pp. 71 and 73.
1915. Hewitt, J., Ann. Transv. Mus. vol. 5, No. 2, p. 92.

Specimens.—♂ (No. 3499) and 4 ♀ ♀ (Nos. 150,481 and B 1175), Bergvleit, Diep R., Cape Peninsula (W. F. Purcell, 10/96 and 5/15).

♂. *Colour.*—Carapace very dark mahogany-brown; posterior legs lighter in colour; abdomen dull testaceous, strongly infuscated dorsally, especially posteriorly; under surface pale; sternum pale yellowish-brown; anterior coxae somewhat darker.

Carapace.—Equal in length to tibia and metatarsus of 1st leg, and equal to or slightly exceeding tibia and patella of 4th leg. Surface densely granular save for a band from fovea to ocular tubercle. Fovea slightly recurved.

Eyes.—Ocular area twice as wide as long. Front row of eyes straight; medians round, a radius apart, and larger than anterior laterals, which are oval, oblique, and about a diameter distant from the medians. Posterior row recurved and not so broad as anterior row; medians small and flat and close to laterals, which are very slightly larger.

Labium and coxae of pedipalps muticous; 3rd coxae with a small patch of bristles corresponding to patch of spinules in ♀.

Chelicerae with 4 small teeth on outer and 4 on inner margin; no rastellum. Posterior sternal sigilla large, inclined towards each other,

opposite posterior edge of 2nd coxae, and well separated from margin.

Legs.—Clothed with short sparse hairs proximally, and longer more numerous ones distally. Tarsi short and stout, spineless and scopulated. Metatarsus I with 3 spines on anterior side and 3 on posterior. Metatarsus II similar, but with finer spines. Former not scopulated below, latter with a few scopular hairs anteriorly. Metatarsus III with long stiff hairs, many somewhat spiniform in character; no scopulation. Metatarsus IV similar and scopulated over $\frac{1}{2}$ its length below. Tibiae I and II well armed with stout spines.

Pedipalps spineless; tibia swollen basally and hollowed out on under surface, latter portion carrying long hairs; bulb (Text-fig. 1)

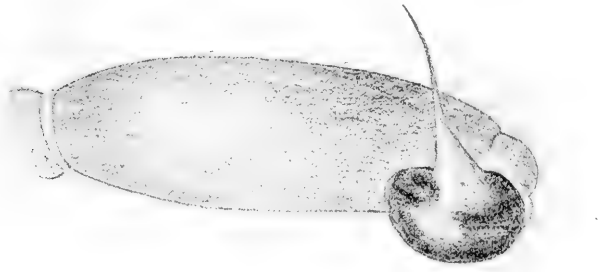


Fig. 1.—*Moggridgea terricola*, Sim. Right palp, under side.

oval, with process stout basally, tapering rapidly towards extremity, and pointing outwards and upwards.

Measurements.—Total length 8 mm.; carapace 4·5 mm. long and 4 mm. broad.

Gen. POECILOMIGAS, E. Sim.

Poecilomigas abrahami, O. P. Cambr.

1889. *Moggridgea abrahami*, Cambr., O. P., P. Z. S. 1889, p. 41, pl. 2, fig. 3.
1889. *Moggridgea tidmarshi*, Lenz., Zool. Anz. Jhrg. 12, 1889, p. 578.
1892. *Migas abrahami*, Simon, E., Hist. Nat. des Araign. 2nd ed. v. 1, pp. 82 and 84.
1895. *Moggridgea abrahami*, Pocock, Ann. Mag. Nat. Hist. (6), vol. 16, p. 187.
1897. „ „ Pocock, P. Z. S. 1897, p. 733.

1902. *Moggridgea abrahami*, Pocock, A. M. N. H. (7), vol. 10, p. 320.
1903. „ „ Simon, E., Hist. Nat. des Araign. vol. 2, p. 881.
1903. *Poecilomigas abrahami*, Pocock, Ann. S. Afr. Mus. vol. 3, pt. 4, p. 72.
1915. „ „ Hewitt, Ann. Transv. Mus. vol. 5, No. 2, p. 91.

Three ♀ specimens (Nos. B 1314, 1946, 1968) from Durban (H. W. Bell-Marley, 11/15).

*Notes on habitations.**—The nests of *Poecilomigas* are invariably furnished with two trap-doors, one at each end of the tube. In one example the rear trap-door is spun over with a disc of silk which is connected by a prominently ridged band with another similar disc of silk fastened on to the bark; the rear door is thus apparently held down, but capable of being used if necessary. In another nest, however, the hinge of the posterior door is but slightly removed from the anterior one—their distance apart is usually commensurate with the size of the inhabitant—and the two silk discs are fastened one on the side of each of the doors, and are themselves hinge to hinge (as in the above example also); in this case the advantage seems so problematical that it may be doubtful if the silk discs with their connecting bands are the work of the spiders to whose habitations they are attached—particularly as they are concealed by being covered with grains of earth and sand instead of pieces of bark and lichen. In another nest the doors were widely separated, the posterior one being smaller than the anterior one, and securely fastened down on the inside so as to be useless for escape (see also P. Z. S. 1887, p. 42); on this nest and on another similar one there were no traces of the connected discs as above, which further seems to show that they are not the work of the inhabitants of the nests to which they may be attached as above.

Family CTENIZIDAE.

Gen. STASIMOPUS, Sim.

Stasimopus purcelli, n. sp. (Plate IX, fig. 1).

Specimens.—♂ (No. 150,432, type) from Caledon (W. F. Purcell, 7/10.

Colour.—Carapace, mandibles, and upper abdomen black; under abdomen brown to purplish-black; sternum pale brown, darker anteriorly; coxae of pedipalps almost black; coxae of legs I and II

* See p. 136.

dark brown; III and IV lighter, being an ochraceous brown with an olivaceous tinge.

Carapace.—Strongly granulated and with deep cephalic grooves; ocular area and border of carapace reticulated. Central granular ridge from ocular tubercle, distinct; lateral ones not so distinct. Length of carapace equal to metatarsus and $\frac{1}{2}$–$\frac{2}{3}$ tarsus of first leg, and to metatarsus and about $\frac{1}{4}$ tarsus of 4th leg; it is subequal in length to metatarsus and tarsus of 2nd leg.

Eyes.—Front row straight, subequal, equidistant, laterals round. Posterior row straight, medians small, directly behind inner side of anterior laterals, and distant their own diameter from posterior laterals.

Pedipalps extend to just over $\frac{1}{2}$ tibia of 1st leg; otherwise as in Plate IX, fig. 1.

Legs.—Tarsi I and II unspined. Tarsus III with 1 spine on outer side. Tarsus IV with 8–10 small spines on outer side; all four tarsi scopulated. Metatarsus I very slightly curved, 8 spines on inner and 9 on outer side. Metatarsus II with 7 spines on inner side and 8 on outer. Metatarsi III and IV spineless but with bristly hairs. Tibiae I and II heavily spined; III and IV unspined. Patella I with 5 apical spines on under and anterior surface; patella II with a few weak spines, III and IV with none. Tarsal claw IV with 2 basal teeth (allied species *S. brevipalpis* has 6 teeth around curve).

Measurements.—Total length 12 mm.; carapace 5 mm. long; 1st leg 16 mm.; 3rd leg 12·5; 4th leg 16·5 mm.

This species is closely allied to *S. brevipalpis* (Purc.).

S. BREVIPALPIS, Purc.

1903. *S. brevipalpis*, Purcell, Ann. S. Afr. Mus. vol. 3, pt. 4, p. 75.
1915. *S. brevipalpis*, Hewitt, Rec. Albany Mus. vol. 3, No. 2, p. 81.

A ♂ specimen (No. B 778) taken at Ashton Robst. Div. by T. O'Connor 2/7/14 appears to be a black variety of *brevipalpis*; apart from colour it also has stronger setae and varies in spination. The eyes also are slightly different; the anterior row appearing even slightly recurved, and the laterals round (approximately) and slightly larger than the medians.

STASIMOPUS KENTANICUS, Purc. (Plate IX, fig. 2).

1903. *S. kentanicus*, Purcell, Ann. S. Afr. Mus. vol. 3, pt. 4, p. 82 and p. 87.
1915. *S. kentanicus*, Hewitt, Rec. Albany Mus. vol. 3, pt. 2, p. 84.

Specimens.—A ♂ (No. 14,685) from Kentani (H. P. Abernethy, 1909); also another ♂ (B 782) by the same collector but with no locality or date.

Colour.—Upper surface of chelicerae, cephalothorax, and abdomen deep black; legs also black with very slight brownish tinge, as far as tibiae; metatarsi and tarsi brownish-red in colour. Sternum, coxae, and bases of pedipalps very dark brown; under abdomen black; genital plate, lung operculae and spinners light brown.

Cephalothorax.—Length equals metatarsus and $\frac{4}{5}$ tarsus of 1st leg, and metatarsus and about $\frac{1}{8}$ tarsus of 4th leg; also equals tibia and patella, and slightly exceeds metatarsus and tarsus of 2nd leg. Border of carapace slightly raised; ridges in centre of cephalic region well marked; middle one reaching nearly to fovea.

Eyes.—Front row slightly procurved: eyes equidistant; laterals and medians subequal, the medians being round and dark and the laterals oval. Posterior row slightly recurved; laterals round, flat, smaller than anterior medians, and dark; medians light, subtriangular, larger than and almost touching laterals; and situated almost behind anterior laterals, to which they are subequal in size.

Spinners short and stout, equal in length to $\frac{1}{2}$ the sternum, and infuscated below as in female. Spinners and under abdomen somewhat hairy; upper abdomen sparsely covered with black hairs.

Labium long, convex, and muticous. Posterior sternal sigilla long, almost vertical, opposite 2 pair of legs, and more than their long diameter from the margin.

Pedipalps.—Tibia long and swelling underneath posteriorly. Basal portion of bulb broad and globular and ending in a long style, curved outwards, tapering and fine. (Plate IX, fig. 2).

Chelicerae with 4–5 teeth on outer edge; 3–4 on inner, with a few denticles between them.

Legs long and slender. Tarsus I scopulate down centre; band of 18 short stout spines down outer side, and 11–12 down inner. Metatarsus I not scopulate but heavily spined underneath and at sides. Tibia I also heavily spined underneath; patella with a few spines at apex underneath. Tarsus and metatarsus II the same as 1st leg; metatarsi I and II are long and swell very gradually distally. Tarsi I and II short compared with tarsi III and IV; narrow at base and swelling in centre; broad on top; scopulated below; also spined at sides, III less so than IV. Metatarsus III heavily and irregularly spined underneath and at sides (spines longer). Femora I and II long and slender; III and IV stouter and shorter and swelling in centre below; III shorter than IV or II.

Measurements.—Length 17·8 mm. (spinners excluded). Carapace 7 mm. long and 6·5 wide; 1st leg 24, 3rd leg 18·5, 4th leg 25·5 mm. long.

Very similar to *S. gigas* (Hewitt), especially in appearance; though considerably smaller. Latter however has stouter process to bulb, and tarsus of first leg is far less heavily spined; 4th tarsal claws of *S. gigas* have 3 stout basal spines and 4 small ones distally inside the curve; *kentanicus* has a basal comb of about 5 spines and about 5 sharp teeth in curve; anterior claws also have more numerous, sharper teeth.

Stasimopus nanus, n. sp.

Specimens.—A ♀ (No. B 89, Type) from Smithfield, Orange Free State, collected by Dr. Kannemeyer.

Colour.—Carapace and legs dark olivaceous brown; lighter around and below ocular tubercle; anterior legs slightly lighter; abdomen dark above and below; under surface of legs, coxae and sternum dull medium brown.

Carapace.—Subequal in length to patella, tibia, and metatarsus I.

Ocular tubercle.—Subequal to tibia or metatarsus I.

Anterior row of eyes with their centres in a straight line; laterals large and broadly oval, transverse to slightly oblique, and much less than a median's diameter from the latter; anterior medians small and their own diameter apart. Posterior row also practically in a straight line, with a tendency to slight recurvation; medians subrotund, larger than anterior medians, and not quite so wide apart as anterior laterals; narrowly separated from posterior laterals, which are oval, subequal to medians in size and more raised; considerably less than their own diameter from anterior laterals; a line parallel to long axis of body and touching the outer edge of the latter, would cut the posterior laterals through their centre.

Labium with 5 teeth, coxae of pedipalps with 8–10.

Spines.—Palps with about 8 distinct spinules at base of tarsus above, and one or two scattered ones on distal upper surface of tibia; 2 spines on inner surface of tibia and 5 on outer; and a band of spines down each side of tarsus. Metatarsus I with basal patch of spinules extending over about $\frac{1}{3}$ of upper surface; area of spinules at apex of tibia above, very small. Metatarsus II with the basal patch of spinules extending over about $\frac{1}{4}$ of its surface; that on the tibia being less in size but greater than on tibia I. Inner surface of tibia I with 3–5 spines; outer surface with about 25 spines. Metatarsus III with about 10 spines on its anterior surface, and

with no spines on its under, apical surface, but with 1 or 2 spiniform hairs. Tibia III with small anterior apical patch of spinules. Comb on metatarsus IV composed of 6–7 spiniform setae; the patch of red spinules on patella IV above extending over about $\frac{1}{2}$ the surface.

Measurements.—Total length 14 mm. Carapace, length 4·8, width 4 mm.

Two ♀ ♀ and two ♀ ♀ jv. specimens (No. 14611) from same locality and collector differ markedly in appearance from the above, both in colour and size (largest ♀ 32·5 mm., carapace 10·8 long, 9·6 wide). The eyes are different and spination heavier than in *S. nanus*.

Gen. IDIOPS, Perty.

Idiops pullus, n. sp. (Text-fig. 2 A and B).

Specimens.—♂. (Type, No. 14706), from region west of Mafeking and north of Vryburg (A. L. Du Toit, 1909).

Colour.—Carapace and legs dark brown; legs lightening distally; abdomen clothed with short dark hairs, and almost the same colour dorsally as carapace; slightly darker, though, anteriorly. Ventral surface of abdomen dull ochraceous; spinners, lung operculae, and genital shield pale brown; sternum and coxae pale brown.

Carapace equal in length to metatarsus I and to metatarsus IV. Fovea U-shaped with an almost semicircular depression anterior to it; in front of the latter are 2 small fine spines, one on each side; surface slightly granular and with a few short bristles posteriorly.

Eyes.—Anterior laterals broadly oval, prominent, only slightly inclined outwards from central axis, and narrowly separated from each other and from anterior border. Anterior medians large, circular, and less than a radius distant from each other. Posterior row procurved. Anterior laterals about an anterior median's diameter from the latter.

Sternum.—Posterior sigilla small, almost circular, and slightly more than their own diameter from border; anterior sigilla similar but smaller.

Labium and coxae of pedipalps muticous.

Chelicerae with 4 teeth on outer and inner row (one chelicera has only 3, but larger, on outer side).

Legs.—Metatarsus I very slightly curved upwards in centre; 1–2 apical spines below and 14–15 small, slightly curved spines down inner side, and 14–16 longer ones down outer. Metatarsus II with 4 apical spines on under surface and 6 other spines down outer edge and 1–2

down inner edge of under surface. Metatarsi III and IV with numerous long, slender spines. Tibia I (Text-fig. 2B), has 2 apical spurs on inner under surface. Anterior spur is very broad and thick basally, and curves upwards and outwards; it is set on a very swollen tubercle, and bears at its base anteriorly 2 bristles and a spine. Posterior and more dorsal spur short, and curving downwards and inwards. Scattered spines over rest of surface.

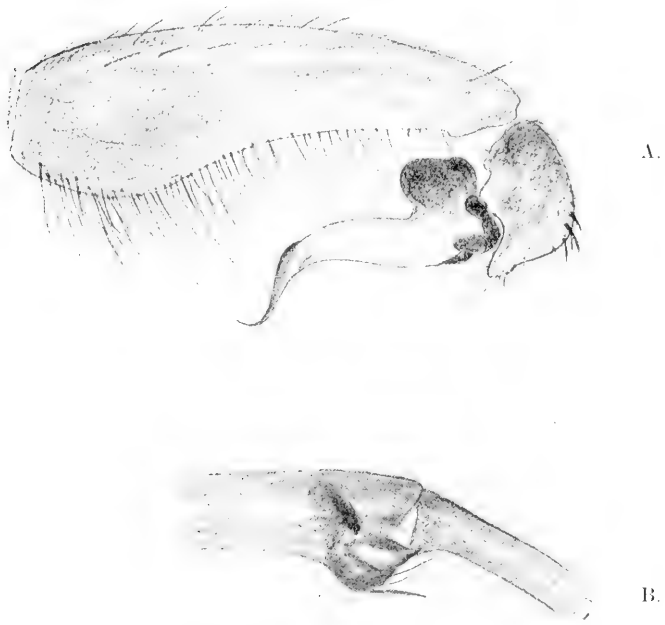


FIG. 2.—*Idiops pullus*, n. sp. A. Right hand palp, outer side. B. Tibia of first leg, under inner side.

Patella III with dorsal row of 5–6 small spines and anterior patch of about 20; only 1 or 2 spines on posterior surface. Patella IV with about 10 spinules on proximal anterior surface, set in a band of stiff short bristles, which extends to distal border.

Tarsi.—Tarsus I with a few scopular hairs distally, especially at sides; no spinules down centre; comb of spine-like bristles on border towards base of claws; 10 spines down outer and 7 down inner side.

Tarsus II with entire scopula; 7 spines down outer and 1 or 2 down

inner side; slightly curved upwards distally. Tarsus III also with entire scopula; stouter than metatarsus and also slightly curved upwards distally; 2 or 3 spines on anterior surface and 7 on posterior surface. Metatarsus IV fairly stout, straight, and with 1 or 2 spines on anterior surface and 4–5 on posterior surface.

Pedipalps.—Femur with 6 slender spines dorsally. Tibia elongate, slightly swollen basally and slightly curved dorsally; hollowed on anterior outer side, but not spined. Numerous long bristle-like hairs on under surface.

Palpal organ (Text-fig. 2A); bulb somewhat reniform in shape; style broad basally, with soft white under surface, and terminating in a slender curved process.

Measurements.—Carapace 6 mm. long, 5·5 wide; chelicerae to end of abdomen 14·5 mm., 1st leg 26 mm., 4th leg about 25 mm.

Idiops palapyi, n. sp. (Text-fig. 3A and B).

Specimens.—♂. (Type, No. 14628), from Palapye, Bechuanaland Protectorate (H. A. Fry, 1908).

Colour.—Carapace and legs light orange-brown, 1st leg becoming darker and redder distally; abdomen dull testaceous, infuscated on anterior dorsal surface and around genital aperture; median under surface dusky brown; sternum, coxae, and under-side of legs yellowish-brown.

Carapace equal in length to metatarsus I and to metatarsus and $\frac{1}{2}$ tarsus of 4th leg; fovea deep, procurved, and semicircular; 2 small spines equidistant from median line and midway between ocular area and a transverse depression in front of fovea. Surface of carapace rugose; the small papillae bearing fine short spines, or stout bristles; especially noticeable posteriorly and at margins.

Eyes.—Anterior laterals broadly oval (almost circular) large, and close together; separated from first group by a shallow transverse depression.

Anterior medians circular, perhaps slightly larger than the laterals, and about a radius apart. Posterior row recurved; medians small, laterals oval; their front margins slightly in advance of hind margins of anterior medians and about the latters' diameter distant from them. Ocular area black, the infuscation spreading beyond anterior eyes to base of chelicerae.

Sternum.—Posterior sigilla almost circular, opposite 2nd pair of legs, moderately large, and their own diameter from border. Anterior sigilla smaller, similar, and opposite 1st pair of legs.

Labium and coxae of pedipalps muticous. *Rastellum* composed of 3 stout spines on inner apical side and one or two smaller spines.

Chelicerae with 6 teeth on inner row and 5 teeth on outer row.

Legs.—Metatarsus I curved strongly upwards and inwards towards base; 5–6 spines on outer side and 6 smaller ones on inner side anteriorly; rest of surface covered with numerous fine, regular, spine-like hairs shorter on under surface. Metatarsus II straight or only very slightly curved; 6 spines on inner side; rest of surface with fine

Fig. 3.—*Idiops palapyi*, n. sp. A. Right hand palp from inner side. B. Tibia of right hand first leg from inner side.

black setal hairs. Metatarsus III fairly heavily spined, especially at apex; rest of surface with fine spine-like hairs, longer on under surface; similarly with metatarsus IV.

Tibia I (Text-fig. 3 B) armed at apex on inner side with single straight projecting spur, set on a narrow tubercle at the base of which is a spine towards the outer side, below, and a black nipple on the inner side below; 2 other apical spines towards outside of under surface and 20–22 other spines on rest of under surface; 2 short spines on outer surface centrally; rest of surface with black setae. Tibia II with 3 apical spines on under and inner surface and

19–20 spines on rest of under surface. Also with 2 spines on outer surface centrally and black setae elsewhere.

Patella III with short spines on anterior border of upper surface; a central line of 7 short spines and an anterior longitudinal strip of about 10 spines, all set in an area of short black setae; also with 2 short spines posteriorly and a curved spine on under surface towards apex.

Patella IV less numerously spined, especially anteriorly.

Tarsi.—Tarsus I short; a few scopular hairs distally on each side of under surface, with a double row of short spines between the patches; each row broadens out towards the base of tarsus into an irregular, scattered area of small spines; distally, each row is connected to the base of the claws by a comb-like arrangement of 6 longer, regular spines; there are one or two longer spines on the sides, distally, and setose hairs on remainder of surface. Tarsus II with slightly larger and more distinct scopular patches and a less numerous but more regular row of spines down centre; distal combs not so pronounced; 2 or 3 more spines than on tarsus I, and slightly swollen distally.

Tarsus III short, much stouter than metatarsus and swollen over whole of lower surface, particularly in centre; an entire and dense scopula on under surface; one or two spines on sides. Tarsus IV similar but not quite so swollen.

Pedipalps.—Femur with a row of 3 spines on upper surface. Patella with 0–1 spines on outer side. Tibia swollen basally, arched dorsally and with a deep hollow on under outer side; outer edge of hollow with 4 long spines anteriorly, an irregular cluster of spines posteriorly and numerous denticles on arch between. Tarsus small; palpal organ as in Text-fig. 3 A; soft under portion below style bearing a lobe.

Measurements.—Carapace 8 mm. long, 6·9 mm. wide; 1st leg 32 mm.; 4th 27·5. Total length (chelicerae to end of abdomen) 19·7 mm.

This species appears closely allied to *I. parvus* (Hewitt) (Rec. Albany Mus., vol. iii, No. ii, p. 7),

IDIOPS KENTANICUS, Purc. (Text-fig. 4 A and B).
(See pp. 127 and 128.)

1903. *Acanthodon kentanicus*, Purcell, Ann. S. Afr. Mus. vol. 3, pt. 4, p. 89.
1904. *Ctenolophus kentanicus*, Purcell, Tr. S. Afr. Phil. Soc. vol. xv, pt. 3, p. 118.

Specimens.—♂ (No. 14,528) from Kentani (Miss Pegler, 1905).

Colour.—Carapace dark brown; legs slightly lighter, especially distally, where there is also a faint olivaceous tinge; upper surface of abdomen almost black; under surface dull testaceous; sternum and coxae pale brown.

Carapace equal in length to 4th metatarsus, and to metatarsus and about $\frac{1}{4}$ tarsus of 1st leg; fovea crescentic and with small and inconspicuous depression in front of it, scattered papillae of surface bearing

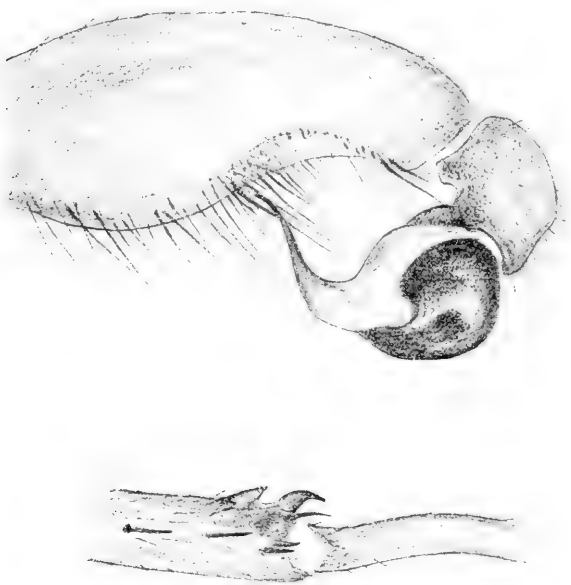


Fig. 4.—*Idiops kentanicus*, Purc. A. Right palp, outer side. B. Tibia of left first leg, under side.

hairs; border of carapace slightly raised and separated by a narrow groove.

Eyes.—Anterior laterals broadly oval, close together and slightly facing outwards; larger than anterior medians which are slightly more than a radius apart. Distance from front of anterior laterals to rear of anterior medians equal to breadth of posterior row. Latter is procurved; medians close to anterior medians.

Sternum.—Posterior sigilla indistinct, small and marginal; anterior sigilla small and touching margin opposite centre of 1st leg.

Labium and coxae of pedipalps muticous. *Rastellum* composed of 3–4 strong spines set on a projecting tubercle, and 3 or 4 spines continued round on upper inner edge of chelicerae.

Chelicerae with 5 teeth on inner edge and 4–5 denticles at base on outer edge.

Legs.—Metatarsus I curved sharply upwards and inwards just over $\frac{1}{3}$ of its length from base; inner side of bend slightly swollen, darker, and bearing 5–6 spinules or short spine-like hairs; 2 apical and 1 other spine on inner surface; 1 apical and 1 other spine anteriorly on outer surface. Metatarsus II slightly curved upwards, with 1 apical and 3 other spines on outer edge of under surface. Metatarsi III and IV very slightly curved and with long fine spines on under surface. Tibia I stout, cylindrical, and shorter than metatarsus, bearing the usual 2 spurs (Text-fig. 4 B); anterior spur apical, stout, and curved, and with a long spine at base of tubercle; 2nd spur short and blunt; also 2 spines apically and 3 other spines on outer under surface. Patella III with 14 spinules on anterior surface; none dorsally, and 2–3 apically on posterior surface. Patella IV with about 20 spinules on proximal portion of anterior surface and 15–16 in a similar position on posterior surface.

Tarsi in general about $\frac{2}{3}$ length of metatarsus. Tarsus I scopulated over whole length and with 1 spine on each lateral surface. Tarsus II scopulated and spineless. Tarsi III and IV scopulated and with a few spines.

Pedipalps.—Femur with line of stiff bristles down centre. Tibia swollen basally and with small, almost semicircular hollow on under surface anteriorly; outer arch of latter well spined, especially posteriorly. Bulb (Text-fig. 4 A) broadly reniform, process flattened basally and curved out and upwards.

Measurements.—Carapace 4 mm. long, 3·5 mm. wide. Tibia I 3·2 mm. Total length 9·5 mm.

No ♀ was taken at the same time, but the specimen seems to fit in as the ♂ of *I. kentanicus* rather than of *I. kolbei* (Purc.), also from Kentani. From the ♂ of the remaining Kentani species, *I. spiricola*, it differs in most details. It is closely allied, however, to *I. cregoei* from Durban; the palpal organ is similar but the process is slenderer and not spatulate at its extremity; the 1st metatarsus is more strongly curved and the tibial spines somewhat stouter.

Gen. ANCYLOTRYPA, E. Sim.

Ancylotrypa pusilla, Purc.

1903. *A. pusilla*, Purcell, Ann. S. Afr. Mus. vol. 3, pt. 1, p. 27.

Specimens.—Two ♀♀ (Nos. B 2608–9) from De Aar (S. C. Schreiner and Dr. W. F. Purcell, 9/13), and 1 ♀ (No. 9454) from Vlag Kop 5–6 miles north of Hanover (Schreiner, 10/01).

♀. *Carapace.*—Cephalic portion very much raised, pale brown in colour and with a line of long setae down the centre; thoracic portion more infuscated, especially posteriorly, to fovea; latter procurved. Length of carapace equal to patella, tibia, and metatarsus and tarsus of 1st leg; and to tibia, metatarsus, and about $\frac{1}{2}$ tarsus of 4th leg. Carapace considerably narrower opposite 3rd pair of legs.

Eyes.—Seen from above, hind margins of anterior row are in a slightly recurved line, and anterior margins in a distinctly procurved line; anterior medians small, round, and nearer to anterior laterals than to each other. Anterior laterals large, oval, and oblique. Posterior row strongly recurved; medians slightly larger than laterals, and almost circular but unsymmetrical in outline; laterals slightly removed, and oval. Ocular area at least $2\frac{1}{2}$ times as wide as long.

Abdomen long, broader posteriorly; almost uniform dark olive-brown in colour; lung operculae and genital plate lighter brown; spinners short and stout.

Sternum, coxae, etc., light brown in colour; posterior sternal sigilla oval, oblique, about their long diameter from the margin and opposite 3rd coxae.

Labium about as long as broad and muticous. Coxae of pedipalps with a few scattered denticles at base of anterior border.

Chelicerae stout; rastellum composed of very stout spines; the 2 anterior ones blunt and prominent, with a more inner inwardly projecting smaller spine; groove with numerous denticles down centre, and 6–7 teeth down inner border; hairs around mouth parts dull in colour.

Legs.—Tarsi I and II scopulate and spineless. Tarsus III with long, sparse, scopular-like hairs, and a row of 4 spines on each side of upper surface, and a cluster of 3–4 spines on anterior surface distally. Tarsus IV with long setose hairs, and with about 15 small spines on under and anterior surface. Metatarsus I lightly scopulated, slightly more densely at sides and bearing 3 apical spines, a median, and a basal spine on under surface. Metatarsus II similarly spined but scarcely scopulated. Metatarsus III with 2 apical spines on under surface, and a band of 10–11 small spines along each side of upper surface; and 2 apical spines on anterior surface. Metatarsus IV with 2 strong apical spines on basal and 2 on anterior surface; 10–11 short spines on anterior surface, and 1 apically on posterior surface. Tibiae I and II with 4–5 spines in a line down centre. Tibia III with 5–6 spines in an irregular band down each side of upper surface. Tibia IV with some setiform hairs on under surface, and a row of setae along posterior side of upper surface. Patella III with a dense area

of short reddish spines on anterior upper surface; rest of upper surface with strong setae. Femur IV with a dense row of moderately long reddish spines on anterior and upper apical edge.

Measurements.—Carapace 4 mm. long and 2·8 mm. wide. Chelicerae to end of abdomen 14·5 mm.

Ancylotrypa spinosa, Sim.

1889. *Ancylotrypa spinosa*, Simon, Act. Soc. Linn. Bord. vol. 42, p. 407.
1892. *Bolostromus spinosa*, Simon, Hist. Nat. des Araign. 2 ed. vol. 1, p. 100.
1897. *Ancylotrypa spinosa*, Pocock, P.Z.S. 1897, p. 732.

Specimens.— ♀ (No. 4242) from Pt. Elizabeth (J. J. Drège, 1898).

As there is no corresponding ♂ the identification may be doubtful, so the following description is provisional.

Carapace.—Light ochraceous brown; darker at sides of cephalic portion; latter not so raised as in *A. pusilla*; otherwise the same as in the latter. In length subequal to tibia and metatarsus of 4th leg, and probably equal to tibia and metatarsus of 1st leg; (anterior legs damaged).

Eyes.—Hind margins of anterior row in a straight to slightly procurved line. Anterior medians closer together than in *A. pusilla*, and equidistant from laterals. Posterior row recurved; laterals larger than medians. Breadth of ocular area only slightly over twice its length.

Abdomen.—Dull testaceous below and with uniform infuscation above.

Sternum and coxae of legs light brown in colour; sigilla as in *pusilla*.

Labium and coxae of pedipalps muticous.

Chelicerae.—Much as in *pusilla*; hairs around mouth parts reddish in colour.

Legs.—Tarsi I and II very slightly scopulated at sides, and spineless. Tarsus III with 3 small spines on posterior border of upper surface, and 4–5 distally on under surface; rest of surface clothed with long hairs. Tarsus IV with long setose hairs and 7–8 small spines on under surface distally. Metatarsus I with 3 apical, 1 mesial, and 1 basal spines on under surface; fairly densely clothed and with a few scopular hairs distally. Metatarsus II similar but with longer spines. Metatarsus III with 8 small spines on posterior side and 5–6 on anterior side of upper surface, the apical spines being longer and curved; also 2 slender apical, and 1 or 2 other spines on under surface.

Metatarsus IV with 11–12 spines on under surface, the 2 central apical ones being the strongest; also 2 spines on posterior upper surface. Tibia I with a weak line of setiform spines below; tibia II similar but stronger. Tibia III with 2 spines on posterior surface and 2–3 on anterior surface. Tibia IV with several setiform spines on under surface. Patella III with 20–24 spines on anterior surface, and 2 stouter spines on posterior border of upper surface. Patella IV muticous.

Measurements.—Chelicerae to end of abdomen 11 mm. Length of carapace 3·5 mm.; breadth 2·7 mm.

Gen. HOMOSTOLA, E. Sim.

Homostola zebrina, Purc.*

1902. *H. zebrina*, Purcell, Tr. S. Afr. Phil. Soc. vol. 11, pt. 4, p. 359.
1903. „ Purcell, Ann. S. Afr. Mus. vol. 3, pt. 4, p. 94.
1915. „ Hewitt, Ann. Durban Mus. vol. 1, pt. 2, p. 130.

This species has been included by Hewitt as a synonym of *Spiroctenus* (Ann. Durban Mus. vol. 1, pt. 3, pp. 221 and 223); on examining the specimens in the Museum collection, and also two others from localities noted below, it seems fairly clear that Purcell's *zebrina* is rightly referred to the genus *Homostola*; and further, that it is not synonomous with *Spiroctenus*. Apart from the differences in size and position of the posterior sternal sigilla (an important character), the other characters such as scopulation of anterior metatarsi serve to distinguish it.

Additional notes on ♀.

Specimens.— ♀ (No. B 1140) from Clairmont, Natal (H. W. Bell Marley, 3/15); and ♀ (No. 150506) from Howick, Natal (Dr. W. F. Purcell, 9/05).

Carapace.—Equal in length to tibia, metatarsus, and tarsus of 1st leg (in Purcell's specimens, No. 8445 *ex typis*, Pietermaritzburg, carapace slightly exceeds the above in length); also equal in length to patella and tibia, and exceeding metatarsus and tarsus of 4th leg.

Chelicerae.—Dark red-brown, almost black in colour; rastellum composed of a row of about 6 strong, fairly even teeth on the inner side and stout bristles in continuation to the outer edge. Groove armed with 10–11 teeth down the inner side, and a line of 6 teeth diminishing in size to a few denticles down the outer side; a few denticles in the groove between, basally.

Legs.—Metatarsus III with a comb of about 4 stout setiform bristles, apically, on both anterior and posterior sides of the under surface.

* See p. 136.

Metatarsus IV has 2 stout apical spines on the under surface, and between them is the 1st of a line of strong setae which runs down the central under surface; between this setal spine and the outer apical spine is a small comb of 2–3 setae; on the posterior (or inner) side of the inner apical spine is a broad comb of 5–6 bristles (mentioned by Hewitt in Ann. Durban Mus vol. i, pt. 2, p. 130). Arrangement of spines otherwise agrees with that given in Purcell's description. Anterior tarsi and metatarsi slightly flattened dorsoventrally; metatarsi short.

Gen. SPIROCTENUS, E. Sim.

Spiroctenus cambierae, Purc. (Plate IX, fig. 3).

1902. *Hermachastes cambierae*, Purcell, Tr. S. Afr. Phil. Soc. vol. 11, pt. 4, p. 369.

1903. *Spiroctenus cambierae*, Simon, Hist. Nat. des Araign. vol. 2, p. 907.

Specimens.—3 ♂ and 1 ♀ from Caledon (Dr. W. F. Purcell, 7/10).

♀ *Colour.*—Carapace and legs dull brown, tinged with olive. Abdomen dark, almost black, both dorsally and ventrally; and with no outstanding dorsal pattern, but with a narrow band of confluent dull testaceous spots down the centre of the ventral surface; lung operculae, genital plate, and spinners about the same colour as the sternum, etc.; *i.e.* slightly lighter than the carapace. (The ♂ is of the same colour in general, though slightly browner; the type ♂ of Purcell's description appears also to have become slightly darker and less ochraceous after years in spirits.)

Carapace.—Equal in length to tibia, metatarsus and $\frac{1}{3}$–$\frac{1}{2}$ tarsus of 1st leg; slightly exceeding metatarsus and tarsus, and equalling patella and tibia of 4th leg. Fovea broad, deep, straight at the bottom, and slightly procurved at the ends.

Eyes.—Anterior row with their centres in a straight line; medians smaller than laterals. Posterior medians long, light, subequal to laterals and almost touching them.

Spinners.—Equal in length to about $\frac{4}{5}$ of sternum; apical joint short and blunt.

Labium with 4 teeth along its apical edge; coxae of pedipalps with 25 or more denticles. *Chelicerae* with 7 large teeth.

Pedipalps.—Tarsi with 1–2 spines on under side; tibia with about 10 moderately long spines on under surface.

Legs.—Tarsus of 1st leg unspined but scopulated; metatarsus slightly scopulated anteriorly, and with 5 spines on under surface;

2nd leg the same, save that the metatarsus has only 2 spines below the outer apical one, and 1 weak one mesially below the inner apical spine; neither legs have lateral or dorsal spines. Tarsi III and IV scopulated but unspined. Metatarsi spined on all surfaces.

Measurements.—Length 17 mm. Carapace 5 mm. long. 1st leg 12 mm., 4th 12·5 mm.

For palp of ♂ specimens, and for the arrangement of spines on tibia and metatarsus of 1st leg, see Plate IX, fig. 3.

Spiroctenus collinus, Poc. (Plate IX, fig. 4 A–D).

1900. *Hermachastes collinus*, Pocock, A. M. N. H. (7), vol. 6, p. 319.
1902. „ „ Pocock, A. M. N. H. (7), vol. 10, p. 15.
1902. „ „ Purcell, Tr. S. Afr. Phil. Soc. vol. 11, pt. 4, p. 364.
1903. *Spiroctenus collinus*, Simon, Hist. Nat. des Araign. vol. 2, p. 907.
1903. *Bemmeris pardalina*, Simon, Bull. Soc. Ent. Fr. p. 42.
1903. „ „ Simon, Hist. Nat. des Araign. vol. 2, p. 896.

Additional Notes.

Specimens.—A number of ♂♂ and ♀♀ from localities on the Cape Peninsula.

The colouring of a ♂ (No. B 1123), which is probably newly moulted, is as follows: Carapace ochraceous, with deep olive infuscations in the cephalic region and posterior carapace, and to a less extent in lateral radiations from the fovea. Legs pale ochraceous below, infuscated above on femora, and browner from patellae onwards. Pedipalps lighter and tinged olivaceous; abdomen infuscated above, with testaceous markings posteriorly, bringing out central and oblique dark lines. Abdomen with its sides and under surface pale testaceous with a distinct green tinge; lung operculae and genital plate darker and browner.

Carapace.—Fovea deep and slightly recurved.

Eyes.—Front row slightly procurved and equidistant; laterals slightly larger than medians. Posterior row well recurved; medians subrotund and not touching laterals, which are more oblique.

Labium with 6–7 teeth; chelicerae with 8–9, and an outer row of minute denticles towards base of groove (2–3 deep basally).

Pedipalps.—As in Plate IX, fig. 4 A; general position as in B and C. The apparent difference is caused by contortion of the palpal organ (it occurs in other specimens), whereby a different aspect is presented from that usually seen.

Spines.—Tibia and metatarsus I as in Plate IX, fig. 4 D; this type of spine arrangement on the tibia appears to be more common and less distinctive amongst the Spiroctenidae.

A ♂ specimen (No. B 796) from Mouille Pt., Cape Town, is coloured much the same, save that the abdomen is less green and more ochraceous. Palps as in B and C. The colouring of the above specimens has been noted, since the examples had been but a comparatively short time in spirits before being examined, and so have undergone less alteration.

Amended Description of Female.

Carapace.—Equal in length to tibia, metatarsus and $\frac{1}{3}$ tarsus of 1st leg; slightly exceeding patella and tibia, and equal to or slightly exceeding metatarsus and tarsus of 4th leg. Fovea straight.

Sternum.—Posterior sigilla oval and slightly less than their long diameter from the margin.

Labium.—Armed with 2–4 teeth; coxae of pedipalps with about 30 teeth.

Chelicerae with 9–10 teeth and a double row of 15–16 denticles towards the base.

Spines.—Tarsus of pedipalps with 2 spines on inner side and 2 on outer; tibia with about 9 fine spines below. Metatarsus I with 3 spines down outer and 2 down inner side; tibia I with 2 long, fine spines on outer side. Metatarsus II the same as I, but generally with a line of setae down the centre also; both have only a few scopular hairs distally. Tibia II with a few fine spines and setae on under surface; or in some cases with a double row of fine spines down the centre.

All tarsi scopulated; posterior ones more coarsely.

Tibia of 1st leg equal in length to the metatarsus.

Claws of 1st and 4th legs with 5 teeth on outer basal row, and 5 teeth or more on the distal axial row.

Seventeen ♀ ♀ (No. B 2583) from Sneeuwgat Valley (4000–5000 ft.), Gt. Winterhoek Mountains, Tulbagh (R W. Tucker, 4/16), appear referable to this species also; unfortunately no ♂ was obtained, so it cannot be determined whether the differences noted below are sufficient to separate them as a different species. In colour and appearance they coincide with *collinus*, though perhaps slightly darker; and in most other characters they are identical. The anterior legs of the Winterhoek specimens, however, are much longer than in the above species, being equal to, or even greater in length than, the 4th legs, the latter coinciding with Pocock's measurements.

In consequence, the length of the carapace equals that of tibia and metatarsus of 1st leg alone.

The terminal joint of the spinners is almost hemispherical, and shorter than in *S. collinus*. Also the posterior median eyes are somewhat smaller and the anterior row is slightly more recurved.

Dentition and spination correspond throughout, though the latter may be somewhat more robust.

Four ♀ ♀ specimens, not fully adult, taken by Dr. W. F. Purcell and R. M. Lightfoot (8/03) at Tulbagh Road Station, agree even more closely with *S. collinus*, since the front legs are normal in length and the terminal joints of the spinners is longer. As this species predominates on the Peninsula it may well have extended to the Tulbagh Valley and environs.

Spiroctenus broomi, n. sp.

Specimens.—Ten ♀ ♀ (No. 13843 Types) from Stellenbosch. (Dr. Broom, 9/10/04.) This distinct species was named by Dr. Purcell, but no description of it published.

Colour.—Very dark. Carapace dark infuscated brown; upper abdomen dull purplish black with faint testaceous flecks; under abdomen slightly lighter; genital plate and lung operculae pale brown. Sternum and coxae a lighter, redder brown than the carapace; legs dark, especially the anterior ones, the posterior ones being slightly lighter. Patellae lighter and slightly redder.

Carapace.—Equal in length to the tibia, metatarsus and $\frac{1}{3}$–$\frac{1}{2}$ tarsus of 1st leg, and exceeding the metatarsus and tarsus of 4th leg. Slightly pilose posteriorly. Fovea as wide as or wider than the ocular tubercle; deep and slightly procurved.

Eyes.—Posterior medians oval, slightly smaller than anterior medians, equal to posterior laterals, and touching the latter. Posterior laterals smaller than the anterior laterals.

Spinners stout; equal in length to about $\frac{3}{4}$ of the sternum; apical segment subconical and about equal in length to $\frac{1}{2}$ the median segment.

Sternum.—Posterior sternal sigilla oval, opposite anterior side of 3rd coxae, and about $\frac{1}{2}$ their long diameter from the margin.

Labium.—With 4–5 stout teeth; coxae of pedipalps with about 40 denticles.

Chelicerae.—With 9–10 teeth on the inner side, and an irregular row of about 15 denticles towards outer side of the base of the groove. Rastellum composed of long stout spines on the inner edge and long stout bristles on the outer edge.

Legs-—Clothed with longish dark hairs, often bristle-like. Tarsi scopulate and spineless. Metatarsus I with very few scopular hairs anteriorly, and bearing 2 apical and 3 other spines on the under surface; metatarsus II with no scopular hairs, but with many bristly ones; 3 apical, and 3 other spines on lower surface; metatarsi III and IV well spined. Patella III with 3 spines anteriorly, and clothed with fairly stiff hairs; patella IV with no spines or stout bristles.

Tarsal claws of 4th leg with 5–6 teeth on outer side towards base (distal 3 large), and 4 in a more distal position on the axial side; 1st leg with the usual S-shaped line of teeth, composed of 5 outer basal ones and 5 inner or axial ones, very much smaller in size.

Measurements.—Chelicerae to end of abdomen 20·5 mm.; spinners 2·6 mm. Carapace 7 mm. long and 5 mm. wide; sternum 3·5 mm. long and 3 mm. wide. One specimen, larger than the rest, had measurements as follows: Length 25 mm.; spinners 3·25 mm.; carapace 7·5 mm. long and 5·25 mm. wide; sternum 4 mm. long and 3·6 wide. The spination was also slightly stronger. This species is remarkably like in appearance—colour, size, etc.—to a number of *Hermacha* (see under *H. nigra*), collected by Dr. Broom at the same place and date.

According to the collector, the tubes of these specimens had low turrets round their openings, and interiorly had a looping passage connecting the lower with the upper end.

Spiroctenus pilosus, n. sp.

Specimens.—One ♀ (Type, No. B250), from Smithfield, Orange Free State (Dr. Kannemeyer).

This specimen has been named provisionally in the absence of further material, since little is known of the Orange Free State Spiroctenidae; and the example certainly differs from the Cape ♀ ♀.

Colour.—Carapace medium brown; cephalic portion infuscated, especially along median and lateral lines; slight infuscate radiations from fovea; abdomen of specimen rather crushed; sternum and coxae of legs ochraceous brown, slightly redder anteriorly; labium dark; chelicerae red-brown below, darker above; femora of legs ochraceous, tinged olivaceous above, and from patella onwards ochraceous brown, becoming slightly redder distally.

Carapace.—Ornamented with fine, rather scattered hairs, which are more numerous posteriorly. Equal in length to tibia and metatarsus of 1st leg, and exceeding metatarsus and tarsus, and also patella and tibia of 4th leg. Metatarsus of 1st leg subequal in length to the tibia. Fovea slightly procurved.

Eyes.—Anterior row procurved; laterals much larger than medians, oval, and oblique; posterior row recurved, medians slightly smaller than the laterals and touching them.

Chelicerae.—Inner margin of groove with 9 teeth; outer margin with 9–10 denticles towards base, the anterior ones being equal to small teeth in size.

Labium.—Convex anteriorly, and bearing a few spine-like hairs. Coxae of pedipalps with about 30 teeth, each set in a small circular cup. Rastellum composed of stout spines.

Sternum, coxae, and legs covered with fine, long dark hairs; the abdomen also appears well clothed. Posterior sternal sigilla long, oval, opposite 3rd pair of legs, and less than their long diameter from the margin. Tarsi scopulate; posterior ones coarsely.

Spines.—Tarsi of palps with 2 small spines anteriorly, and 2 along inner side of under surface; tibiae with 8–9 fine spines on under surface. Tarsi spineless. Metatarsus I with 3 apical spines and 2 others in line below on outer side of under surface. Metatarsus II the same, with sometimes an extra spine on the outer edge and a mesial spine on the inner edge of the under surface. Tibia I with 0–1 spines about the centre of the under surface; tibia II with 1 spine mesially on under surface; tibia III short and stout, with 3–4 spines on upper anterior surface, and with some setiform spines on under surface. Upper surfaces of patellae III and IV, especially IV, furnished with stout reddish bristles. Anterior side of femur of 4th leg armed apically with spinule-like bristles, which on the upper edge are reddish in colour.

Tarsal claws of 4th leg bearing 4 strong teeth at the base on outer side, and 1 tooth and 2 smaller denticles anteriorly on the axial side; the claws of the 4th leg armed with 5–6 basal teeth on the outer side, and 4 teeth on the axial side distally.

Measurements.—Length (abdomen damaged) probably about, or over, 20 mm. Carapace 7 mm. long, 5·4 mm. wide. 1st leg 18·5 mm. long, 3rd 12·5 mm., and 4th 14 mm. long.

Spiroctenus validus, Purc. (Plate IX, fig. 5).

1902. *Hermachastes validus*, Purcell, Tr. S. Afr. Phil. Soc. vol. 11, p. 367.

1903. *Spiroctenus validus*, Simon, Hist. Nat. des Araign. vol. 2, p. 907.

Specimens.—Two ♂ and one ♀, Caledon (No. 150,408). Dr. W. F. Purcell, 7/10.

♂ *Colour* less red and more olivaceous than type of *S. validus* (Purc.); carapace similarly infuscated, legs more ochraceous and femora not so dark; tibiae and metatarsi ochraceous brown; infuscated spots above spinners on ventral surface are large.

Palps.—As in Plate IX, fig. 5 A, B, and C.

Legs.—Spination of under surface of tibia and metatarsus of 1st leg (right-hand side) as in Plate IX, fig. 5 D.

Measurements.—Total length 14 (excluding spinners). Carapace 6·4; 1st leg 18 mm., 4th leg 21; the specimens are thus smaller than the types from Ashton.

♀ Agrees more in colour with the immature specimens of *S. validus*. Other specimens taken from Caledon by Dr. Purcell at the same time have been referred to *S. validus*. Of these, one calls for note, since in appearance it resembles *Stictogaster reticulatus* (Purc.); its sternal sigilla correspond to Spiroctenus, but in many respects it varies from that genus. It has 12 teeth on the interior border of cheliceral grooves and 13 small teeth or denticles on outer border towards centre; the labium has 4 strong teeth, and the coxae of the pedipalps about 60; the tarsi of the pedipalps are spined. The length of the carapace exceeds the tarsus and metatarsus of 4th leg and equals the tibia, metatarsus and about $\frac{1}{2}$ tarsus of 1st leg; in this it agrees with *S. flavopunctatus*, which it also resembles in abdominal markings, but greatly exceeds in size. A similar specimen, though shorter in carapace, has been identified as *S. validus*, by Purcell, from Montague Baths, Caledon. It is recorded of one of the Caledon specimens that the nest is Y-shaped and has a turret similar to that constructed by *S. collinus*.

Spiroctenus gooldi, Purc.

1903. *Hermachastes gooldi*, Purcell, Ann. S. Afr. Mus. vol. 3, pt. 4, p. 95.

Specimens.—♂ (No. B 2341). St. James. Cape Peninsula. (Cyril French, 7/09). This example differs from either of the Peninsula species, *collinus* and *lightfooti*, but agrees in size and proportions, palp and spination (with slight variations), with the type specimen of *S. gooldi*. In appearance it is darker in colour, and slightly stouter.

To the description of *gooldi* may be added—

Carapace equal in length to 4th metatarsus and subequal to patella and tibia and to metatarsus and tarsus of 1st leg; in this it coincides with *S. collinus*, but differs from *S. tricalcaratus* (Purc.), to which

it is closely allied in palpal organ and spination. In *tricalcaratus* the carapace equals metatarsus and $\frac{1}{3}$ tarsus of 4th leg and is less than patella and tibia, and metatarsus and tarsus of 1st leg.

Spinners equal in length to $\frac{3}{4}$ of sternum, as in *tricalcaratus*; in *collinus* the spinners are the same length as sternum.

Labium and coxae of pedipalps are muticous.

Chelicerae with 8 teeth and a few minute scattered denticles.

Spiroctenus purcelli, n. sp. Plate IX, fig. 6 a, b, and c).

Specimens.—♂ (Type No. 150,472). Simonstown. (Dr. W. F. Purcell, 4/10).

Colour.—Carapace and upper surface of femora dark ochraceous brown. Cephalic portion slightly darker, with a line down centre to fovea; under surface of femora lighter and tinged with olive; legs slightly browner and darker distally; palps lighter distally and tinged with olive. Entire under surface ochraceous; upper surface of abdomen strongly infuscated, especially anteriorly; posteriorly, infuscation takes the form of a central dark line and 3 to 4 distinct oblique dark lines branching from it; sides of abdomen clear ochraceous; small dark spot on under abdomen below each posterior spinner.

Carapace.—Equal in length to patella and $\frac{5}{6}$ tibia of 1st leg, or to metatarsus and $\frac{1}{2}$ tarsus of 1st leg, and equals $\frac{6}{7}$ metatarsus IV. Fovea deep and very strongly recurved.

Eyes.—Front row well procurved and large; medians round, laterals oval, larger, and equidistant. Posterior row recurved; medians oval, slightly smaller than laterals and touching them.

Labium and coxae of pedipalps muticous; chelicerae with 9 teeth. Posterior spinners equal in length to $\frac{2}{3}$ sternum; posterior joint just less than $\frac{1}{2}$ subapical joint.

Pedipalps.—As in Plate IX, fig. 6 a and b.; cf. *S. collinus* (Purc.).

Legs.—Tarsi muticous (may have small spinules below). Scopulae divided by line of setae in every case; setal band of IV being broad and merging with scopula. The lines of setae down tarsi I and II are continued down the metatarsi, which are scopulated distally over $\frac{1}{3}$ to $\frac{1}{2}$ of their length. Metatarsus I fairly strongly curved; spined below, as in Plate IX, fig. 6 c. Tibia I as in Plate IX, fig. 6 c. Metatarsus II with 1 apical spine on inner edge, 1 below it mesially; 3 spines down inner side and one in centre of outer side; also, one on upper surface below centre.

Measurements.—Total length 19·5 mm., excluding spinners; 21·6 including them. Carapace, 6 mm. long, 4·75 wide, 1st leg 20–5; 4th leg 25 mm.

Gen. HERMACHA, E. Sim.

Hermacha curvipes, Purc.

1902. *Hermacha curvipes*, Purcell, Tr. S. Afr. Phil. Soc. vol. 11, pt. 4, p. 377.

Specimens.—Numerous ♀ ♀ from Simonstown; collected by Dr. W. F. Purcell.

♀ *Colour* medium brown; carapace and legs syncolorous, chelicerae slightly darker; abdomen dull testaceous brown on upper surface, with moderately distinct tree pattern; under surface yellowish-brown; whole of abdomen covered with long yellowish-brown hairs.

Carapace covered with appressed, golden silky hairs; fovea straight and about as wide as ocular tubercle. Length of carapace equal to metatarsus and tarsus of 4th leg; also equals tibia, metatarsus and $\frac{1}{2}$ tarsus of 1st leg.

Eyes.—Anterior row with hind margins in a straight line, and front margins slightly procurved; anterior medians about $\frac{3}{4}$ their own diameter apart; laterals elongate and about a median's diameter from margin. Posterior row recurved; medians small, ovate, and almost touching laterals. Posterior laterals longer and equal in area to anterior laterals.

Labium with 0–2 denticles.

Chelicerae with 9 teeth (occasionally with 11 on one chelicera); and a row of irregular, fairly numerous denticles at base of groove. Coxae of pedipalps with large area of denticles (about 90), distal ones scattered.

Spinners.—Posterior spinners long; equal in length to sternum and twice labium and also from fovea to front edge of carapace or over. Distal segment long and slender, as long as basal segment and slightly longer than middle segment; anterior spinners about their own length apart.

Sternum and coxae yellowish-brown and well clad with darker brown hairs, which are stiffer around margin of sternum. Posterior sigilla nearly touching margin; long and oval.

Spines.—Pedipalps: tibiae with 4 apical, 2 mesial and 2 basal spines on under surface and 1 on inner side. Tarsi with no spines. Metatarsus I with 2 apical, 1 mesial, and 1 basal spines on under surface. Metatarsus II with 5–7 spines on under surface, and 1 large median spine on upper inner surface. Metatarsus III heavily spined, especially on outer and upper surfaces. Metatarsus IV also well spined,

but somewhat irregularly; apical spines large, particularly inner one, which is long and curved.

Scopula entire on 1st and 2nd metatarsi; absent on 3rd and 4th save for a few scopular hairs and setae on 3rd. Tarsi are all scopulate; that of 2nd leg has a narrow band of very fine setae, and 3rd and 4th have a distinct band of setae down centre.

Measurements.—Length of carapace 7 mm., breadth 5. Chelicerae to end of abdomen 17·5 mm.; spinners 5 mm.; tibia I, 3 mm. long (equal to metatarsus and about $\frac{1}{3}$ tarsus), 1st leg 17 mm., 4th leg 19 mm. long.

This species occurs elsewhere in the Peninsula, occasionally with slight differences as noted.

♂, ♀ and jv. (B 2342) from St. James (C. French, 7/09); specimens smaller than type and spinners slightly shorter; ♂ otherwise identical, though tibia of palp is shorter and stouter, and carapace is slightly longer relatively to legs, and relatively broader; spinners also equal sternum and labium only, and do not reach to front of carapace. Pedipalp also with one or two extra spines on inner side of tibia.

Also ♂ and jv. ♀, Platteklip Ravine. (W. F. Purcell, 6/10 and 1900). Juvenile specimens from Newlands (Skeleton Ravine) and Wynberg Hill appear referable also to *H. curvipes*.

HERMACHA BICOLOR, Poc. (Text-fig. 5 A and B).

1897. *Brachythele bicolor*, Pocock, P.Z.S. 1897, pp. 735 and 736.
1898. *Brachythele bicolor*, Pocock, A.M.N.H. (7) vol. ii, p. 199.
1902. *Brachytheliscus bicolor*, Pocock, A.M.N.H. (7), vol. x, p. 317.
1915. *Hermacha bicolor*, Hewitt, Ann. Durban Mus. vol. i. pt. 2, pp. 125–7.

Specimens 1 ♂ and 2 ♀ ♀ (Nos. B 888 and 889) from Stella Bush (Durban), Natal. (H. Bell-Marley, 1/1915). ♂, 4 ♀ ♀, and 4 jv. ♀ (No. 150, 710) from near Port Shepstone, Natal (Dr. and Mrs. Purcell, 9/05).

The females agree with Pocock's description, except in the proportion of the carapace to the legs; the length of the carapace equals that of the tibia, metatarsus and $\frac{1}{2}$ tarsus of 1st leg, and slightly exceeds the metatarsus and tarsus of 4th leg; there is also the usual row of small denticles in grooves of chelicerae, which may have been overlooked by Pocock. The bicolor markings are also more olive and orange than black and red; this may be due to the relative ages of the specimens.

The male differs slightly from Hewitt's description in that metatarsus I is curved (though distinct from *H. curvipes*) and metatarsus II

is slender and also slightly curved; the arrangement of spines also differs somewhat (spination is hardly a sure character, since it often varies on the corresponding legs of the same specimen; further the spines are too apt to get rubbed off, and the scar left may be easily overlooked).

The fovea is deep and slightly recurved at ends.

Posterior sternal sigilla are large, oval, and nearly touching margin.

Anterior sigilla practically touching margin.

Bulb of pedipalp as in Text-fig. 5 B.

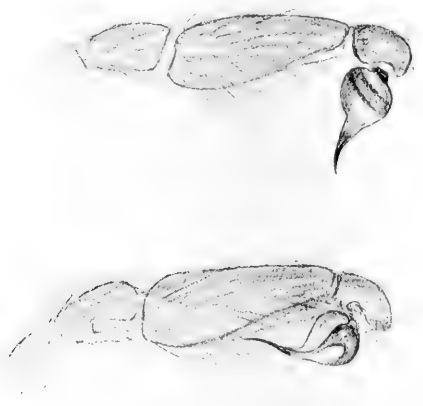


FIG. 5.—*Hermacha bicolor*, Poc. Right hand palp from outer side.

In the Port Shepstone specimens the ♂ has longer and more numerously spined front legs, but is not apparently distinct from *bicolor*. Metatarsi I and II are not so much curved as in the Stella Bush specimens, nor are the tarsi so nearly white underneath. The bulb of pedipalp (see Text-fig. 5 A) appears distinct from the Stella Bush specimen (fig. B); the difference, however, is due to torsion; viewed differently, they are the same.

Of the females 2 have much lighter legs, but do not differ in structural characters from the darker ones, and are presumably the same species; in all, however, the bicolor markings are not very pronounced; the measurements also are not fully in accord with those given by Pocock. There seem, however, no adequate grounds for separating the Port Shepstone specimens from the species.

A small ♂ and a young ♀ (No. 150,504 and 150,627) from

Howick, Natal (W. F. Purcell, 9/05), also appear to belong to *H. bicolor*; although very small (total length 8·5 mm., spinners 2 mm., carapace 4 mm. long and 3 wide) the ♂ agrees with the Port Shepstone specimen. The ♀ has no bicolor markings and is fairly indeterminable.

As a rule ♀ Hermacha have so much in common that the separation or identification of specimens, in the absence of a ♂, is a matter of great uncertainty. The fact that the ♂ ♂ have much clearer specific characters may be due to their free and active life, whereas the ♀ ♀, which live a sedentary life in similarly constructed tubes, generally in a uniform tpye of soil, are naturally more level in character and generally blended together. No doubt the ♂ differentiations in character are also transmitted in degree to the ♀ ♀, which, with individual and distributional variation, may account for the distinctions which can be made specific in the ♀ when the ♂ is known.

HERMACHA FULVUS, n. sp. (Text-fig. 6).

Specimens.—One ♂ (No. 150,406) from Caledon (Dr. W. F. Purcell, 7/10).

Carapace.—Light mahogany-brown in colour, covered with appressed yellow hairs, longer at border of carapace, which is dark-edged; fovea shallow and sub-rotund; cephalic portion scarcely raised, grooves shallow. Equal in length to metatarsus and $\frac{1}{6}$ to $\frac{1}{4}$ of tarsus of 4th leg; also equal or subequal to metatarsus and tarsus of 1st leg, and equal to tibia and patella of 2nd leg.

Eyes.—Front row with their centres in a straight line; posterior laterals smaller than anterior laterals; medians oval and touching laterals.

Abdomen dark brown, covered with short golden brown hairs above and below and with longer, stiffer dark ones above; spots or pattern practically invisible. Under surface ochraceous.

Spinners pale ochraceous, equal in length to the sternum; moderately stout; penultimate joint shorter than apical or basal joint; inferior spinners short and about their own diameter apart.

Sternum pale orange-brown, slightly darker at border; posterior sternal sigilla small, less than long diameter from margin. Coxae same general colour as sternum; both covered with moderately long dark hairs; the coxae have in addition a slight yellow pubescence. Coxae of pedipalps with a strip of 30–35 denticles. Labium muticous.

Chelicerae armed with stiff black hairs at apices; rastellum of moderately short bristles. Inner side of groove with 6–7 teeth, somewhat scattered, and 1 or 2 denticles lower down in groove.

Legs.—Clothed with yellow pubescence and longer fine dark hairs; under sides paler with olivaceous tinge, especially on femora. Metatarsus of 1st leg similar to *H. curvipes*; considerably curved and much narrower at base.

Pedipalps.—Tibia with 2 spines on outer side anteriorly; 2 underneath on outer side towards middle, 2 inside underneath by bulb, and 3 on the inner side towards apex. Bulb somewhat pear-shaped, tapering to a hard dark style which curves slightly out and up, and reaches about $\frac{3}{4}$ way down the tibia (Text-fig. 6).

Spines.—Tarsus and metatarsus of 1st leg spineless, or with at most one spine on under side of metatarsus; tibia has a very stout curved spine on outer side at apex, and 2 others towards the centre; 0–1 basal spines on outer under surface, 1–2 spines on inner under

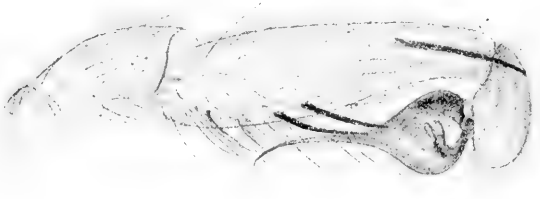


Fig. 6.—*Hermacha fulvus*, n. sp. Right hand pedipalp, outer side.

surface and 2 on inner side. Metatarsus II with 0–1 spines at apex and 1–2 on outer side of under surface. Metatarsi III and IV heavily and somewhat irregularly spined.

Scopula on tarsus and metatarsus of both 1st and 2nd legs fairly dense and undivided; scopula on tarsus of 3rd leg undivided; metatarsus scopulated over nearly $\frac{1}{2}$ its length; scopula on tarsus of 4th leg divided by a band of setae; metatarsus with setose, but with no scopular hairs.

Measurements.—Total length 13 mm.; spinners 2·9 mm.; carapace 6 mm. long and 4·2 mm. wide.

Hermacha nigra, n. sp.

Specimens.—Two ♀ ♀ (Types, No. 13,899), Bergvleit Flats, Cape Peninsula (Dr. W. F. Purcell, 9/04); 15 ♀ ♀ and jv. (No. 12,166). Bergvleit Flats, Cape Peninsula (Dr. W. F. Purcell, 10/02).

Carapace.—Dark mahogany brown with sparse short yellowish hairs, somewhat denser towards the hinder portion. Equal in length

to tibia, metatarsus, and $\frac{1}{3}$–$\frac{1}{4}$ tarsus of the 1st leg, and equal to or exceeding the metatarsus and tarsus of the 4th leg. Fovea straight.

Eyes.—Front row slightly procurved; anterior medians small and about their own diameter apart; anterior laterals more than this diameter from the anterior margin of the carapace. Posterior medians oval and touching laterals, which are subequal to the anterior laterals.

Abdomen.—Dull olive black-brown, with longer fawn-coloured hairs; no difference between the upper and under abdomen, save in some cases a faint tree pattern on the upper surface.

Spinners.—Just exceeding sternum in length; distal segment lighter brown and slightly longer than the preceding one; anterior spinners lighter and about their own length apart.

Sternum and coxae very dark mahogany colour (coxae slightly the lighter), and clothed with almost black pubescence; posterior sternal sigilla large; less than their own long diameter from the margin.

Labium with 0–2 denticles. Coxae of pedipalps with extensive patch of fine denticles at base. Hair fringing mouth parts rufous in colour.

Chelicerae.—Under surface almost red; inner groove bearing 9 teeth.

Legs.—Slightly lighter in colour, particularly on upper surface from patella onwards; the latter being lighter and redder than the rest, thus giving a slight bicolour appearance. Tibia I equal in length to metatarsus and about $\frac{1}{3}$ of tarsus.

Tarsi I and II with no setal bands; tarsus III with a line of setae down centre, and tarsus IV with a broad band of setae.

Metatarsus I with scopula entire, and with 2 apical, 1 mesial, and 1 basal spines on under surface. Metatarsus II with the scopula very thin to absent on the lower half; 2 apical and 5 other spines on the under surface; 1 small spine on the inner side and sometimes 1 above. Metatarsi III and IV with a few scopular hairs and setae distally on under surface.

Measurements.—Chelicerae to end of abdomen 17 mm.; carapace 6 mm. long and 4 mm. wide; spinners 3 mm. long; length of 1st leg 14 mm.; of 4th, 16 mm.

A ♀ specimen (No. 150,433) from Caledon agrees with *H. nigra* in all details save size, and in carapace being considerably longer than tarsus and metatarsus of 4th leg.

Measurements.—Length 26 mm.; carapace 8·5 mm. long and 6 mm. wide; spinners 4·5 mm. and tibia I, 5 mm. long. It might possibly be a ♀ from a previous season.

A number of ♀ specimens (No. 3890) from Knysna are also remarkably close to *H. nigra*, but vary in a few details. In the absence of ♂♂ in any of the cases it is impossible to definitely name the species from Caledon or Knysna as *H. nigra*, but it is possible that they may be.

A number of ♀ specimens (No. 13842) from Stellenbosch strongly resemble *H. nigra*, and are also apparently closely allied to it; it is no doubt a young example of this species which was described by Simon as *Damarchodes purcelli* (Bull. Soc. Ent. Fr. 1903, No. 3, p. 43); the description, however, is of a juvenile, and is based mainly on colour and lacks specific details.

Damarchodes is considered by Purcell to be synonymous with *Hermacha*; Hewitt, however, thinks it allied to *Pelmatorycter* (Ann. Durban Mus. vol. 1, pt. 3, p. 224).

Hermacha nigrispinosus, n. sp. (Text-fig. 7).

Specimens.—♂ (Type, No. B 2593) and 20 ♀♀ from around Sneeuwgat Valley (4000–4800 ft.). Gt. Winterhoek Mountains, Tulbagh (R. W. Tucker, April, 1916).

♂. *Colour.*—Carapace very dark mahogany-brown, darker towards margin, clothed with fairly dense yellow pubescence save in centre from around fovea to ocular tubercle; legs and pedipalps very dark; posterior pair slightly lighter, especially distally; tarsi light on under surface. Abdomen almost black; upper surface with yellow pubescence and sparse longer black hairs; under surface slightly lighter; genital plate and lung operculae on under side lighter brown. In spirits abdomen is seen to be spotted, especially on sides. Coxae of legs brown with olivaceous tinge; sternum and coxae of pedipalps reddish-brown.

Carapace.—Equal in length to metatarsus and ½ tarsus of 4th leg; equal to metatarsus and tarsus of 1st leg and slightly shorter than tibia and patella. Fovea straight.

Eyes.—Anterior medians about ¾ of their own diameter apart; laterals larger, broadly oval, oblique, and less than ½ a median's diameter from them. Posterior laterals narrowly ovate, subequal in length to anterior laterals; posterior medians oval, slightly less than ½ laterals and nearly touching them.

Labium.—Muticous. Coxae of pedipalps with about 34 teeth.

Chelicerae with 7 teeth (2 in outer row).

Posterior spinners about ¾ length of sternum; distal segment conical, equal to or slightly exceeding middle segment; sternal sigilla indistinct.

Pedipalps.—Femur and patella well clad in black hairs; former with a spine on outer and inner sides apically; latter with spine-like hairs and 1 weak spine on upper apical surface.

Tibia with 2 spines anteriorly above and 2 posteriorly below on outer side; on inner side, 2 spines anteriorly above and 3 anteriorly below; 1 spine posteriorly below; on upper and under surfaces, no spines (1 apparently on anterior under surface included in side spines). Spines black and stout.

Palpal organ.—Process of bulb black, stout, compressed laterally, slightly spatulate at end, and curving out and up (Text-fig. 7).

Legs.—Metatarsus I bent as in *H. curvipes*. Metatarsi II, III, and IV straight. Tarsi slightly curved upwards in centre except on 1st

Fig. 7.—*Hermacha nigrispinosus*, n. sp. Right pedipalp, outer side.

leg. Tarsi entirely scopulate. Metatarsus I scopulate on anterior half. Metatarsus II scopulate on anterior $\frac{2}{3}$; remaining $\frac{1}{3}$ with sparse scopular hairs. Metatarsus III scopulate on distal $\frac{1}{2}$. Metatarsus IV with a few scopular hairs distally.

Spines.—Tibiae and metatarsi fairly heavily armed with strong black spines and clothed in stout black hair, often setiform.

Metatarsus I spineless. Metatarsus II with 1 median and 1 posterior spine on inner surface and with 2 spines posteriorly on outer side of under surface. Tibia I with no spines above, 2 on inner side posteriorly, none on outer side; 1 stout apical spur-like spine, 2 median and 2 posterior spines on outer under surface and 2 spines on inner under surface posteriorly.

Patella I with 1 anterior and 1 posterior spine on inner surface.

Patella II with 3 anterior spines on inner surface.

Patella III with 2 small spines on anterior surface and 1 on posterior surface.

Patella IV with 1 median spine on posterior surface.

Measurements.—Total length (chelicerae to end of abdomen) 20 mm.; spinners 2·5 mm.; carapace 7 mm. long, 5·75 mm. broad.

♀. *Colour* as in ♂; abdomen distinctly marked above and at sides with testaceous flecks, and also to a lesser degree on ventral surface. Sternum and coxae slightly redder in colour; tarsi not paler below.

Carapace.—Equal in length to tibia, metatarsus and $\frac{1}{4}$ to $\frac{1}{3}$ tarsus of 1st leg; equal to tarsus and metatarsus of 4th leg.

Eyes.—As in ♂.

Labium.—Generally muticous; occasionally with 1 or 2 denticles.

Coxae of pedipalps with 30–34 teeth (variable).

Chelicerae.—Usually with 8 teeth on inner side of groove, and 2 to 3 denticles in groove opposite last 3 teeth; one or two specimens have 9 to 10 teeth on one chelicera.

Posterior spinners $\frac{3}{4}$ to $\frac{4}{5}$ length of sternum; terminal joint bluntly conical and slightly longer than subterminal joint.

Legs.—Tibia I equal to or slightly exceeding metatarsus I; slightly less than tibia of 4th leg.

Tarsi I and II densely scopulate. Tarsus III with faint central line of setae. Tarsus IV with broad dividing line of setae.

Metatarsus I scopulate entirely; 1 spine on lower surface. Metatarsus II scopulate entirely, 1 apical, 0–1 median, and 1–3 basal spines on lower surface. Metatarsus IV with a few scopular hairs distally and with 14 spines. Patella III with 1 to 2 small spines on anterior surface; rest of the patellae are spineless. Patella IV occasionally has a spine on posterior surface.

Measurements.—Total length 22·5 mm.; spinners 3·4 mm.; length of carapace 9 mm., width 7 mm.; tibia of 1st leg 4 mm. long.

Hermacha purcelli, n. sp. (Text-fig. 8).

Specimens.—Two ♂ (B 2670, Types) from Ashton, Robertson Div. (Walter and Dr. W. F. Purcell), 7/14 and a ♀ (No. 12395) from same locality (Dr. Purcell, 11/02).

♂ *Colour.*—Carapace and legs dark brown; abdomen testaceous brown above, spotted and flecked with black; under surface testaceous. Sternum light orange-brown; coxae slightly lighter.

Carapace.—Equal in length to metatarsus and $\frac{1}{2}$ tarsus IV; also equals tibia and metatarsus I, and considerably exceeds metatarsus and tarsus I. Fovea straight to slightly procurved.

Eyes.—Anterior row procurved; medians large and about a radius apart; laterals oval, only slightly larger and less than a medians radius from latter. Posterior medians smaller than posterior laterals and touching them.

Spinners.—About $\frac{3}{4}$ of the sternum in length; apical joint longer than sub-apical.

Labium about 3 times as wide as long, and muticous. Coxae of pedipalps with a basal patch of about 30 teeth. Chelicerae with 7 teeth on inner side, and one large denticle in groove. Posterior sternal sigilla long, oval, fairly deeply impressed, and about their own long diameter from margin.

Pedipalps.—Femur with a spine anteriorly on each side of upper

Fig. 8.—*Hermacha purcelli*, n. sp. Left pedipalp, inner side.

surface. Patella with one spine anteriorly on inner surface. Tibia with 4 strong spines on inner surface and 3 on outer, and with a few stout setose hairs on under surface; tarsus unspined. Tibia hollowed on under side anteriorly; bulb large and swollen; process slightly curved down and out, flattened dorso-ventrally and tending to be spatulate at its extremity (Text-fig. 8).

Legs.—Metatarsus I with distal $\frac{1}{2}$ stouter, and curved downwards and slightly outwards. Metatarsus II slightly curved, III and IV straight; I and II paler distally.

Scopulation.—Tarsi I and II with scopulae undivided; III with narrow dividing line of long setae; IV with a very broad dividing line of strong setae. Metatarsus I scopulate over distal $\frac{1}{2}$, II over distal $\frac{2}{3}$; III with scopular hairs on distal $\frac{1}{2}$, IV with setose hairs.

Spines.—Tarsi I, II, and III unspined; IV with 0–1 spines on anterior side distally. Metatarsus I with 1 small apical and 1–2

stouter spines on under surface. Metatarsus II with 1–2 apical, 3 stout spines on under surface basally and 3 on inner upper surface; III and IV heavily spined. All femora spined on upper surface.

Measurements.—Length of carapace just over 7 mm., width 5·3 mm., chelicerae to end of abdomen 16 mm.; tibia I 3·6 mm., slightly exceeding metatarsus I in length; tibia II slightly less than metatarsus II.

♀ *Colour.*—Carapace and legs dark to medium brown; under surface as in ♂ but slightly browner.

Carapace.—Slightly shorter than tibia, metatarsus, and tarsus of 1st leg, and subequal to tibia and metatarsus of 4th leg. Fovea slightly procurved.

Eyes.—Anterior medians less than a diameter apart, but a diameter or more from the anterior laterals which are a long oval and larger in area; posterior row with medians smaller than laterals, and touching them.

Spinners.—Equal in length to $\frac{4}{5}$ of sternum; apical joint slightly shorter than subapical.

Labium muticous; coxae of pedipalps with 25–30 teeth at base anteriorly.

Chelicerae with 8 teeth on inner side and 1 large denticle in groove towards base. Posterior sternal sigilla oval, about their long diameter from margin, and fairly deeply impressed; median sigilla in form of a semicircular impression on margin of carapace opposite 2nd coxae.

Pedipalps.—Tarsi scopulate and with 2–3 spines basally on under surface. Tibia with 4 apical and 4 other spines on under surface and 1 median spine on inner surface; femur and patella unspined.

Legs.—Tarsi I and II with scopulae undivided; III with band of dividing setae; IV with broader band of stronger setae down centre. Metatarsi I and II scopulate to base; III with scopular hairs on distal $\frac{1}{3}$; IV with no scopular hairs but with numerous setae. Tibia I longer than metatarsus I.

Spines.—Tarsi unspined. Metatarsus I with 2 apical, and 3 spines basally on under surface; metatarsus II similar but with an extra apical spine, and a median spine on inner surface; metatarsus III with 6–7 apical and 11 other spines; metatarsus IV heavily spined, especially at apex. Patella III with 3 spines on anterior surface, set in a patch of short stout bristles. Femora unspined, but with 1 or 2 long bristles proximally on upper surface.

Measurements.—Total length 19·4 mm.; carapace 7 mm. long, 4·5 mm. wide; spinners 3·3 mm., and sternum about 3·9 mm. long; tibia I, 2·8 mm. long.

Gen. PIONOTHELE, Purc.

Pionothele straminea, Purc.

1902. *P. straminea*, Purcell, Tr. S. Afr. Phil. Soc. vol. 11, pt. 4, p. 381.
1903. ,, Simon, Hist. Nat. des Araign. vol. 2, p. 907.

Specimens.—♂ and ♀ (No. 11,707) Stompneus, St. Helena Bay, Malmesbury Division (J. Gould, 5/02).

♀ *Carapace.*—Light mahogany-brown in colour, with slightly darker radiating stripes; cephalic portion lighter in colour and raised. Equal in length to, or slightly exceeding, tibia, metatarsus and tarsus of 1st leg; longer than metatarsus and tarsus of 1st leg, and equal to tibia, metatarsus and tarsus of 2nd leg (on the other side, however, it only equals the tibia and $\frac{3}{4}$ of the metatarsus; the same side of the specimen is also less heavily spined, as noted below). Fovea very slightly procurved and wider than the ocular tubercle.

Eyes.—Anterior row slightly procurved (seen from above); medians large, subequal to laterals, and quite their own diameter apart; laterals subrotund. Posterior row straight to slightly recurved; laterals much smaller than anterior laterals and about their own long diameter from them: medians exceedingly small and nearly touching laterals.

Abdomen.—Dull testaceous brown in colour, spotted above, very slightly lighter underneath and with sparse long brown hairs.

Spinners.—Equal in length to $\frac{3}{4}$ of the sternum; stout and subconical; terminal joint very short and with stiff bristly hairs at apex.

Sternum.—Broad posteriorly, narrowing anteriorly.

Labium muticous; coxae of pedipalps with a narrow strip of about 20 teeth.

Chelicerae with a row of 6 teeth, and 2 or 3 inner denticles.

Legs.—Slightly lighter than carapace in colour. Tibia of 1st leg equal in length to the metatarsus. Tarsus and metatarsus of 1st and 2nd legs scopulated and with no setal bands; tarsus of 3rd leg clothed with long and somewhat setiform scopular hairs; setose hairs also down metatarsus, which tapers distally; tarsus of 4th leg with scopular hairs also long and setiform, and with somewhat similar hairs on the metatarsus.

Spines.—Metatarsus I with 2 weak apical spines, and 1–2 basal spines on under surface; metatarsus II with 2 stronger apical spines, and 2 basal spines on under surface. Tarsus IV has 0–1 spines; metatarsus IV has 3–4 apical spines underneath; the two central ones being very long ($\frac{1}{3}$–$\frac{1}{2}$ the length of the tarsus); about 3 other spines on the under surface, and very numerous ones on the upper and lateral

surfaces, particularly on the outer surface (the right-hand metatarsus had over 20 spines and the left had under 10; the left leg was also shorter).

Pedipalps.—Armed with 1 spine on outer side of base of tarsus; 4 apical spines on under surface of tibia, 1 median and 1 basal spine on outer side of under surface, and 4–5 on inner surface of tibia.

Measurements.—Chelicerae to end of abdomen, 13·5 mm. Carapace 5 mm. long and 3·2 mm. wide; spinners 2 mm. long. Tibia of 1st leg 2 mm. long.

Though the material is scanty and only in moderate preservation, the genus *Pionothele* seems sufficiently distinct from *Hermacha* to remain separate from it.

Family DIPLOTHELEAE.

Gen. DIPLOTHELE, Cambr.

Of the three genera of the group, *Acropholius* and *Cestrotrema* (Sim.) are both confined to Madagascar, and *Diplothele* to India and Ceylon. The following species from Rhodesia does not agree with the Madagascan genera, but coincides rather with the Indian genus; it differs therefrom in certain respects, but the differences are not generic.

Diplothele arcturus, n. sp.

Specimens.—A ♀ (No. B 2189, Type) from Arcturus, Salisbury (Dr. Melle, 12/15).

Colour.—Carapace and legs light reddish brown; upper surface of abdomen dull blackish brown, flecked with numerous testaceous spots; under abdomen testaceous with a black spot directly below the vulva. Sternum, coxae, and under side of legs slightly lighter than the carapace. The latter is marked with numerous infuscated lines radiating from the fovea; sides of cephalic region lightly infuscated; ocular tubercle almost entirely black.

Carapace.—Equal in length to the tibia, metatarsus and $\frac{3}{4}$ tarsus of 1st leg, and to the metatarsus and $\frac{3}{4}$ tarsus of the 4th leg. Ornamented with appressed yellow hairs and scattered black bristles, which are most numerous on the cephalic portion. Fovea small and straight, cephalic edge longer and slightly procurved.

Ocular area wider than long.

Eyes.—Anterior laterals oval, oblique, and nearly their long diameter apart anteriorly; anterior medians round and slightly smaller than the anterior laterals; at least their own diameter behind the latter and from each other. The anterior eye area is thus slightly

narrower posteriorly. Posterior medians very small, and touching laterals, which are long oval and oblique, and situated in a recurved line with the anterior medians, and a procurved line with posterior medians.

Spinners.—Two only. (As in Fig. 110, p. 117, Simon, Hist. Nat. des Araign. vol. 1, 1892.)

Sternum.—As broad as long; bearing stiff black hairs, especially on posterior borders. Three pairs of sternal sigilla; small, marginal, equal in size and opposite 1st, 2nd and 3rd coxae respectively.

Labium quite twice as wide as long, and bearing 4 apical teeth. Coxae of pedipalps with a small basal patch of 15–20 teeth.

Chelicerae.—Clothed with moderately long hairs; rastellum not prominent, composed of a row of very slender spines which are longer on internal border. A single row of 9 strong teeth on inner border of groove, and a patch of denticles in the basal portion of the groove itself. Hairs around mouth parts long and copper-red in colour.

Legs.—Tarsi with no clavate hairs on upper surface; scopulae entire on under surfaces, and each divided by a band of setae which is faint in the 1st leg, and progressively stronger and wider to the 4th leg. Metatarsi I and II scopulate and with a faint trace of setae down centre; metatarsus III faintly scopulate over distal $\frac{1}{2}$–$\frac{2}{3}$ of its length; metatarsus IV over distal $\frac{1}{2}$ only; each with a line of long strong setae extending beyond the scopulated portion. Tarsi I and II $\frac{2}{3}$ length of their metatarsi, III and IV $\frac{1}{2}$ or slightly less.

Spines.—Tarsi spineless. Metatarsus I spineless; metatarsus II with 1 or 2 spines basally on under surface; metatarsi III and IV armed with long strong spines. Patella III with 3 spines on anterior surface and 1 on posterior; rest of surface covered with strong bristly hairs; other patellae spineless. Tarsal claws with a single tooth situated anteriorly in the bend of the claw; claws longer than the fascicles.

Pedipalps.—Tarsus scopulated and divided by a line of setae; tibia weakly spined below.

Measurements.—Chelicerae to end of abdomen, 15 mm. Carapace 6·2 mm. long, 5 mm. wide. Legs, in order from 1–4, approximately 14, 13, 13, and 17 mm. in length.

Family. DIPLURIDAE.

Gen. THELECHORIS, Karsch.

This genus has been made synonymous with *Ischnothele* (see Simon Hist. Nat. des Araign. 2nd ed. vol. ii, pt. 4, 1903, p. 968); from material now to hand it would appear that the synonymy is not valid, and *Thelechoris* is perfectly distinct from *Ischnothele*. It seems that

hitherto certain ♀ *Thelechoris* have been described as *Ischnothele*, whilst before the genera were merged, ♂ *Ischnothele* were referred to *Thelechoris*; thus the ♂ palp figured in Sim. Hist. Nat. des Araign. 2nd ed. vol. i, 1892, p. 70, as of *Thelechoris*, is characteristic of *Ischnothele*. Hence as up till now only *Ischnothele* ♂♂ were known, and the ♀ ♀ of both genera were much alike, the synonymy was probably established on account of the cross descriptions referred to above. The ♂ *Thelechoris* described below makes it clear that the genera are distinct, and the ♀ characters set out by Simon in Hist. Nat. des Araign. 1892, p. 187, should be sufficient to separate *Thelechoris* from *Ischnothele* as instituted by Ausserer in Verh. Zool. Bot. Ges. Wien. 1875, pp. 162 and 163.

THELECHORIS AUSTRALIS, Purc. (Text-fig. 9 A, B and C).

1903. *T. australis*, Purcell, Ann. S. Afr. Mus. vol. iii, pt. 4, p. 106.

Specimens.—♂ and ♀ (No. B 1948), Durban, Natal (H. W. Bell-Marley, 10/1915), and 1 ♂ and 2 ♀ ♀ (No. B 2401), Grahamstown (Dr. W. F. Purcell, 7/10/05); also 7 ♀ ♀ (No. B 2402), from Cookhouse, Somerset E.

♂ *Colour* as in female; perhaps slightly lighter and less infuscated; spinners pale and posterior ones less darkly ringed at apices of segments. Under abdomen paler than dorsal surface; genital plate and lung operculae brown; legs faintly banded by olive infuscations.

Carapace as long as metatarsus IV, and equal to metatarsus and tarsus of 1st leg. Fovea slightly recurved.

Eyes.—Anterior row equidistant, strongly recurved. Medians large, round, and almost equalling in size the broadly oval, oblique, lateral eyes. Posterior row straight; medians small, oval, touching laterals, which are smaller than anterior laterals.

Labium and coxae of pedipalps muticous; white inner border of the latter is raised above the rest and separated by a fine groove.

Chelicerae with 10–11 teeth on inner border, alternately large and small, especially anteriorly.

Spinners.—Posterior ones 7·5 mm. long; about equal to patella, tibia, metatarsus and tarsus of 1st leg; apical joint equal to basal and median joints in length.

Legs in order 4, 3, 2, 1. Metatarsi much longer than tarsi, especially in legs 3 and 4; metatarsus I straight and moderately spined, especially at apex below; metatarsus II slightly curved inwards towards base, where it is also stouter; provided on lower surface, towards base of inner side, with a small tubercle bearing an

ordinary spine; more numerous spines than on metatarsus I; tibia I subequal to metatarsus I and stouter. Tibia II shorter than meta-

Fig. 9.—*Thelechoris australis*, Purc. A. Right palp, outer side. B. Left palp, under side. C. Right-hand second leg, inner side.

tarsus II, much stouter and bearing on under side of inner surface, over one-third-way down, a stout process which has 3 teeth on its inner and under edge (see Text-fig. 9 c); inner side with 3 slender

spines in a row behind each other; other scattered spines also. Metatarsi and tibiae of 3rd and 4th legs with long, fairly numerous spines. Tarsus I reddish in colour, infuscated terminally; scanty scopula anteriorly and 1 or so weak spines. Tarsus II lighter and with 2 or 3 spines and more scopular hairs. Tarsi III and IV still lighter, more numerously spined, and with more plentiful scopulation distally; in all cases the scopular hairs are long and setose. Claws of 4th leg with uniseriate row of 5 teeth; anterior teeth longest; claws of 1st leg with row of 6 or 7 long fine teeth.

Pedipalps.—Tarsus short and oblong; tibia swollen medially and posteriorly; neither are spined, but tibia carries long setose hairs, particularly on under surface. Basal part of bulb pear-shaped tapering gradually to a long, fine, inwardly curved style, the apex of which curves slightly downwards and reaches to base of tibia (Text-fig. 9 A and B).

Measurements.—Chelicerae to end of abdomen, 9 mm.; spinners 7·5 mm.; length of carapace 4 mm., width 3·6 mm.; length of 1st leg 10·75 mm.; 2nd leg 12·25 mm.; 3rd leg 13·5 mm.; 4th leg 15 mm.

It may be mentioned that in the ♀ the 1st and 2nd legs are always practically equal in length, the 1st being longer only by a mere fraction of a millimetre.

The Grahamstown specimens are much smaller, and the male is newly moulted, and maimed in one palp, but the characters are identical. In the females slight variations from the type occur in the eyes; the Natal specimen having the median anteriors lighter and apparently slightly larger than the type, whilst in the Grahamstown specimen the posterior medians appear slightly longer, oval, and nearer to the anterior medians.

Thelechoris and *Ischnothele* being now separated, *Thelechoris australis*, Purc. *loc. cit.*, retains its name.

Thelechoris karschi, Bos. & Lens., Hamburg Anstalt. vol. 12, p. 27, pl. II, fig. 31 and 31 a and b, appears to be *Ischnothele karschi*; the description is of a ♀, based mainly on colour and markings, and is lacking in detail.

Thelechoris rutenbergi, Karsch, Abhl. d. Naturw. v. Bremen, vol. xi, 1881, p. 196, retains its name, and is not *Ischnothele rutenbergi* as noted by Simon in Bull. Mus. d'Hist. Nat. 1902, No. 7, p. 514.

Ischnothele mashonica, Poc., Ann. and Mag. Nat. Hist. (7), vol. 7, p. 337, though most vaguely described, appears a true *Ischnothele*; likewise *Ischnothele catamita*, Sim., in Ann. del Mus. Civ. Genov. vol. xliii, p. 9.

Gen. ISCHNOTHELE, Ausserer.

Entomothele, Simon, Ann. Soc. Ent. Fr. 1889, pp. 235–6.
? *Schismatothele*, Karsch, Zeitsch. f. g. Naturw. lii, 1879, p. 544.
Mygale guianaise (*M. guianensis*), Walckenaer, Hist. Nat. des Ins. Apt. 1837, vol. i, p. 231, from South America, appears from description to be an *Ischnothele*.

Ischnothele gracilis, n. sp. (Text-fig. 10).

Specimen.— ♂ (No. 8500) from East Africa, probably Moçambique (Dr. J. D. F. Gilchrist).

Carapace.—Reddish-brown in centre and cephalic region, shading to a pale golden-brown; margin slightly black-edged posteriorly;

Fig. 10.—*Ischnothele gracilis*, n. sp. Right hand pedipalp, outer side.

cephalic grooves moderately deep; fovea deep and transverse at bottom. Carapace ornamented with dark radiating lines and somewhat sparse appressed yellow hairs. In length it equals the 4th metatarsus, the 1st metatarsus and tarsus, and 1st tibia and metatarsus; its breadth equals its length, namely, 6·5 mm.

Eyes.—Ocular tubercle quite 3 times as wide as long; front row of eyes procurved; medians large and round, nearly their own diameter apart; anterior laterals slightly less in area than medians, less than a median's diameter from them and from anterior margin of carapace. Posterior row practically straight along hind margins; median posteriors very small, subtriangular, oblique, hind margins touching laterals, which are elongate and equal to or greater than anterior laterals.

Abdomen.—Dark brown with slight purplish tinge; narrow oblique

testaceous lines on upper surface, with a round pale yellow spot on either side anteriorly. Under surface testaceous in colour, ornamented as in *I.* (*Thelechoris*) *karschi*, but region between marks on inner margin of lower lung pockets and down to spinners is speckled black, the flecks assuming the form of 3 horizontal lines, the lower one touching the base of the anterior spinners. Abdomen clothed with long foxy-brown hairs, long dorsally, shorter ventrally.

Spinners also clothed with long hairs. Superior spinners unfortunately have the last joint missing; length of remainder is about 5 mm.; basal joint equals $\frac{3}{4}$ length of sternum and is slightly longer than the penultimate segment of superior spinners.

Sternum.—Rich orange-red in colour, clothed with long dark hairs; as broad as long and with 3 small sigilla on each side, level with hind margins of 1st, 2nd, and 3rd coxae, and about their own lengths from margin. Coxae light yellowish-brown and clothed with longish dark hairs.

Labium muticous, very much broader than long, and with light-coloured apex. Coxae of pedipalps slightly darker than leg coxae and with area of numerous denticles.

Chelicerae same colour as central carapace, clothed with long fairly stiff hairs, curving over apex; no rastellum; both margins of groove with teeth; 5–6 on inner, anterior ones being the larger, and 8–9 on outer margin, with 2 two smaller inner teeth between 7th and 8th teeth.

Legs pale yellowish-brown, with faint olivaceous tinge towards tarsi; long and clothed with long and fairly stiff hairs (often somewhat spine-like), and faintly banded in appearance. No scopulae on the metatarsi; tarsi scopulate to base and with dividing lines of setae, which are most distinct on 3rd and 4th tarsi; 3rd and 4th metatarsi fairly heavily spined. Tibia of 1st leg with small outward and upwardly curving spur on outer apex.

Pedipalps.—Tarsus long, tapering to tip, and with 5–6 spines down each under side towards apex; swelling at base for attachment of palpal organ; latter somewhat heart-shaped, indented and tapering suddenly to a fine style which grows almost hair-like towards apex, and is slightly curved inwards and upwards, as in Text-fig. 10. Tarsus with 5–6 spines down each under side at apex.

Measurements.—Chelicerae to end of abdomen 17 mm.; carapace length and breadth, 6·5 mm.; sternum, length and breadth, 3·5 mm.; 4th leg 23 mm., 3rd, 21·8 mm., 2nd, 21 mm., 1st, 19 mm. long. The order 4, 3, 2, 1 is also in agreement with Ausserer's character for *Ischnothele*.

Family. CTENIZIDAE.

SEGREGARA, gen. nov. (Text-fig. 11 A.)

This name is proposed for the inclusion of such forms as have the characters of eyes, legs, chelicerae, etc., of the sub-family Idiopeae, but

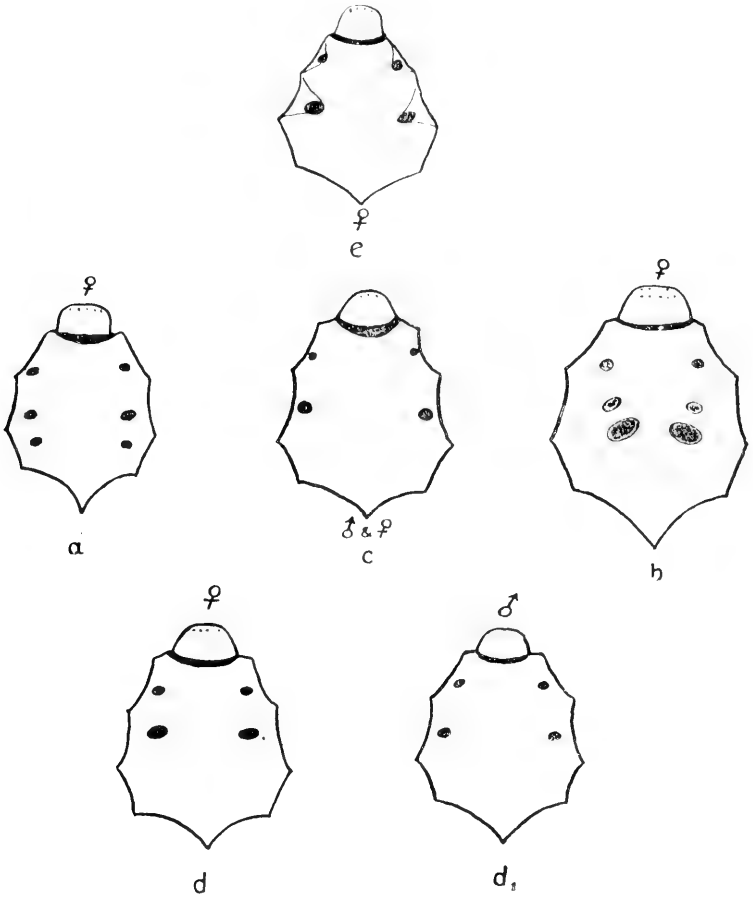


Fig. 11.—*a. Segregara. b. Gorgyrella. c. Ctenolophus = Idiops. d. Idiops (fryi)* ♀. *d_1. Idiops (pullus)* ♂. *e. Heligomerus (caffer).*

are distinct in the possession of 3 pairs of small marginal sigilla. Hitherto these have been placed in the genus *Acanthodon* (Guérin, 1838), which apparently applied originally to forms with 2 pairs of sigilla only, and was made synonymous with *Idiops* (Perty, 1833) by O. P. Cambridge in 1870, and again by Simon in 1903.

The name *Acanthodon*, therefore, should have lapsed. *Segregara* takes its place for forms with sternum (*a*) (Text-fig. 11); *Idiops* form (*d*) should include form (*e*); and form (*b*) would retain the name *Gorgyrella* (Purcell, 1902). For the above and later reasons Hewitt's inclusion of (*a*), (*b*), and (*c*) under *Acanthodon* is not considered valid.

The Name Acanthodon.

In 1833, Delictus Anim. &c., pp. 197–8 (pl. 39, fig. 5), Perty founds the genus *Idiops* on a ♂ specimen, *I. fuscus*, from Brazil.

In 1837 Walckenaer, in Ins. Apt. vol. i, p. 379, misquotes the type as *I. aculeatus*, and makes it synonymous with *Sphasus* (now a synonym of *Oxyópes*: Fam. *Oxyopidae*). In 1838–9 Guérin in 'Arachnides du Voyage de la Favorite,' and 'Rev. Zoologique' founds the genus *Acanthodon* on a ♀ specimen from Brazil, and this name is used by Walckenaer in "Supplement à l'Ordre des Aranéides," Ins. Apt. vol. ii p. 434. In P.Z.S, 1870, p. 101, O. P. Cambridge gives a short *resumé* of the history of *Idiops* (Perty), in which he states that "M. Guérin-Meneville (without any reference to the genus established by M. Perty) founded the genus *Acanthodon* upon another spider undoubtedly congeneric with that upon which the genus *Idiops* had been previously established"; and that Walckenaer appears to have overlooked its identity with *Idiops* when including it in Ins. Apt. tom. xi, p. 434 (not 234, as quoted in P.Z.S.).

In 1871 Ausserer separates *I. sigillatus*, described by Cambridge in 1870, as a new genus *Idiosoma* (Verh. z. b. g. Wien, 1871, p. 150).

In 1892, Hist. Nat. des Ar., both *Acanthodon* and *Idiops* are included by Simon under Idiopeae, the main separating characters being given on pp. 89 and 92 as the eyes; the name *Idiops* is here applied to the American species only.

In P.Z.S. 1897, p. 731, Pocock divides the species referred to *Idiops* by Cambridge in 1870, and places the two African forms (*meadii* and *thorelli*) in the genus *Acanthodon*; probably according to Simon, although no reasons are given for the separation. A new species, *Acanthodon lacustris*, is also described from 2 ♀ specimens (Lake Tanganyika), and the diagram of the sternum coincides with that for *Idiops* and *Ctenolophus* (Text-fig. 11 (*c*) and (*d*)), which is accounted for as below. (Simon later puts *A. lacustris* in his genus *Titanidiops*, Hist. Nat. des Ar. 1903, p. 890).

In 1898, A.M.N.H. (7), vol. i, p. 320, Pocock describes a new species, *Acanthodon pretoriae*, from South Africa, and tabulates it with the other African species.

In 1902, Purcell in Trans. S. Afr. Phil. Soc. vol. xi, pt. 4, and Ann. S. Afr. Mus. vol. iii, pt. 4, describes several new species of *Acanthodon*, also from South Africa, and in the former proposes the genus *Gorgyrella* for form (b).

In 1903, *loc. cit.* p. 888, Simon having received a ♀ *Idiops* unites *Acanthodon* and *Idiops* as having rested previously on a sexual character only; adding further that the latter genus should be confined to American species, and proposing *Titanidiops* for the African species. The name *Acanthodon* should therefore disappear.

In 1903, P.Z.S. p. 350, Pocock apparently accepts *Acanthodon* as a synonym of *Idiops*.

In 1904, Trans. S. Afr. Phil. Soc., vol. xv, pt. 3, Purcell removes all his species from *Acanthodon*, 2 of which, both ♀ ♀, namely, *A. fryi* and *A. versicolor*, he transfers to the genus *Idiops*; and for the other species, both ♂ ♂ and ♀ ♀, he makes a new genus, *Ctenolophus*. Subsequently new species are described by Purcell under *Idiops*, but none are added by him to *Ctenolophus*. Hewitt, however (Rec. Albany Mus. vol. ii, 1913), adds several new species to both genera.

But previously, in Ann. Transv. Mus. vol. ii, p. 74, 1910, Hewitt describes the supposed ♀ of *A. pretoriae* (Poc. 1898), although the genus disappeared finally in 1903.

In Rec. Albany Mus. vol. ii, p. 418, he refers the species to *Idiops*, giving no reasons; and in the same volume, p. 471, describes a new species, *Acanthodon microps*. In Ann. Transv. Mus. vol. 5, pt. 6, p. 97, footnote, having examined the type, Hewitt speaks of *I. thorelli* (Cambr.) as being a true *Acanthodon*.

However, in Rec. Albany Mus. vol. ii, pt. 5, p. 412, he describes a new species, *Ctenolophus transvaalensis*; then later (Rec. Alb. Mus. vol. ii, p. 473, footnote) places it under *Gorgyrella*, as it possesses 3 pairs of sternal sigilla, the 3rd pair very small (hence it cannot be a *Gorgyrella* at all (Text-fig. 11 B)); later still he settles it as *Acanthodon*, and considers the two latter genera inseparable (Ann. Transv. Mus. vol. v, pt. 3, p. 183). Hence apparently *Acanthodon* as used by Hewitt should have the sternum as in fig. (A), *i. e.*, with 3 pairs of small sternal sigilla, of which he regards (B) as a variation.

Further, in Rec. Alb. Mus. vol. xi, p. 473, Hewitt adds a footnote that, according to Hirst, *Ctenolophus* is a synonym of *Acanthodon*; and later states, *in lit.*, that he has examined Guérin's type *A. petiti*, and considers that ♀ *Ctenolophus* is congeneric with it. But Guérin's *A. petiti* is an *Idiops* according to Cambridge, and according to Simon also it should be referred to that genus. Hence, when Hewitt says that *Ctenolophus* and *A. petiti* are congeneric, it may be taken as

equivalent to saying that *Ctenolophus* is congeneric with *Idiops*, which is borne out by the diagrams (c) and (d).

But in Ann. Durban Mus. vol. i, pt. 3, p. 225, Hewitt considers the "South African species now referred to this genus (*Acanthodon*) congeneric with the genotype of *Acanthodon* (Guérin) from Brazil," and gives a short diagnosis of *Acanthodon*, in which he states that there are "either 2 or 3 pairs of sternal sigilla, the 1st pair marginal or sometimes (= *Gorgyrella*, Purc.) a little separate from the margin." He thus includes all 3 forms A. B, and C, as one genus under the name *Acanthodon*; which, if Guérin's type is identical with Purcell's *Ctenolophus* as he maintains, has but 2 sternal sigilla as in (c), and does not apply to forms (a) and (b), but did and still does apply to forms (d) now known as *Idiops*. Thus, as the following will tend to show, the name *Acanthodon* disappeared once in 1870 (Cambr.) and once again in 1903 (Sim.), and was accepted as synonymous with *Idiops* by Pocock in 1903. Hewitt, however, still uses the name, and further includes under it the 3 forms as above; whereas it would seem more fitting to keep *Gorgyrella* separate, unite *Ctenolophus* with *Idiops*, and substitute *Segregara* for the form (a) hitherto described under the lapsed name *Acanthodon*. The creation of a new name seems necessary, since Simon's *Titanidiops* does not appear to be the same as form (a), but rather should agree with form (d). It may be mentioned that *Ctenolophus* and *Idiops* differ in one respect, namely, the latter has two rows of teeth on the cheliceral groove, whilst the outer row is represented in *Ctenolophus* by minute denticles only; this by itself is perhaps hardly sufficient for separation, though fairly constant, but would no doubt serve to divide the group into two main classes.

From the above *résumé*, it would seem that M. Perty founded the genus *Idiops*. Guérin, not having referred to this, subsequently founded the genus *Acanthodon* on a specimen, *A. petiti*, which was congeneric with Perty's *Idiops*. Walckenaer subsequently not only adopted Guérin's *Acanthodon*, but erroneously concluded that Perty's *Idiops* was really a *Sphasus*. This mistake was rectified later, but *Acanthodon* was left standing. Cambridge then (P.Z.S. 1870) states definitely that *Acanthodon* is identical with Perty's *Idiops*, and describes a series of species for this genus, from South America, Syria, Africa, and Australia; unfortunately he thus describes species which were generically different from *Idiops*. Hence Ausserer puts the Australian species *I. sigillata* into a new genus *Idiosoma*, and Simon subsequently reduces *Idiops* to the South American species and places the rest under *Acanthodon*, in which genus he includes as a synonym Ausserer's

Idiosoma. In 1897 Pocock records the two African species of *Idiops* (*thorelli* and *meadii*) described by Cambridge in 1870 as *Acanthodon*, and describes a new species of the genus from ♀ specimens. Subsequently Simon makes *Acanthodon* a synonym of *Idiops*, and constitutes the synonymy of the latter genus as on p. 889, Hist. Nat. des Ar. 1903; apparently re-establishing Ausserer's *Idiosoma.* The generic type for *Idiops* thus reverts to Perty's *I. fuscus*, and *Acanthodon* disappears; *A. petiti* becoming *I. petiti.* For species other than American, Simon makes new genera, *Pachyidiops* and *Titanidiops*; which Hewitt, however, does not think valid (Ann. Durb. Mus. vol. i, pt. 3, p. 225, note).

Purcell in 1904 removes all his species from *Acanthodon*, placing some in a new genus, *Ctenolophus*, and the rest in *Idiops.* About 1910 Hewitt describes the supposed ♀ of *Acanthodon pretoriae*, of which the ♂ was described by Pocock in 1898, and subsequently describes other species under the genus *Acanthodon*, although the name had lapsed. Amongst species which finally come to rest under *Acanthodon* are forms with 3 pairs of small marginal sternal sigilla, which Hewitt considers generically the same as Purcell's *Gorgyrella*; further, having examined Guérin's type on which *Acanthodon* was originally based, he finds that *Ctenolophus* is congeneric with the original *Acanthodon* (which, however, is *Idiops*); hence *Ctenolophus, Gorgyrella*, and an apparently new form are all included by him under the lapsed *Acanthodon.* If sternal sigilla are thus considered valueless for generic separation, *Idiops* itself has little support; hence it is not surprising that Hewitt considers it probable that "*Acanthodon* and *Idiops* will eventually be united" (Ann. Durb. Mus. vol. i, pt. 3, p. 225, footnote); in fact the subfamily *Idiopeae* would practically become one big genus.

A possible solution is suggested in the previous and following pages in which the name *Segregara* shall be applied to forms with 3 pairs of small marginal to [submarginal sigilla, from which fresh genera, *Gorgyrella* and *Idiops* (including *Ctenolophus*), have branched off.

Sytematic Value of Sternal Sigilla (Text-figs. 12 and 13).

In connection with the genus *Pelmatorycter*, Hewitt states (Ann. Durb Mus. vol. i, pt. 3, p. 223) that "the character of the position of the posterior sternal sigilla is only of specific importance, for in the genus *Pelmatorycter* these sigilla may be small and submarginal, or very large and submedian." This may perhaps be because specimens of the genus *Ancylotrypa* have been included as *Pelmatorycter.* In specimens of both genera available for examination great similarity exists, and the posterior sternal sigilla show less divergence than in

other genera discussed; yet, taking sigilla as the criterion, two distinct classes can be distinguished, to each of which a generic name had previously been given on other and less reliable characters.

Ancylotrypa.—Posterior sternal sigilla oval, marginal to submedian; and their distance apart always exceeds the width of the labium, and is also much greater than their long diameter. The distance between their inner anterior margins greatly exceeds the distance from the latter to the margin of the sternum.

Pelmatorycter.—Posterior sternal sigilla large, oval or pear-shaped,

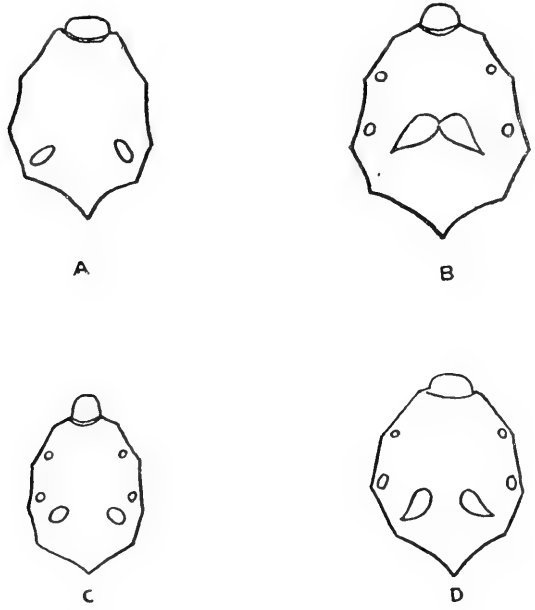


Fig. 12.—A. *Ancylotrypa cornuta* ♂. B. *Pelmatorycter namaquensis* ♂. C. *A. pusilla* ♂. D. *P. pallidipes* ♂.

and median to submedian in position; the distance apart usually less than, and rarely equal to, the width of the labium, and also seldom exceeding the long diameter of the sigilla. The distance between the inner anterior margins is considerably less than from the latter to the margin of the sternum.

In both genera the 2 anterior pairs of sigilla are small, less distinct, and marginal; in *Pelmatorycter* the 2nd pair are submarginal.

The characters given in the original generic descriptions are not of primary importance, the dentition of the tarsal claws being especially variable; the eyes, however, are of some importance, since in *Ancylo-*

trypa the ocular area is scarcely wider posteriorly than anteriorly, is shorter in comparison with the width, and has the posterior row of eyes smaller and more subequal in size than *Pelmatorycter*; the latter also has the posterior tarsi of the ♀ ♀ more heavily spined on the under surface. Further, *Ancylotrypa* are considerably smaller and slenderer in build, and the ♂ ♂ have shorter palps, and the ♀ ♀ more oblong (or cylindrical) abdomens than in *Pelmatorycter*.

Thus among Hewitt's recent additions (Ann. Transv. Mus. vol. v, No. 3, p. 192, etc.) to the genus *Pelmatorycter*, are forms such as *P. parvus* and *P. brevipalpis*, etc., which from the descriptions appear to belong to *Ancylotrypa*; further, a ♀ specimen depicted in fig. 10, pl. XXVI, and referred to as a species near *brevipalpis*, possesses the characteristic size and shape of *Ancylotrypa*, and would no doubt possess the sternal characters also.

Not only in *Pelmatorycter* and *Ancylotrypa*, but in the preceding and other genera, sternal sigilla appear to be a sufficient generic distinction. When one considers that these sigilla are the marks formed by attachments of the powerful internal thoracic muscles which actuate the legs, their significance is not inconsiderable. A difference in position and size of the posterior sternal sigilla, as shown by *Gorgyrella* and *Segregara* (Text-fig. 11), can only mean a difference in arrangement and action of the thoracic musculature which makes the two forms entirely separate. In the above case both are ground-trapdoor-tube builders, and are also alike in external appearance. It is generally admitted that genera arise in evolution by branching off from a common stock, and therefore intermediate forms are at times only to be expected. Although the posterior sternal sigilla of *Gorgyrella* are equivalent to the corresponding ones of *Segregara*, and have probably been formed by the enlargement and forward migration of the posterior sternal muscles of a *Segregara*-like stock, it seems quite legitimate to consider that branch generically distinct. The supposition of the development of *Gorgyrella* from a *Segregara*-like form seems borne out by the young examples of *Gorgyrella*, in which the posterior sigilla bear more resemblance in conformation and size to those of some adult forms of *Segregara*, whilst the adult forms do not. In all specimens of *Gorgyrella* examined the muscle attachments are as in Text-fig. 11 B, and though some may perhaps be smaller and slightly further apart posteriorly or *vice versâ*, the arrangement is invariably characteristic and distinct. A parallel case to this is furnished by *Homostola* and *Spiroctenus;* Hewitt considers that *Homostola zebrina* is "an aberrant *Spiroctenus* standing somewhat isolated in the genus owing to the large size and close approximation

of the posterior sternal sigilla" (Ann. Durb. Mus. vol. i, pt. 3, p. 233). Fig. 13 shows the characters under consideration, and though no doubt the one form can be considered as arising from the other by a muscular alteration and migration as in *Gorgyrella*, the difference thus brought about is surely generic. No doubt, as Hewitt says, the characters by which Simon separates the *Cyrtaucheniæ* from the *Nemesieae* are not very clear and definite; and further knowledge will perhaps bring about rearrangements there and elsewhere. Never-

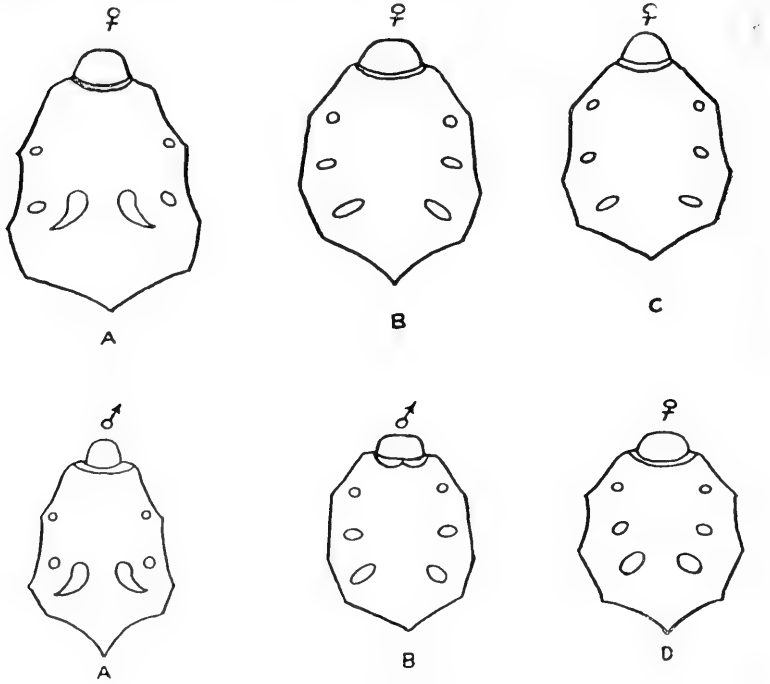


Fig. 13.—*Homostola zebrina*. B. *Spiroctenus validus*. C. *Spiroctenus schreineri*. D. *Stictogaster reticulatus*.

theless, though *Homostola* should preferably be in the same group as *Spiroctenus*, the two seem generically separate. *Stictogaster* (Text-fig. 13 D), contains but the one species on which the genus was founded, and is allied to, but distinct from, *Spiroctenus*; further material and the discovery of the ♂♂ of the specimens is necessary to decide whether the generic characters are constant and valid; in the meantime, there is no advantage in calling it *Spiroctenus*. Hewitt apparently considers that as extreme members of one genus may resemble the opposite extreme members of another genus, that

the whole form one series with the sigilla as a specific character only; but the difficulty of placing a form such as *Gorgyrella* in the same genus as one such as *Segregara* seems greater than that of separting such forms as constitute the so-called intermediate forms. Both Simon and Purcell considered the character, when strongly shown as above, to be more than specific, and so far as I am able to see, that view is correct.

The *Ctenizidae* are not alone in having muscle-scars or sigilla as a generic character; in the *Eresidæ*, for example, the two genera *Eresus* and *Dresserus*, of which the ♀ ♀ greatly resemble each other, can be separated at a glance owing to the dorsal abdominal sigilla. The two anterior pairs of muscle attachments are close together in *Dresserus* and separate in *Eresus;* in addition *Dresserus* is distinct in having 4 small cribellal plates instead of 2 large ones. The point, however, is that the character, though scarcely so important as the differences which exist in the *Ctenizidae*, is nevertheless of generic significance; so that it seems justifiable to consider that, although the genera of 4-lunged terricolous spiders of South Africa will perhaps have to be re-grouped and in some cases merged, the relegation of sternal sigilla to a merely specific character in order to simplify matters, is not sound.

It is quite possible that sternal sigilla will afford a means of tracing the generic development of such groups as the *Idiopeae*. As far as can be seen, from out of the cross identification and synonymy of the past, the fact emerges that *Idiops* exists in Africa and South America (as well as in Central Asia, Syria, Arabia, India, and Burma) and includes as synonyms the majority of species described under *Acanthodon*. Further in this group occurs the genus *Gorgyrella*, found only in South Africa; *Heligomerus*, found in Tropical Africa, India, and Ceylon, and finally *Segregara*, proposed for forms as previously defined. Now Pocock, writing on the geographical distribution of the *Ctenizidae* (P.Z.S. 1903, pp. 351 and 357), considers that *Idiops* reached South America, not from North America, but from Africa. This and the general geographical distribution of the *Idiopeae* indicate that Tropical Africa was the seat of origin of the group. The probability is that the original stock was akin to *Segregara*, and that the latter genus is a direct but numerically feeble continuation of it. From this a branch occurred, in which muscular alteration and migration took place, giving forms (c) and (d) Text-fig. 11; this form, now known as *Idiops*, spread far and wide, and eventually reached South America, where it still exists, and has given rise to a specialised offshoot, *Pseudidiops*; in view of its success in establishing itself and its

consequent numerical preponderance, a fair range of variation is only to be expected; hence the name *Ctenolophus* was applied to what is most probably only a section (confined perhaps to South Africa) of the genus, whilst the original erroneous formation of the genus *Acanthodon* was responsible for much confusion and cross identification. Finally *Gorgyrella* can also be regarded as an offshoot from form (A), and is important in that it lends support to the theory of the South African origin of the *Idiopeae* in that it is found in South Africa alone; whilst in the resemblance of its young to the adult forms of *Segregara*, it indicates a former connection therewith. *Heligomerus*, the other representative of the group, diverged on the same lines as *Idiops*, and is found in Tropical Africa, Ceylon, and India, but evidently did not succeed in establishing itself as did *Idiops*.

The occurrence also of the genus *Diplothele* (p. 118) in Africa, as well as Madagascar and India, is interesting, since the group is akin to the *Idiopeae* in eye formation, and to *Segregara* in sternal sigilla, and may eventually prove to be connected with the group in origin, in Tropical Africa.

It follows then that the species placed under *Acanthodon* in Hewitt's table (Ann. Transv. Mus. vol. 5, No. 3, p. 87) will have to be separated as follows:

A. spiricola, *kolbei*, and *kentanicus* come under *Idiops*, section one row of teeth on inner side only of cheliceral groove, and formerly known as *Ctenolophus*. *A. namaquensis* and *A. schreineri* are as Purcell named them, *Gorgyrella namaquensis* and *schreineri*.

A. abrahami and *A. transvaalensis* become *Segregara abrahami* and *transvaalensis*, as apparently do *monticola* and *grandis* also; for the others an examination of the specimens is necessary to decide under which genus they should be placed.

Segregara transvaalensis (Ht.).

Specimens.—A subadult ♀ (No. 150, 502) from Warmbaths, Transvaal, collected by Dr. W. F. Purcell, 9/05. The specimen differs very slightly from the description of *transvaalensis* in the number and arrangement of the spines, and is smaller in size; the sternal sigilla, however, though faint in appearance, are as in form (A) and are characteristic of *Segregara*.

Segregara abrahami (Ht.).

Specimens.—One ♀ (No. B 78) from Burghersdorp, Albert Div., collected by Dr. Kannemeyer, 10/07. This example is smaller than

the Alicedale specimen of *abrahami*, but is not specifically different, though the spination is occasionally slightly weaker. The three small pairs of sternal sigilla are as in Text-fig. 11 (A).

Gen. GORGYRELLA, Purc.

(See pp. 125–128.)

Gorgyrella inermis, n. sp.

Specimens.—One ♀ (No. B 1625, Type) from Cradock (Mrs. W. F. Purcell, 10/05).

Colour.—Similar to *namaquensis* and *schreineri*.

Carapace.—Equal in length to patella, tibia, and $\frac{2}{3}$–$\frac{3}{4}$ metatarsus of the 1st leg, and just exceeds the tibia and metatarsus of the 4th leg.

Ocular area.—Length subequal to the width; latter slightly less than the length of metatarsus I. Anterior eyes (seen from in front) are nearly $\frac{1}{2}$ a diameter apart; anterior medians a diameter apart; area formed by anterior eyes scarcely wider behind than in front. Posterior medians small, but do not occupy a greater width than the anterior medians, from which they are separated by about their own diameter; posterior laterals less than their own long diameter from the posterior medians, and form with them a strongly procurved line.

Sternum.—Very slightly longer than broad (greatest breadth opposite 3rd pair of legs). Sternal sigilla characteristic of the genus; posterior pair about $1\frac{1}{4}$ diameters apart and very close to the median pair, being in fact opposite the bases of the 2nd pair of coxae; median pair small and slightly lower than the border of the 2nd coxae, and about 4 times their own diameter from the margin; anterior pair subequal to the medians, opposite the bases of the 1st pair of coxae, and at least twice their own diameter from the margin.

Pedipalps.—As in *namaquensis*.

Legs.—Coxae with no spinules or spiniform setae on posterior borders; coxa III with a band of longer, denser hairs posteriorly; I, II, and IV with normal clothing of long hairs. Tibia of 1st leg as long as metatarsus and $\frac{1}{2}$ the tarsus.

Spines.—Much as in *namaquensis*; metatarsus IV with 8–9 strong spines on anterior under surface; tibia IV has no spinules on anterior surface, but 4–5 long spiniform setae on the under surface; band of spinules on patella IV reaches only half-way along anterior surface. Metatarsus III with 2 spines on anterior under surface. Distal edge of patella III with 3 spinules on inner side and 4 on outer; latter

followed by a band of 12–14 stout spinules which reach to the base of outer or anterior surface.

Labium with 8–9 denticles anteriorly.

Chelicerae.—Inner curve of fang with the usual serration; groove with 5 strong teeth on the inner border and 3 smaller ones posteriorly on the outer border.

Genital operculum.—Covered with hairs down to the lower lip, and apparently with no striae on its surface.

Measurements.—Total length 20·5 mm.; carapace 6·5 mm. long and 5·9 mm. wide; sternum 4 mm. long; length of tibia of 1st leg 2·6 mm.

NOTES.

Poecilomigas abrahami, O. P. Cbr.

Since writing the foregoing notes, p. 84, the Rev. Nendick Abraham has supplied me with further information, based on his own observations, on the above paired discs. Their presence on the lids of the trap-door retreats was pure chance, since they are constructed by larvae (imago not known) which live in the band connecting the two discs. This band is tubular, and has a flap or door at each end. The grub issues at either door and feeds on the lichen, etc. covered by the disc above: when that is finished it transfers its attention to the area covered by the other disc, and thus feeds concealed from possible enemies, and with a safe retreat in the tube if a bird should turn the discs over. When these two pastures are exhausted, it transfers its dwelling-place to another region, and it was thus quite by chance that the discs happened to fit over the trap-door lids. The Rev. Abraham has not succeeded in rearing any of the larvae to maturity, but the above note may serve to guide others to secure further information.

Homostola zebrina, Purc. (p. 97).

Since going to press a further paper by Hewitt (Ann. Transv. Mus. vol. v, pt. 3, p. 203) provides fresh localities and a diagram of the palp of the ♂ of specimens, which the author refers to *Spiroctenus* (*Homostola*) *zebrina*; I have since examined Hewitt's specimens, both ♂ ♂ and ♀ ♀, and consider them to be true *Homostola*, sp. *zebrina*, and can hardly agree that they are *Spiroctenidae*, though the two genera have much in common. The relative sizes and positions of the sternal sigilla (see Text-fig. 13, and note on sternal sigilla, p. 129) are a clear and definite distinction, apart from the dentition of the chelicera and scopulation of metatarsi, etc.

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EXPLANATION OF PLATE IX.

FIG.

1.—*Stasimopus purcelli*, n. sp. Left palp, outer and under aspect.

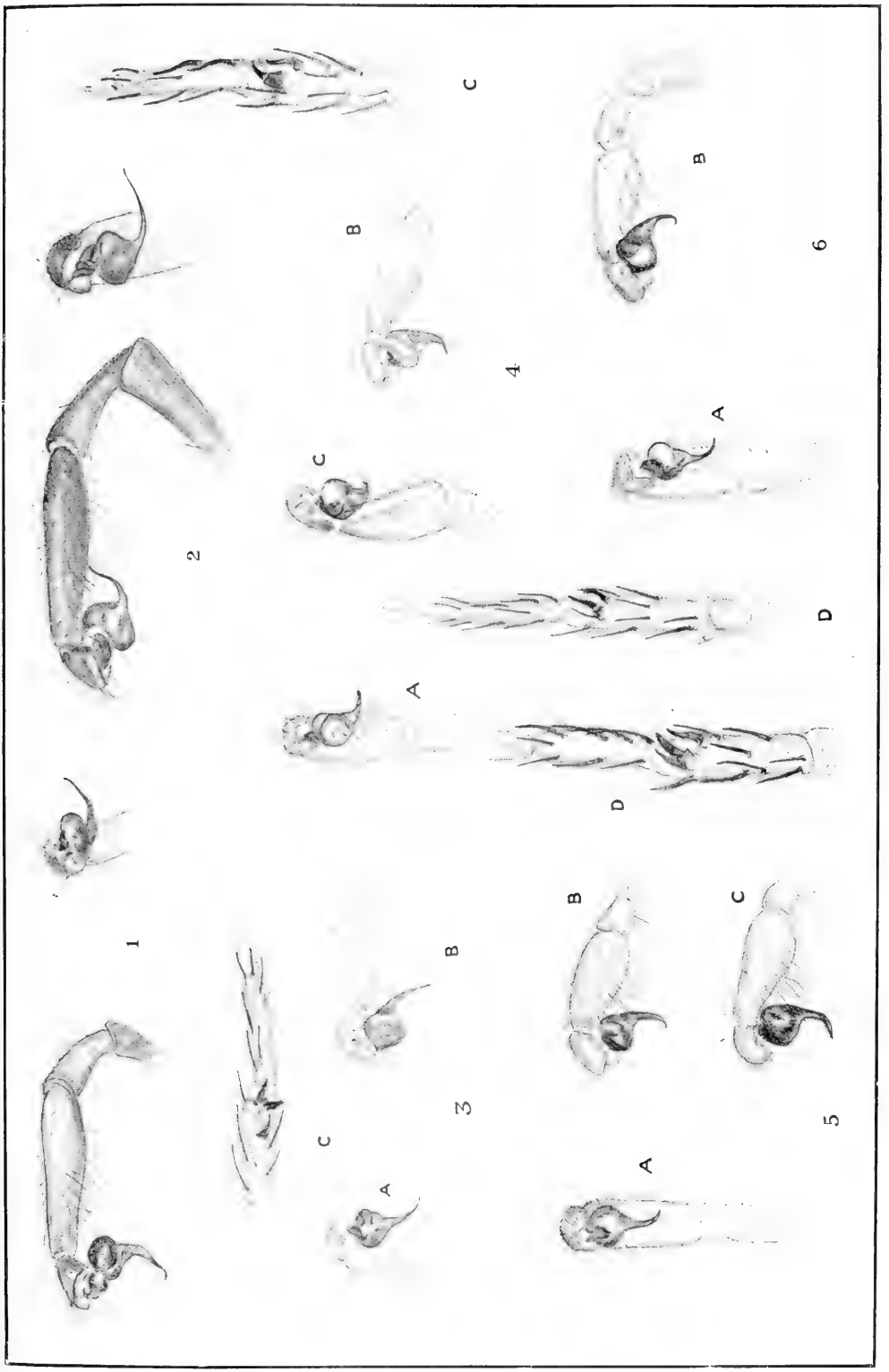
2.—*Stasimopus kentanicus*, Purc. Left palp, outer and under aspect.

3.—*Spiroctenus cambieræ*, Purc. A and B. Under and side view of palp. C. Tibia and metatarsus of right hand, first leg, inner side.

4.—*Spiroctenus collinus*, Poc. Left palp, (A) from below, (B) from the side. C. Showing different aspect due to torsion. D. Tibia and metatarsus of first leg, under aspect.

5.—*Spiroctenus validus*, Purc. Left palp, (A) from below, (B) from side. C. Type specimen from side. D. Tibia and metatarsus, first leg.

6.—*Spiroctenus purcelli*, n. sp. Left palp, (A) from below, (B) from side. C. Tibia and metatarsus of leg, under surface.



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5.—*The Crane-flies of South Africa in the South African Museum (Diptera, Tipulidae).*—By Charles P. Alexander, Cornell University, Ithaca, N.Y.

Part I.

(With Plates X–XIV, and 2 Text-figures.)

The following paper is a consideration of the local crane-flies contained in the collection of the South African Museum, Cape Town, and sent to me for determination through the kindness of the Director, Dr. L. Péringuey. The collection is of especial interest in that it contains the majority of the South African species described by Bergroth in 1888, and the re-examination of this material has been very interesting. As has been done in previous papers, the author has supplied figures of the wings and details of the male hypopygia of species that are still insufficiently known. I am greatly indebted to Dr. Péringuey for his many kindnesses, and also to the various collectors of the material, these being credited throughout the text.

Family PTYCHOPTERIDAE.

Gen. PTYCHOPTERA, Meigen.

1803. Illiger's Magazine, vol. 2, p. 262.

Ptychoptera capensis, sp. n.

Head black; mesonotum orange without markings; wings light yellowish, a brown seam along the cord and an interrupted seam at the forks of R_4+_5 and M; apical cells of the wings pubescent.

Male.—Length about 8 mm.; wing 8·1 mm.

Rostrum and palpi dark brown. Antennae elongated; two basal segments reddish-orange, third segment dark brown, more yellowish basally, remainder of the antennae dark brownish-black. Front dark brown, shiny; vertex and occiput broad, black, with metallic reflections.

Mesonotum and pleura shiny orange without markings. Halteres dark brown. Legs with the coxae and trochanters orange-yellow; femora yellow broadly tipped with black; tibiae yellowish-brown, the apices black; tarsi broken. Wings with the ground-colour light yellowish, most intense in the costal area, the apex and anal cells darker, greyish; a brown seam along the cord; a similar interrupted seam at the tip of R_1, fork of R_4+_5, the fork of M and about mid-length of Cu_1 beyond the *m-cu* cross-vein. Venation, (Plate X, fig. 1, upper left hand corner), *Rs* very short, less than the *r-m* cross-vein; deflection of R_4+_5 punctiform; *r-m* longer than *m-cu*; apical cells of the wings pubescent.

Abdomen yellowish-orange, dark brownish-black along the mid-dorsal line of the tergum; apical segments destroyed excepting the hypopygium, which is orange.

Habitat.—South Africa.

Holotype, ♂, M'fongosi, Zululand, February, 1914 (W. E. Jones).

Type in the South African Museum.

This is the first representative of this family of flies to be discovered in Africa and the first species of *Ptychoptera* to be described from the southern hemisphere.

Family TIPULIDAE.

Sub-family LIMNOBIINAE.

Tribe LIMNOBIINI.

Gen. DICRANOMYIA, Stephens.

1829. Cat. Brit. Ins., vol. 2, p. 243.

Dicranomyia lightfooti, sp. n.

Antennae black; thorax light brown, thoracic stripes dark brown; pleura yellow with two dark brown stripes; wings greyish subhyaline; cell 1*st* M_2 open; subcosta short.

Male.—Length 4·7 mm.; wing 6·8 mm.

Rostrum and palpi dark brownish-black. Antennae black, short, the flagellar segments globular, moniliform. Head brownish-grey.

Mesonotal praescutum light brown with a very broad dark brown median stripe; lateral stripes shorter; scutum with the lobes brown; scutellum brownish-grey; postnotum brown. Pleura dull yellow with two dark brown stripes, the dorsal stripe extending from the cervical sclerites underneath the base of the halter to the abdomen; ventral

stripe short, mesosternal in position. Halteres short, light yellow, the knob very slightly darkened. Legs with the coxae and trochanters dull yellow; femora dull yellow, the tips broadly but indistinctly infuscated; tibiae yellowish-brown; tarsi light brown, the three apical segments dark brown. Wings pale at the extreme bases; membrane pale greyish subhyaline; veins dark brown; no stigma. Venation (Plate X, fig. 2, upper right hand corner), *Sc* short, ending just before the origin of *Rs*; Sc_2 not distinct; cross-vein *r* at the tip of R_1 much longer than that portion of R_1 beyond it; *Rs* elongated, about three times the deflection of R_4+_5; cell 1*st* M_2 open by the atrophy of *m*; M_3 leaves Cu_1 at a right angle, strongly arcuated; basal deflection of Cu_1 at the fork of *M*.

Abdominal tergites dark brown; hypopygium pale; sternites dark brown, the segments broadly margined caudally with paler brown.

Habitat.—South Africa.

Holotype, ♂, East London, South-east Cape Colony, November, 1915 (Lightfoot).

Type in the South African Museum.

This species is respectfully dedicated to its collector.

Dicranomyia tipulipes, Karsch.

1886. Ent. Nachr., vol. 12, No. 4, pp. 51, 52.

This fly was described from Pungo-Ndongo, Portuguese West Africa, but is now known to be widely distributed over the southern half of the African continent and the adjacent islands. The following material is in the collection:

♂ ♀ Bergroth's specimens (4, 5) from Stellenbosch, Cape Town, 1887 (Peringuey).

♂ Cape Town, 1913 (Péringuey),

♂ Ceres, Cape Colony, April, 1913 (Lightfoot).

♀ Smithfield, Orange River Colony, September, 1910 (Kannemeyer).

♂ Barberton, Transvaal, April, 1911 (H. Edwards).

The position of Sc_2 is not as described by Karsch but is far removed from the tip of Sc_1, the distance being about equal to the entire radial sector. The wing has been well shown by Edwards in his Seychelles report and is again figured in Plate X, fig. 3. This insect varies much in the intensity of the wing-pattern, fully-coloured individuals having *C*, *Sc*, and *R* light yellow with four large black marks along *Sc*, the first at the wing base, the second the largest, the third at Sc_2, and the fourth at the margin of the sector. Bergroth (Ann. Mag. Nat. Hist., ser. 8, vol. 91, p. 580, 1913) denies that *D. confinis*, Bergroth (Wien. Entomol. Zeit., vol. 8, p. 116, 1889, n.n. for *D. consimilis*, Bergroth,

Ent. Tidskr., vol. 9, p. 127, 1888, preocc.) is conspecific with *D. tipulipes* as suggested by Edwards (Trans. Linn. Soc. Lond., vol. 15, pt. 2, p. 197, 1912). The material at hand indicates the possibility of a mistaken observation on Bergroth's part in regard to the position of Sc_2, and it appears that Edwards is right in his assumption. It will require more material to decide this question finally.

Dicranomyia marleyi, sp. n.

Thorax rich cinnamon-brown; pleura with a broad dark brown stripe; wings subhyaline, stigma distinct, cord seamed with grey; vein *Sc* long, cell 1*st* M_2 closed.

Male.—Length 5·8 mm.; wing 5·7 mm.

Rostrum and palpi brownish-black. Antennae broken. Head greyish-brown.

Mesonotal praescutum rich cinnamon-brown, duller laterally, the median area behind darker brown; scutal lobes dark brown; scutellum blackish; postnotum yellowish-brown. Pleura with a broad dark brown stripe extending from the cervical sclerites through the base of the halteres to the abdomen; dorsal sclerites brown, ventral sclerites light yellow. Halteres short, the knobs large, dark brown, the extreme base of the stem more yellowish. Legs with the coxae and trochanters yellowish-brown; femora bright yellow, darkened toward the tips, which are dark brown; tibiae and tarsi brown. Wings subhyaline; stigma spot large, rounded, dark brown; pale brownish-grey seams as follows: Tip of Sc_1, base of *Rs*, broad seams to the cord and outer end of cell 1*st* M_2; veins dark brown. Venation (Plate X, fig. 4), *Sc* long, extending to beyond mid-length of the sector; Sc_2 at the tip of Sc_1; *Rs* elongate, nearly square at its origin; *r* at the tip of R_1; *r-m* a little shorter than the basal deflection of R_4+_5; cell 1*st* M_2 large, nearly square; basal deflection of Cu_1 at the fork of *M*.

Abdominal tergites brownish-yellow, the caudal and lateral margins broadly blackish; sternites pale yellow, the caudal margins brown.

Habitat.—South Africa.

Holotype, ♂, Stella Bush, near Durban, April, 1915 (Marley).

Type in the South African Museum.

This interesting new species is dedicated to its discoverer.

Dicranomyia peringueyi, sp. n.

Antennal flagellum uniformly dark brown in colour; thorax brownish-yellow without distinct stripes; wings greyish subhyaline, stigma rounded, pale brown; vein *Sc* long, cell 1*st* M_2 closed.

Male.—Length 5 mm.; wing 6·4 mm.

Rostrum brown, palpi dark brown. Antennae with the first segment brown beneath, yellow above, the second segment entirely light yellow; flagellar segments dark brown, submoniliform, densely pubescent, the constrictions between the individual segments well defined, the last segment elongated, pointed, slightly darker brown. Eyes closely approximated, but not contiguous; head brown with a grey bloom.

Thoracic dorsum brownish-yellow, somewhat shiny, without distinct stripes; scutellum more yellowish, postnotum more brownish. Pleura dark brown with a very sparse pale bloom. Halteres pale yellow at the extreme base, the remainder of the organ dark brown. Legs with the coxae and trochanters dull yellow; femora elongate, slender, dull yellow, not darkened; tibiae brownish-yellow, the apical segments broken. Wings pale greyish subhyaline, the stigmal spot rounded, pale brown; veins dark brown. Venation, *Sc* long, extending to mid-length of the elongate sector; Sc_2 at the tip of Sc_1; *r* at the tip of R_1; *Rs* about three times the length of the deflection of R_4+_5; inner end of cell 1*st* M_2 a little arcuated; basal deflection of Cu_1 at the fork of *M*.

Abdomen more or less discoloured, the tergites yellowish-brown, the sternites more yellowish.

Habitat.—South Africa.

Holotype, ♂, South Africa, without more exact data.

Type in the South African Museum.

This fly is named in honour of Director Péringuey of the South African Museum.

Gen. RHIPIDIA, Meigen.

1818. Syst. Beschr., vol. 1, p. 153.

Rhipidia afra, Bergroth.

1888. Entomol. Tidskr., vol. 9, pp. 128, 129.

Two female specimens, one from East London, South-east Cape Colony, July, 1914 (Lightfoot), the other from Krantz Kloof, Natal, June, 1915 (Marley). The specimens measure in length 6·3–8·5 mm., the wing 7·3–8·8 mm., one of the specimens being much larger than the other, but undoubtedly belonging to the same species. The wing is shown on Plate X, fig. 5.

Gen. LIBNOTES, Westwood.

1876. Trans. Ent. Soc. Lond., p. 505.

Libnotes capensis, sp. n.

Basal antennal segments black, intermediate segments light brown, the terminal segment black; thorax yellow with a double black mid-

dorsal stripe; femora with a narrow subterminal black ring; wings light yellowish to hyaline with abundant black, brown and grey dots, spots and clouds on the wing-membrane.

Male.—Length 12·5 mm.; wing 20 mm.

Female.—Length 12·2 mm.; wing 15·5 mm.; fore leg, femur 11·3 mm., tibia 13·5 mm.; hind leg, femur 13 mm., tibia 13·8 mm.

Rostrum and palpi black. Antennae moderately elongated, the first five segments black, beyond the fifth passing into light brown or brownish-yellow, the terminal segment elongated, black with a grey bloom. Front narrow, buff; remainder of the head buff with a slight greenish tinge; a narrow black mark on the vertex.

Thorax gibbous. Pronotum elongated, yellow, with a green cast. Mesonotal praescutum light yellow with a strong greenish cast on the sides; a well-defined black stripe on each side of the very narrow yellow median vitta, these stripes narrowed anteriorly, considerably broadened at the transverse suture; lateral stripes short, barely indicated, greenish; a quadrate area devoid of pollen just back of the pseudosutural foveae; scutum with the lobes largely black, median area and the remainder of the lobes yellowish; scutellum black with a narrow median yellowish line; postnotum brownish-black, yellow on the sides. Pleura yellow with a strong green cast; two broad, interrupted brown stripes, the dorsal one beginning above the fore coxae, becoming indistinct beneath the wings; the ventral stripe is on the mesosternum, reappearing as a rounded spot just in front of the halteres. Halteres green, the knobs yellowish. Legs with the coxae and trochanters green; femora light brown, more yellowish apically; a narrow subterminal black annulus, subequal to or slightly less in extent than the yellow apex; tibiae light brown, the extreme tip narrowly darker brown; metatarsi similar, the remaining tarsal segments black. Wings light yellowish on the costal area, more hyaline elsewhere; veins light yellow, dark brown where traversed by dark markings; dark markings as follows: A series of small black dots in the costal and subcostal cells; dark brown areas at the base of *M*, base of *Rs*, tip of Sc_1, along the cord and along vein *Cu*; numerous grey clouds and spots in all the cells of the wing, the anterior cells being more free of these markings. Venation (Plate X, fig. 6), Sc_2 at the tip of Sc_1; *r* at the tip of R_1; deflection of R_{4+5} longer than *r* or *r-m*; basal deflection of Cu_1 longer than Cu_2, situated at the fork of *M*.

Abdomen with the first tergite brownish, the remainder greenish-yellow, each segment margined caudally with yellowish, these margins broader toward the tip of the abdomen.

The female is similar to the male, but in this latter sex Sc_1 is about three to four times the length of Sc_2. The whole body in the living insect is undoubtedly strongly greenish, but this colour is lost in specimens that are pinned for many years.

Habitat.—South Africa.

Holotype, ♂, Umvoti, Natal (H. Fry).

Allotype, ♀, Stella Bush, near Durban, October 17th, 1915 (Marley)

Type in the South African Museum.

The genus *Libnotes* is Oriental in its distribution, and this is the first African species to be described.

Tribe ANTOCHINI.

Gen. RHAMPHIDIA, Meigen.

1830. Syst. Beschr., vol. 6, p. 281.

Rhamphidia capensis, sp. n.

Thorax black, the praescutum with a yellowish brown median stripe that is indistinct behind and is split by a narrow black vitta; wings spotted.

Male.—Length 9·5 mm.; wing 9·2 mm.

Rostrum slender, elongated, half again as long as the head, black; palpi black. Antennae rather short, first segment dark brown, second segment dark brown basally, bright yellow apically; basal flagellar segments pale at the base, darkened at the tip; terminal flagellar segments uniformly dark brown. Front greyish; vertex comparatively narrow, dark brown; occiput similar.

Thorax gibbous. Pronotum dull yellow. Mesonotal praescutum black; a yellowish-brown median stripe, indistinct behind, split by a narrow black median vitta; lateral stripes yellow, broad, distinct and well-defined; area around the pseudosutural and transverse sutures yellowish; scutum yellow, the lobes black; scutellum and postnotum black or dark brown. Pleura dark brownish black. Halteres light yellow. Legs with the coxae dull yellow, the outer faces infuscated, darkest on the middle coxae; trochanters yellow; femora yellow, passing into brown toward the tip, the apex narrowly blackened; tibiae and tarsi dark brown. Wings light grey, the costal cells and cell *2nd* R_1 light yellow; veins dark brown; brown markings as follows: The stigma, base of vein *M*, origin of *Rs*, mid-distance between the last two, along the cord and outer end of cell *1st* M_2

and tip of R_{2+3}; apex of wing slightly infumed. Venation (Plate X, fig. 7), *Sc* long, ending opposite the fork of the sector; *Rs* angulated and spurred at its origin; basal deflection of R_{4+5} longer than *r-m*.

First abdominal tergite blackish, tergites two to six with the basal half blackish, the caudal half dull yellowish; tergites seven and eight black; hypopygium pale yellow; sternites largely dull yellow; the extreme base and sides more blackish.

Habitat.—South Africa.

Holotype, ♂, Krantz Kloof, Natal, November, 1915 (Marley).

Type in the South African Museum.

This is the first African *Rhamphidia* to be described.

GEN. ELEPHANTOMYIA, Osten Sacken.

1859. Proc. Acad. Nat. Sci. Phila., p. 220.

ELEPHANTOMYIA AURANTIACA, sp. n.

Rostrum black; head black with a sparse grey bloom; thorax orange; wings brownish-yellow, the anal angle slightly darkened.

Length uncertain, the abdomen broken; wing 6·7 mm.

Rostrum broken, much longer than the head and thorax together, black; palpi black. Antennae with the scape black, the flagellum broken. Head black with a sparse dark grey bloom.

Mesonotum rich orange without darker markings; metanotum black. Pleura orange with a slight brownish suffusion. Halteres with the stem yellow, the knob broken. Legs with the coxae and trochanters dull yellow; femora rather stout, dull yellow, more brownish toward the tip; tibiae and tarsi brown. Wings with a strong brownish yellow tinge; anal angle and along vein *Cu* slightly darkened; stigma barely indicated, pale brown; costa brownish yellow, remaining veins dark brown. Venation (Plate X, fig. 8), *Sc* long extending beyond mid-length of *Rs*; basal deflection of R_{4+5} a little longer than *r-m*, basal deflection of Cu_1 before the middle of cell 1*st* M_2.

Abdomen broken.

Habitat.—South Africa.

Holotype, sex? Ceres, Cape Colony, April, 1913 (Lightfoot).

Type in the South African Museum.

Although the type is injured there can be little question about the generic reference of this fly. It differs from *E. wahlbergi* Bergroth (Caffraria) in its black rostrum, orange thorax without a brown dorso-median stripe, indistinct stigma, etc.

Gen. STYRINGOMYIA, Loew.

1845. Dipterol. Beitr., vol. 1, p. 6.

Styringomyia vittata, Edwards.

1914. Trans. Ent. Soc. Lond., June 25, pp. 217, 218.

Two males, Durban, Natal, 1914 (W. Haygarth).

The ventral aspect of the hypopygium was not described nor figured by Edwards (Plate XIII, figs. 46, 47). The pleurite has a swollen ventral lobe that is armed on the cephalic face with a sharp chitinized tooth. The ninth tergite (Plate XIII, fig. 46) is produced into a rather slender lobe that is squarely truncated at the apex, on each angle with a small papilla bearing a stout spine.

Gen. ATARBA, Osten Sacken.

1869. Mon. Dipt. N. Am., pt. 4, p. 127.

Atarba capensis, sp. n.

Antennal flagellum uniformly dark brown; thorax dull yellow without darker markings; wings without a stigmal spot.

Male.—Length about 4·4 mm.; wing 5·1 mm.

Female.—Length 4·7 mm.; wing 5·5–5·6 mm.

Rostrum and palpi dark brown. Antennae of the female rather elongated for this sex, the scape light brown, the flagellum uniform dark brown; segments of the female flagellum oval, densely white pubescent, the segments gradually decreasing in size to the tip, the last segment not elongated. Head brownish-yellow.

Thorax uniform dull yellow without stripes, the pleura a little lighter coloured. Halteres short, pale, the knob a little darker. Legs with the coxae and trochanters dull light yellow; femora rather stout, dull yellow, passing into brown at the tip; tibiae and the first tarsal segment yellowish-brown, the tips darker; remainder of the tarsi dark brown. Wings with a strong yellowish tinge on the basal and costal portions, the distal and anal areas more greyish; no stigma; veins yellow in the yellowish area, brown in the greyish areas. Venation (Plate X, fig. 10), *Sc* short, ending slightly beyond the origin of *Rs*; Sc_1 about three times the length of Sc_2; *Rs* gently arcuated, a little more than half the length of R_2+_3; basal deflection of Cu_1 at or slightly beyond the fork of *M*.

Abdomen uniform brown, the ovipositor more yellowish; sternal valves of the ovipositor elongate, acute at the tips; tergal valves a

little more than half as long as the lower valves, blunt at the tips ; in the male a black ring before the hypopygium.

Habitat.—South Africa.

Holotype, ♂, Hottentot-Hollands Mountains, altitude 4000 ft., Caledon, Cape Colony, 1915 (Barnard).

Allotype, ♀, with the type.

Paratopotypes, 2 ♀♀.

Type in the South African Museum.

The present form is the first South African species of the genus to be discovered.

Tribe ERIOPTERINI.

Gen. ERIOPTERA, Meigen.

1803. Illiger's Magazine, vol. 2, p. 262.

Sub-gen. EMPEDA, Osten Sacken.

1869. Mon. Dipt. N. Am., pt. 4, p. 183.

Erioptera (Empeda) bonae spei, sp. n.

Light brownish-grey ; hypopygium yellow ; wings light grey with an ill-defined brown stigma.

Male.—Length about 3–3·1 mm. ; wing 3·9–4 mm.

Rostrum and palpi brown. Antennae brown, the basal flagellar segments large, globular, the segments gradually decreasing in diameter and becoming more and more elongated to the apex. Head light grey.

Pronotal scutum light yellow. Mesonotum light brown with a dense grey bloom. Pleura concolorous. Halteres pale yellow the knobs only slightly darkened. Legs with the coxae brownish-yellow, sparsely greyish pruinose ; trochanters yellowish-brown ; femora light yellowish-brown, a little darkened at their tips ; tibiae and tarsi dark brown, the latter blackened on the apical segments. Wings with a slight grey suffusion, the costal region a little more yellowish ; stigma brown, ill-defined ; veins dark brown. Venation (Plate X, fig. 11), *Sc* moderately elongated, extending to about mid-length of the sector ; Sc_2 not distantly removed from its tip, Sc_1 being about equal to the radial cross-vein ; cross-vein *r* about equal in length to that portion of R_1 between it and the fork of the sector ; fused portion of Cu_1 and M_3 shorter than or subequal to the basal deflection of Cu_1.

Abdomen dark brown ; hypopygium reddish-yellow.

Habitat.—South Africa.

Holotype, ♂, Cape Town, August, 1909 (Lightfoot).
Allotype, ♀, with the type.
Paratopotypes, 6 ♂ ♀.

ERIOPTERA (ERIOPTERA) PERINGUEYI, Bergroth.

1888. Ent. Tidskr., vol. 9, pp. 129, 130.

The types, bearing Bergroth's label (No. 3), are from Stellenbosch, near Cape Town, November, 1887 (Peringuey). There are a few other specimens in the collection bearing the label "Cape Town, Cape Colony." The wing of this beautiful *Erioptera* is figured on Plate X, fig. 12. The specimens show the following measurements:

Male.—Length 7 mm.; wing 5·8 mm.

Female.—Length 6·9–7 mm; wing 7·2 mm.

GEN. TRIMICRA, Osten Sacken.

1861. Proc. Acad. Nat. Sci. Phila., p. 290.

TRIMICRA INCONSPICUA, Loew.

1866. Berlin Entomol. Zeitschr., vol. 10, p. 59 (*Gnophomyia*).

Several specimens of both sexes from Smithfield, Orange River Colony (Kannemeyer); a few from Stellenbosch, near Cape Town. These agree closely with the original description of the species. It is possible that the *Limnobia lanuginipes*, Walker (Ins. Saunders., p. 435, 1856) is the same species, although there is a considerable discrepancy in size. The wing is shown on Plate X, fig. 13.

GEN. PLATYLIMNOBIA, gen. n.

Rostrum and palpi short. Head large, wider than the narrow thorax. Antennae short, 16-segmented; first scapal segment elongated, the second short, subglobular, shorter than the first flagellar segment; flagellar segments cylindrical. Front broad, widely separating the eyes; eyes with coarse ommatidia. Mesothoracic dorsum very flattened, depressed, the praescutum short, not projecting over the pronotum. Halteres small, twisted, with about seven or eight bristles on the elongate knob. Legs slender, the coxae very large, tibiae unspurred. Wings reduced to mere pads without apparent venation; a series of about twenty-five bristles along the costa, about four in the radial field and about five in the median field. Male hypopygium with the pleural pieces short, stout, cylindrical, with rather abundant stout hairs that are larger and more abundant toward the tip; inner faces of the pleurites grooved to receive the appendages when in a position

of rest; pleural appendages two, strong and powerful, directed inward and dorsad, the dorsal appendage a simple curved hook that is strongly chitinised at the apex; ventral appendage flattened, the outer angle produced into a finger-like lobe that bears a few hairs, longest at the apex.

Genotype, *Platylimnobia barnardi*, sp. n. (Southern Ethiopian region).

PLATYLIMNOBIA BARNARDI, sp. n.

Wings rudimentary in both sexes; thoracic dorsum very flattened; coxae enlarged; colouration brownish-yellow, the thorax with a brown dorso-median stripe.

Male.—Length 4·6–5·3 mm.

Female.—Length 4·5 mm.

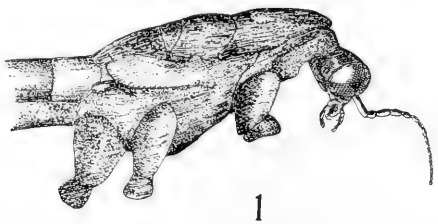

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FIG. 1.—*Platylimnobia barnardi*, sp. n. Lateral aspect of the head and thorax, the legs being removed.

Rostrum short, dark brown; palpi dark brown. Antennae with the first segment brown, somewhat darker at the tip; second segment dark brown but not so deeply coloured as the flagellum, the segments of which are provided with numerous pale hairs and a few bristles. Head large, rounded, dark brown with a sparse bloom.

Mesonotal praescutum narrow, small, light brownish-yellow with a broad dark brown median stripe; anterior margin and the pronotal scutellum shiny; scutal lobes indistinct, yellowish; scutellum small, quite indistinct, brownish-yellow; postnotum elongate, similar to the scutellum in colour. Pleura brownish anteriorly, more yellowish behind. Halteres pale. Legs with the fore and middle coxae brownish, the hind coxae yellowish; trochanters yellowish; femora dark brown, a little paler basally; tibiae and tarsi dark brown. Wings dull yellow with an indistinct venation.

Abdomen brown. The hypopygium of the male as described under the generic characterisation (Plate XIII, fig. 45). Ovipositor with the sternal valves powerful, almost straight; tergal valves more slender.

Habitat.—South Africa.

Holotype, ♂, Hottentot-Hollands Mountains, altitude 4000 ft., Caledon, Cape Colony, 1915 (Barnard).

Allotype, ♀, with the type.

Paratopotypes, 4 ♂ ♀.

Type in the South African Museum.

This curious insect is named in honour of its collector. The outline of the body is shown in fig. 1.

Gen. PODONEURA, Bergroth.

1888. Ent. Tidskrift, vol. 9, p. 133.

Podoneura anthracogramma, Bergroth.

1888. Ent. Tidskrift, vol. 9, pp. 133, 134.

The type-material is from Cape Town (Peringuey) and bears Bergroth's label No. 7; a ♂ from Cape Town (Lightfoot); a ♂, S. W. District, Cape Colony. The wing of this remarkable insect is shown on Plate X, fig. 14.

Gen. GNOPHOMYIA, Osten Sacken.

1859. Proc. Acad. Nat. Sci. Phila., p. 223.

Gnophomyia elegans, Wiedemann.

1830. Aussereur. Zweifl. Ins., vol. 2, p. 617 (*Limnobia*).

The material at hand includes one of Bergroth's specimens (Caffraria, Wahlberg, No. 6) and a female from Durban, Natal, April, 1915 (Marley). The female offers the following measurements, length about 9·5 mm.; wing, 9·5 mm. This beautiful fly bears a striking resemblance to certain of the Neotropical species of *Eriocera* Macquart, and it is not strange that Dr. Schiner (Reise Novara) referred it to this genus. The wing is shown on Plate XI, fig. 15.

Gen. GONOMYIA, Meigen.

Sub-gen. GONOMYIA, Meigen.

1818. Syst. Beschr., vol. 1, p. 146.

Gonomyia (Gonomyia) spuria, Bergroth.

1888. Ent. Tidskrift, vol. 9, pp. 134, 135.

One female specimen from Lourenço Marquez, Portuguese East Africa (C. W. Howard), in the collection of the United States National Museum. The wing is shown on Plate XI, fig. 16.

This delicate species bears a certain resemblance to species in many widely separated regions of the world, especially as regards the arrangement of media and its branches—the *blanda* group (Holarctic), *Gonomyia proxima*, Brunetti (Oriental), and even to *Ptilostena*, Bergroth (Ann. Mag. Nat. Hist., ser. 8, vol. 11, p. 575–578, 1913). The last-named group is separated from *Gonomyia* because of its arrow petiolate wings, the long Sc_1 and the peculiar shape of cell R_2 of the wings; *G. spuria* shows all of these characters except the last, and it seems doubtful whether *Ptilostena* should receive more than sub-generic rank. Edward's *Thaumastoptera aldabrensis* (Trans. Linn. Soc. Lond., vol. 15, pt. 2, p. 205, pl. 10, fig. 10, 1912) is also a *Gonomyia* that shows many characters in common with *Ptilostena*. It may here be mentioned that the *Teucholabis flavonotata*, Edwards (*loc. cit.*, pp. 205, 206, pl. X, fig. 11), from the Seychelles Islands is a *Gonomyia*, closely resembling *G. sulphurella*, Osten Sacken (E. Nearctic).

Sub-gen. GONOMYELLA, sub-gen. n.

Differs from *Gonomyia*, s.s., as follows: Wings with the subcosta elongate, cell R_2 very large; radial cross-vein present; cell 1st M_2 open by the atrophy of m or the outer deflection of M_3.

Type of the sub-genus.—*Gonomyia slossonae*, Alexander (Neotropical).

Besides the two Ethiopian species described in this paper, *Gonomyia velutina*, Alexander (Peru) also belongs to this group.

Gonomyia (Gonomyella) natalensis, sp. n.

Head light grey; thorax grey with three brown stripes; pleura striped grey and pale yellow; abdominal tergites uniformly dark brown; wings with subcosta elongate, cross-vein r present and connected with R_2+_3, cell 1st M_2 open by the atrophy of the outer deflection of M_3.

Female.—Length about 6·6 mm.; wing 6·2 mm.

Rostrum short, black, with a sparse greyish bloom; palpi black. Antennae rather elongated for this sex, black, the first segment about as long as the two following combined; flagellar segments elongate-oval with an abundant white pubescence. Head clear light grey, the vertex with a faint suffusion of brown; space between the eyes very broad.

Pronotum prominent, light grey, broadly darker medially, the scutellum more pallid, brownish-yellow. Mesonotal praescutum light grey with three dark brown stripes, the median stripe broadest, ending just before the transverse suture; pseudosutural foveae prominent, elongate, subtriangular, shiny black; tuberculate pits

prominent, shiny black, rounded, situated near the anterior margin of the sclerite, the distance between them a little greater than the diameter of one; scutum dark grey; scutellum pale brown to brownish-yellow; postnotum black with a sparse grey bloom. Pleura with the propleural sclerites yellowish; mesopleura pale whitish-yellow, with two broad blackish-grey stripes, the dorsal one beginning on the pronotal scutellum continuing caudad to the mesonotal postnotum; ventral stripe including the coxae and the mesosternum; mesosternum yellowish medially. Halteres pale brown, the knobs darker brown. Legs with the coxae yellow, the outer faces dark with a dense grey bloom; trochanters dark brown; remainder of the legs black. Wings with a pale grey tinge, vein *Cu* suffused with brown; stigma distinct, rounded-oval, brown; veins dark brown. Venation (Plate XI, fig. 17), *Sc* very long, extending to beyond mid-length of the long sector; Sc_1 rather long, longer than the radial cross-vein but shorter than vein R_2 alone; *Rs* long, somewhat angulated at its origin; R_2+_3 short; cross-vein *r* connecting R_1 with R_2+_3; basal deflection of R_4+_5 long, not on a line with *r–m*; cell 1st M_2 open by the atrophy of the outer deflection of M_3; fork of M_1+_2 longer than its petiole; basal deflection of Cu_1 beyond the fork of *M*.

Abdominal tergites dark brownish-black, unmarked, the ovipositor light yellowish-brown; sternites black, the segments broadly margined caudally and laterally with yellowish; lateral integument bright yellow.

Habitat.—South Africa.

Holotype, ♀, Gillets, Natal, September, 1915 (Marley).

Paratype, ♀, Krantz Kloof, Natal, September 26th, 1915 (Marley).

Type in the South African Museum.

Gonomyia (Gonomyella) brevifurca, sp. n.

Black; thorax and abdomen striped and banded with bright yellow; wings with the radial cross-vein present; cell 1st M_2 open by the atrophy of the medial cross-vein; fusion of Cu_1 and M_3 very extensive, the remaining fork being very short.

Male.—Length 4 mm.; wing 3·3 mm.

Rostrum and palpi black. Antennae black, the flagellar segments rounded-oval. Head black; eyes small with coarse ommatidia; front and vertex extensive.

Pronotum black, the scutellum bright yellow. Mesonotum black with a small yellow blotch on the outer caudal angle of the scutum inside the wing-base. Pleura bright yellow with two broad black stripes, the dorsal stripe extending from the pronotum to the mesonotal post-

notum ; ventral stripe near the sternum and including all the coxae ; prosternum beneath yellow ; mesosternum with a large oval yellow spot beneath. Halteres brown, the knobs darker. Legs with the coxae and trochanters black ; femora dark brown, the tips black ; tibiae and tarsi black. Wings with a pale yellowish-brown tinge ; no stigma ; veins brown. Venation (Plate XI, fig. 18), *Sc* long extending about one-third to one-quarter the length of the long sector ; Sc_2 indistinct ; *Rs* very long ; R_2+_3 short, less than R_2 ; cross-vein *r* present but indistinct, connecting with R_2 ; basal deflection of R_4+_5 and *r-m* about on a line ; basal deflection of M_1+_2 obliterated ; cross-vein *m* lacking so that cell M_2 is undivided ; fusion of M_3 with Cu_1 very extensive, Cu_1 alone being about as long as the *r-m* cross-vein.

Abdomen banded black and yellow, tigrine in appearance, the segments black with broad caudal margins of bright yellow ; hypopygium black.

Habitat.—South Africa.

Holotype, ♂, Hottentot-Hollands Mountains, altitude 4000 ft., Caledon, Cape Colony, 1915 (Barnard).

Type in the South African Museum.

This interesting little fly is not like the typical members of the sub-genus in the manner that cell 1st M_2 is open. The very short fork of Cu_1 and M_3 is strongly suggestive of the possibility of the loss of one of these veins by complete fusion to the wing-margin, a very rare condition in this family of flies, the only other comparable case known to the author being certain species of the Neotropical genus *Polymera*.

Gen. MONGOMA, Westwood.

1881. Trans. Ent. Soc. Lond., p. 364.

Mongoma exornata, Bergroth.

1888. Ent. Tidskrift, vol. 9, pp. 135, 136 (*Trentepohlia*).

This interesting fly has a rather extensive range in Eastern and South-Eastern Africa, as given by the author in an earlier paper (Can. Ent., vol. 44, p. 204, 1912) ; a specimen in the collection from the Bluff, Durban, Natal, August, 1915 (Marley).

Gen. CONOSIA, van der Wulp.

1880. Tijd. v. Entomol., vol. 23, p. 159.

Conosia irrorata, Wiedemann.

This is a very widely distributed species that is found practically throughout the tropics of the Old World. Five ♂, ♀, M'fongosi, Zululand, February, 1914 (W. E. Jones).

Tribe LIMNOPHILINI.

Gen. LIMNOPHILA, Macquart.

1834. Suit. à Buffon, vol. 1, p. 95.

Limnophila transvaalica, sp. n.

Antennae elongate; head dark grey; thorax and abdomen orange-yellow; wings yellowish without markings.

Female.—Length 10·6 mm.; wing 11·3 mm.

Rostrum and palpi brown. Antennae with the first segment elongated, light brown with a pale bloom; second segment brown; flagellar segments elongate-cylindrical, black, with sparse pale hairs and strong bristles near mid-length of the segments. Head prominent, subtriangular, the eyes being large and semiprotuberent; space between the eyes rather narrowed; anterior portion of the vertex with a pale grey bloom, remainder of the head dark grey, passing into brownish on the occiput; several prominent bristles on the vertex along the inner margin of the eye and another group on the sides of the occiput.

Thorax dull brownish-yellow to orange without distinct darker markings. Pleura more yellowish. Halteres light yellow at the base passing into brown toward and on the knob. Legs with the coxae and trochanters light yellow; femora brown, brighter basally; tibiae dark brown basally, the remainder broken. Wings with a strong yellowish tinge, the stigma indistinct, pale brown; costa dark brown; remaining veins yellowish-brown. Venation (Plate XI, fig. 19), *Sc* long ending beyond the fork of *Rs*; cross-vein *r* at the tip of R_1; basal deflection of Cu_1 beyond the middle of cell 1*st* M_2.

Abdominal tergites brownish-yellow, the eighth and ninth segments black; sternites reddish-yellow; ovipositor yellowish, the elongate acicular tergal valves directed strongly upward at the tip.

Habitat.—South Africa.

Holotype, ♀, Barberton, Transvaal, November, 1911 (H. Edwards).

Type in the South African Museum.

The structure of the female antennae indicates an elongate organ in the male sex.

Limnophila frugi, Bergroth.

1888. Ent. Tidskrift, vol. 9, pp. 137, 138.

Two specimens from Natal, a male, Gillets, September, 1915 (Marley), and a specimen of uncertain sex from Krantz Kloof, February, 1915 (Marley).

This is a well-defined species and, as indicated by Bergroth, related to the Nearctic *L. luteipennis*, et al.; the bright yellow colour of the first flagellar segment of the antennae is a conspicuous character. The male specimen offers the following measurements: Length 8·5 mm.; wing 8–8·4 mm. The venation is shown on Plate XI, fig. 20.

? Limnophila dubiosa, sp. n.

Antennae of the male elongated, the flagellum bicolorous; wings with a heavy brown pattern, with about seven larger blotches along the costal margin; cell M_1 absent; a strong supernumerary cross-vein in cell *M*.

Male.—Length 6·5 mm.; wing 7·4 mm.

Rostrum and palpi black. Antennae very elongate, but six flagellar segments remain and the entire organ must be nearly as long as the wing; scape dark brown; flagellar segments with the basal half brownish-black, the apical half dull yellow; scapal segments large, the first segment elongate, the second segment very short, much broader than long; flagellar segments abruptly narrower than the scape, elongate-cylindrical, without bristles, but with abundant elongate pale outstretched hairs. Eyes small with coarse ommatidia; space between the eyes very broad. Head discoloured, dark brown.

Thorax dull dark brown, any bloom destroyed by discoloration of the type. Pleura dark brown. Halteres elongate, dull brownish-yellow, the knobs brownish. Legs with the coxae and trochanters dark brown; remainder of the legs broken. Wings pale yellowish-white with a heavy brown pattern, consisting of about seven larger dark brown blotches along the costa, the first at the wing-base, the third at the origin of the sector, the fourth at the tip of Sc_1, the fifth, largest, at the tip of R_1, the sixth at the tip of R_2; the remainder of the wing is densely spotted and clouded with a paler shade of brown; veins dark brown, in the paler areas more yellowish. Venation, *Sc* rather short, ending just before the fork of *Rs*; Sc_2 at the tip of Sc_1; *Rs* elongate, arcuated at its origin; R_2+_3 rather long, almost in a line with *Rs*; R_2 and R_3 divergent, widely separated at the wing-margin; basal deflection of R_4+_5 nearer the base of the wings than the *r-m* cross-vein; cell M_1 absent; basal deflection of Cu_1 under the middle of cell 1*st* M_2; a strong supernumerary cross-vein in cell *M*, this vein slightly subsinuate in its course.

Abdomen dark brown, discoloured.

Habitat.—South Africa.

Holotype, ♂, Stellenbosch, near Cape Town, Cape Colony.

Type in the South African Museum.

This very interesting fly is, unfortunately, not in good condition, but the well-marked diagonstic characters are such that it will be easily recognised. If the generic reference as given above is correct, then the fly would fall in the sub-genus *Idioptera*, Macquart (Suit. à Buffon, vol. 1, p. 94, 1834), the described species of which are Holarctic in their distribution.

Sub-family TIPULINAE.

Tribe DOLICHOPEZINI.

Gen. DOLICHOPEZA, Curtis.

1825. Brit. Entomol., p. 62.

Sub-gen. TRICHODOLICHOPEZA, sub-gen. n.

Differs from *Dolichopeza* s.s., as follows: Wings with a black pubescence in all the apical cells from R_1 to Cu_1.

Type of the sub-genus.—*Dolichopeza* (*Trichodolichopeza*) *hirtipennis*, sp. n.

Dolichopeza (Trichodolichopeza) hirtipennis, sp. n.

Head dark brownish-black with a greyish bloom; thorax buff with three dark brown stripes; wings pale grey with a prominent stigma; numerous short hairs in all the apical cells of the wings; tarsi brown.

Male.—Length 9·8 mm.; wing 12·3 mm.

Female.—Length 9·1 mm.: wing 10·4 mm.

Male.—Frontal prolongation of the head light yellow, the dorso-median line, including the nasus, dark brown. Antennae of moderate length, the first segment dull yellow, a little darkened toward the tip; second segment bright yellow; flagellum black; first flagellar segment elongated, cylindrical, with numerous scattered bristles: remaining segments of the flagellum with a sub-basal verticil of stout black bristles. Eyes with fine ommatidia, rather widely separated; vertex with a low protuberance, the latter with the front orange-yellow, remainder of the head dark brownish-black with a brownish-grey bloom.

Pronotum buff with a broad dark brown median line. Mesonotal praescutum pale yellowish-buff with three dark brown stripes, the median one broadest in front, more narrowed behind; lateral stripes short, narrowed in front; pseudosutural fovea deep, surrounded by a brown blotch and with another brown mark from the fovea to the lateral margin of the sclerite; about a dozen scattered black hairs in the area just in front of the foeva; scutum buff medially, the lobes

dark brown, especially inwardly; scutellum and postnotum yellowish-buff, the latter sparsely pale pollinose. Pleura pale whitish with brown spots. Halteres slender, pale yellow, darkened toward the knob, which is yellowish at the tip. Legs with the coxae pale with a sparse whitish bloom: trochanters yellow; femora dull brownish-yellow, darkened towards the tips; tibiae and tarsi dark brown. Wings with a pale grey tinge, more whitish subhyaline on the apical half; costal cell pale brownish-yellow; stigma prominent, rectangular, dark brown; tip of the wing infuscated; brown seams along the cord and the veins excepting *M* and 1*st A*; a large white blotch before and beyond the stigma and the whole area distad of the basal deflection of Cu_1 whitish subhyaline; veins dark brown, excepting *Rs*, R_1 between the origin of the sector and the stigma and the fork of *M* which are light yellowish-orange; numerous hairs in all the apical cells of the wings. Venation (Plate XI, fig. 21), *Rs* short, oblique, tip of R_2 atrophied; fused portion of Cu_1 and *M*, that portion of *M* between *r-m* and the first fork, and the petiole of M_1+_2 all subequal or the second a little longer.

Abdomen yellowish-orange, the tergites with the caudal half of each segment brownish-black; sternites more uniformly yellow.

Female.—Similar to the male, but the antennae shorter and the frontal prolongation of the head without the distinct, narrow, median brown line.

Habitat.—South Africa.

Holotype, ♂, Hottentot-Hollands Mountains, altitude 4000 ft., Caledon, Cape Colony, 1915 (Barnard).

Allotype, ♀, Winterhoek Mountains, Tulbagh, Cape Colony, altitude 3600 ft., April, 1916 (R. M. L.).

Type in the South African Museum.

Gen. MEGISTOCERA, Wiedemann.

1828. Aussereur. Zweifl. Ins., vol. 1, p. 55.

Megistocera bicauda, Speiser.

1909. Dem Kilimand., dem Meru Exped., Dipt. 10, Orthorr. 4, pp. 53, 54.

One female, Dunbrody, Blue Cliff, Cape Colony, April 2nd, 1912, agrees well with Speiser's description of the species, but the general coloration of the fly is much darker than stated by Dr. Speiser, the chestnut-brown shades, as described, being very dark brown. In spite of these slight differences I believe it to be the same species; the cloudings on the wings are also a little more extensive than indicated

for typical *bicauda* ; the second pair of " tails " described by Dr. Speiser are presumably the sternal valves of the ovipositor.

The female specimen offers the following measurements: Length 13·3 mm.; wing 20·2 mm.; fore femur 9·7 mm ; hind femur 15 mm. The abdomen in the specimen at hand is greatly shortened, the intermediate segments being crowded and telescoped together, the terminal segment (Plate XIII, fig. 42) elongate, cylindrical-tubular, the tergal valves rather short, curved gently upwards, the apices acute ; sternal valves shorter, straight, and high, the apices rounded to subacute; along the dorsal margin a groove containing tufts of long pale hairs ; viewed from above the tergal valves are strongly divergent apically, the sternal valves nearly parallel. The wing venation is shown in Plate XI, fig. 23 ; the colour of the membrane is the peculiar whitish tinge characteristic of the genus ; the apex and the margin around to the first anal vein is indistinctly and very faintly tinged with dusky, small pale brown clouds as follows : origin of the sector ; *r-m* cross-vein ; apex of Cu_2 and second anal.

MEGISTOCERA HIRSUTA, sp. n.

Thoracic praescutum greyish-yellow with four brownish-grey stripes ; thorax with a dense covering of long, pale hairs ; wings without dark markings.

Male.—Length 15 mm. ; wing 20 mm.

Frontal prolongation of the head moderately long, shiny, shorter than the first antennal segment in this sex, brownish-yellow, nasus distinct ; palpi yellowish, darkened towards their tips. Antennae with the scapal segments brownish-yellow, the first segment greatly enlarged, the flagellum broken. Head greyish-yellow with a broad median chestnut area.

Thoracic dorsum greyish-yellow, the praescutum with four brownish-grey stripes of which the median pair are the longest ; the thoracic interspaces are reddish ; remainder of the thorax pale whitish, the scutellum and postnotum with a delicate reddish median line. Thorax with a dense covering of long, pale, erect hairs. Pleura pale with a greyish-white bloom. Halteres slender, brown, yellowish at the extreme base. Legs with the coxae very small, whitish ; trochanters dull yellow ; femora dull yellow, the extreme tip narrowly dark brown ; tibiae similar, the apices brown ; tarsi brownish-yellow. Wings with the peculiar whitish tinge characteristic of the genus, without seams or darker markings on the veins or at the wing-tip. Venation as in Plate XI, fig. 24 ; the stigma is of a much paler shade of brown than in *bicauda*, the second anal cell much larger, vein Cu_1 more sprawly, etc.

Abdominal tergites chestnut-brown, sublaterally much paler, light greyish-buff; segment one and most of segment two with a narrow dark brown lateral line; segments three to eight with a pale greyish-buff triangular spot at the base of each segment, the apex of the triangle directed caudad.

Habitat.—Portuguese East Africa.

Holotype, ♂, Quelimane, Lourenço Marquez, December 20th, 1908 (C. W. Howard).

Type in the collection of the United States National Museum, the species being added here to complete the data.

This fly differs from all of the described African species in the conspicuous erect hairs on the thorax.

Gen. LEPTOTIPULA, gen. n.

Frontal prolongation of the head moderately prominent, nasus distinct. Antennae of the male elongate, 12-segmented, the first and third segments subequal in length; flagellar segments very elongated, cylindrical, the first flagellar segment shortest, thence gradually increasing in length to the fifth, and then shortened to the tip. Tibiae with short spurs. Wings with R_2 oblique; cross-vein *r* short; a long fusion of Cu_1 and M_3, this distance equal to the length of cell 1*st* M_2; second anal vein short.

Genotype, *Leptotipula limnophiloides*, sp. n. (Southern Ethiopian region).

The long fusion of Cu_1 and M_3 is a Limnobiine character and quite unexpected in this sub-family. In *Dolichopeza* and *Nephrotoma* long fusions may occur, but they are between Cu_1 and *M*.

Leptotipula limnophiloides, sp. n.

Antennae elongated; femora black at the tip with a yellow subterminal annulus; wings with a distinct brown stigma; veins Cu_1 and M_3 fused for the length of cell 1*st* M_2.

Male.—Length 7·6 mm.; wing 8·2 mm.; antennae about 4·8 mm.

Frontal prolongation of the head rather prominent, brown, the entire dorsal half abruptly light yellow; a distinct nasus with numerous pale yellow hairs; palpi dark brown. Antennae elongated, the three basal segments brownish-yellow, the remainder dark brown; first flagellar segment short, about as long as the first scapal segment; remaining segments of the flagellum exceedingly elongated, slender, with abundant pale outstretched hairs and scattered black bristles. Head broad, the eyes large with fine ommatidia; a low tubercle on the

vertex, this with a deep median furrow; head yellowish-brown with an indistinct narrow darker median line.

Thorax dull brownish-yellow with three rather indistinct brown stripes on the praescutum; scutum and postnotum brown, the scutellum more yellowish. Pleura yellow, the mesopleura largely brown with a sparse pale bloom. Halteres elongated, pale yellowish, the bases of the knobs dark brown, the apices brighter. Legs with the coxae small, greyish-yellow with a bloom; trochanters yellow suffused with brown; femora brown, paler at the extreme base, the tip black, a subequal pale yellow ring just before the tip; tibiae dark brown, the tips narrowly darker; tarsi dark brown; tibial spurs very short. Wings with the basal half pale greyish, the apical half more hyaline; stigma prominent, rectangular, dark brown; pale brown marks at the base of *M*, origin and fork of *Rs* and along the basal deflection of Cu_1; tip of the wing in cell R_2 a little darkened; a narrow hyaline streak in cell *R* just before the bend in the sector; base of the wing more hyaline. Venation (Plate XI, fig. 22), Sc_2 entering R_1 just beyond the fork of *Rs*; *Rs* rather long, angulated and spurred at its origin; cell R_2 large, vein R_2 oblique, the radial cross-vein somewhat indistinct; vein *M* strongly arcuated just before its fork; basal deflection of Cu_1 at the fork of *M* and fused with M_3 for a distance about equal to the deflection of Cu_1 alone; second anal rather short and straight.

Abdomen with the basal tergites pale yellow, the second segment with the intermediate portion dark brown; third to sixth tergites blackish basally, the apices broadly silvery; a large yellowish subapical area; seventh segment largely yellow; eighth and ninth segments black; sternites dark brown, the caudal margins broadly silvery; third to sixth sternites with a narrow linear yellow mark on the mid-line and a yellowish subterminal area; eighth and ninth segments dark brown. Male hypopygium with the ninth tergite black, the sclerite arched so that the caudal margin (Plate XIV, fig. 54) appears to be very broadly V-shaped; the dorsal surface with numerous black semi-appressed hairs. Ninth pleuro-sternite extensive, profoundly incised beneath on the mid-ventral line, projecting beyond the caudal margin of the ninth tergite, the surface with numerous long hairs; pleural appendages two (Plate XIII, fig. 43), the outer one slender, the extreme base narrowed, the knob elongate with a very few scattered hairs; inner appendage compressed, ending in a slender, finger-like lobe that projects into the notch of the tergite, the outer margin of the sclerite with numerous outstretched black hairs giving a hystriciform appearance to the appendage.

Habitat.—South Africa.
Holotype, ♂, Clairmont, Natal, August, 1915 (Marley).
Type in the South African Museum.

Tribe TIPULINI.

Gen. LONGURIO, Loew.

1869. Berlin. Entomol. Zeitschr., vol. 13, p. 3.

Longurio minusculus, sp. n.

Head black with a greyish-brown bloom; thorax orange-yellow, unmarked; abdomen brownish, the basal segments and the hypopygium yellowish.

Male.—Length 8·2–9·6 mm.; wing 8·8–10·3 mm.

Frontal prolongation of the head moderate in length, yellowish-brown, the mid-dorsal region darker, the nasus present, with elongate hairs; palpi dark brown. Antennae short, the scape yellowish, the flagellum dark brownish-black; first segment as long as the succeeding two together; second segment pyriform; first flagellar segment enlarged, elongate-pyriform, the remaining segments gradually narrowed and more slender; hairs on the flagellum very short. Head black with a greyish-brown bloom, the front yellowish, this colour continued on to the vertex along the inner margin of the eyes; ventral sclerites of the head yellowish; sometimes the occiput is dull yellow.

Thorax orange-yellow without markings, the pleura more yellowish. Halteres long and slender, brown, the knob darker. Legs with the coxae and trochanters yellow; femora and tibiae yellow, darkened towards their tips; tarsi dark brown. Wings light grey, the costal region yellowish; stigma small, greyish-yellow; veins brown. Venation (Plate XI, fig. 26), petiole of cell M_1 about one-half the length of vein M_1 alone.

Abdomen with the basal tergites yellowish, more brown medially; on segments three to eight dark brown, more yellowish sublaterally; sternites dull yellow, the eighth segment brown; hypopygium dull yellow. Male hypopygium (Plate XIII, fig. 51) of the typical *Longurio* structure, the ninth tergite (Plate XIV, fig. 56) small, deeply incised by a U-shaped notch, the lateral lobes slender, subacute at their tips; the ninth sterno-pleurite moderately elongated, bearing at its apex the pleural appendages that are beset by numbers of short black spicules; these appendages in a position of rest lie in the dorsal concavity of the ninth sterno-pleurite.

Habitat.—South Africa.

Holotype, ♂, Hottentot-Hollands Mountains, altitude 4000 ft., Caledon, Cape Colony, 1915 (Barnard).

Paratopotypes, 3 ♂ ♂ ♂.

Type in the South African Museum.

LONGURIO BONAE SPEI, Bergroth.

1888. Ent. Tidskrift, vol. 9, pp. 138, 139 (*Tipula*).

A male specimen, without locality, but Bergroth's original description gives Stellenbosch, near Cape Town. The fly gives the following measurements: Length 10·2 mm.; wing 12·3 mm.; middle leg, femur 7·6 mm.; tibia 8·6 mm.; hind leg, femur 9·1 mm.; tibia 11·4 mm. The male hypopygium (Plate XIII, fig. 48) has the ninth tergite (Plate XIV, fig. 55) rather short with a deep U-shaped median notch, dark brown, the margin more yellowish; the lobes with appressed black hairs that are directed cephalad; lateral lobes broad at their apices. Ninth sterno-pleurite elongated, about two times the length of the tergite, conical in lateral aspect, profoundly incised on the median line beneath; pleural appendages elongated, lying in the dorsal concavity of the sclerite, bearing along the dorsal edge a series of about five or six sharp black spines that are directed strongly cephalad; these spines are situated on the sharp edge of the appendage and in alignment.

Bergroth, in his original description of this species, discussed in general terms the peculiar structure of the hypopygium without giving any intimation that it agreed with that of *Longurio*. The general appearance of the fly is very similar to certain Nearctic species of *Tipula* of the *tricolor* group (especially *eluta*, Loew), but the structure of the male hypopygium as described above seems to indicate that the present generic reference is more nearly correct. The genotype, *Longurio testaceus*, Loew (North-Eastern Nearctic region), has a hypopygium of the same structure, the short notched tergite and the greatly produced ninth sterno-pleurite bearing the compressed pleural appendages on their dorsal face and jutting into the tergal notch, together with the profound incision of the sterno-pleurite beneath, so that the sclerite is completely bisected.

GEN. CTENACROSCELIS, Enderlein.

1912. Zool. Jahrb., vol. 32, pt. 1, pp. 1, 2.

CTENACROSCELIS ALBOVITTATUS, Macquart.

1838. Diptères Exotiq., vol. 1, pt. 1, p. 53 (*Tipula*).

This handsome crane-fly has an extensive range throughout the southern half of Africa and the adjacent islands—Mauritius (Mac-

quart); Reunion (Loew); Madagascar (Bigot); Caffraria (Bergroth); Kilimandjaro (Speiser).

The following records are contained in the material at hand:

♀, Natal, Krantz Kloof, February, 1916 (Marley), bearing the number 852.

♂, Zululand, M'fongosi, February, 1912 (W. E. Jones).

♀, Southern Rhodesia, Que Que (Bultitude); ♀, Salisbury, May 12th, 1914.

The specimens give the following measurements:

Male.—Length 17 mm.; wing 20·5 mm.; middle leg, femur 13·3 mm.; tibia 13·8 mm.; hind leg, femur 13·8 mm.; tibia 15 mm.

Female.—Length 24 mm.; wing 21 mm.

The wing is shown on Plate XI, fig. 27.

The male hypopygium has the ninth tergite (Plate XIV, fig. 57) elongate, slightly narrowed toward the tip, deeply split by a narrow V-shaped notch, the adjacent lobes slender, rounded at their tips; the dorsal surface with an abundance of delicate appressed hairs.

Gen. TIPULA, Linnaeus.

1758. Syst. Nat., ed. 10, p. 585.

Tipula chionoides, sp. n.

Subapterous, at least in the female sex; nasus bifid at the apex; coloration dark brown; legs short.

Female.—Length 15 mm.; wing ·9 mm.; fore legs, femur 3·7 mm.; tibia 4·2 mm.; tarsus 4·6 mm.; hind legs, femur 5·5 mm.; tibia 6·1 mm.; tarsus about 6·5 mm.

Frontal prolongation of the head rather elongate, dark brown, the apex deeply bifid by a U-shaped notch (Plate XIII, fig. 44), producing two nasiform projections, each of which is armed with numerous strong bristles; palpi short, dark brown, the terminal segment not elongated. Antennae with the two basal segments dark brown, the flagellar segments dull yellowish; first scapal segment elongate-cylindrical; the second short-globular; flagellar segments short-cylindrical. Head dark brown with a strong median tubercle on the vertex just behind the antennal bases.

Thorax dark brown with a sparse yellowish pollen, but without distinct stripes; pleura dark brown with a sparse yellowish-brown bloom. Halteres with the knob elongated, dark brown throughout. Legs with the coxae powerful, elongate, dark brown; trochanters similar in colour; femora very short, especially the anterior pair, incrassate, dark brown; tibiae and tarsi dark brown. Wings very

reduced, less than a millimetre in length and not exceeding the halteres, extending to the base of the abdomen; they are somewhat curved, dark brown basally, more yellowish apically, venation indistinct.

Abdominal tergites rather dark brown with numerous large black blotches, and with abundant scattered yellowish appressed hairs, and black rectangular areas of close-set impressed punctures lying transversely across the sclerites; on segment two they are about mid-length of the segment and interrupted medially and two small areas on either side near the caudal margin; segments three to seven with the broad transverse bands sub-basal in position, interrupted

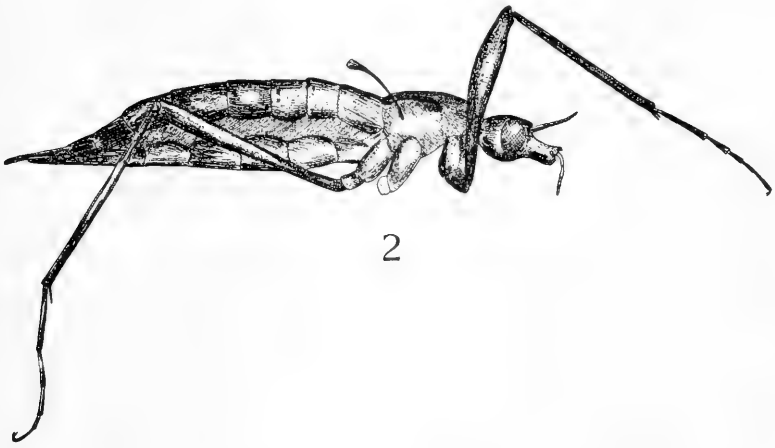


Fig. 2.—*Tipula chionoides*, sp. n. Lateral aspect, with the middle leg removed.

medially and with two small areas on either side of the median line and near the caudal margin of the sclerite; sternites brown with darker brownish-black blotches and with impressed punctured areas arranged about as on the tergites; ovipositor with the tergal valves elongate, obtuse at their tips; sternal valves much shorter, more acute at the tips.

Habitat.—South Africa.

Holotype, ♀, South Africa, the exact station unknown.

Type in the South African Museum.

The general habit of the insect is shown in fig. 2.

The genus *Icriomastax*, Enderlein (Zool. Jahrb., vol. 32, pt. 1, p. 9, 1912), established for the Brazilian *I. ocellata*, Enderlein, is the only other crane-fly known to me in which the nasus is bifid.

TIPULA SOROR, Wiedemann.

1821. Diptera Exotica, vol. 1, p. 24.
1828. Aussereur. Zweifl. Ins., vol. 1, p. 46.

There are two specimens in the collection, a male without exact locality, and Bergroth's specimen (No. 2), a female from Cape Town. The specimens give the following measurements :

Male.—Length 18·6 mm. ; wing 19·1 mm.

Female.—Length 23·5 mm. ; wing 19·2 mm. ; fore leg of female, femur 8·5 mm. ; tibia 10 mm. ; middle leg, femur 10 mm. ; tibia 10·2 mm. ; hind leg, femur 12 mm. ; tibia 14·1 mm.

The antennae are short, light yellow, the basal enlargement of the flagellar segments with four black verticils. The wings are shown on Plate XII, fig. 28. Male hypopygium (Plate XIII, fig. 49) with the sclerites of the ninth segment fused into a ring, continuous except on the mid-ventral line of the sternite, where the edges are contiguous and carinate ; pleural suture short, almost straight, slightly upcurved at the end. Ninth tergite (Plate XIV, fig. 58) moderate in size, the caudal margin concave with a very broad median lobe, whose caudal margin is squarely truncated and bifid for a short distance by a deep line ; the caudal dorsal margin with numerous small black spicules ; a shallow semicircular depression at the base of the median lobe. Outer pleural appendage very broad and flat, pale, almost white, the apex somewhat obliquely truncated, the outer face with short, appressed hairs that are most numerous at the cephalic dorsal angle of the lobe ; inner pleural appendage showing through the translucent outer appendage as figured, complex, flattened, the apex produced into a slender darkened tip ; a small tuft of yellowish hairs on the margin of the sternite just ventrad of the pleural suture.

TIPULA ZAMBEZIENSIS, sp. n.

Coloration orange-yellow ; wings yellowish-grey, the costal region more saturated ; male hypopygium with the sclerites of the ninth segment fused into a ring, the tergite with two divergent flattened horns on the caudal margin.

Male.—Length about 14 mm. ; wing 14·4 mm.

Female.—Length about 21 mm. ; wing 15·8 mm.

Frontal prolongation of the head yellowish-orange, the nasus elongate, slender ; palpi dark brown. Antennae with the scape dull orange ; flagellum brown, the basal swellings of the segments darker brown ; flagellar segments elongate-cylindrical, very slender, with long

verticils. Head deep brownish-orange without distinct darker markings.

Mesonotal praescutum dull orange-yellow with four stripes that are mottled orange and dark brown, the elongate middle pair almost continuous along the median line, the lateral stripes lying very close to the central pair; scutum light yellow with a greenish tinge, each lobe with two dark marks, the larger one lying caudally and nearer the median line; scutellum and postnotum dull yellow, the latter with a strong greenish tinge. Pleura clear light yellow, unmarked. Halteres dark brown. Legs with the coxae and trochanters light yellow; femora yellowish-brown, the tips darker brown; tibiae light brown, the tips narrowly darker brown; tarsi dark brown. Wings with a yellowish-grey tinge, the costal region and the stigma yellowish; veins dark brown. Venation (Plate XII, fig. 29), *Rs* short, straight, oblique; cells R_2 very small.

Abdomen with the basal segments light yellow, sub-basal segments dull yellow, indistinctly and narrowly trivittate with dark brown, the segments soon passing into a more uniform brownish. Male hypopygium (Plate XIII, fig. 53) with the sclerites of the ninth segment fused into a continuous ring except on the mid-ventral line of the sternite. Region of the ninth tergite (Plate XIV, fig. 59) with the median area slightly projecting caudad and bearing on either side of the median line a flattened subacute lobe, the space between these horns U-shaped and a little less than the diameter of a single horn; the horns divergent. Outer pleural appendage a broad flattened pale lobe that is obliquely truncated at the apex, and the outer face with rather sparse subappressed black bristles; inner pleural appendage more complex, consisting of a long finger-like lobe that projects cephalad, the caudal edge with a fringe of long yellow bristles. Region of the ninth sternite extensive, carinate on the mid-ventral line, the edges closely approximated. Eighth sternite unarmed.

The female has the thoracic stripes indistinct, the abdominal segments yellowish-brown, indistinctly and narrowly trivittate with darker brown; ovipositor with the tergal valves very long and slender, the apices slightly expanded; sternal valves short, deep, the tips somewhat rounded to subacute.

Habitat.—South Africa.

Holotype, ♂, Victoria Falls, Rhodesia, July, 1911 (L. Péringuey).

Allotype, ♀, Kafue River, Northern Rhodesia, 1906 (J. Drury).

Paratype, ♀, Krantz Kloof, Natal, January, 1915 (Marley).

Type in the South African Museum.

TIPULA POMPOSA, Bergroth.

1888. Ent. Tidskrift., vol. 9, p. 139, fig. 4.

A male from Barberton, Transvaal, March, 1911 (H. Edwards); a female from the same station, December, 1911; a female from M'fongosi, Zululand, March, 1911 (W. E. Jones); Bergroth's type was from Caffraria.

The wing is shown on Plate XII, fig. 30.

The specimens offer the following measurements:

Male.—Length 19·5 mm.; wing 21·8 mm.

Female.—Length about 27 mm.; wing 23·8–28·2 mm.; fore legs, femur, 12·8 mm; tibia 15·4 mm.; hind legs, femur, 14·4 mm.; tibia 18 mm.

Male hypopygium (Plate XIII, fig. 52) with the sclerites of the ninth segment fused into a ring that is continuous except on the mid-ventral line beneath; pleural suture distinct but incomplete, slightly curved at the end. Ninth tergite (Plate XIV, fig. 60) broad, the caudal margin produced medially into a slender lobe whose tip is truncated with a U-shaped notch; this lobe is concave dorsally, the lateral margins being slightly elevated, the caudal margin with numerous chitinised points which continue back on the dorsal surface of the lobe for about half its length: Pleural appendages two, the outer appendage slightly elongate-oval, the inner appendage more rounded-oval with cephalad-projecting arms. Sternal region profoundly incised on the mid-ventral line, the adjacent edges barely contiguous.

TIPULA JOCOSA, sp. n.

Flagellum of the antennae black; head chestnut-brown with a median black stripe; thoracic stripes dull yellow, narrowly margined with dark brown; wings greyish subhyaline with sparse brownish spots and seams; cell 1*st* M_2 large and ample.

Female.—Length about 25 mm.; wing 19·8 mm.

Frontal prolongation of the head reddish-brown with black dorsal and lateral lines, elongated, the nasus long and slender; palpi black, the bases and apices of the first two segments dull yellow, the remaining segments broken. Antennae short, the first scapal segment dull yellow, blackened above toward the tip; second segment brownish-black, globular; flagellar segments elongated, black, with elongated bristles. Head chestnut-brown with a well-defined median black stripe, the occiput more brownish.

Mesonotal praescutum dull yellow with four dull yellow stripes that are narrowly margined with dark brown; middle pair of stripes

narrowly separated behind, but confluent in front, where the yellow of the stripes is darkened, more greyish; lateral margin of the sclerites black, narrowed out in front and not continuous over the mid-line; scutum dull yellow, the median area and posterior portions of the lobes blackish; scutellum dull brownish-yellow, darkened behind; postnotum yellow, broadly dark brown medially. Pleura discoloured, apparently dull yellow with blackish markings. Halteres dark brown, the knob light yellow. Legs with the coxae and trochanters pale; femora brownish-yellow, the tips broadly black, a little brightened just before the tips; tibiae yellowish-brown, the tips indistinctly and narrowly brown; tarsi dark brown. Wings greyish subhyaline, the costal cell light yellow; apex of the wing greyish in cells R_2, R_3, and base of R_5; stigma dark brown; dark brown seams along the cord and the veins surrounding cell 1*st* M_2; a brown spot at the base of the wing and a brown seam along the base of vein *Cu* and along the forks of this vein; a large hyaline area in cell *M* along vein *Cu*; veins dark brown; a yellow area at the base of *M* and *Cu* and a smaller area just before the stigma. Venation (Plate XII, fig. 31), *Rs* very short, R_3 not arcuated, as in *Ctenacroscelis*; cells 1*st* M_2 and M_1 large and full; petiole of cell M_1 not as long as the basal deflection of Cu_1; fusion of Cu_1 with M_3 subequal to the *r-m* cross-vein.

Abdominal tergites pale yellowish-brown, the basal third of the intermediate segments yellow; sternites paler basally, the apical sclerites darker.

Habitat.—South Africa.

Holotype, ♀, Cape Town, Cape of Good Hope (P. C. Keytel).

Type in the South African Museum.

Tipula coronata, sp. n.

Antennae with the basal four or five flagellar segments much larger than the slender apical segments; coloration dark grey with a sparse yellowish pollen; wings brownish-grey with the stigma brown; male hypopygium with the ninth tergite having the caudal margin with an acute median notch.

Male.—Length 8–8·7 mm.; wing 9·5–11·4 mm.

Frontal prolongation of the head dark brown, the dorsal half abruptly yellowish, nasus prominent; palpi short, dark brown. Antennae dark brown, the scape a little paler and with a sparse greyish bloom; first four segments of the flagellum enlarged, but gradually smaller than one another, the terminal seven segments of the flagellum cylindrical, slender, approximately subequal in length and more yellowish than the basal flagellar segments. Head clear

light grey, the front more yellowish; tubercle on the vertex low with a shallow median groove and a broad V-shaped notch in front.

Thoracic dorsum blackish with a yellowish-brown bloom; two dorso-median dark brown lines on the praescutum; scutum clear grey, the lobes more brownish laterally; postnotum clear light grey with an indistinct blackish median line. Pleura light grey. Halteres elongate, dull yellow, the knobs brownish. Legs with the coxae dull yellow with a sparse whitish bloom; trochanters yellow with a blackish mark on the lower side; femora light brown, a little darkened at the tips; tibiae and tarsi brown. Wings brownish-grey, the costal cell a little more suffused; stigma distinct, but ill-defined, dark brown; a vitreous band along the cord and crossing cell 1*st* M_2; veins dark brown, the veins in the path of the vitreous band and the tips of R_1 and R_2 pale. Venation (Plate XII, fig. 32), *Rs* weak, rather short; second anal short.

Abdominal tergites grey, the sternites more reddish-grey. Male hypopygium (Plate XIII, fig. 59) with the ninth tergite (Plate XIV, fig. 61) subquadrate, the caudal margin with a very deep median re-entrant angle; caudal margin densely beset with powerful black bristles; margin of the U-shaped notch pale, the inner ventral angle of each of the lateral lobes produced beneath into a blunt lobule that is armed at the tip on the outer face with three stout black teeth and several powerful bristles. Ninth pleurite small, triangular, bearing at its outer ventral angle the pleural appendages; pleural appendages consisting of a rounded knob that is densely beset with powerful short spines and numerous bristles; a flattened lobe lying distad of this knob, whose margin is armed with a crown of six or seven stout spines that are subequal in size and equidistantly spaced; a stout hair on the underside near the tip. Ninth sternite very extensive, profoundly incised on the mid-ventral line, each division powerful, bearing at the apex a small pale triangular lobe that seems to be the ninth pleurite.

In a paratype the fifth flagellar segment is a little larger than those which follow, and apparently belongs to the same series, with the four basal flagellar segments; the frontal prolongation of the head not so pale dorsally. In the two paratypes from the Winterhoek Mountains the size is very small, the smallest measurements given.

Habitat.—South Africa.

Holotype, ♂, South-west District, Cape Colony.

Paratopotype, ♂; paratypes, 2 ♂ ♂, Winterhoek Mountains, Tulbagh, Cape Colony, altitude 3600 ft., April, 1916 (R. M. Lightfoot).

Type in the South African Museum.

TIPULA CAFFRA, sp. n.

Antennae with the flagellar segments uniformly elongate-cylindrical; coloration blackish with a yellowish pollen; wings brownish-grey, the stigma and costal cell yellowish-brown; male hypopygium of simple structure, the ninth tergite extensive, profoundly incised medially by a V-shaped notch that extends about to the eighth tergite.

Male.—Length about 10 mm.; wing 10·6 mm.

Frontal prolongation of the head narrowed basally, dark brownish-black with a sparse greyish bloom; nasus not distinct, but the whole apex of the prolongation with an abundance of stout black bristles; palpi short, black. Antennae black with sparse tiny grey hairs; flagellar segments elongate-cylindrical, even more narrowed toward the tip of the organ. Head with the frontal tubercle not very prominent; head black with a heavy greyish-golden pollen; a blackish area on either side of the median line.

Thoracic praescutum dark with a heavy yellowish pollen and with four brown stripes, the median pair confluent in front; scutellum dull yellowish; postnotum yellow, darkened behind. Pleura with the mesopleurites dark brown with a greyish pruinosity, the metapleurites light brown, conspicuously and abruptly lighter coloured than the anterior sclerites. Halteres brownish-yellow, the knobs darker. Legs with the anterior and middle coxae dark brown, the posterior coxae brownish-yellow; trochanters brownish-yellow; femora light yellowish-brown, the tips broadly dark brown; tibiae brown, darker at the tips; tarsi dark brown. Wings brownish-grey, the costal cell and stigma light yellowish-brown; a yellowish tinge along *Cu*; a vitreous band before the cord crossing cell 1*st* M_2 and a smaller vitreous spot beyond the stigma; veins dark brown, paler in the vitreous areas. Venation (Plate XII, fig. 33), *Rs* rather elongate, strongly angulated at its origin; second anal vein short and straight.

Abdomen with the basal segment light reddish-yellow; remaining segments black with a sparse greyish bloom. Male hypopygium of simple structure. Ninth tergite dark brown, extensive, profoundly incised medially by a V-shaped notch, this cut extending about to the eighth segment, so that the ninth tergite, viewed from above, is completely divided into two lobes, each lobe triangular, the apex subacute. Ninth sterno-pleurite smaller than the tergite, dark brown, the pleural region yellowish; appendages yellow, simple in structure; pleural suture deep, black and almost straight; sternal region profoundly incised on the mid-ventral line, the adjacent edges not contiguous.

Habitat.—South Africa.

Holotype, ♂, Winterhoek Mountains, Tulbagh, Cape Colony, altitude 3600 ft., 1916 (R. M. L.).

Type in the South African Museum.

Gen. NEPHROTOMA, Meigen.

1803. Illiger's Mag., vol. 2, p. 262.
1834. Macquart, Hist. Nat. des Insect.; Dipt., vol. 1, p. 88 (*Pachyrrhina*).

The South African species of this difficult genus are still not well understood. There are eleven described species that may be considered regional, five of which (*aurantiaca*, Macquart, *petiolata*, Macquart, *delegorguei*, Macquart, *crocea*, Loew, and *capensis*, Rondani) are apparently very closely related, and I have been unable to distinguish them satisfactorily; they belong to the group of species with black thoracic stripes and the intermediate abdominal tergites with black markings of various shapes and greater or less extent. To determine these species accurately it will be necessary to have an abundance of material and to study the type-specimens where they are in existence. Unfortunately most of the species were described from female specimens, which sex shows very few of the necessary specific characters.

Nephrotoma umbripennis, sp. n.

Antennal flagellum dark brown; head orange-yellow; thoracic praescutum with the median stripe chestnut margined with black; scutellum and postnotum pale; pleura spotted yellow and pale reddish; abdomen with the basal tergites unmarked medially; wings suffused with brownish; *m-cu* cross-vein beyond the fork of *M*; *Rs* somewhat elongated; cell M_1 sessile.

Male.—Length 14·4 mm.; wing 15·3 mm.

Frontal prolongation of the head short, pale yellow; palpi brown. Antennae moderate in length, the scape yellow, the second segment a little darker; first flagellar segment pale basally, passing into dark brown at the tip; remaining segments dark brownish-black on the basal swelling, the pedicels dark brown; first flagellar segment elongated, longer than the combined scape; remaining flagellar segments deeply incised beyond the basal swelling. Head orange, the occipital mark dark brown, very large, sending its anterior angle far up on to the frontal tubercle.

Pronotum dull yellow medially. Mesonotal praescutum dull yellow with three stripes; median stripe rich chestnut-brown, broadly

margined on each side with black, becoming indistinct before the transverse suture; lateral stripes shiny black, slightly out-curved at their anterior ends; scutum dull yellow, the lobes with the proximal half black, being caudal prolongations of the lateral praescutal stripes; scutellum and postnotum dull yellow. Pleura light yellow with pale reddish blotches, these arranged as two indistinct bands, the ventral band occupying the sternum and suffusing all the coxae; propleura brownish; sides of the postnotum largely brownish-red. Halteres brown, stem paler at the base. Legs with the coxae as described above; trochanters and femora dull yellow, the latter with the tips dark brownish-black; tibiae dark brown; tarsi broken. Wings with a strong brown or yellowish-brown suffusion, the costal cell rich yellowish; stigma pale brown, indistinct; a brown seam along *Cu*; a pale vitreous area before the stigma and at the base of cell 1*st* M_2. Venation (Plate XII, fig. 34), with the point of contact between Cu_1 and M_3 underneath cell 1*st* M_2 as in the genus *Tipula*; *Rs* elongated, also as in *Tipula*; cell M_1 sessile as in *Nephrotoma*.

Abdomen rich orange-yellow without dorsal markings, except on the fifth to eighth tergite, where there is a rounded blackish median mark; lateral margins of the sclerites darkened; sternites with a sublinear black median mark on segment five to eight. Male hypopygium (Plate XIV, fig. 62) with the caudal margin of the ninth tergite almost straight, produced laterally into a subacute shiny tooth, medially with an obscure notch; caudal margin shiny, heavily chitinised, with about two small black teeth on each side of this notch; ninth pleurite nearly complete, the pleural suture being very long and straight, running back to the eighth segment; outer pleural appendage elongate, pale, rounded at the apex; ninth sternite profoundly incised medially, the lateral angles contiguous.

Habitat.—South Africa.

Holotype, ♂, South Africa, without exact locality.

Type in the South African Museum.

In the venation and the male hypopygium this form closely approaches *Tipula* and shows the close relationship between this genus and *Tipula*.

Nephrotoma edwardsi, sp. n.

Head orange without a distinct occipital mark; thorax dusky brown with darker stripes; abdomen orange-yellow, the apical segments, including the hypopygium, blackish; legs black except at the extreme bases of the femora.

Male.—Length 14·5 mm.; wing 14·7 mm.

Frontal prolongation of the head short, orange; palpi brown. Antennae with the first scapal segment orange, second segment dull yellow; first flagellar segment dull yellow, pale with a dense pale pubescence; remainder of the antennae broken. Head bright orange, the frontal tubercle large and high; occipital mark not apparent.

Pronotum brown. Mesonotal praescutum brown with three ill-defined dark brown stripes that are not conspicuous on this dark background; anterior ends of the lateral stripes capped by a velvety-black mark; scutum pale brown with the lobes dark brown, at the outer cephalic angle with a velvety-black spot; scutellum and post-notum pale brown. Pleura brown with scattered darker brown markings. Halteres short, dark brown, the extreme bases paler. Legs with the coxae brown; trochanters dull yellow; femora black, the extreme bases a little brighter; tibiae and tarsi black. Wings with a pale grey tinge, the costal cell rather dark brown; stigma dark brown; a brownish seam along *Cu*, *Rs*, R_2, R_3 and R_4+_5; veins black. Venation (Plate XII, fig. 35), *Rs* rather elongate for this genus of flies; *m-cu* at the fork of *M*; cell *M* rather broadly to merely sessile.

Abdominal tergites dull orange-yellow, brightest at the base, on the sixth segment passing into brownish-black; apical segments, including the hypopygium, blackish; lateral margins of the tergites narrowly black; sternites colored about as on the tergites. Male hypopygium with the ninth tergite black, the caudal margin with a deep U-shaped notch. Abdomen with numerous appressed hairs, more elongate and prominent toward the end of the organ.

Habitat.—South Africa.

Holotype, ♂, Barberton, Transvaal, October, 1911 (H. Edwards).

Type in the South African Museum.

This interesting *Nephrotoma* is dedicated to its discoverer.

Nephrotoma strenua, sp. n.

Head orange without a dark occipital mark; antennae elongated, flagellum bicolorous; thorax with black stripes; abdomen dull brownish-yellow, toward the apex with an indistinct blackish annulus; hypopygium yellowish.

Male.—Length 14·5 mm.; wing 16 mm.; antennae about 9 mm.

Frontal prolongation of the head short, yellow; palpi brown, the extreme tip of the last segment yellowish. Antennae with the first scapal segment orange; flagellar segments with the basal enlargement light brown, the pedicels brownish-yellow; flagellar segments elongated, rather deeply incised beneath. Head yellow on the front and

genae, more saturated, orange-yellow, on the vertex and occiput; occipital mark not apparent.

Pronotum brownish-orange. Mesonotal praescutum brownish-yellow with three shiny black or brownish-black stripes that are nearly confluent; middle stripe broadest in front, narrowed to an indistinct point behind, indistinctly split by a reddish line; anterior ends of the lateral stripes capped by an opaque black mark; scutum brown with the lobes darker; scutellum and postnotum brownish-yellow, the latter more brightened. Pleura marked with yellow and reddish-brown. Halteres light brown, the knobs darker brown. Legs with the coxae yellowish-brown provided with numerous long yellow hairs; trochanters dull yellow; femora dull brownish-yellow, narrowly tipped with dark brown; tibiae yellowish-brown, darkened at their apices; tarsi broken. Wings with a strong brownish-yellow tinge, the costal cell very little brighter; stigma oval, dark brown; apex of the wings and vein *Cu* a little infuscated; a broad seam along the basal deflection of R_4+_5 and *r-m*. Venation (Plate XII, fig. 36), *Rs* short, oblique; cell M_1 sessile; fusion of Cu_1 with *M* before the fork of the latter vein.

Abdominal tergites dull brownish-yellow, the lateral margins of the segments broadly blackish; on the sixth to eighth segments broader and including the caudal margins of the segments; hypopygium yellowish; sternites six and seven and the lateral portions of eight black, the remainder orange-yellow. Male hypopygium (Plate XIV, fig. 63) with the ninth tergite dull yellow, with the caudal margin deeply rounded by a U-shaped notch, the caudal margin chitinised; pleural suture elongate, curved slightly dorsad at its tip; outer pleural appendage not large, the apex not produced, rather blunt. Abdomen with rather dense yellow hairs, on the basal segments short and appressed, longer toward the tip of the organ, on the eighth sternite very conspicuous.

Habitat.—South Africa.

Holotype, ♂, St. Matthew's, King William's Town District, South-east Cape Colony, 1894 (R. Lightfoot).

Type in the South African Museum.

Nephrotoma unicingulata, sp. n.

Antennal flagellum dark brown; head light yellow; thorax with black stripes, scutellum and postnotum pale; abdomen unmarked on the mid-dorsal line, but with a black subterminal ring; wings pale yellowish with a slight suffusion at the apex and a seam on the basal deflection of R_4+_5; extreme apices of cells R_5 and M_1 sparsely pubescent.

Male.—Length 13·7 mm.; wing 15 mm.

Female.—Length 21 mm.; wing 16·5 mm.

Frontal prolongation of the head very short, light yellow, the nasus elongate; palpi pale brown. Antennae moderately elongated; scape yellow; flagellar segments dark brown toward the tip of the organ; basal swelling of the individual segments a little darker than the pedicels; segments of the flagellum a little constricted beyond the base. Head light yellow; frontal tubercle low, entire, at its base along the inner margin of the eyes a small brown spot; occipital blotch elongate-triangular, dark brown.

Pronotum clear, light yellow dorsally, unmarked. Mesonotal praescutum dull yellow with three black shiny stripes; lateral stripes curved outwards at their anterior ends; scutal lobes shiny black; scutellum and postnotum dull yellow, brownish black on the sides, slightly darkened caudally. Pleura pale with a whitish cast, indistinctly marked with yellow; an elongate dark brown mark on the propleura. Halteres yellow, the knobs brown with the apices paler. Legs with the coxae pale yellow; trochanters and femora dull yellow, the latter broadly dark brown at their tips; tibiae and tarsi dark brown. Wings with a yellowish or greyish-yellow tinge, the costal cell a little brighter; stigma distinct, oval, dark brown; a brown seam along the basal deflection of R_{4+5} and at the tip of the wing in cells R_3 and R_5; a sparse short pubescence in the apices of cells R_5 and M_1 and on the stigma. Venation as on Plate XII, fig. 37.

Abdomen light yellow, the basal third of the first tergite brownish; a black band near the tip of the abdomen, including all of segment seven, the apex of the sixth tergite, the extreme base of the eighth tergite and the eighth sternite; an indistinct brownish spot on the extreme lateral margins of the basal segments; hypopygium yellow. Male hypopygium with the ninth tergite (Plate XIV, fig. 65) rather short, broad; caudal margin with a U-shaped notch, lateral angles beneath produced into blunt darkened lobes that are roughened and carunculated; caudal margin of the incision beneath is darkened, provided with numerous small acute teeth; a small rounded median notch; pleural suture prominent, curved strongly dorsad at its tip; outer pleural appendage pale, elongated, the tip attenuated.

In the female the black abdominal band occupies the seventh and the apical two-thirds of the sixth tergites, and the lateral margins of the tergites are broadly dark brown, folded over the sternites; valves of the ovipositor slender.

Habitat.—South Africa.

Holotype, ♂, Malvern, Natal, 1901 (C. N. Barker).

Allotype, ♀, Overbeck, Mossel Bay, Cape Colony, 1897.

Paratypes, ♂, with the allotype; ♀, Barberton, Transvaal, April, 1911 (H. Edwards).

Type in the South African Museum.

Nephrotoma antennata, Wiedemann.

1821. Wiedemann, Diptera Exotica, vol. 1, p. 53 (*Tipula*).
1828. Wiedemann, Aussereur. Zweifl. Ins., vol. 1, p. 53 (*Tipula*).
1888. Bergroth, Ent. Tidskrift, vol. 9, p. 140 (*Pachyrrhina*).

Bergroth's specimen (No. 1), without locality, but in the paper cited above given as "Cape Town." The specimen is a male measuring 12·4 mm. in length, and the wing 13·5 mm.

The wing is shown on Plate XII, fig. 38.

The coloration of the thorax, well described by Bergroth, offers a very good specific character; the middle thoracic stripe is not as dark in colour as the lateral stripes and is narrowed toward the caudal end, not attaining the transverse suture; the opaque black line surrounds the lateral stripe except a small portion on the outside; the same intense marking occupies the lateral portions of the transverse suture and runs caudad as a small spot above the wing-root; postnotum with a distinct brown median mark. Hypopygium with the ninth tergite (Plate XIV, fig. 64) short, broad, the caudal margin with a very broad and deep U-shaped notch with a low, obtuse, median tooth; outer pleural appendage pale, large, very conspicuous.

Nephrotoma tigrina, sp. n.

Head orange, occipital mark distinct; thorax yellow with black stripes, the median stripe paler centrally; abdomen with the tergites banded; hypopygium yellowish and black.

Male.—Length 13·6 mm.; wing 12·4 mm.; antennae about 6 mm.

Female.—Length 16 mm.

Frontal prolongation of the head short, nasus slender; palpi yellowish-brown, darker toward the tip. Antennae moderately elongated; first segment orange; second segment brown; flagellum black, the base of the first segment a little paler; flagellar segments rather feebly incised beyond the basal swelling. Head orange, more yellowish on the genae; a large rounded blackish spot near the base of the frontal tubercle and adjoining the inner margin of the eye; occipital triangle prominent, shiny, dark brown.

Pronotum obscure yellowish dorsally. Mesonotal praescutum shiny yellow with three black stripes, the median stripe with the central

portions paler, brownish or brownish-yellow; lateral stripes very broad, especially anteriorly; scutum obscure yellowish medially, the lobes largely shiny black; scutellum obscure yellowish-brown, almost black caudally; postnotum with the dorsal median portions conspicuous light yellow, the caudal third almost black; lateral portions of the postnotum black with a conspicuous oval, light yellow mark just before the base of the halteres. Pleura with the lateral margins of the propleura brownish; remainder of the pleura brownish-red with conspicuous light yellow marks as follows: On the dorsal half of the mesosternum, interrupted above the middle coxae; on the mesepimeron and metaepisternum, and a more obscure blotch on the dorsal portions of the mesepimeron underneath the wing-root. Halteres brown, the tips of the knobs a little brighter. Legs with the coxae and trochanters brownish-red; anterior femora black, the basal quarter brighter, reddish-brown; posterior femora yellowish-brown, broadly tipped with blackish; tibiae brown, narrowly darkened at their tips; tarsi brown. Wings with a strong yellowish tinge, the costal cell a little suffused; stigma conspicuous, dark brown; a broad, light brown seam along the basal deflection of R_4+_5 and the *r-m* cross-vein; apex of the wing broadly suffused with brown. Venation (Plate XII, fig. 39), cell M_1 short-petiolate.

Abdominal segments brownish-yellow, the basal tergite black; segments two and three with a broad, black, caudal margin that is continued back up the sides of the segments for a short distance; segments six to eight largely black; hypopygium black with the outer pleural appendage conspicuously brownish-yellow. Hypopygium (Plate XIV, fig. 67) with the ninth tergite large, the caudal margin with a prominent U-shaped notch, the lateral lobes shiny, smooth; caudal margin blackened, medially with a deep, rounded incision and with abundant black spicules that are most numerous at the opening of the lesser incision, more sparse and scattered on the dorsal portions of the sclerite; outer pleural appendage large, conspicuous, the tip drawn out in a long point; ninth pleurite not complete, the pleural suture rather long, curved dorsad at its cephalic end.

The female is similar to the male, differing as follows: antennae shorter; black bands on the abdomen broadest on segments one to three, successively narrower on four and five, complete and very intense on six and seven; segments eight and nine, including the ovipositor, yellowish; lateral margins of the tergites black excepting the basal half of segment two; sternites dull yellow except on segment seven, which is largely black.

Habitat.—Portuguese East Africa.

Holotype, ♂, Lourenço Marquez, Portuguese East Africa, February 13th, 1909 (C. W. Howard).

Allotype, ♀, topotypic, 1911 (J. B. Paulus).

Paratopotypes, 2 ♂♂.

The type is in the collection of the United States National Museum, the allotype in the South African Museum.

In the structure of the hypopygium it most closely resembles *N. umbripennis*, sp. n., and *N. tincta*, Walker, as described below.

Nephrotoma tincta, Walker.

1856. Ins. Saunders., vol. 1, Dipt., p. 444 (*Tipula*).

One male and one female, Barberton, Transvaal, April, 1911 (H. Edwards); a female from the same locality, November, 1911.

The specimens offer the following measurements:

Male.—Length 11 mm.; wing 10·3 mm.

Female.—Length 15·8 mm.; wing 12·4 mm.

This beautiful species much resembles *N. tigrina*, sp. n., but is a much darker species in all respects; the praescutal stripes are very broad, further restricting the ground-colour; pleura and coxae black, excepting a bright yellowish-white mark on the lateral portions of the postnotum, and more yellowish spots on the mesepimeron. The legs are black, excepting the basal quarter of the femora and the trochanters, which are yellowish; wings strongly suffused with blackish, the venation as shown on Plate XII, fig. 40. Abdomen with the subterminal black ring occupying all of segments six to eight and the caudal portion of the fifth tergite; ninth tergite dark yellowish-brown, the outer pleural appendages conspicuously bright yellow. Hypopygium with the ninth tergite (Plate XIV, fig. 66) of the same general structure as in *N. tigrina*, but the lateral lobes much broader and stouter, so that the caudal notch is more V-shaped, the median incision large, rounded; caudal margin with an abundant pale pubescence that conceals the chitinised teeth beneath; outer pleural appendage elongate, the tip drawn out into a long point.

Nephrotoma petiolata, Macquart.

1838. Macquart, Dipt. Exotiq., vol. 1, pt. 1, p. 49 (*Pachyrrhina*).

1888. Bergroth, Ent. Tidskrift, vol. 9, p. 140 (*Pachyrrhina*).

The following specimens in the collection:

♀, Hex River Mountains, Worcester, Cape Colony, 1886 (L. Péringuey), bearing Bergroth's number 8.

Two ♀ ♀, Natal.

♂, Pilgrim's Rest, Transvaal (Miss Schunke).

♂, Machike, Rhodesia, August, 1913.

The specimens measure as follows:

Male.—Length 11 mm.; wing 11 mm.

Female.—Length 17 mm.; wing 13 mm.

The occipital mark sends a narrow line forward almost to the tip of the frontal tubercle. Hypopygium with the ninth tergite nearly as in *N. tincta*, the median notch small, the caudal margin with numerous black spicules.

The wing is shown on Plate XII, fig. 41.

EXPLANATION OF THE PLATES.

Plate X.

FIG.

1.—Wing of *Ptychoptera cavensis* sp. n. (Upper left-hand corner.)
2.—Wing of *Dicranomyia lightfooti* sp. n. (Upper right-hand corner.)
3.—Wing of *D. tipulipes* Karsch.
4.—Wing of *D. marleyi* sp. n.
5.—Wing of *Rhipidia afra* Bergroth.
6.—Wing of *Libnotes capensis* sp. n.
7.—Wing of *Rhamphidia capensis* sp. n.
8.—Wing of *Elephantomyia aurantiaca* sp. n.
9.—Wing of *Styringomyia vittata* Edwards.
10.—Wing of *Atarba capensis* sp. n.
11.—Wing of *Erioptera* (*Empeda*) *bonae spei* sp. n.
12.—Wing of *E.* (*Erioptera*) *peringueyi* Bergroth.
13.—Wing of *Trimicra inconspicua* Loew.
14.—Wing of *Podoneura anthracogramma* Bergroth.

Plate XI.

FIG.

15.—Wing of *Gnophomyia elegans* Wiedemann.
16.—Wing of *Gonomyia* (*Gonomyia*) *sparia* Bergroth.
17.—Wing of *G.* (*Gonomyella*) *natalensis* sp. n.
18.—Wing of *G.* (*G.*) *brevifurca* sp. n.
19.—Wing of *Limnophila transvaalica* sp. n.
20.—Wing of *L. frugi* Bergroth.
21.—Wing of *Dolichopeza* (*Trichodolichopeza*) *hirtipennis* sp. n
22.—Wing of *Leptotipula limnophiloides* sp. n.
23.—Wing of *Megistocera bicauda* Speiser.
24.—Wing of *M. hirsuta* sp. n.
25.—Wing of *Longurio bonae spei* Bergroth.
26.—Wing of *L. minusculus* sp. n.
27.—Wing of *Ctenacroscelis albovittatus* Macquart.

Plate XII.

FIG.

28.—Wing of *Tipula soror* Wiedemann.
29.—Wing of *T. zambeziensis* sp. n.
30.—Wing of *T. pomposa* Bergroth.
31.—Wing of *T. jocosa* sp. n.
32.—Wing of *T. coronata* sp. n.

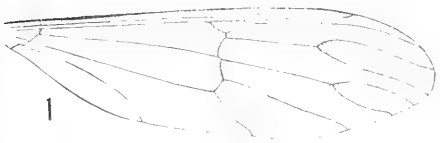
33.—Wing of *T. caffra* sp. n.
34.—Wing of *Nephrotoma umbripennis* sp. n.
35.—Wing of *N. edwardsi* sp. n.
36.—Wing of *N. strenua* sp. n.
37.—Wing of *N. unicingulata* sp. n.
38.—Wing of *N. antennata* Wiedemann.
39.—Wing of *N. tigrina* sp. n.
40.—Wing of *N. tincta* Walker.
41.—Wing of *N. petiolata* Macquart.

Plate XIII.

FIG.
42.—Ovipositor of *Megistocera bicauda* Speiser; lateral aspect.
43.—Hypopygium of *Leptotipula limnophiloides*; lateral aspect; 8 *t*, 9 *t* = tergites; 9 *pl. st.* = pleuro-sternite.
44.—End of nasus of *Tipula chionoides*; dorsal aspect.
45.—Hypopygium of *Platylimnobia barnardi* sp. n.; dorsal aspect of the pleurite.
46.—Hypopygium of *Styringomyia vittata*; dorsal aspect.
47.—Hypopygium of *S. vittata*; ventral aspect.
48.—Hypopygium of *Longurio bonae spei*; lateral aspect. Lettering as in fig. 43.
49.—Hypopygium of *Tipula soror*; lateral aspect. Lettering as in fig. 43.
50.—Hypopygium of *T. coronata*; dorsal aspect of the pleural appendages.
51.—Hypopygium of *Longurio minusculus*; lateral aspect. Lettering as in fig. 43.
52.—Hypopygium of *Tipula pomposa*; lateral aspect.
53.—Hypopygium of *T. zambeziensis*; lateral aspect.

Plate XIV.

FIG.
54.—Hypopygium of *Leptotipula limnophiloides*; ninth tergite, dorsal aspect.
55.—Hypopygium of *Longurio bonae spei*; ninth tergite, dorsal aspect.
56.—Hypopygium of *L. minusculus*; ninth tergite, dorsal aspect.
57.—Hypopygium of *Ctenacroscelis albovittatus*; ninth tergite, dorsal aspect.
58.—Hypopygium of *Tipula soror*; ninth tergite, dorsal aspect.
59.—Hypopygium of *T. zambeziensis* ninth tergite, dorsal aspect.
60.—Hypopygium of *T. pomposa*: ninth tergite, dorsal aspect.
61.—Hypopygium of *T. coronata*; ninth tergite, dorsal aspect.
62.—Hypopygium of *Nephrotoma umbripennis*; ninth tergite, dorsal aspect.
63.—Hypopygium of *N. strenua*; ninth tergite, dorsal aspect.
64.—Hypopygium of *N. antennata*; ninth tergite, dorsal aspect.
65.—Hypopygium of *N. unicingulata*; ninth tergite, dorsal aspect.
66.—Hypopygium of *N. tincta*; ninth tergite, dorsal aspect.
67.—Hypopygium of *N. tigrina*; ninth tergite, dorsal aspect.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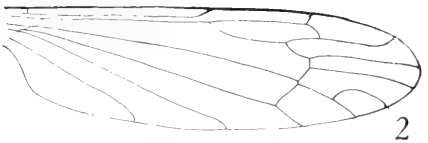
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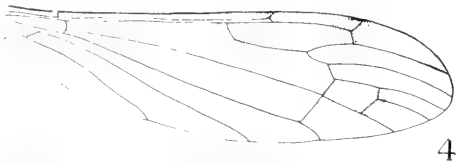
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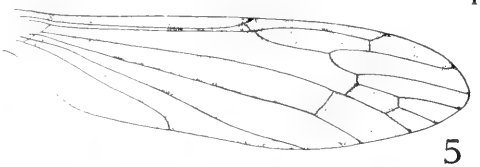
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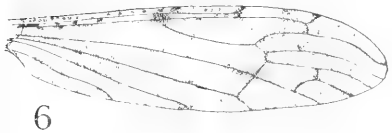
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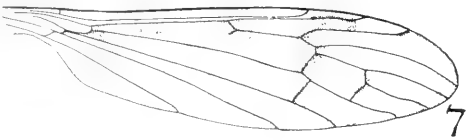
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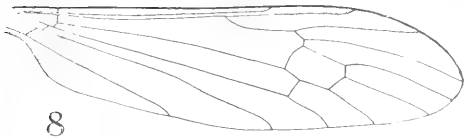
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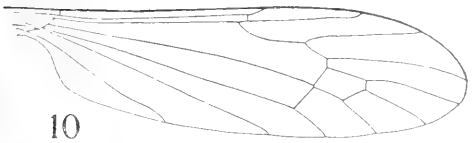
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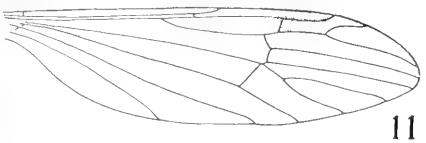
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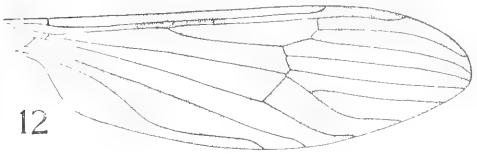
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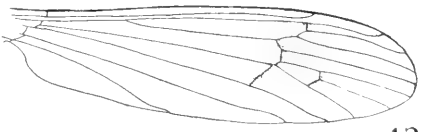
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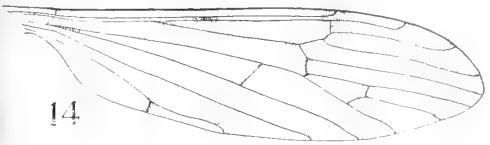
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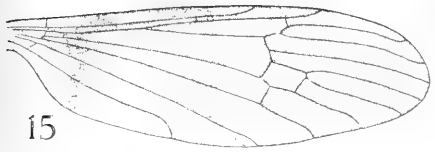

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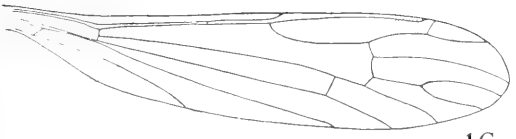

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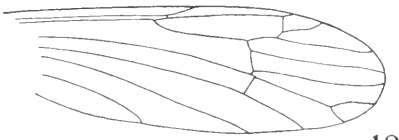

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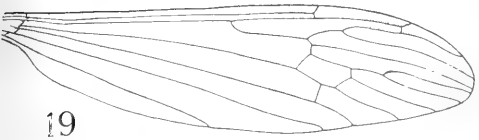

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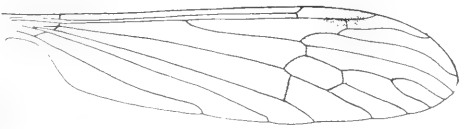

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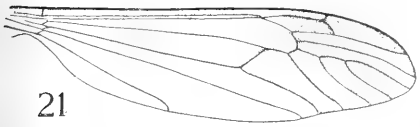

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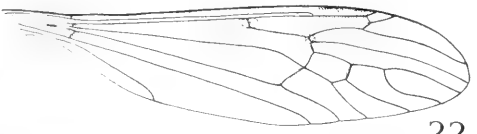

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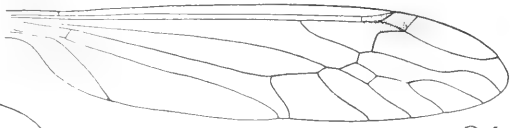

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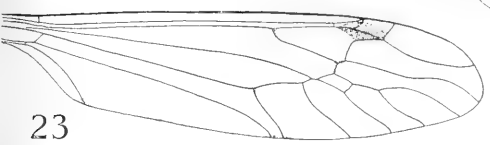

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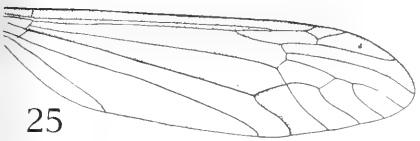

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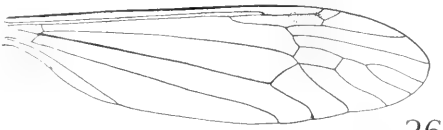

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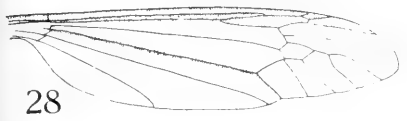
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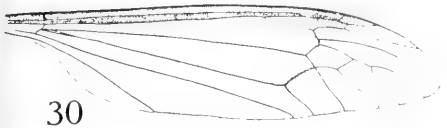
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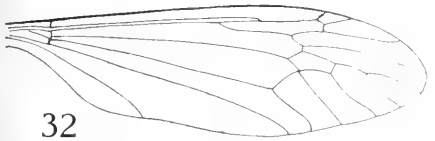
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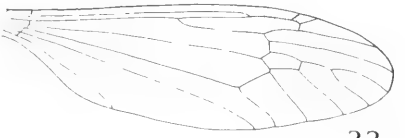
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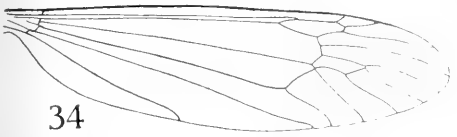
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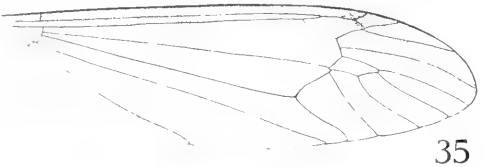
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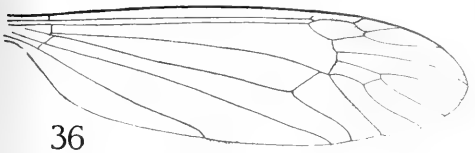
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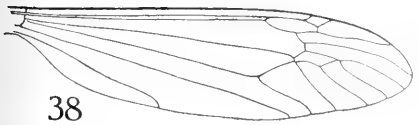
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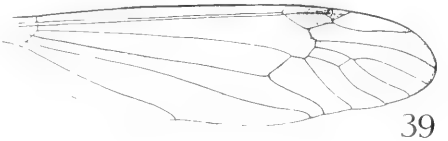
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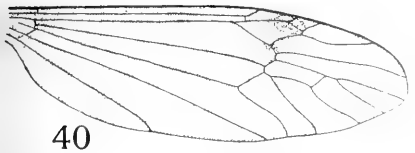
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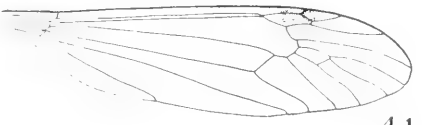
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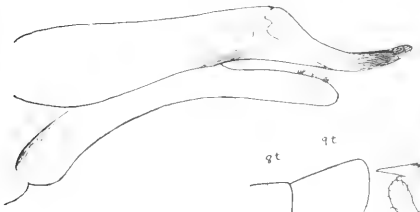

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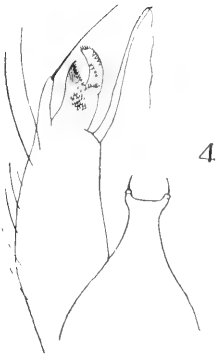

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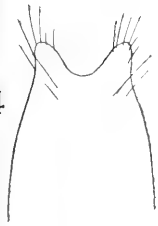

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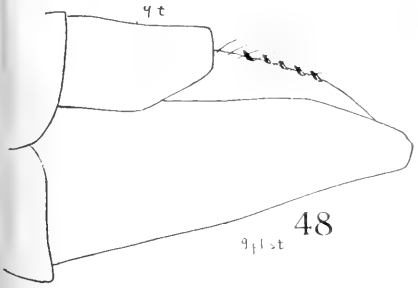

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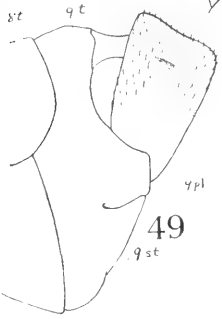

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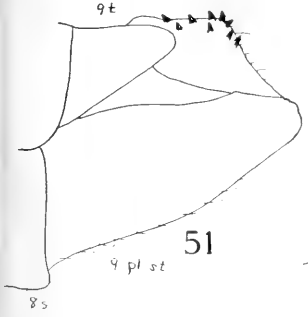

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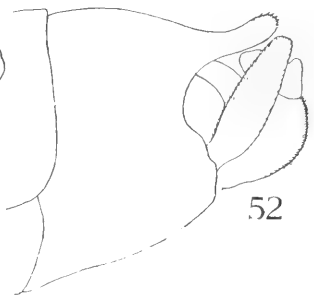

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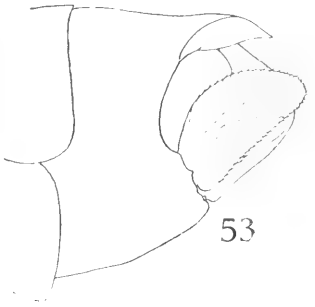

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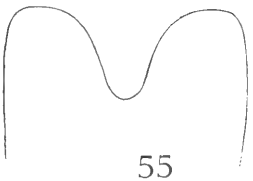

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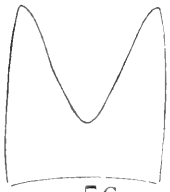

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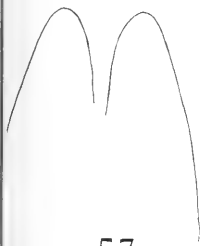

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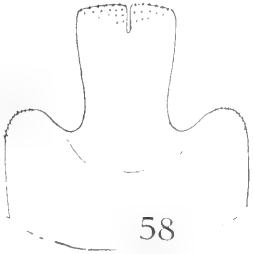

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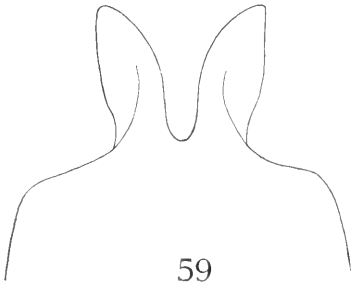

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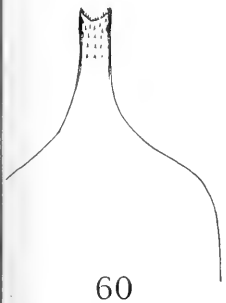

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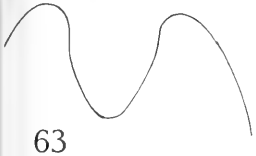

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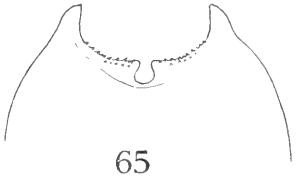

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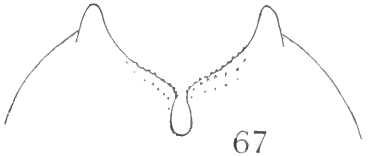

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6.—*Description of an apparently Undescribed Moth of the Family* Lymantriadae (*Lepidoptera*).—By A. J. T. Janse.

Gen. OLAPA, Wlk.

1764. List Lep. Br. Mus., vii, p. 1856.

Olapa nigribasis, n. sp.

♂. Head, shaft of antennae, abdomen above and on underside, and legs maize-yellow (iv); hairs on tegulae and patagia maize-yellow mixed with orange-buff hairs (iii); hairs on frons, femora and tibiae of forelegs, and on tibiae of midlegs orange-buff; hairs of palpi and those round the eyes black; fore-femora outerside of tibiae, and nearly the whole of the tarsi black; mid-femora with a few black hairs on tibiae, spurs and tarsi black on the outerside; hind-tibiae with a few black hairs at end, spurs streaked with black, tarsi black on the outer-, orange-buff on the inner-side; branches of antennae ochraceous-buff (xv), each ending in two bristles.

Upperside of forewing whitish, costal and inner marginal area broadly tinted with sulphur-yellow (v); base of costa narrowly edged with black for about one-fourth; black scales just beyond discocellula between veins 4 and 5, 6 and 7; cilia ivory-yellow (xxx); hindwing and its cilia quite white.

Underside of both wings white, with the costal area thinly covered with sulphur-yellow hairs.

Habitat.—One specimen from Salisbury (Dr. G. M. Mellé). In the collection of the South African Museum.

Exp.—46 mm.

This species is very closely allied to *O. flabellaris*, from which it can easily be distinguished by the black scales on the forewing and also its black costa.

7.—*Two Species of Bittacidae (Neuroptera) from South Africa.*—By P. Esben-Petersen. With 4 Text-figs.

Amongst a few specimens of Bittacidae belonging to the South African Museum and forwarded to me for determination by the Director, Dr. Péringuey, I found a new and undescribed species, together with a single specimen of a species hitherto only known from the type-specimen in the British Museum. I give here a description of both species.

Bittacus selysi, n. sp.

Head yellowish-brown. Rostrum yellowish-brown with a black longitudinal streak at each side and below the eye; at the base of rostrum a narrow and slightly indicated dark median streak. Labial and maxillary palpi yellowish-brown, the apical joint of the former with a broad dark band. Above the antennae a black spot, enclosing the dark and shining ocelli. Antennae yellowish-brown and slender. Thorax yellowish-brown. Abdomen yellowish-brown with a short, fine and yellowish pubescence, and with a few blackish bristles along the margins at base; the two apical joints dark brown with paler hind margins. In the male the upper anal appendages rather long and sharply pointed; the apex itself provided with two or three strong spines; the lower margin (seen from side) with a triangular projection. Legs yellowish-brown. Femur, tibia and tarsal joints with a blackish band at the tip. Third and fourth tarsal joints of the hind feet together with the claw of the same almost black. Wings broadened towards the apex, which is rounded. Membrane shining and with a rather deep yellowish-brown tinge. The nervature brown and the apical cross-veins faintly brownish shaded; the apical border rather strongly brownish shaded. The pterostigma pentagonal, $1\frac{1}{2}$ times as long as broad, brownish coloured. In the wings is found a cross-vein between *Sc* and *R*; in the forewing nearer to the fork of *Rs* than to the origin of the sector itself; in the hindwing nearer to the origin of the sector. A cross-vein is found between Cu^1 and Cu^2 almost below the forks of *Rs* and *M*. No cross-vein between Cu^2 and 1*A*. *Rs* forks a little before *M*, the difference greatest in the hindwing. At the

origin and at the fork of *Rs* a faint brownish spot. At the fork of *M* a hyaline, whitish spot. Blackish bristles on the margins of the wings at their base.

Length of forewing 19–21 mm.; that of hindwing 17–19 mm.

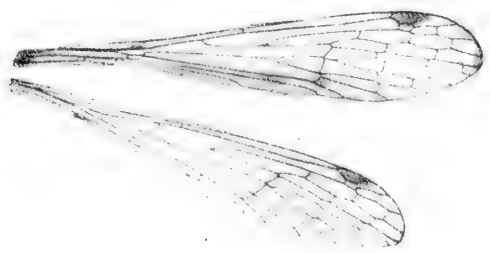


Fig. 1.—*Bittacus selysi*, ♂. Fore- and hindwing.

I have seen only two specimens (males) of this very rare species. In the *Selysian* Collection, Bruxelles, is found one specimen (type-specimen), labelled *Port Natal* in the handwriting of *H. A. Hagen*.

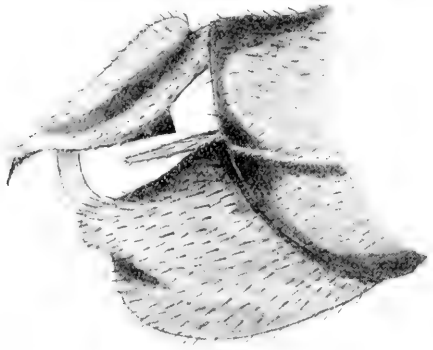


Fig. 2.—*Bittacus selysi*, ♂. Anal appendages (seen from side).

The other specimen belongs to the South African Museum and was collected at *Durban*, July, 1913 (*W. Haygarth*, leg.). The latter specimen is the smaller.

It is a very distinct species, easily recognisable by the colour, the shape and the nervature of the wings, but especially by the peculiar shape of the anal appendages of the male.

BITTACUS WALKERI, Esben-Petersen.

1915. *Bittacus walkeri*, Esben-Petersen, Ent. Meddelelser, Kóbenhavn, Bd. 10, p. 236.

Head, rostrum and palpi yellowish-brown; rostrum with blackish lateral margins. Above the insertion of the antennae is found

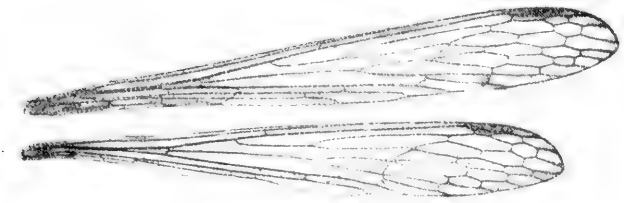


Fig. 3.—*Bittacus walkeri*, ♂. Fore- and hindwing. British Museum.

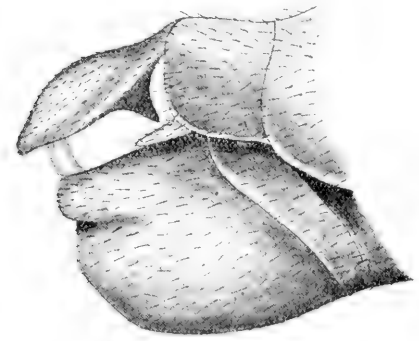


FIG. 4.—*Bittacus walkeri*, ♂. Anal appendages (seen from side). South African Museum.

blackish spot enclosing the ocelli. Antennae dark brown, yellowish-brown at their base. Thorax brown and provided with a few black bristles; mesothorax with four black spots in its front half; metathorax with two black spots on its front margin.

Abdomen dark brown at base, becoming pale brown towards the apex. The hind margin of sixth and seventh segments dark brown.

Anal appendages of the male yellowish-brown; lower margin of appendages (seen from side) with a triangular projection near base. Femora and tibiae pale brown; tips of femora with a black band, and tips of middle and hind tibiae with a narrow black band. Joints of fore and middle tarsi brown, becoming blackish-brown towards the tip; joints of hind tarsi blackish-brown. First joint of hind tarsus as long as second and third united, which are equal; fourth joint two-thirds of first; fifth joint almost as long as fourth. Hind femora rather incrassate in the middle. Wings very long and slender with elliptical apex. Membrane hyaline with hardly any yellowish tinge; nervures dark brown, narrowly margined with brown, especially in the apical part.

Pterostigma subrectangular, five or six times longer than broad, strongly brownish coloured (purple-brown in the specimen in British Museum). Between *Sc* and *R* a cross-vein, in the forewing placed about in the middle between the origin of *Rs* and the fork of *Rs*, in the hindwing nearer to the origin of *Rs*. Fork of *Rs* a little nearer to the base of the wing than the fork of *M*. The cross-vein between Cu^1 and Cu^2 much before fork of *M*, but further out than the cross-vein between Cu^2 and 1*A*. Bristles on the margins of the wings near their base.

Length of forewing 22–24 mm,; that of hindwing 20–22 mm.

British Museum: One ♂ (type specimen) labelled: [388] [Dr. *Smith* S. Afr. 44–6] [one of *Walker's* series of so named *B. capensis*].

South African Museum: One ♂ labelled: Krantzkloof, Natal, *Marley*, 10 : 5 : 15.

The specimen in the British Museum was somewhat larger than that in the South African Museum.

I have only seen these two specimens of the species, and it seems to be a very rare one.

The species much resembles the species of the Australian genus *Harpobittacus*, but it is easily separated by the longer first tarsal joint of the hind tarsus and the especially long and narrow wings.

INDEX.

8.—*On some South African Ichneumonidae in the Collection of the South African Museum.* By Claude Morley, F.E.S., F.Z.S., Memb. Soc. Entom. de France, etc. Part II.

I have much pleasure in presenting a further account of the parasitic Hymenoptera of Africa, comprising a consignment sent for determination by Dr. L. Péringuey of the Cape Town Museum and including a few additional species from other sources. It is issued in continuation of the former paper by me upon the same subject, which appeared in these Annals late in 1916. All the types of the species herein described as new are, unless otherwise stated, in the South African Museum at Cape Town.

The number of new descriptions is by no means surprising, when the size of the area be considered, along with the paucity of collectors. The outstanding feature of the present contribution to our knowledge of these very beneficial insects is the discovery of a new and most extraordinary Tribe allied to the Banchides.

Also, be it noted, the more we investigate these parasites in all parts of the globe the wider is discovered to be the range of individual species. For at least one kind, recorded herein, no part of the equator seems too hot, though it is also of frequent occurrence so far north as Sweden; another occurs with equal frequency in both Queensland and Assam; and now we find Bengalese insects of this group occurring in Natal. All these are doubtless imported in or along with their Lepidopterous and other hosts' food-plants, shipped in the ordinary course of commerce.

CLASSIFIED CATALOGUE.

ICHNEUMONIDAE.

ICHNEUMONINAE.

Joppides.

Leptophatnus, Cam.
ruficeps, Cam.
bucephalus, sp. n.
Ischnojoppa, Kriech.
uteator, Fab.
visibilis, sp. n.
Xanthojoppa, Cam.
lutea, Cam.
inermis, sp. n.
Epijoppa, Morl.
variabilis, Morl.
nigricoxata, Morl.
Aglaojoppa, Cam.
rubrithorax, sp. n.
Coelichneumon, Thoms.
petiolaris, sp. n.

Listrodromides.

NEOTYPUS, Först.
conflatus, Morl.

Ichneumonides.
Oxypygini.

EUPALAMUS, Wesm.
cariniscrobes, sp. n.

Amblypygini.

CHARITOJOPPA, Cam.
thoracica, sp. n.

Platyurini.

PLATYLABUS, Wesm.
croceocephalus, Tosq.
nigripalpis, Cam.
bicinctorius, Roman.
Phorcys, sp. n.
hemerythraeus, sp. n.
albidornatus, Cam.
Ceta, sp. n.
Lucifer, sp. n.
rufidornatus, Cam.
maculiscutis, Cam.
erythrocephalus, Cam.
pulchellus, Morl.
rufescens, Morl.
vallatus, Morl.
testaceus, sp. n.
miniatulus, Morl.
spilonotus, Cam.

CRYPTINAE.

Phygadeuonides.
Hemitelini.

HEMITELES, Grav.
pulchellus, Grav.

Cryptides.
Mesostenini.

GORYPHUS, Hlmgr.
corniger, sp. n.
trisulcatus, Morl.
lobatus, sp. n.
cinctitibia, sp. n.
evanescens, Morl.
bisulcatus, Morl.
testaceus, Morl.
Celoeno, sp. n.
Aello, sp. n.

MESOSTENUS, Grav.
Rhodesiae, Cam.
denticlypeus, sp. n.
octans, sp. n.

CRYPTAULAX, Cam.
ruficeps, Cam.

EARRANA, Cam.
rectinervis, sp. n.

Cryptini.

AGLAOCRYPTUS, Cam.
glabratus, sp. n.

CRYPTUS, Fab.
Leighi, Cam.

PIMPLINAE.

Xoridides.

MOANSA, Tosq.
maculiceps, Cam.

GABUNIA, Kriech.
ruficoxis, Kriech.
Togensis, Krieg.

Echthromorphides.

ECHTHROMORPHA, Hlgr.
variegata, Brullé.

Pimplides.

EXERISTES, Först.
nigricornis, Cam.

THERONIA, Hlmgr.
melanocera, Hlmgr.

XANTHOPIMPLA, Sauss.
renovata, nom. nov.
Natalensis, Cam.

PIMPLA, Fab.
crocata, Tosq.
pubens, sp. n.

EPIURUS, Thoms.
semidilutus, sp. n.

HEMIPIMPLA, Sauss.
divisa, Tosq.
terebrata, sp. n.

Lissonotides.

SYZEUCTUS, Först.
spilocephalus, Cam.
fuscicornis, Cam.
interstitialis, Cam.

ASPHRAGIS, Först.
flavidorbitalis, Cam.
rubricosa, sp. n.

Banchides.

Tegona, Morley.
discreta, sp. n.

Skiapodes, trib. nov.

Skiapus, gen. nov.
coalescens, sp. n.

TRYPHONINAE.

Bassides.

Bassus, Fall.
laetatorius, Fab.

OPHIONINAE.

Ophionides.

Allocamptus, Thoms.
senescens, Tosq.
crassellus, sp. n.
nugalis, Schulz.
Henicospilus, Steph.
vecors, Tosq.
rufus, Kriech.
longescutellatus, Kr.
leionotus, Tosq.
Nototrachys, Marshall.
flavomaculatus, Cam.

Paniscides.

Paniscus, Grav.
Æthiopicus, Szépl.
ocellaris, Szépl.

Pristomerides.

Pristomeridia, Ashm.
albescens, sp. n.
Pristomerus, Curtis.
luteolus, Tosq.

Cremastides.

Cremastus, Grav.
annulicornis, Tosq.
noxiosus, Morl.
Cypete, sp. n.

Campoplegides.

Xanthocampoplex, Morl.
flavescens, sp. n.
Omorga, Thoms.
longiceps, Cam.

Family ICHNEUMONIDAE.

Subfamily ICHNEUMONINAE.

Tribe JOPPIDES.

LEPTOPHATNUS, Cam.

Ann. S. Afr. Mus. v, 1906, p. 165.

This genus certainly belongs to the Joppides, though not so placed by its author. In my Table of Genera of the Joppides (Revis. Ichn. iv, 1915, p. 9), it should be inserted next before the neotropical *Camarota*,* Kriech., from which it differs in its regular areolet and buccate, though not cubical, head. The discovery of its male renders a slight modification of the generic characters essential.

Leptophatnus ruficeps, Cam.

Ann. S. Afr. Mus. v, 1906, p. 166, ♀.

♂. The male differs slightly from Cameron's female description in the following respects: The antennae are setaceous and serrate with

* *Camarota*, Kriechbaumer, Entom. Nachr. xxiv, 1898, p. 4, *et* Berl. Entom. Zeit. xliii, 1898, p. 23, *nec* Meigen in Diptera, 1830 (*cf.* Ent. Mo. Mag. 1911, p. 148, etc.), for which I here propose the new name *Camarotella*.

the 21–26 flagellar joints white; the metanotal areola is glabrous and elevated throughout (as in the Indian genus *Cratojoppa*); the scutellum is laterally carinate to near its apex; the postpetiole is but obsoletely aciculate, with apex distinctly punctate; the seventh abdominal segment alone is white and the venter plicate throughout; front tibiae internally white-lined—*tarsi postici desunt.*

Taken at Mfongosi in Zululand by W. E. Jones during May, 1916.

LEPTOPHATNUS BUCEPHALUS, sp. nov.

♂ only. A large and somewhat dull black species with the wings nigrescent throughout, the head red and both flagellar band and four apical hind tarsal joints, as well as inner side of front tibiae, white. Length 16 mm.—So like the above ♂ as to need no detailed description. Therefrom it differs in no more than a few, though pertinent, characters: Head clear red; cheeks slightly, and the temples very strongly, more buccate; pronotum also red; mesopleurae punctate to immediately below speculum; postpetiole shagreened throughout and not apically punctate; abdomen narrower, with the apical segments immaculate; hind tarsi pure white, with only metatarsus and ungues black; wings somewhat narrower, with radius less curved both above areolet and at its apex. I should have hesitated to regard these details as sufficient to warrant specific rank were it not that the metanotal areola, though equally elongate and narrow, is rugulose throughout and not at all elevated.

The type occurred to R. M. Lightfoot at East London during 1915.

ISCHNOJOPPA, Kriech.

Ent. Nachr. xxiv, 1898, p. 32.

ISCHNOJOPPA VISIBILIS, sp. nov.

♂ ♀. An elongate, testaceous and somewhat dull species with only the white-banded flagellum, mandibular apices, ocellar region, posterior tarsi and disc of hind tibiae black. Head posteriorly and cheeks very strongly buccate; face glabrous, nitidulous and impunctate; frontal orbits not elevated, frons centrally bicarinate. Antennae slender, as long as body; of ♂ serrate, of ♀ compresso-dilated, beyond their centre. Thorax discally dull; mesonotum basally depressed, apically and laterally elevated, with strong and subcarinate notauli; mesopleurae glabrous and nitidulous; metathorax laterally finely, and discally rugosely punctate, black-pilose between the distinct basal and obsolete apical transcarinae. Scutellum ephippiform, discally deplanate and punctate, with its sides and apex strongly and conspicuously carinate

or, rather, vallate; postscutellum small, transverse and, at least in ♀, basally margined. Abdomen elongate-fusiform and much longer than head and thorax; basal segment indistinctly punctate, slender and fully thrice as long as apically broad, with the ♂ spiracles prominent; second segment basally constricted to the small gastrocoeli at its basal third; terebra nigrescent only at extreme apex. Legs very slender and strongly elongate. Wings fulvescent-hyaline with stigma and the subcosta testaceous, nervures infuscate; areolet somewhat large, nearly coalescent above, emitting the broadly bifenestrate recurrent nervure from distinctly before its centre; nervellus sinuate, emitting spurious nervure from its lower fourth. Length, ♂ ♀, 15 mm.

In 1915 I restricted this genus to a single species, ranging through Africa, India and Australia. A second was brought forward in 1916 (Ann. S. Afr. Mus. p. 358). I am glad to recognise another, so distinct as to render a glance sufficient to differentiate it, by its longer antennae and legs, irregular mesonotum, circumvallate scutellum and the antecentral emission of the recurrent from areolet.

Marley took the female type at Kranzklopf in Natal during May, 1915; and the androtype occurred to W. E. Jones at Mfongosi in Zululand.

XANTHOJOPPA, Cam.

Ann. Nat. Hist. vii, 1901, p. 378 = *Anisojoppa*, Cam. Ann S. Afr. Mus. v, 1906, p. 168.

The distinctions between the descriptions of these two genera consist solely in the size of the gastrocoeli and the sculpture of the metanotum, though not of its carinae; and an examination of the type of the former and a co-type of the latter genus proves them to be synonymous. The main feature of distinction, I think, was overlooked by their author: I find the anterior claws of the former to be simple and those of the type species of the latter stoutly pectinate; but this character is inconstant, and doubtless (as in *Neotypus*) at most sexual.

Xanthojoppa lutea, Cam.

Anisojoppa lutea, Cam. Ann. S. Afr. Mus. v. 1906, p. 168, ♂ ♀.

Cameron dismisses the ♂ of this species in a dozen words; but it differs from his ♀ description in having the head and thorax 7 mm. in length, the abdomen no more than 11 mm.; the metanotum rugulose throughout; the gastrocoeli very broad and deeply impressed, with the intervening space not at all striate; the flagellar joints 14–21 alone are white; the stigma fulvous; the face sparsely punctate throughout.

postpetiole shagreened and not at all punctate; the anterior onyches are stoutly pectinate. The metanotal areola is hexagonal and not longer than broad, with its apex truncate and base both semicircular and elevated.

The species has been further found at Stella Bush near Durban in Natal during February, 1915, by H. W. Bell Marley and at Mfongosi in Zululand by W. E. Jones.

Xanthojoppa inermis, sp. nov.

♂ ♀. A large testaceous species, with the pleurae and coxae paler, the face but not frontal orbits flavous, and band of the black flagellum white; legs with tarsal claws and hind tarsi alone black, ♀ with hind knees and lateral mesonotal vittae also black. Onyches not at all pectinate. Length 14–15 mm.—It is extremely like the last species but differs, besides the conclusive simple claws, in having the sides of the areolet nearly coalescent above and the ramellus obsolete, the scutellum more convex and apically as well as laterally carinate; all trace of metanotal areola wanting in ♂, which has the postpetiole much narrower and abdomen less parallel-sided; the ♀ is distinct in its nigrescent mesonotal streaks and hind knees.

Mfongosi in Zululand (W. E. Jones) and East London during 1915 (R. M. Lightfoot).

EPIJOPPA, Morley.

Revis. Ichn. iv, 1915, p. 49.

Epijoppa variabilis, Morl.

lib. cit. p. 52, ♂ ♀.

Described from Nyassaland and the Uganda Protectorate. Mr. W. E. Jones has extended its known southern range by the capture of a male at Mfongosi in Zululand during April, 1916.

Epijoppa nigricoxata, Morl.

lib. cit. p. 53, ♂ ♀.

Also described from Central Africa and one male found with the last by W. E. Jones.

AGLAOJOPPA, Cam.

Ann. Nat. Hist. vii, 1901, p. 381.

Aglaojoppa rubrithorax, sp. nov.

♂ only. A dull black species with white pubescence and the thorax, except below, rosy; white-marked. Head buccate and closely

punctate; orbits, except at cheeks and temples, and the clypeus laterally white. Antennae immaculate black, with the joints subserrate. Thorax closely punctate, only black below and at the apex; pronotum discally, callosities below radices and basal lateral scutellar dots, white; metathorax convex with areola peculiarly elongate, twice as long as broad and emitting costulae from its centre; petiolar area short and vertical. Scutellum rosy, punctate and laterally margined to near its apex; postscutellum white. Abdomen black with apices of the four basal and of the seventh segments white, those of the second and third centrally interrupted; basal segment smooth and shining with a few scattered punctures; venter plicate on second to fourth segments, with the second and third white-margined. Legs normal and black with inner side of front tibiae and apices of their femora white. Wings subhyaline, with stigma and nervures black; areolet pentagonal, not coalescent above and emitting recurrent nervure slightly beyond its centre; discoidal cell with its lower external angle obtuse and nervelet short. Length, 14 mm.—It is the only known species of this genus with red thorax.

The type was captured at Mfongosi in Zululand by W. E. Jones during May, 1916.

COELICHNEUMON, Thoms.

Opusc. Entom. xviii, 1893, p. 1901.

Coelichneumon petiolaris, sp. nov.

♀ only. A stout and dull brick-red species with a central flagellar band white and a mesonotal line, the frenum, areola and petiolar area, base of petiole and the hind tarsi, indefinitely black; apex of postpetiole clearly and deeply punctate both discally and laterally. Length, 13 mm.—Quite unlike the species from the palaearctic, Indian or New World regions (tabulated in my Revis. Ichn. iv, 1915, p. 120) in its immaculate face, tibiae and intermediate femora; in the distinctly punctate postpetiole; and immaculate rufescent abdomen. It is most closely allied to *C. rudis*, Fonsc.; therefrom it differs in its coloration, smaller size, much less buccate cheeks, deeper clypeal foveae, closely punctate mesonotum and scutellum, more evenly punctate metanotum, not at all rugose postpetiole, centrally punctate base of the second segment, lack of ramellus and the lower emission of the spurious nervure from nervellus.

The type was taken at "Gillets, Natal," during September, 1915 by H. W. A. Bell-Marley.

Tribe LISTRODROMIDES.

NEOTYPUS, Först,

Ver. pr. Rheinl. 1868, p. 194.

Neotypus conflatus, Morl.

Ann. S. Afr. xv, 1916, p. 359, ♀.

♂. A very robust, and somewhat small, dark red male with black and several white markings. Head stramineous with the frons, vertex and part of occiput, mandibular apices, a line down the buccate cheeks and another down centre of face, black; vertical marks, cheeks externally and more or less of occiput rufescent; face finely and sparsely punctate, frons glabrous and excarinate, and vertex not broad. Antennae very short and stout; scape black with its under side and apex white; flagellum immaculate brunneous, filiform, of 25 transverse joints, only the three basal being longer than broad and of these the first is shorter than the second. Thorax nitidulous, short and hardly longer than high, with sternum and frenum and basal metanotal sulcus black, callosities before and below radices and whole of the transverse postscutellum white; mesonotum deeply and sparsely punctate, with no notauli; mesopleurae glabrous, with similar puncturation and the sternauli half their length; metathorax very short and subreticulate with petiolar area deeply impressed, parallel-sided and rising nearly to base, where is a small and strongly transverse areola; costulae strong, spiracles large and linear. Scutellum not small, simply convex, shining and sparsely punctate, laterally carinate to near apex. Abdomen subelongate-ovate, shining with the transverse second and third segments dull, very dark red with apices of all segments but the third broadly flavous; petiole long and slender, postpetiole abruptly explanate, glabrous with a few central punctures; second and third segments closely punctate, with gastrocoeli of the former deeply impressed and not small; valvulae white. Legs black, stout and not short; all the coxae, inner side of anterior tibiae and apices of their femora below, white; anterior tarsi and remainder of their tibiae rufescent; hind coxae evenly punctate; tarsi not pectinate. Wings hyaline; radix and tegulae stramineous; stigma nigrescent and not narrow; basal nervure subvertical, and the lower basal distinctly a little antefurcal; discoidal cell short and broad, emitting short ramellus and another slight nervure from centre of second recurrent, which rises from centre of the somewhat large and subquadrate areolet;

radius apically straight and not elongate; nervellus subopposite and hardly angled at its lower fourth. Length, 9 mm.

This androtype is labelled "Congella," where W. A. Bell-Marley captured it in March, 1915.

Tribe ICHNEUMONIDES.

Subtribe OXYPYGINI.

EUPALAMUS, Wesm.

Nouv. Mém. Ac. Brux. 1844, p. 13; Morl. Ann. S. Afr. Mus. xv, 1916, p. 362.

Eupalamus cariniscrobes, sp. nov.

♂ ♀. A large and stout, shining and dark red species, with only the white-banded flagellum and apical half of abdomen black; frontal orbits broadly, and in ♂ face etc., white; juxta-scrobal orbits carinate. Head of ♂ with face, clypeus, external orbits and under side of the black scape, white. Thorax very finely and closely punctate with pronotum almost glabrous and metanotum to the infra-spiracular carinae rugose, its areola double as long as broad, remote from base, emitting distinct costulae from its centre; petiolar area short and discreted; ♂ with pronotum and callosity beneath radices flavous. Scutellum deplanate and glabrous with a few fine punctures, laterally carinate to near its apex which in the ♂ is, like the postscutellum, flavous. Abdomen stout with the third to fifth and sides of sixth segments black, the remainder and in ♂ apices of second and third narrowly, white; basal segment broad and very finely shagreened; second closely punctate with small gastrocoeli, third far more finely sculptured and remainder nearly smooth. Legs stout and elongate, with claws large and simple; hind coxal scopulae of ♀ large; ♂ with inner side of front tibiae, and three apical joints including claws of its otherwise black hind tarsi, white. Wings ample and distinctly fulvescent with costa and nervures black, stigma and tegulae fulvous; nervures exactly as in *E. Wesmaeli*, excepting the areolet which is slightly less produced internally, and a little curved externally, with its sides coalescent above. Length, ♂ ♀, 17 mm.—This species is a true *Eupalamus*, bearing all the characters ascribed to that genus by Thomson (Ann. Soc. Ent. France, 1886, p. 11); the colour, but especially the coxal scopulae, differentiate it from *E. convexius* (Ann. S. Afr. Mus. xv, 1916, p. 362).

Both sexes were discovered by W. E. Jones at Mfongosi in Zululand during April and May, 1916.

Subtribe AMBLYPYGINI.

CHARITOJOPPA, Cam.

Ann. Nat. Hist. vii, 1901, p. 383.

Head with neither clypeus discreted nor labrum exserted; mandibles stout, with the upper tooth slightly the longer; cheeks elongate and strongly buccate. Antennae stout and, beyond their centre, compresso-dilated. Meso- and meta-notum strongly reticulate; areola smooth, apically incomplete, with its lateral carinae extending to petiole and widely divergent. Scutellum more or less pyramidal, with at least its base laterally margined. Abdomen with second and third segments closely aciculate-punctate and ventrally plicate throughout, gastrocoeli of the former somewhat large and deeply impressed; petiole basally constricted, and apically abruptly explanate; terebra basally covered by hypopygium. Legs stout, with the penultimate hind tarsal joints spinose. Areolet triangular, laterally nearly coalescent above and straight below, above junction of recurrent nervure; radius apically subreflexed; basal nervure not continuous through the median. Colour brilliant metallic.

The above is the original description emended from the type specimen in the British Museum. I find our African representative a very typical species of this East Indian genus, which its author considered closely related to *Magrettia* (= *Xenojoppa*, Cam.), from which it differs in having the scutellum usually subpyramidal and not apically incised, the coxae mutic, and the central abdominal segments longitudinally aciculate. The scutellar structure allies the genus to the Joppides, from which it is excluded by its total lack of basal metanotal sulcus.

Charitojoppa thoracica, sp. nov.

♂ only. A stout, metallic species with white pilosity; the head black, antennae and thorax red, metathorax green, abdomen and legs steel-blue. Head very strongly buccate behind the prominent eyes; vertex broad and subglabrous; face and clypeus evenly punctate, the former broadly stramineous on either side, the latter a little reflexed along its rounded apex; mandibles subglabrous and stout, with a basal stramineous mark. Antennae of forty-one joints, setaceous, serrate throughout, stout and hardly extending to the metathoracic apex, brick-red and apically darker, with the two basal flagellar joints (which alone are longer than broad) and scape, black. Thorax metallic

green with the dull and reticulate mesonotum, the mesopleurae, base of pronotum on either side and its extreme apical margin, sanguineous-red; notauli and sternauli wanting, mesopleurae transversely impressed centrally; metanotum nitidulous and rugulose, its areola large and hexagonal, extending to base and emitting costulae from its centre. Scutellum, postscutellum and frenum red; the first elevated, but hardly pyramidal, very coarsely rugose and laterally carinate to its flavidous apex; postscutellar region metallic blue, with its apical margin stramineous. Abdomen cyaneous with apices of all the segments, but fourth, stramineous; basal segment glabrous and obsoletely aciculate apically; second and third very closely punctate and dull. Legs somewhat short and not slender, with anterior tarsi and their tibiae laterally white. Wings normal; tegulae fulvous, radix and stigma nigrescent; recurrent emitted slightly beyond centre of areolet. Length, 11 mm.

The type was found by W. E. Jones at Mfongosi in Zululand during May, 1916.

Subtribe PLATYURINI.*

PLATYLABUS, Wesm.

Nouv. Mém. Ac. Brux. 1844, p. 150; Morl. Ann. S. Afr. Mus. xv, 1916, p. 368.

Some of the southern African species of this genus are so closely allied that a superficial tabular guide appears desirable.

(2). 1. Flagellum dilated before apex; notauli deep. *crocecephalus*, Tosq.
(1). 2. Flagellum not dilated; notauli obsolete or wanting.
(20). 3. Head, at least discally, black.
(7). 4. Palpi infuscate or black, never pale.
(6). 5. Gastrocoeli of second segment deeply impressed. *nigripalpis*, Cam
(5). 6. Gastrocoeli of second segment small, triangular. *bicinctorius*, Roman.
(4). 7. Palpi always pale; gastrocoeli superficial.
(17). 8. Disc of thorax entirely red; stigma black.
(10). 9. Second segment red; hind coxae discally white. *Phorcys*, sp. nov.
(9). 10. Second segment not red-marked; hind coxae black.
(16). 11. Metanotal areola subcircular; nesonotum dull; punctate.
(13). 12. Apophyses acute; central segments white-banded. *hemerythraeus*, sp. n.
(12). 13. Apophyses wanting; central segments not white-marked.
(15). 14. Flagellum immaculate; hind calcaria white. *albidornatus*, Cam.

* Cameron places his new genus *Phaisura* (Ann. S. Afr. Mus. v, 1906, p. 170) in the Joppides. An examination of two co-typical males, the only sex known, in the British Museum, has convinced me that the genus belongs to the Platyurini.

(14). 15. Flagellum white-banded; hind calcaria black. . *Ceta*, sp nov.
(11). 16. Metanotal areola elongate; mesonotum subglabrous.
Lucifer, sp. nov.
(8). 17. Disc of thorax mainly black; stigma testaceous.
(19). 18. Postpetiole aciculate; nervelet distinct. . . *rufidornatus*, Cam.
(18). 19. Postpetiole punctate; nervelet wanting. . *maculiscutis*, Cam.
(3). 20. Head nearly entirely testaceous or red.
(30). 21. Metathorax punctate, with distinct areae.
(25). 22. Abdomen centrally distinctly black.
(24). 23. Postpetiole punctate-aciculate; hind legs red.
erythrocephalus, Cam.
(23). 24. Postpetiole glabrous; hind tibiae and tarsi black. *pulchellus*, Morl.
(22). 25. Abdomen not black-marked.
(29). 26. Thorax black-marked.
(28). 27. Dark red, black-marked; cheeks long and narrow. *rufescens*, Morl.
(27). 28. Testaceous; flavous-marked; cheeks short, buccate. *vallatus*, Morl.
(26). 29. Thorax pale, not black-marked. . . . *testaceus*, sp. nov.
(21). 30. Metathorax scabrous, with no definite areae. . *miniatulus*, Morl.
? . . . . . *spilonotus*, Cam.

Platylabus Phorcys, sp. nov.

♂ only. A black species with white markings, and the thorax except beneath, with two basal segments, brick-red. Extremely like the next species (*P. hemerythraeus*), but smaller and much more slender with the second segment basally fulvidous and apically white, not black-marked. The scutellum is equally convex and laterally carinate, but the areola is half as long again as centrally broad, the face white with its base and an irregular central band black, the clypeus white with its apex narrowly black; the third segment is laterally fulvescent-white; the anterior coxae entirely, and a large discal mark on the hind ones, white. Length, 9 mm.

Mfongosi in Zululand during May, 1916 (W. E. Jones).

Platylabus hemerythraeus, sp. nov.

♂ ♀. A black species with white markings, the thorax except beneath and in ♀ basal segment dull brick-red. Head very narrow behind the prominent eyes; black with vertical orbits narrowly, the palpi and labrum white, ♂ with the facial and two clypeal dots also white; face and the apically truncate clypeus closely punctate and not discreted. Antennae filiform and apically attenuate, centrally white-banded, basally rufescent beneath and in ♂ apically subserrate. Thorax not short; sternum alone black; notauli wanting, sternauli distinct; metathorax evenly punctate with complete areae and short apophyses; areola longer than broad, parallel-sided to its basal third, whence the costulae are emitted; basal area entire, spiracles sublinear.

Scutellum brick-red, convex and laterally margined to near apex. Abdomen black with the second segment laterally indefinitely, and whole of the first, in ♀ red; anus, apices of second and fifth segments, with apical angles or in ♀ the apex of the evenly punctate basal segment, white; terebra a little exserted, ♂ valvulae white. Legs elongate and not slender, rufo-infuscate with all coxae, trochanters and hind tarsi black; ♂ with trochanters, intermediate coxae beneath and centre of posterior tarsi, white. Wings normal and hyaline, with nervures and stigma black; second recurrent nervure broadly fenestrate and emitted from centre of the sessile areolet; basal nervure continuous through the median. Length, ♂ ♀, 12 mm.—Evidently allied in its continuous basal nervure, etc., to *P. erythrocephalus*, Cam., though differing in colour, in the evenly punctate postpetiole and in many other points.

Both sexes were taken at Mfongosi in Zululand by W. E. Jones during February, 1914 and May, 1916.

Platylabus Ceta, sp. nov.

♂ ♀. A black species with sparse white markings, the thorax entirely rosy. Both sexes of this insect differ from the above description of *P. hemerythraeus* only in the following particulars: Head, scutellum, metathorax and basal segment more sparsely punctate and slightly nitidulous. Head with vertical orbits broadly white, mandibles red and in ♂ the whole face and clypeus, mandibular base and all the orbits but at the temples, white. Antennae less attenuate apically, not basally red; scape of ♂ white beneath. Metathorax without apophyses, areola subcircular and apically emarginate. Scutellum glabrous and nitidulous, deplanate and laterally margined only to its apical third. Second to fifth segments immaculate black, or in ♂ sometimes badious, the first not white-marked; postpetiole shagreened and in ♂ red. Hind legs dead black, with only their trochanters white. Length, ♂ ♀, 9 mm.—The male of this species differs from *P. Lucifer* in its somewhat duller mesonotum, subcircular areola, immaculate hind tarsi and basal segment, and in its smaller size.

The female type, with three males, was captured at Mfongosi in Zululand by W. E. Jones during April and May, 1916.

Platylabus Lucifer, sp. nov.

♂ only. A black species with white markings, and the thorax except beneath rosy. Too closely allied to *P. hemerythraeus* to need a detailed description. Therefrom it differs in the much more nitidulous and sparsely punctate body, the totally white face and clypeus, white

mandibular base, external orbits, underside of scape and callosity below radices; in the glittering and convex speculum, deplanate scutellum, much longer areola emitting costulae from its centre, wanting basal area; immaculate fifth segment, white front coxae and underside of their tibiae. The postpetiole is obsoletely shagreened, with a few scattered punctures. Length 14 mm.

The type was found by W. E. Jones during May, 1916, at Mfongosi in Zululand.

PLATYLABUS VALLATUS, Morl.

Ann. S. Afr. Mus. xv, 1916, p. 370, ♂.

This ♂ sometimes has the mesonotum laterally, and centre of scutellum longitudinally, black; the carinae of the latter are sometimes pale, and the stigma occasionally testaceous. Mr. Jones found a male with these modifications in Zululand at Mfongosi during May, 1916.

PLATYLABUS TESTACEUS, sp. nov.

♂ ♀. A nearly unicolorous testaceous and dull species; only the head, scutellum, anus and pleurae are indeterminately flavescent; the mandibular apices, ocellar region narrowly, apical half of flagellum, claws or in ♂ hind tarsi, the terebra, and sometimes part of the sixth and seventh segments, black. Head posteriorly short; cheeks very long and buccate; face evenly punctate and not apically discreted; frons nitidulous and subglabrous. Antennae white-banded, with apical half a little compresso-dilated, in ♂ subserrate. Notauli indicated; metathorax finely coriaceous with areola hexagonal, as long as broad, entire, with central costulae; basal area distinct, apophyses wanting, spiracles elongate. Scutellum glabrous and glittering, subconvex and laterally margined to near its apex. Abdomen dull and coriaceous, apically more or less infuscate before the white anus; postpetiole shagreened; thyridii somewhat broad, with the intervening space strigose; terebra slightly exserted. Legs not slender, paler basally; tarsal claws large. Wings ample and subflavescent with radix and stigma testaceous, nervures darker; areolet small and triangular, nervelet usually obsolete or wanting. Length ♂ ♀, 7–11 mm.—Slightly variable in the depth of the testaceous coloration, in extent of black before the anus; sometimes the ♂ hind tibiae are apically subinfuscate, and in one example their base is also distinctly nigrescent.

Nearly a dozen examples occurred to Mr. W. E. Jones at Mfongosi in Zululand during April and May, 1916.

Subfamily CRYPTINAE.

Tribe PHYGADEUONIDES.

Subtribe HEMITELINI.

HEMITELES, Gravenhorst.

Hemiteles pulchellus, Grav.

Ichn. Europ. ii, 1829, p. 854, ♀.

A palaearctic species, known from Germany, France and the Channel Islands; doubtless imported here. One female was bred by Lightfoot at "Cape Town, January, 1909, from larvae of the Geometrid moth *Osteodes turbulentata*, Guén.; feeds on *Acacia horrida*."

Tribe CRYPTIDES.

Subtribe MESOSTENINI.

GORYPHUS, Holmgr.

Eug. Res. Ins. 1868, p. 398; Morley, Ann. Nat. Hist. xiv, 1914, p. 410.

The species of this genus are extremely puzzling and so closely allied that general descriptions are vain repetitions. Careful distinctions are essential, and for that purpose I here present a table of such as I have seen from South Africa. I am convinced that the white abdominal markings are inconstant.

(14). 1. Normally stout, black-and-red species.
(13). 2. Second recurrent emitted from near centre of areolet.
(12). 3. Postpetiole subglabrous or scabrous, not bicarinate.
(5). 4. Clypeus pyramidally produced centrally. . *corniger*, sp. nov.
(4). 5. Clypeus not produced.
(11). 6. Metanotum unicarinate, basally rugulose.
(8). 7. Mesonotum discally sulcate; terebra a third the length of abdomen. *trisulcatus*, Morl.
(7). 8. Mesonotum not so; terebra = $\frac{2}{3}$ of abdominal length.
(10). 9. Areolet normal, angled below; hind tibiae black. *lobatus*, sp. nov.
(9). 10. Areolet small, straight below; hind tibiae basally white. *cinctitibia*, sp. nov.
(6). 11. Metanotum bicarinate, basally glabrous. . *evanescens*, Morl.
(3). 12. Postpetiole striolate, longitudinally bicarinate. *bisulcatus*, Morl.
(1). 14. Strongly elongate, slender, testaceous species.

(16). 15. Metathorax evenly scabrous; internal orbits normal.
testaceus, Morl.

(15). 16. Metathorax trans-striate throughout; internal orbits elevated.

(18). 17. Face and frons reticulate; clypeus normally convex.
Celoeno, sp. nov.

(17). 18. Face and frons finely punctate; clypeus very convex. *Ællo*, sp. nov.

GORYPHUS CORNIGER, sp. nov.

♀ only. A not very stout, black species with white markings; the thorax and head red, and terebra as long as basal segment; frons not centrally carinate. Head, four basal antennal joints, thorax except sternum, frenum and basal area, sides of first segment and disc of hind coxae, red; flagellar band, apex of second segment and anus from apex of fifth, calcaria, anterior coxae beneath and inner side of front legs, white. Very closely allied to *G. bisulcatus*, but differing therefrom in its centrally scabrous postpetiole, the colour of the coxae and hind femora, and in the usually apically white-margined second segment. Before its apex the clypeus is produced into a vertical and subacuminate pyramidal tooth. Length, 8–9 mm.

Taken with the next species during May in Zululand.

GORYPHUS LOBATUS, sp. nov.

♀ only. A somewhat stout, black species with white markings; the thorax entirely red, and terebra nearly as long as abdomen; frons centrally carinate. From my description of the female *G. trisulcatus* (Ann. S. Afr. Mus. 1916, p. 372) it differs only in the following particulars: Head obliquely constricted behind the eyes; antennae no stouter beyond their white band; mesonotum not discally sulcate between the notauli; abdomen with apex of second but not of first segment white, the fifth and sixth immaculate black, and terebra as long as abdomen excepting basal segment; calcaria not white; wings hyaline. Length, 9 mm.—The structure of the penultimate hind tarsal joint, which is centrally cleft nearly to its base and strongly pectinate, is unique in my experience and somewhat resembles that of *Spilocryptus* females.

Mfongosi in Zululand, taken by W. E. Jones during May, 1916.

GORYPHUS CINCTITIBIA, sp. nov.

♀ only. A somewhat stout, black species with sparse white markings; the thorax and head entirely red, and terebra nearly as long as abdomen; frons centrally carinate. Nothing but the conformation of the areolet convinces me of specific distinction from *G. lobatus*. The

lower nervure is distinctly angled at the central emission of the recurrent nervure in that species, while here the lower nervure is straight throughout and the recurrent emitted at its apical third. In coloration this insect differs in having its head red, second segment immaculate, and (agreeing with *G. basalis*) in the conspicuous subbasal white band of its hind tibiae. Length, 9 mm.

The type is from Durban in April, 1915 (H. W. Marley); a co-type from Mfongosi in Zululand in April, 1916 (W. E. Jones).

Goryphus testaceus, Morl.

Ann. S. Afr. Mus. xv, 1916, p. 375, ♂.

♂ ♀. Both sexes have the basal segment elongate—about five times longer than apically broad—and sublinear, the basal metanotal transcarina obsolete and strongly sinuate, more usually the stigma is testaceous, and their length varies from 6½–9 mm.—The undescribed female differs from my male description (*loc. cit.*) in having the hind tarsi, calcaria and tibiae fulvous, with the claws and onychii alone black; antennae nearly as long as body, slender and black with the basal flagellar joints and scape fulvous, in both sexes; abdomen elongate-fusiform with the deflexed terebra infuscate and as long as basal segment, which is fully a third of the abdomen in length.—The gynetype is from Kloof, Durban in Natal, during February, 1915 (H. W. Bell Marley); and further males are from Mfongosi in Zululand during April and May, 1916 (W. E. Jones).

Goryphus Celoeno, sp. nov.

♂ only. A dull and slender, dark testaceous species with the flagellum except its subapical white band, ocellar region, posterior tarsi and a basal dot on inner side of hind tibiae, black; the three mesonotal lobes and anus indefinitely infuscate, and pleurae ochraceous. Instantly known from all other species of this genus by its stoutly and irregularly reticulate-striate frons and face, which latter is quadrate; the clypeus is but slightly convex and apically rounded; the inner orbits carinately elevated; metanotum with no apical transcarina, basal area indistinct; metapleurae deeply impressed longitudinally above, not carinate; basal segment linear and glabrous. Length, 11 mm.—Were it not for the typically *Goryphus*-structure of the areolet I should place this male in the Cryptini genus *Friona*, Cam., with which the sculpture of its metathorax so well agrees this is stoutly and evenly trans-striate throughout both notum and pleurae from the basal carina.

Taken during 1913 at Durban in Natal by W. Haygarth.

Goryphus Aello, sp. nov.

♀ only. A dull and slender, pale testaceous species with the flagellum except its subapical white band, and ocellar region, alone black; hind tarsi and terebral valvulae infuscate; head except frons, pleurae and frenum stramineous; terebra half length of abdomen. Recognised by its very strongly convex clypeus, evenly punctate face, elevated orbits which extend to either side of ocelli, the longitudinally sulcate central mesonotal lobe. In all other respects, especially the metathoracic structure, it agrees exactly with *G. Celoeno*, of which I cannot consider it the opposite sex. Length, 8 mm.—These two species have nothing in common with *Plesiocryptus carinifrons*, Cam. (Zeits. Hym.-Dip. iii, 1903, p. 300, ♀ = *Bathycrisis striaticollis*, Cam. Spolia Zeylanica, iii, 1905, p. 97, ♂) for, though equally elevated, the orbital structure is entirely different.

W. E. Jones found the type during May, 1916, at Mfongosi in Zululand.

MESOSTENUS, Gravenh.

Mesostenus Rhodesiae, Cam.

Ann. S. Afr. Mus. v, 1906, p. 145, ♀.

♂ ♀. Areolet small and quadrate, very slightly broader than high, apically subpellucid, emitting recurrent nervure from its centre; lower basal nervure always a little antefurcal; nervellus strongly postfurcal and geniculate a little above its centre, at junction of the strong spurious nervure. Notauli remarkably deeply impressed. The undescribed ♂ differs only sexually. Several examples of both sexes were found by W. E. Jones during May, 1916, at Mfongosi in Zululand.

Mesostenus denticlypeus, sp. nov.

♂ ♀. A slender, rich testaceous, shining species with the head, antennae, onychii, terebra and in ♂ central mesonotal lobe, deep black; face, mouth, cheeks, all the orbits broadly and the flagellar band, white. Head large and buccate, posteriorly as broad as the eyes; occiput and frons glabrous and mutic; face and clypeus sparsely punctate, the latter elongately dentate centrally and emarginate on either side. Thorax shining and subglabrous with notauli deeply impressed and petiolar area closely punctate; both metanotal transcarinae strong, the apical curved; apophyses wanting, spiracles elongate and not small. Scutellum deplanate, smooth and not laterally margined. Abdomen narrow, dull and closely punctate; basal segment linear with slightly prominent spiracles a little beyond its

centre; ♂ valvulae exserted, terebra straight and as long as abdomen except first segment. Legs normal and not stout; claws small, calcaria short. Wings fulvescent hyaline, of ♂ subinfumate; nervelet wanting; basal nervure continuous; areolet of normal size, subquadrate, emitting the straight recurrent nervure from slightly before its centre. Length, ♂ ♀, 12 mm.—The clypeal structure is remarkable.

Both sexes occurred at Mfongosi in Zululand to W. E. Jones in May, 1916.

MESOSTENUS OCTANS, sp. nov.

♀ only. A somewhat slender, brick-red, dull species with the head, antennae, apical half of abdomen, hind coxae, femora and two apical joints of their tarsi, black; labrum, vertical orbits, flagellar band, apices of third and fourth and seventh segments narrowly, with whole of the large and prominent eighth, and the three central hind tarsal joints, white. Clypeus apically depressed and truncate; notauli deeply impressed; both metanotal transcarinae distinct, its petiolar area striate; basal segment stout, shagreened and only double as long as its apical breadth; terebra one-third of abdomen; areolet small and quadrate, emitting recurrent nervure before its centre; nervelet wanting, upper basal nervure postfurcal. Length, 12 mm. —The coloration is distinctive.

Taken with the last species at Mfongosi in Zululand by W. E. Jones.

CRYPTAULAX, Cam.

CRYPTAULAX RUFICEPS, Cam.

Ann. S. Afr. Mus. v, 1906, p. 151, ♂ ♀.

Areolet small and quadrate, emitting recurrent nervure from its centre.

A female has been taken at Mfongosi in Zululand by Jones during April, 1916.

EARRANA, Cam.

Spolia Zeylanica, iii, 1905, p. 119.
Parca, Morl. Indian Ichns. i, 1913, p. 361.

Essential Characters.—Metathoracic spiracles circular; areolet wanting; clypeus neither reflexed nor apically depressed; mesosternum not laterally spinate; abdomen not metallic. The following species is sufficiently congruous with *E. lutea*, Cam. (= *P. ocularia*, Morl.), to allow of its inclusion in this somewhat anomalous genus, though the upper basal nervure is distinctly a little antefurcal.

EARRANA RECTINERVIS, sp. nov.

♀ only. A small and slender, somewhat dull, rufo-testaceous species, with the mandibular apices and flagellum except basally, alone black; face, vertical orbits broadly and a subapical flagellar band, white; terebra slender, half length of abdomen and, like the hind tarsi, apically infuscate. Head vertical and evanescent behind the prominent eyes; face strongly transverse, finely shagreened and not discreted from the convex and apically rounded clypeus. Antennae as long as the body. Notauli and sternauli deeply impressed; metathorax elongate and somewhat narrow, evenly shagreened throughout with a very weak central and distinct apical, straight transcarina; petiolar area short and nearly smooth. Scutellum small, dull and nearly smooth, only basally carinate. Abdomen finely shagreened throughout with basal segment nearly smooth, fully twice longer than apically broad. Legs long and very slender. Wings somewhat narrow, with the disco-cubital nervure perfectly straight; areolet half as broad again as high, its apical nervure wanting, though indicated; nervellus postfurcal, centrally intercepted. Length, 7 mm.

Mfongosi in Zululand, April, 1916, W. E. Jones.

SUBTRIBE CRYPTINI.

In view of the considerable literature likely to arise when the Ichneumonidae of Africa come to be more fully collected, it were well to here point out that the distinctions between the subtribes *Mesostenini* and *Cryptini* (which together constitute the tribe Cryptides of the subfamily Cryptinae) are extremely obscure and consist solely in the conformation of the alar areolet. The Cryptinae, as a whole, are the least specialised and, consequently, most difficult group of the entire Ichneumonidae. In the palaearctic fauna it is sufficient to describe this areolet (as is done in my Ichn. Brit. ii, 1907, pp. 258 and 266) as small and quadrate in the *former* subtribe, pentagonal and of normal size in the *latter*; but throughout the tropics the *Mesostenini* show much greater variability in this respect, which is still our sole guide to differentiation, and it is misleading to state, as does Cameron of his genus Stenomeris (Ann. S. Afr. Mus. v, 1906, p. 154), that "the form of the areolet does not give always a trustworthy distinction between the two"; for if such be the case, they must be merged. That there is a constant, though subtle, distinction I am convinced; and the already enormous—ere long, overwhelming—number of the world's species in both these subtribes renders it convenient to retain them apart. The test to which I subject individuals is a (more or less) regularly pentagonal areolet of variable

size for the *Cryptini* and a quadrate or (to any extent, breadth, and size) transverse areolet for the *Mesostenini*. Into these two, certainly very loose, divisions I find all the genera with which I am acquainted fall sufficiently naturally with no overlapping except in the case of the Indian genus Etha, under which name Cameron had congregated examples of both wing-types. The "small, square" areolet of Stenomeris shows it to unmistakably belong to the *Mesostenini*.

AGLAOCRYPTUS, Cam.

Mem. Manch. Soc. 1903, no. 14, p. 31.
Habrocryptus, Thoms. Opusc. Ent. v, 1873, p. 498.

Aglaocryptus glabratus, sp. nov.

♀ only. A strongly nitidulous, testaceous species with only the abdomen somewhat dull; ocellar region to centre of occiput, mandibular apices, flagellum and dot on scape, onychii, costa and stigma, black; remainder of head, and the flagellar band, white. Head broad and glabrous with the face longitudinally sulcate between epistoma and orbits, clypeus apically depressed and truncate, labrum exserted, Notauli profound and entire to disc of mesonotum; metathorax glabrous with both transcarinae strong and entire, its spiracles exactly circular and apophyses wanting. Scutellum smooth, not margined. Abdomen narrow and confluently punctate, with anus smoother and basal segment glabrous; terebra a little shorter than abdomen. Legs and the hyaline wings normal, with penultimate joint of hind tarsi deeply bilobed; areolet small and pentagonal, emitting recurrent nervure from its centre; nervelet wanting; upper basal nervure and nervellus postfurcal, the latter centrally intercepted. Length, 9 mm.—There is nothing distinctive about this species (which has the facies of a small *Mansa*, Tosq. = *Colganta*, Cam.) but its subglabrous body, circular spiracles and bisulcate face.

The type was taken at Durban in Natal during February, 1913, by W. Haygarth.

CRYPTUS, Fabr.

Syst. Piezat. 1804.

Cryptus Leighi, Cam.

Ann. S. Afr. Mus. 1906, v, p. 141, ♀.

This is a member of the present genus, *sensu Thomsoni*.

"Kranzkloof," Durban, in Natal: a female by Bell Marley on October 9th, 1915.

Subfamily PIMPLINAE.

Tribe XORIDIDES.

MOANSA, Tosq.

Mém. Soc. Entom. Belg. v, 1896, p. 344.
Gonioprymnus, Cam. Ann. S. Afr. Mus. v, 1906, p. 126.

Moansa maculiceps, Cam.

Gonioprymnus maculiceps, Cam. Ann. S. Afr. Mus. v, 1906, p. 126, ♀.

The hitherto unknown ♂ of this conspicuous species differs very slightly from the ♀ description in having the external orbits shortly, and hind femora externally, streaked with white; the second as well as third segment bears an impressed triangle, and both are united to the base by an impressed discal line; the apex of the fourth segment is dorsally emarginate and the metathorax is shortly bicarinate at both base and apex with lateral traces of an apical transcarina. Front tibiae inflated and basally constricted. Length, 14 mm.

The androtype is labelled "Durban lights, March, 1915, Marley."

GABUNIA, Kriech.

Sitzb. Nat. Ges. Leipz. 1895, p. 130.
Morley, Ann. S. Afr. Mus. xv, 1916, p. 383.

Gabunia ruficoxis, Kriech.

Sitzb. Nat. Ges. Leipz. 1895, p. 132, ♂ ♀.
Nadia fasciipennis, Tosq. 1896, p. 337, ♀.

I have seen this species from Uganda, a considerable extension of range. It is the closest ally of *G. Bardo* (Ann. S. Afr. Mus. xv, 1916, p. 383), though the terebra is much longer, the head posteriorly narrower, the clypeus centrally produced and apices of the lower wings not totally infumate as in that species.

Gabunia togensis, Krieg.

Mitt. Zool. Mus. Berl. v, 1911, p. 550, ♀.

Ernest A. Elliott, F.Z.S., has presented me with a ♀ of this handsome insect, taken by C. A. Wiggins at Entebbe in Uganda during June, 1912. *G. ruficeps*, Cam. (Entom. 1906, p. 30, ♀), from East Coast, Natal, seems a very closely allied species; I have not seen it.

Tribe ECHTHROMORPHIDES.

ECHTHROMORPHA, Holmgr.

Echthromorpha variegata, Brullé.

Morl. Ann. S. Afr. Mus. 1916, p. 386.

Further specimens of both sexes have been taken by Jones during May, 1916, at Mfongosi in Zululand.

Tribe PIMPLIDES.

EXERISTES, Först.

Verh. pr. Rheinl. 1868, p. 164.

Charitopimpla, Cam. Journ. St. Br. R. Asiatic Soc. 1902, p. 48;
Holcopimpla, Cam. Ann. S. Afr. Mus. v, 1906, p. 112.

Exeristes nigricornis, Cam.

Holcopimpla nigricornis, Cam. Ann. S. Afr. Mus. v, 1906, p. 113, ♀.

Cameron's new genus *Holcopimpla*, with its single species, is entirely synonymous with *Exeristes*, Först. In my table of the latter genus (Revis. Ichn. iii, 1914, p. 25) insert thus:

"(20). 21. Metanotum very sparsely punctate; areolet subpetiolate."
(β). α. Flavidous, apices of metathorax and second segment black-marked. 10ª. *nigricornis*, Cam.
(α). β. Species not so coloured.
"(25). 22. Red with black markings; legs entirely pale."

Cameron omits to note that the head is buccate both below and behind the eyes, that the scape and flagellar base are both pale, that the thorax is discally deplanate, and that the wings are apically infumate with their stigma basally white. He only knew the ♀; the ♂ differs no more than sexually and in having the abdomen sublinear. Jones took several examples in Zululand at Mfongosi during May, 1916.

THERONIA, Holmgr.

Ofv. Vet. Ak. Förhdbl. xvi, 1860, p. 123.

Theronia melanocera, Holmgr.

Eugen. Resa Insect. 1868, p. 404.

In my diagnosis of this species (Revis. Ichn. iii, 1914, p. 41) for "metathorax" read "mesonotum." The length of both sexes varies, 10–12 mm. The present examples all have the anus infuscate; they were bred at Johannesburg in the Transvaal in March, 1904; captured

at Mfongosi in Zululand in May, 1916, by W. E. Jones; and taken at "Kranzkloof" in Natal on May 24th, 1915, by Bell Marley.

XANTHOPIMPLA, Sauss.

Grandidier's Hist. Phys. Madagascar, 1892, Pl. XIII.

Xanthopimpla renovata, nom. nov.

Xanthopimpla appendiculata, Cameron, Ann. S. Afr. Mus. v, 1906, p. 111, ♀, *nec* Cameron, Fauna Maldive and Lacc. Arch. I, i, 1902, p. 51, ♂ ♀.

Cameron described two distinct species under a single name in this genus; consequently I have renamed the later of these. Marley took a large female of *X. renovata* at "Kranzkloof" near Durban in Natal (the typical locality) in May, 1915.

PIMPLA, Fabr.

Syst. Piez. 1804, p. 112.

Pimpla crocata, Tosq.

Morley, Ann. S. Afr. Mus. xv, 1916, p. 386.

Both sexes from Mfongosi in Zululand in May, 1916 (Jones), and Durban in Natal during May, 1915 (Marley); Knysna, Cape (L. Péringuey).

Pimpla pubens, sp. nov.

♂ only. A densely white-pubescent, dull red species with the head and thorax, anus, stigma and apical half of the hind legs black; wings hyaline with radices, tegulae and base of stigma pure white. Length, 10 mm.—Very like *P. crocata* in its sculpture and coloration, but with the palpi white, clypeus and mandibular base testaceous, the frons transaciculate and centrally stoutly carinate; scutellum and flagellum black, with scape rufescent below; abdomen more finely punctate, with basal segment distinctly longer; hind femora and tibiae darker, and the whole body shortly white-pubescent.

W. E. Jones captured the type at Mfongosi in Zululand during May, 1916.

EPIURUS, Thomson.

Opusc. Entom. xiii, 1889, p. 1412.

Epiurus semidilutus, sp. nov.

♂ only. A deep red and strongly nitidulous species with the head, except its testaceous palpi, the antennae, sternum and pleurae, meso-

notum except discally, the frenum, both base and apex of metathorax, base of first segment, apex of second narrowly and two apical marks on third, all the claws and hind tarsi, black. Basal segment parallel-sided, double as long as broad and not discally canaliculate; lower basal nervure postfurcal. Length, 10 mm.—This species agrees in every way with the characters, set forth in my table of *Epiurus* (Revis. Ichn. iii, 1914, p. 80, in which at No. "(30) 27" for "hind claws" read "hind claw-joint"), of *E. dilutus*, Ratz., the ♂ of which was first described by Bridgman (Entom. xii, 1879, p. 55), who remarks upon its subglabrous abdomen. Therefrom the present male differs in no more than a few essential details: Mesonotum subglabrous and less closely pubescent, mesopleurae transversely sulcate centrally and more deeply punctate below, metanotum glabrous with sparse puncturation and lacking basal carina; abdomen stouter with the dorso-lateral tubercles a little more prominent; hind tarsi black throughout; tegulae fulvous, costa and stigma black, upper basal nervure far more oblique and the lower distinctly a little postfurcal; but especially in having the first segment glabrous and discally smooth with subapical lateral foveae and its base simple, whereas in *E. diluta* it is discally sulcate and bicarinate from the laterally auriculate base to a subapical transconstriction.

The type is labelled "C. W. Mally, Agrl. Dept., Elsenberg, Cape Colony, October 11th, 1914."

HEMIPIMPLA, Sauss.

Grandidier's Hist. Phys. Madagascar, 1892, Pl XIII, fig. 4.

Hemipimpla divisa, Tosq.

Mém. Soc. Entom. Belg. v, 1896, p. 302, ♀.

♂ ♀. The male has hitherto been unknown. It differs only sexually from the female in—at least occasionally—having the lateral tubercles of the second and third segments infuscate. I do not find that the ♀ has either the hind tarsi or apices of their tibiae black, as indicated by its author; in both sexes they are but little darker than the remainder of the pale fulvidous legs, with nothing but the tarsal claws black. Both sexes occurred to Jones at Mfongosi in Zululand during April and May, 1916.

Hemipimpla terebrata, sp. nov.

♀ only. Head, thorax and legs nitidulous and testaceous-red, with mandibular apices and both hind tibiae and their tarsi alone black. Antennae filiform and black. Abdomen deep black with the three

basal segments testaceous-red. Metathorax not flavous-marked, exareolate, with circular spiracles and a black dot on either side of its apex. Basal segment discally shining and centrally transimpressed, remainder closely punctate to sixth; the second apically black-lined on either side; terebra exactly as long as whole body. Hind femora simple; tarsal claws basally lobate and not pectinate. Wings fulvescent with apices of both pairs black, the front ones alone with a concolorous band as broad as the stigma and extending therefrom to the sinus, broadly confluent in the anal cell with the apical infumation; nervures of basal half red; areolet broadly triangular and not petiolate, emitting the subentire recurrent from its apical fourth; nervelet extending half way to basal nervure; nervellus subopposite and centrally intercepted. Length, 15 mm.—In my table of species (Revis. Ichn. iii, 1914, p. 90) this female should stand next to *H. divisa*, Tosq. The alar infumation resembles that of *H. bifasciata*, though not extending along the inner margin of the hind wing, as in that species.

The type (in coll. auct.) was taken by C. A. Wiggins at Entebbe in Uganda during June, 1912, and presented to me by Ernest A. Elliott, F.Z.S.

Tribe LISSONOTIDES.

SYZEUCTUS, Först.

Verh. pr. Rheinl. 1868, p. 167.

Syzeuctus spilocephalus, Cam.

Lissonota spilocephala, Cam. Ann. S. Afr. Mus. v, 1906, p. 124, ♂.

Its author precedes this species with a query, as though doubtful of its right to inclusion in the genus *Lissonota*; this and, I believe, the majority of the species described by him at *loc. cit.* are referable to the genus *Syzeuctus*.—The ♀ differs, as is usual in the genus, considerably in coloration from the ♂, though the sculpture is identical. Head, antennae and thorax black; clypeus, part of mandibles, sides of face broadly and all the orbits narrowly, stramineous; propleural margin, subhamate mesonotal lines, post-scutellum and both sides and apex of scutellum stramineous; metapleural spiracles elongate. Abdomen brick-red throughout, becoming flavescent at apices of the second and third segments; terebra straight, black and as long (8 mm.) as the abdomen. Legs brick-red, with the posterior discally black and the front coxae stramineous. Wings slightly flavescent, with apices of both pairs truncately and definitely infumate; stigma and subcosta testaceous;

radial nervure straight above the small areolet, which is no higher than the length of its petiolar nervure, subtriangular, externally curved, emitting recurrent nervure from its apical fourth; spurious nervure of hind wing straight to apex. Length, 12 mm.

This gynetype was captured by R. M. Lightfoot at East London during 1915.

Syzeuctus fuscicornis, Cam.

Lissonota fuscicornis, Cam. Ann. S. Afr. Mus. v, 1906, p. 121, ♀.

♂ ♀. The conformation of the areolet and metapleural spiracles of both sexes is exactly as in *S. spilocephalus*; the spurious nervure of the hind wing is strong, though hardly extending to apex. The ♀ has the three basal segments laterally black-lined.—The undescribed ♂ differs only in its smaller size of 11 mm. and the coloration of its abdomen, the spiracles of whose three basal segments are rather more conspicuous; the last is black with a quadrate subbasal fascia; apices of the basal segment broadly and of the following narrowly flavous with base of second, third and fourth centrally concolorous; the anus from centre of fourth segment alone is red.

Both sexes were taken at Mfongosi in Zululand during April, 1916, by Jones.

Syzeuctus interstitialis, Cam.

Lissonota interstitialis, Cam. Rec. Albany Mus. i, 1905, p. 251.

♂ ♀. The conformation of the areolet and metapleural spiracles of both sexes is exactly as in *S. spilocephalus*; the spurious nervure of the hind wing is wanting. The ♀ differs from the last species in having the black and straight terebra no longer (6 mm.) than the abdomen, and the ♂ in having the red abdomen apically black from centre of the fourth segment.

The female occurred with *S. fuscicornis* in Zululand; and the male at Gt. Winterhoek near Tulbagh, Cape, at 3600 ft. to R. M. Lightfoot during April, 1916.

ASPHRAGIS, Först.

Verh. pr. Rheinl. xxv, 1868, p. 166.

Asphragis flavidorbitalis, Cam.

Entom. xxxix, 1906, p. 18, ♀.

♂ ♀. For length "5 mm." read "15 mm.," which includes the body $7\frac{1}{2}$ and terebra $7\frac{1}{2}$. The ungual pectination is strong. The

undescribed ♂ differs only sexually from the female.—Found at the same locality as *S. interstitialis* by R. M. Lightfoot.

ASPHRAGIS RUBRICOSA, sp. nov.

♀ only. A dull closely punctate, rosy species, becoming posteriorly black, with only the anterior femora and tibiae laterally testaceous. Head posteriorly constricted; clypeus neither basally discreted nor its evenly rounded apex impressed; cheeks not short; juxta-scrobal orbits alone shortly stramineous. Antennae filiform, slender and black with base of the first three or four joints, and the entire scape, rosy. Thorax dull and discally deplanate, with neither notauli nor sternauli; its sternum black; metathorax strongly and closely punctate, its apical transcarina subentire and spiracles circular. Scutellum closely and more finely punctate, distinctly a little convex. Abdomen deplanate, no longer than head and thorax, with the three basal segments evenly punctate, remainder black and subglabrous and retracted; first segment double as long as apically broad, longitudinally rugulose discally, with spiracles before centre; terebra as long ($2\frac{1}{2}$ mm.) as three first segments, or two-thirds of abdomen. Legs not slender; hind ones, intermediate coxae except discally, and their trochanters, black; claws strongly pectinate. Wings hyaline and not broad; radix testaceous, tegulae and stigma black; basal nervure strongly arcuate and subcontinuous through the median; intercubital nervure slightly longer than distant from second recurrent, of which nearly the upper half is fenestrate; radius obtusely angled; nervellus opposite and indistinctly intercepted a little below its centre. Length, 8 mm.—Stouter, less elongate and more deeply punctate than the last species, from which the colour renders its facies very different, though the neuration is similar.

Found by W. E. Jones at Mfongosi in Zululand during May, 1916.

TRIBE BANCHIDES.

TEGONA, Morley.

Fauna India, Ichn. i, 1913, p. 251.

TEGONA DISCRETA, sp. nov.

♀ only. A clear testaceous species with the head flavous; the frons, occiput, antennae, central mesonotal lobe and hind tarsi, black; wings clear fulvescent, with costa and stigma testaceous. Head not strongly constricted posteriorly; clypeus strongly elongate, as long as

basally broad and apically truncate, closely punctate and not discreted from the similarly punctate face; mandibles stout and obtusely bidentate apically, teeth nigrescent; both maxillary and labial palpi testaceous, with cylindrical joints; eyes internally parallel and not emarginate; frons sulcate from ocelli to the superiorly elevated scrobes. Antennae elongate, setaceous, slender and immaculate. Thorax stout, dull and closely punctate; notauli deeply impressed, sternauli wanting; mesopleural speculum foveate; metathorax without even supracoxal carinae, impressed at the slightly elongate spiracles, its disc longitudinally subsulcate. Scutellum and postscutellum convex, deeply punctate, with only basal carinae. Abdomen glittering and subglabrous, with two first segments deplanate and remainder subcompressed; basal segment straight, slightly explanate throughout, twice and a half as long as apically broad and centrally constricted beyond the somewhat prominent spiracles; central segments indefinitely black-lined laterally; hypopygium large and cultriform; terebra hardly exserted. Legs slender, the hind ones elongate, with apices of their tibiae infuscate; coxae finely punctate; claws distinctly and shortly pectinate. Wings ample; lower basal nervure but slightly postfurcal; internal cubital entire and broadly fenestrate at its apical third; areolet rhomboidal and corneously petiolate, emitting the semifenestrate recurrent distinctly before its centre; nervellus elongately postfurcal, emitting spurious nervure from its upper third. Length, 11 mm.—The produced clypeus places this species in *Tegona* (*cf. lib. cit.*, fig. lxii), though the cheeks are much shorter than the basal breadth of the mandibles.

The type was discovered by W. E. Jones at Mfongosi in Zululand during April, 1916.

Tribe SKIAPODES, *tribus nova.*

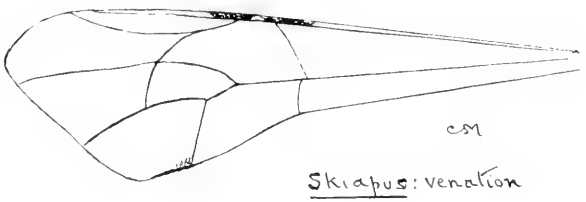
The characters are those of the genus. So remarkable is the conformation of the following species that I find myself reluctantly compelled to erect for its reception a new Tribe, agreeing in its abdominal structure to a limited extent with the *Banchides*, as grouped by me (Revis. Ichn. iv, 1915, p. 135), but with totally different and unique neuration. The *Skiapodes* is at once known from the whole remainder of the Ichneumonidae by its semicircularly excised occiput, the sublinear disposition of the ocelli, the bicarinate frons, minute and subquadrate mandibles, which are (as in the Braconidous family Alysiidae) porrect and not apically touching *inter se*, and by the unique structure of both nervures, which most closely, perhaps,

resemble those of the Ophionides, and hind tarsi, which are of greater length than the whole body. In certain respects the neuration is not dissimilar to that of *Lapton*, as figured by Pfankuch (at Deut. Entom. Zeit. 1912, p. 458), though the intercubital nervure is strongly oblique, and not, as there shown, vertical; also the hypopygium in both is prominent.

I need hardly point out that the Skiapodes were a fabulous people of Libya, possessed of enormously developed feet.

SKIAPUS, gen. nov.

Head very strongly transverse; occiput semicircularly excavate centrally immediately behind ocelli, which are not in triangle but in a curved line with the lateral only half their breadth behind the



central; frons strongly bicarinate and centrally sulcate between the scrobes; eyes large and acutely emarginate internally; face transverse and longitudinally impressed on either side above base of the minute and triangular clypeus; cheeks obsolete; mandibles porrect and very small, nearly quadrate, lower tooth minute and upper wanting; labrum strongly exserted, longitudinally carinate discally; mandibular palpa joints cylindrical. Antennae longer than body, filiform and not slender, apically setaceous. Thorax stout, notauli and sternauli wanting; mesonotum abruptly declivous anteriorly; scutellum glabrous, not convex, laterally finely carinate; metathorax very short, obliquely declivous throughout, and not centrally impressed; glabrous and exareolate, with two evenly curved carinae traversing its basal half, of which the first centrally touches the base; spiracles large and linear; apophyses wanting. Abdomen small and coarctate, strongly compressed from base of third segment; first segment petiolate and linear to spiracles at its apical fourth, and thence slightly explanate; thyridii wanting; venter plicate, with hypopygium protuberant, and ♀ valvulae half length of basal segment. Legs long and slender, with the hind ones extraordinarily elongate; all tibiae externally setiferous; hind coxae large and globose, discally sulcate and as long as meta-

thoracic disc, their femora extending to anus (4½ mm. in length) and exactly as long as tibiae; hind tarsi slender, cylindrical and fully as long in ♂, or longer (10½ mm.) in ♀, than the whole body, sparsely and strongly setiferous and pilose with base of all joints glabrous, their claws simple but apical half of unguiculi stoutly pectinate laterally and below; all the claws straight and apically attenuate, the anterior alone basally pectinate. Wings ample; stigma obsolete; inner cubital cell apically acute; areolet wanting; the strongly oblique intercubital nervure receiving second recurrent, inner and outer cubital nervures at a common point; sinus infumate; nervellus strongly geniculate at its upper fourth.

Skiapus coalescens, sp. nov.

♂ ♀. A bright flavous species, with extreme mandibular apices, ocellar region, the central occipital impression, antennae except underside of scape, three mesonotal vittae, a radical dot, spicula and its valvulae except apically, and whole of hind tibiae and tarsi, black; stigma and nervures infuscate, with centre of the former rufescent; wings subhyaline, evenly and but very slightly infumate throughout. Length, 8–10 mm.

The type of this remarkable tribe and genus is in my collection; it was captured at Stella Bush, near Durban, in Natal, by H. W. Bell Marley during April, 1915. I do not anticipate that the species is rare, for W. E. Jones has found it at Mfongosi in Zululand in May, 1916, F. Muir about Durban in 1902 (in coll. Mus. Brit.), and S. A. Neave considerably extended its known range by his discovery of the unique male on February 4th, 1913, at Mlanje in Nyassaland.

Subfamily TRYPHONINAE.

Tribe BASSIDES.

BASSUS, Fall.

Specimen. Hym. 1813.

Bassus laetatorius, Fab.

Cam. Ann. S. Afr. Mus. v, 1906, p. 131.
Morl. *loc. cit.* xv, 1916, p. 391.

This cosmopolitan species has now penetrated to Zululand, where W. E. Jones took it at Mfongosi during April, 1916.

Subfamily OPHIONINAE.

Tribe OPHIONIDES.

ALLOCAMPTUS, Thoms.*

Opusc. Entom. xii, 1888, p. 1186.

Allocamptus senescens, Tosq.

Mém. Soc. Entom. Belg. v, 1896, p. 375, ♂.

Found by Dr. Melle. Arcturus, 1915, Salisbury in Mashonaland, and by Jones at Mfongosi in Zululand.—The ♀ differs only sexually; in the present instance, also in having the nervellus interrupted at a slightly higher point, and the thorax of a paler colour, than the male.

Allocamptus crassellus, sp. nov.

♂ only. A testaceous species with head mainly flavous, stigma and costa and flagellum nigrescent; agreeing in all essential characters with the Australasian *A. crassus* (Revis. Ichn. i, 1912, p. 26), but much smaller with the stigma darker, and base of radial nervure strongly sinuate. Basal nervure continuous through median, nervellus geniculate at its lower third, scutellum deplanate and laterally carinate only to its centre; metanotum shagreened with its basal region smoother. From all African species with corneous alar marks, the posterior breadth of the head, which is no less than that of the eyes, will distinguish it. Length, 17 mm.

Captured at Mfongosi in Zululand during March, 1916, by W. E. Jones.

Allocamptus nugalis, Schulz.

Spolia Hymen. 1906, p. 275, ♀.

A female was taken at Durban in Natal by Marley in March, 1915. I have examined the type of Schulz' species, which is in the British Museum.

* I should like to take the opportunity of correcting the synonymy of Allocamptus latilineatus, Cam., found in Mexico, Guatemala, Paraguay, and Brazil:

Ophion curvinervis, Cameron, Biologia Centr.-Amer. Pl. XLVIII, 1886, Hym. i, p. 293, Pl. XII, fig. 19, ♀ (*nec* Kriech.).

Ophiomorpha curvinervis, Szépligeti, Gen. Ins. fasc. xxxiv, 1905, p. 35.

Ophion latilineatus, Cameron, Journ. R. Agric. Soc. Demerara, i, 1911, p. 179.

Allocamptus renovatus, Morley, Revision Ichneumonidae, i, 1912, p. 23, ♀ ♂.

HENICOSPILUS, Steph.

Illus. British Entom. vii, 1835, p. 126.

Henicospilus vecors, Tosq.

Mém. Soc. Entom. Belg. v, 1896, p. 387.

Marley took a large male at Stella Bush near Durban during January, 1914.

Henicospilus rufus, Kriech.

Berl. Entom. Zeit. 1894, p. 307 (*nec* Brullé *necnon* Tosq.).

Represented by both sexes from Stella Bush near Durban in Natal in November, 1915 (Marley), Mfongosi in Zululand during April, 1916 (Jones), and Salisbury in Southern Rhodesia (D. Dodds). A ♀ from "Bonnefoi, Transvaal," is in the Berlin Entom. Mus.

Henicospilus longescutellatus, Kriech.

Berl. Entom. Zeit. 1894, p. 308, ♀.

A female was bred by Marley in Natal during August, 1915, from its own white dull and nearly smooth cocoon of the shape usual to this genus, out of the Noctuid moth, *Phytometra limbirena*, Guén.

Henicospilus leionotus, Tosq.

Mém. Soc. Entom. Belg. v, 1896, p. 393.

Marley also bred this male at Durban in March, 1915, from its own dull chocolate-coloured cocoon with a pale central cincture; host not given.

NOTOTRACHYS, Marshall.

Tr. Ent. Soc. 1872, p. 260.

Nototrachys flavomaculatus, Cam.

Rec. Albany Mus. i, 1905, p. 250.

A couple of ♀ ♀ found by W. E. Jones at Mfongosi in Zululand in May, 1916.

Tribe PANISCIDES.

PANISCUS, Grav.

Ichn. Europ. iii, 1829, p. 622.

Paniscus Aethiopicus, Szépl.

Bull. Mus. Paris, 1907, p. 139, ♀.

Both sexes are from Mfongosi in Zululand during April, 1916 (W. E. Jones), and from Kimberley during October, 1913 (Bro. J. H. Power).

Paniscus ocellaris, Szépl.

Kilimandj. Exped. ii, 1910, p. 89, ♀.

A male (which sex I described in Revis. Ichn. ii, 1913, p. 116) was found by W. E. Jones at Mfongosi in Zululand during May, 1916.

Tribe PRISTOMERIDES.

PRISTOMERIDIA, Ashm.

Proc. U. S. Nat. Mus. 1900, p. 100.

This differs from the next genus in no constant character but the straight nervellus, which is neither geniculate nor intercepted.

Pristomeridia albescens, sp. nov.

♂ ♀.—♂. A very pale stramineous, dull and apparently debilitant species with the mandibular apex, a line connecting ocelli, a vitta on each of the three mesonotal lobes, scutellar fovea, frenum, speculum, hind tarsi, base and apex of their tibiae, inner side of their coxae and more or less of anus, indefinitely brunneous or nigrescent; flagellum infuscate with joints of its basal half apically flavidous and the first pale beneath. Face short, shining and finely punctate, longitudinally elevated centrally and discreted from the convex and apically rounded clypeus; mandibular teeth of equal length, cheeks normal. Mesonotum dull and finely shagreened, its apex prominent and abruptly declived but with superficial notauli; scutellum convex, nearly circular and whitish, only basally margined; metathorax obsoletely scabriculous, both its transcarinae distinct with very indistinct and subtriangular areola; petiolar area trans-strigose. Abdomen linear, somewhat dull and evenly shagreened throughout, with the thyridii of second segment elongate and genital valvulae exserted. Legs slender; hind femora stout with an acute tooth, followed by a series of serrations, slightly beyond centre. Wings ample and hyaline with nervures and the very broad stigma black; basal continuous through median; nervellus neither geniculate nor intercepted.

The ♀ shows remarkable transition to the Cremastides, and suggests that the present tribe cannot long be retained distinct therefrom. Its hind femora bear no more than the slightest trace of a tubercle, followed by a series of very fine trans-striae. In other respects it differs from the male in nothing but its black and subaciculate two basal segments, nigrescent metanotum and centre of the third and

fourth segments; the terebra is straight, black and half length of abdomen. Length, ♂ ♀, 5–5½ mm.

A couple of males were found with one female by W. E. Jones at Mfongosi in Zululand, April, 1916.

PRISTOMERUS, Curtis.

Brit. Ent. xiii, 1836, p. 624.

Pristomerus luteolus, Tosq.

Mém. Soc. Entom. Belg. v, 1896, p. 421, ♂.

It is surprising that no additional species of this genus have been brought forward since Tosquinet (*loc. cit.*) described three. The present male was from Gambia; but a second, captured by D. Dodds at Salisbury in South Rhodesia, is certainly not distinct and represents a wide range.

Tribe CREMASTIDES.

CREMASTUS, Grav.

Morley, Ann. S. Afr. Mus. xv, 1916, p. 393.

Cremastus annulicornis, Tosq.

Mém. Soc. Entom. Belg. v, 1896, p. 416, ♀.

I am not aware that this species has been mentioned since first described from Delagoa Bay; and the ♂ is still unknown. The dark stigma bordered by the pale costa is remarkable. The only species since described from all Africa appears to be *C. testaceus*, Szépl. (Kilimandjaro Exped. viii, 3, 1910, p. 50).*

One female occurred to Jones at Mfongosi in Zululand during May, 1916.

Cremastus noxiosus, Morl.

Fauna India, Ichn. i, 1913, p. 501, ♂ ♀.

A male, differing in no pertinent particular from the typical Bengal type of this species was captured in Natal by Marley during March, 1916.

Cremastus Cypete, sp. nov.

♀ only. A strongly elongate, dull species with mandibles, orbits throughout, elongate lines before radices coalescent with two hamate

* Also here must be added Ricrena pallidipennis, Cameron, Ann. S. Afr. Mus. v, 1906, p. 104, which I noted as belonging to the *Cremastides*, and not (as placed by its author) to the *Porizonides*, when examining the reputed type in the British Museum.

mesonotal vittae, apices of third to fifth segments centrally, venter and a dot beneath anterior coxae, flavous; legs, and marks near apices of second and third segments, more or less dark rufescent. Head dull and distinctly punctate with only scrobes glabrous; face not convex, its apex discreted from the reflexed and apically rounded clypeus; juxta-antennal orbits elevated. Antennae not pale-marked. Thorax dull and somewhat deeply punctate throughout, with obsolete notauli; metathoracic areae entire; basal area narrow, areola large and subparallel-sided, twice longer than broad and emitting strong costulae from its basal third. Scutellum deplanate, not margined, as deeply punctate as the thorax. Abdomen finely shagreened with second segment aciculate throughout, its thyridii basal; terebra deflexed, black and longer ($5\frac{3}{4}$ mm.) than whole abdomen (5 mm.). Wings hyaline with stout nervures; stigma broad and black; base of apical abscissa of radius strongly sinuate; brachial cell very narrow; nervellus neither geniculate nor intercepted. Length, 8 mm.

The type is labelled: "Hottentots' Holland Mts. 4000 feet. Caledon, Cape, Barnard, 1916."

Tribe CAMPOPLEGIDES.

XANTHOCAMPOPLEX, Morl.*

Fauna India, Ichn. i, 1913, p. 445.

Xanthocampoplex flavescens, sp. nov.

♂ ♀. A dull and very slender species, the wings hyaline and body clear flavous with only the mandibular apices, ocellar region, flagellum and disc of scape, terebral valvulae, hind tarsi and apices of the anterior, black; central mesonotal vitta nigrescent and in ♂ extending to scutellum, sometimes with a pale brunneous one on either side. Metathorax shagreened with a curved basal transcarina touching the base centrally, to which the parallel-sided and trans-striolate petiolar area extends; spiracles linear. Basal segment glabrous, gradually explanate apically and longer than the terebra. Discal spines of the hind tibiae strong; tarsi pectinate. Wings somewhat narrow, with tegulae and stigma flavidous; lower basal nervure postfurcal; radius

* Xanthocampoplex nigromaculatus is the only described species—*Zachresta* (*sic*) *nigromaculata*, Cam. Ann. Nat. Hist. xx, 1907, p. 13, ♀ = *Xanthocampoplex orientalis*, Morl. Faun. India, Ichn. i, 1913, p. 445, ♂ ♀. The Berlin Museum possesses this species from Sumatra and twenty-three specimens, comprising both sexes, which were collected by Col. Bingham in Sikkim

elongate and but slightly curved; petiole of the oblique areolet as long as its inner nervure; both the outer cubital and second recurrent nervures emitted from lower external angle of areolet; hind wings with both the radial and cubital nervures pellucid beyond the recurrent; nervellus entire, straight and not intercepted. Length, 8–9 mm.

Both sexes occurred to W. E. Jones at Mfongosi in Zululand during April and May, 1916.

OMORGA, Thoms.

Opusc. Entom. xi, 1887, p. 1125.

Omorga longiceps, Cam.

Limnerium longiceps, Cam. Ann. S. Afr. Mus. v, 1906, p. 100, ♀.

The ♂ differs very slightly in having the mandibles, palpi, tegulae and the anterior coxae and trochanters, pure white; the hind coxae and trochanters stramineous, and the basal joint of their tarsi not pale-marked. The structure of the nervellus was overlooked by Cameron; it is antefurcal and geniculate, relegating the species to Thomson's genus *Omorga*, with which the conformation of the basal segment also agrees.

The androtype was captured at Mfongosi in Zululand by W. E. Jones in May, 1916.

INDEX.

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

(Plates XVIII–XXVII of Vol. XVII. Plates XCVIII–CVII of Crustacea.)

Of the thirty-six species noted in this contribution ten are regarded as new to science, and for three of them new genera have been named, *Dairoides* in the family Xanthidae of the Cyclometopa, *Xeinostoma* in the family Cyclodorippidae of the Oxystomata, and *Hapaloptyx* in the family Uroptychidae of the Galatheidea. Notice is taken of Dr. Ihle's identification of my genus *Nasinatalis*, 1910, with *Corycodus*, A. Milne-Edwards, 1880, and the transfer of *Corycodus disjunctipes* from the Raninidae to the Cyclodorippidae. The specific validity of *Platymaia turbynei* is accepted, as proposed or suggested by Miss Rathbun.

Mr. Keppel Barnard has pointed out to me that the locality given in Part IX, p. 26, of this series for *Hyastenus uncifer*, Calman, is misleading, since "Pietermaritzburg is at least 50 miles from the sea." Whatever the explanation may be, my authority was correctly quoted. Perhaps Pietermaritzburg was only added to indicate whereabouts in Natal the "Umsunduzi River" should be looked for, without any intention to imply that the marine species had visited the inland town.

It may be worth mentioning that the paper has been unavoidably curtailed and its publication considerably delayed, owing to those gigantic troubles, still reluctantly subsiding, which have extended their interference to efforts the most unambitious and peaceful.

BRACHYURA GENUINA.

Tribe OXYRRHYNCHA.

Family INACHIDAE.

Gen. PLATYMAIA, Miers.

1886. *Platymaia*, Miers, Challenger Brachyura, p. 12.
1918. ,, Rathbun, Fisheries, Australia, F.I.S. Endeavour, vol. 5, pt. 1, p. 7.

PLATYMAIA TURBYNEI, Stebbing.

1902. *Platymaia turbynei*, Stebbing, S. Afr. Crust., pt. 2, p. 3, pl. 5, in Gilchrist's Marine Investigations of S. Africa.
1918. „ „ Rathbun, Fisheries, Australia, F.I.S. Endeavour, vol. 5, pt. 1, p. 9.

Miss Rathbun decides that the specimens which Wood-Mason and Alcock, Chun and Doflein identified with *P. wyville-thomsoni*, Miers, should be distinguished from that species under the new name of *P. alcocki*. Further it appears that in 1908 and 1910 I ought not to have accepted Doflein's identification of my species with that which has now been named *P. alcocki*, for in regard to this Miss Rathbun writes, "The name *P. turbynei*, Stebbing, cannot be applied to the above form [*P. alcocki*] because it is differentiated by the characters set forth by Stebbing, *e. g.* the propodus of the penultimate leg of *turbynei* is about twice as long as the same article in the young male of similar (larger) size of *P. alcocki*. Compare Stebbing's pl. 5 with Doflein's pl. 22, fig. 1." In the text of my paper above cited it is obvious that on page 5 in the top line "sixth joint" should be read instead of "fifth joint," as shown by the figure which Miss Rathbun quotes.

FAMILY BLASTIDAE.

(For systematic references see these Annals, vol. 6, pp. 283, 288, 1910.)

GEN. DOCLEA, Leach.

1815. *Doclea*, Leach, The Zoological Miscellany, vol. 2, p. 41.
1895. „ Alcock, J. Asiat. Soc. Bengal, vol. 64, pt. 2, pp. 165, 225.
1918 „ Rathbun, Fisheries, Australia, F.I.S. Endeavour, vol. 5, pt. 1, p. 16.

DOCLEA MURICATUS (Herbst).

1788. *Cancer muricatus*, Herbst, Krabben und Krebse, pt. 7, p. 211, pl. 14, fig. 85.
1793. „ „ Fabricius, Ent. Syst., vol. 2, p. 459.
1798. *Inachus muricatus* and *hybridus*, Fabricius, Suppl. Ent. Syst., p. 355.

1834. *Doclea hybrida* and *muricata*, Milne Edwards, Hist. Nat. Crust., vol. 1, pp. 294, 295.

1895. *Doclea muricata* and *hybrida*, Alcock, J. Asiat. Soc. Bengal, vol. 64, pt. 2, pp. 230, 231.

Under the last reference Alcock supplies more of the bibliography and a comparison of the two species which suffices to my mind to make the second name superfluous, though it is the one which would apply to our specimen were such distinction really needed.

From the little notch in the rostrum to the apex of the hindmost spine the carapace measures 38 mm. Across the widest part the breadth is 29 mm. The elevations in the median line longitudinally are blunt. In the right cheliped the chela is scarcely longer than the finger of the second peraeopod, with the breadth of the palm equal to the length of the thumb, both this and the rather longer curved finger being considerably shorter than the palm. The specimen is a male, with the left cheliped missing.

Locality. Point Shepstone, W.N.W. 2 miles; depth 34 fathoms. A 1355.

Tribe CYCLOMETOPA.

Family XANTHIDAE.

Gen. DAIROIDES, nov.

Extensively tuberculate carapace rotundiform except at points of greatest breadth. Pleon of male of seven segments, third segment the broadest, seventh with narrowly rounded apex. Front of carapace between the orbits about one-fourth of the greatest breadth. Mandibular palp two-jointed. Third joint of third maxillipeds strongly tuberculate, distally widened, fourth joint narrow at base, distally as wide as the third joint, its anterior margin produced into a strong tooth outside the fifth joint. Chelipeds unequal, cristiform. Ambulatory limbs with fourth, fifth and sixth joints not expanded but strongly and in part spinosely tuberculate, the seventh joint not tuberculate but felted with minute spinules, and ending in a small curved horn-like nail. The male organ of the second pleopod very long and slender with acute apex.

Dairoides margaritatus, n. sp.

Plate XCVIII.

The delicate specimen for which the new genus is instituted arrived from the Cape in company with eight and a quarter of its limbs, but all of them detached from the body, so that the respective lengths of the ambulatory legs could not be assigned with certainty. The somewhat depressed front of the carapace was also damaged, leaving its proper character indefinite. The affinity of the species seems to be with *Daira* and *Actaea*, for though the mouth-organs make a nearer approach in shape to those figured by de Haan for his *Cycloës*, the third maxillipeds are strictly confined to the mouth cavity, not, as in that genus, produced to the frontal margin.

The carapace, about 31 mm. broad at the broadest part below the middle, is about 22 mm. long. Dorsally it is covered by a mass of shining tubercles, the crowding of which obscures their symmetrical arrangement. On the ventral surface curved lines in front of the mouth cavity and long lines of more or less bead-like prominences on either side of that cavity and the pleon, together with the ornamentation of the pleon itself and of the third maxillipeds, produces a very elegant appearance. Had the verrucose chelipeds and horny walking-legs been in position, they would have diversified, perhaps without enhancing, this artistic display. At the hinder end of the antero-lateral margin a triplet of tubercles makes a decided projection; between this and the orbit at two points single tubercles feebly project. The shell of the carapace in its intimate structure appears to resemble that which Dana describes for *Actaea cellulosa* and figures for *Actaea areolata*. There is an upper (calcareous?) tuberculate layer with various small perforations and a lower smooth (chitinous?) layer with large cavities over which rest spinulose tubercles, the two layers being connected by chitinous septa at intervals. The little *Chlorodius fragifer*, Adams and White, has the eyes much more widely apart and the teeth of the antero-lateral margins much nearer together. The genus *Actaeomorpha*, Miers, 1878, among the Oxystomata, offers perplexing resemblances to the present form, but the third maxillipeds are distinctive.

Locality. Durnford Point, N.W. $\frac{3}{4}$ W. 12 miles; depth 90 fathoms (Zululand). A 1606.

Gen. CARPILIUS, Leach.

1825. *Carpilius*, Leach, in Desmarest, Consid. gén. Crust., p. 104, footnote.

1898. *Carpilius*, Alcock, J. Asiat. Soc. Bengal, vol. 67, pt. 2, pp. 72, 78 (with synonymy).

Carpilius maculatus (Linn.).

1758. *Cancer maculatus*, Linn., Syst. Nat., ed. 10, p. 626 (reprint).
1834. *Carpilius maculatus*, Milne Edwards, Hist. Nat. Crust., vol. 1, p. 382.
1898. „ „ Alcock, J. Asiat. Soc. Bengal, vol. 67, p. 79 (with synonymy).

A small specimen, with carapace 20 mm. wide, was obtained by Mr. K. H. Barnard at Mozambique. A 2222.

Gen. CHLORODOPSIS, A. Milne-Edwards.

(See Ann. S. Afr. Mus., vol. 6, p. 300, 1910.)

Chlorodopsis areolatus (Milne Edwards).

(See General Catalogue of S.A. Crustacea, 1910, p. 300.)

Specimens obtained by Mr. Barnard at Delagoa Bay. A 2195.

Carapace of male 12·5 mm. wide, 8 mm. long; of female 11 × 6·5 mm.

Gen. PILUMNUS, Leach.

(See Ann. S. Afr. Mus., vol. 6, p. 301, 1910.)

Pilumnus granulatus, Krauss.

(See General Catalogue of S.A. Crustacea, 1910, pp. 301, 302, and for the genus add M. J. Rathbun, U.S. Fish Comm. for 1900, vol. 2, p. 38, 1901, and U.S.F.C. for 1903, pt. 3, p. 362, 1906, and Tr. Linn. Soc. London, series 2, vol. 14, p. 228, 1911.)

One of the specimens has the carapace 29 mm. broad by 20 mm. long, the corresponding measurements of the other being 24 × 18 mm. The proportions in this specimen agree with those given by Krauss, 4 × 3 lines, equivalent to little more than 8 × 6 mm.—a great disproportion in size. Miss Rathbun reports a specimen of *P. longicornis*, Hilgendorf, 20 × 14 mm.

The present specimens were taken by Mr. Barnard at Durban. A 2250.

Family PORTUNIDAE.

Gen. ACHELOUS, de Haan.

1833. *Achelous* (subgen. of *Portunus*), de Haan, Crustacea Japonica, decas 1, p. 8.
1899. „ (subgen. of *Neptunus*), Alcock, J. Asiat. Soc. Bengal, vol. 68, pt. 2, pp. 9, 30.
1901. „ (subgen. of *Portunus*), Rathbun, U.S. Fish. Comm. Bull., 1900, vol. 2, p. 44.
1906. „ „ „ Rathbun, U.S. Fish Comm. Bull., 1903, pt. 3, p. 371.
1910. „ Stebbing, Ann. S.A. Mus., vol. 6, pt. 4, p. 307.

In defining this genus or subgenus de Haan states that of the nine teeth of the antero-lateral margin the hindmost tooth is scarcely longer than the preceding teeth. In the species now to be mentioned it has been observed that the tooth in question is actually smaller than those which precede it.

Achelous orbicularis, Richters.

1880. *Achelous orbicularis*, Richters, in Möbius, Meeresf. Maurit., p. 153, pl. 16, figs. 14, 15.
1893. „ „ Henderson, Tr. Linn. Soc. London, ser. 2, vol. 5, pt. 10, p. 371.
1899. *Neptunus* (*Achelous*) *orbicularis*, Alcock, J. Asiat. Soc. Bengal, vol. 68, pt. 2, p. 47.
1906. *Portunus* (*Achelous*) *orbicularis*, Rathbun, U.S. Fish. Comm., p. 871, pl. 12, fig. 4.
1911. „ „ „ Rathbun, Tr. Linn. Soc. London, ser. 2, vol. 14, pt. 2, p. 206.

The specimen measures 24 mm. at the broadest part, between the apices of the seventh antero-lateral denticles, with a median length of 18 mm., the length being thus six-eighths of the breadth, as compared with six-sevenths recorded by Alcock. The subcircular appearance, however, is increased by a slight protrusion of the third maxillipeds in front, and of the pleon to the rear. The telson of the female is triangular, ending bluntly, abruptly narrower than the preceding segment. The first two segments of the pleon are extremely short, not clearly separated. The third segment is the widest of all, sharply ridged, not very long; the fourth is also short, exceeded in breadth by the fifth, which,

like the sixth, has considerable length and breadth. The widened fourth joint and the strongly ridged palm of the chelipeds are noteworthy features in this attractive species.

Locality. Off Umkomaas River; depth 13 fathoms. A 852.

Gen. CHARYBDIS, da Haan.

(See these Annals, vol. 6, p. 306, 1910.)

Charybdis variegatus (Fabricius).

1798. *Portunus variegatus*, Fabricius, Suppl. Ent. Syst., p. 364.
1833–5. „ (*Charybdis*) *variegatus*, de Haan, Crust. Japon., decas 1, p. 10, decas 2, p. 42, pl. 1, fig. 2.
1899. *Charybdis* (*Goniosoma*) *variegata*, Alcock, J. Asiat. Soc. Bengal, vol. 68, pp. 50 (*variegatum*), 60 (with synonymy).

The small specimen which I refer to this species is a male with the carapace 13 mm. long by 20 mm. in extreme width. The pleon has its second and third segments transversely keeled, the composite third leading by concave margins to the sixth, which has convex margins and is broader than long. According to Alcock the front is cut into six rather pointed teeth (not including the inner supra-orbital angle), whereas de Haan calls the front 8-dentate, with obtuse teeth; in our specimen the four central teeth are not at all pointed. Further, as to the teeth of the antero-lateral margins, while there is agreement as to the size of the large hindmost tooth, Alcock speaks of the others increasing in size from before backwards. It is proper, therefore, to mention that in our specimen the first of the six lateral, though much less sharp than those which follow, is as large as any of the intermediate four, as appears to be the case in de Haan's figure.

Locality. Tugela River, N.W. by N. 22 miles; depth 47 fathoms. A 581.

Gen. PARATHRANITES, Miers.

1886. *Lupocyclus* (*Parathranites*), Miers, Rep. Voy. Challenger, Brachyura, vol. 17, p. 185.
1899. *Parathranites*, Alcock, J. Asiat. Soc. Bengal, vol. 68, pt. 2, pp. 7, 10, 16.

1906. *Parathranites*, M. J. Rathbun, Bull. U.S. Fish. Comm. for 1903, p. 867.

Alcock, defining this as an independent genus, considers it "nearer to *Bathynectes* than to *Lupocyclus*."

PARATHRANITES ORIENTALIS, Miers.

1886. *Lupocyclus* (*Parathranites*) *orientalis*, Miers, Rep. Voy. Chall., Brachyura, vol. 17, p. 186, pl. 17, figs. 1, 1 *a–c*.

1899. *Parathranites orientalis*, Alcock, J. Asiat. Soc. Bengal, vol. 68, p. 17.

The larger specimen, a male, measures 12·5 mm. in length, with a breadth of 19 mm. between the tips of the outstanding hindmost teeth of the carapace; the smaller specimen of the same sex is 9 mm. long by 14 mm. wide. This specimen in travelling retained all its legs, while the other shed them all; in both the two wide terminal joints of the fifth peraeopods are extremely transparent.

Locality. Umhloti River, N.W. ½ W. 15 miles; depth 100 fathoms. A 580.

TRIBE CATOMETOPA.

FAMILY GONEPLACIDÆ.

(See these Annals, vol. 6, pt. 4, p. 312, 1910.)

GEN. EUCRATE, de Haan.

1835. *Eucrate*, de Haan, Crust. Japon., decas secunda, p. 36.
1900. ,, Alcock, J. Asiat. Soc. Bengal, vol. 69, pt. 2, pp. 292, 298.
1908. ,, McCulloch, Records Austral. Mus., vol. 7, p. 58.

EUCRATE AFFINIS, Haswell.

1881. *Eucrate affinis*, Haswell, Pr. Linn. Soc. N.S. Wales, vol. 6.
1882. ,, ,, Haswell, Catal. Austral. Crust., p. 86.
1887. ,, ,, de Man, J. Linn. Soc. London, vol. 22, No. 137, p. 89, pl. 5, figs. 5-7.
1900. ,, *crenata*, var. *affinis*, Alcock, J. Asiat. Soc. Bengal, vol. 69, p. 300.

All these authors call attention to the beaded ridge on the carapace which in this species runs more or less parallel to each postero-lateral border. Dr. de Man suggests that it may be a synonym of *Pilumnoplax sulcatifrons*, Stimpson, 1858, and Alcock makes the same suggestion in regard to *Pseudorhombila sulcatifrons*, var. *australiensis*, Miers, 1884 Targioni Tozzetti, when re-discussing Stimpson's species in 1877, says that Stimpson assigns to the male a length of mill. 32·5, and a breadth of mill. 41, whereas Stimpson's actual statement is "Carapacis long, 0·325; lat. 0·41 poll." These measurements are not much in excess of our specimen, which has length of carapace 6·5 mm., greatest breadth 8 mm. All but one of the ambulatory limbs were missing.

Locality. Point Shepstone, W.N.W. $2\frac{1}{2}$ miles; depth 24 fathoms. A 854.

Family OCYPODIDÆ.

(See Ann. S. Afr. Mus., vol. 6, p. 325, 1910.)

Gen. CLEISTOSTOMA, de Haan.

1833. *Cleistostoma* (subgen. of *Ocypode*) (part), de Haan, Crust. Japonica, decas prima, p. 2, decas secunda, pp. 26, 55, 1835, *Cleistotoma* in index, decas 7, pp. 233, 234, 1849. *Cleistotoma* on pl. 7, *Cleistostoma* on pl. B.
1837. *Cleistotoma*, Milne Edwards, Hist. Nat. Crust., vol. 2, p. 67.
1838. ,, McLeay, Annulosa of S. Africa, p. 64.
1843. ,, Krauss, Südafrik. Crust., p. 40.
1852. *Cleistostoma* (part), Dana, U.S. Expl. Exp., vol. 13, p. 312.
1900. *Clistostoma* Alcock, J. Asiat. Soc. Bengal, vol. 69, pp. 294, 372.
1902. ,, Alcock, Illustr. Crust. Investigator, pl. 64, fig. 1.
1910. *Cleistostoma* Stebbing, Ann. S. Afr. Mus., vol. 6, p. 328.
1910. ,, Rathbun, Kjöbenhavn Vid. Selsk. Skr., ser. 7, vol. 5, p. 323.

Cleistostoma leachii (Audouin).

1825. *Macrophthalmus leachii*, Audouin, Explic. planches Crust. Égypte (Savigny), pl. 2, fig. 1.
1835. *Ocypode* (*Cleistostoma*) *dilatata*, de Haan, Crust. Jap., pp. 27, 55, pl. 7, fig. 3.

1837. *Cleistotoma leachii*, Milne Edwards, Hist. Nat. Crust., vol. 2, p. 68.
1838. ,, *edwardsii*, McLeay, Annulosa of S. Africa, p. 64.
1843. ,, ,, Krauss, Südafrik. Crust., p. 40.
1910. *Cleistostoma edwardsii*, Stebbing, Ann. S. Afr. Mus., vol. 6, p. 328.

Krauss, in describing *Macrophthalmus boscii*, Audouin, refers it to Savigny's pl. 2, fig. 1, and states that the usual fulness of detail supplied by Savigny is on this occasion wanting. Miers in the Crustacea of the "Alert" and in his "Challenger" report gives the same reference, while following A. Milne-Edwards in assigning the species generically to *Euplax* (*Chænostoma*), but the authors are evidently alluding to fig. 2 of Savigny's plate. His fig. 1 has the accustomed amplitude of finely drawn details, which excellently correspond with those of a specimen from South Africa.

Our specimen has a carapace about 8 mm. long by 10 mm. broad, the rostrum deflexed, lightly bifid, the orbits oblique, the lateral borders setose. The pleon of the female is as figured by de Haan, the seventh segment broad, though not very long.

The characteristic mouth-organs are well shown on Savigny's plate, unless the length of the mandibular palp is exaggerated, for in our example that feature is only normal. Both pairs of maxillae have their laminae well developed and powerfully setose. In the first maxillipeds the principal joint of the endopod is elongate with parallel sides and rounded apex. The third maxillipeds have the fourth joint as long as the broad third joint, and even broader by the bulging of its convex outer margin; the epipod is more elongate than that shown in Savigny's figure. The right cheliped of the female is missing, the left is in accord with Savigny's figure.

Locality. Swartkops River, Port Elizabeth. A 850.

Family PINNOTHERIDAE.

Gen. PINNOTHERES, Bosc., 1802.

(For the family and genus see these Annals, vol. 6, p. 330, 1910, and add—

1910. *Pinnotheres*, M. J. Rathbun, Kjöbenhavn, Vid. Selsk. Skr., ser. 7, vol. 5, p. 330.)

PINNOTHERES PISUM (?) (Linn.).

1767. *Cancer pisum*, Linn., Syst. Nat., ed. 12, p. 1039.
1802. *Pinnotheres pisum*, Bosc, Hist. Nat. Crust., vol. 1, p. 243.
1817. „ „ Leach, Malac. Podophth. Brit., pl. 14, figs. 1, 2, 3.
1908. „ „ Lagerberg, Göteborgs K. Vet. Handl., ser. 4, vol. 11, p. 105, pl. 3, figs. 9–11.
1916. „ „ Borradaile, Brit. Antarct. Exp., Zool., vol. 3, p. 100, fig. 12.

A specimen, labelled "from *Avicula* (pearl oyster)," taken in Mossel Bay, shows a very close resemblance to the figures which Leach gives of *P. pisum*. The *Avicula* purports to come from a depth of 12 fathoms, but the crab had become dry before it attracted attention. Accordingly it is no longer in a good state for precise examination. It has the broad pleon of an adult female, from which a multitude of ova have probably escaped. A 2644.

PINNOTHERES OSTREARIUS, Rathbun.

1901. *Pinnotheres ostrearius*, Rathbun, Bull. U.S. Fish. Comm. for 1900, vol. 2, p. 20, figs. 3 *a–b*.

A specimen, female, with carapace 8 mm. long, and 10 mm. broad, has the chela and third maxilliped so fully answering to those figured by Miss Rathbun for her species above-named that the identification seems reasonable. The specimen, partially dried, was procured by Mr. Barnard from a *Modiola* shell, in Delagoa Bay. A 3145.

A similar specimen, of the same sex, is recorded as taken from an ascidian. The carapace measures about 10 mm. in length by 11 mm. in breadth. The small but elongate mandible has a curved cutting edge fringed with a dozen small denticles followed below by a powerful tooth; the terminal joint of the palp is fringed with setae. The meral joint of the third maxilliped is broader than that shown in Miss Rathbun's text-figure, and the terminal joint seems to be considerably more than half the length of the preceding joint, but the setose furniture makes a precise estimate difficult.

Locality. St. James', Cape Peninsula.

Tribe OXYSTOMATA.

Family CYCLODORIPPIDAE.

1892. *Cyclodorippidae*, Ortmann, Zool. Jahrbüch., vol. 6, pp. 552, 558.
1900. „ A. M.-E. et Bouvier, Décap. Travailleur et Talisman, p. 34.
1901. *Dorippidae*, Rathbun, Bull. U.S. Fish. Comm. for 1900, vol. 2, pp. 5, 89.
1903. „ Lankester, Q.J.M.S., vol. 47, p. 456.
1905. „ Alcock, Ann. Nat. Hist., ser. 7, vol. 15, p. 565 (with synonymy).
1914. *Cyclodorippidae*, Parisi, Atti. Soc. Ital. Sci. Nat., vol. 53, p. 297 (20).
1916. „ Ihle, Zool. Anzeiger, vol. 46, p. 359.
1916. „ Ihle, Siboga-Exp., Mon. 39*b*[1], p. 98 (*Cyclodorippinae*, pp. 152, 154).

Gen. CORYCODUS, A. Milne-Edwards.

1880. *Corycodus*, A. M.-Edw., Bull. Mus. Comp. Zoöl., vol. 8.
1902. „ A. M.-Edw. et Bouvier, Mem. Mus. Comp. Zoöl., vol. 27, p. 86.
1910. *Nasinatalis*, Stebbing, Ann. S. Afr. Mus., vol. 6, p. 340.
1916. *Corycodus*, Ihle, Zool. Anzeiger, vol. 46, p. 361.
1916. „ Ihle, Siboga-Exp., Mon. 39*b*[1], p. 124.

Corycodus disjunctipes (Stebbing).

1910. *Nasinatalis disjunctipes*, Stebbing, Ann. S. Afr. Mus., vol. 6, p. 343, pl. 42.
1916. *Corycodus bouvieri*, Ihle, Zool. Anzeiger, vol. 46, p. 362.
1916. „ *disjunctipes*, Ihle, Siboga-Exp., Mon. 39*b*[1], p. 124, fig. 68 in text.

This species, as shown by Ihle, should be transferred from the Raninidae to the Dorippidae or Cyclodorippidae, if the latter be accepted as an independent family. Ihle includes in it the genera *Cymopolus*, *Cymonomus*, *Corycodus*, *Clythocerus*, *Cyclodorippe* and *Tymolus*.

Gen. XEINOSTOMA, nov.

Carapace orbicular, rostral process broad, arched, produced beyond the orbits. Pleon in both sexes consisting of six segments, of which the first and sixth are much the narrowest. Eye-stalks of moderate length, slightly bent. Palp of mandibles three-jointed. First maxillæ having a long spine-like termination to the palp. Second maxillæ feebly developed except as to the vibratory lamina. First maxillipeds with first joint small, second narrow at apex, rest of endopod broadly produced beyond the exopod to a squared apex; exopod with a small one-jointed flagellum. Second maxillipeds having the terminal joint of the endopod attached in cheliform fashion on the inner side of the penultimate, the long narrow exopod ending in a small one-jointed flagellum. Third maxillipeds reaching beyond the broad front of the buccal frame, the exopod not concealed, a very elongate oval, with no flagellum, the fourth joint of the endopod considerably shorter than the third but fully as broad, approaching a semicircle in shape, with the fifth joint attached below the apex of the inner margin. The chelipeds denticulate, stouter than the setose second and third peraeopods. The fourth and fifth peraeopods very slender, subdorsal. The generic name is compounded of the Ionic form ξείνος strange, and στόμα, mouth.

There appear to be many points of resemblance between this genus and *Cyclodorippe*, A. Milne-Edwards, and *Clythrocerus* of the same author. The figures of Ortmann's *Cyclodorippe uncifer* by Ortmann and Ihle illustrate this, while the differences in the pleon are very marked, as seen in Parisi's illustration of the same species.

XEINOSTOMA EUCHEIR, n. sp.

Plate XCIX.

The finely denticulate rostrum is concave above, the surface of the carapace traversed by ill-defined transverse and longitudinal depressions, the antero-latero-lateral margins denticulate, a conspicuous tooth at the external corner of the orbit and a similar one near the beginning of the curved setulose postero-lateral border; the hind margin shallowly excavate. The sternal plastron is acutely produced between the bases of the third maxillipeds in front and deeply excavate behind for the terminal segment of the pleon. In the male the second segment of the pleon is the widest though proximally very narrow; in the female the third segment is the widest but subequal to the fourth.

The eyes as preserved are a light orange in colour; the stalk carries several setules. The first antennae have the three joints of the peduncle nearly equal in length, but the first much the stoutest; the flagella are very short. In the second antennae the slender six-jointed flagellum is slightly longer than the peduncle.

The mandibles are rather short but strong, with the palp membraneous. The first and second maxillae are rather feeble. In the first maxillipeds the epipod is very broad at the base. The second maxillipeds appear remarkable by exhibiting a character familiar in the first maxillipeds of some other genera, such as *Pinnotheres*, Latreille, and *Pinnixa*, White, namely the chela-like arrangement of the ultimate and penultimate joints of the endopod. The rounded ends, however, of both joints make any chelate function in the present case rather difficult to explain. The place of insertion of the seventh joint is similar in *Hexapus* but without cheliform prolongation of the sixth joint. The epipod of these maxillipeds is narrow; in both sexes it shows at the base two small elevations of the outer margin. The third maxillipeds have been already described as part of the generic character.

The chelipeds are massive compared with the other limbs, and show various rows of granules and setules on the fourth to the seventh joints. The curved fingers close accurately together, the movable finger equalling the palm in length. The second peraeopods are shorter than the third, but similar in structure, both pairs having the last two joints strongly setose; the finger in the third pair is very elongate. The fourth and fifth peraeopods are very much smaller, with the last two joints a little curved as if for grasping. These limbs were present only in one of the specimens, and only on the left side of that, as shown in the figure. I have been unwilling to remove them for more accurate delineation, and no representatives were present among the detached limbs of other specimens.

The male stilet is elongate, its needle-like apex reaching nearly the end of the pleon. The four pairs of pleopods of the female show long plumose setae on one branch and simple setae on the other.

The carapace of the male specimen figured has a length of 9 mm., with a rather smaller breadth.

Locality. Cape Vidal, N.N.E. ¼ N. 95 miles; Zululand; depth 80 fathoms. A 1608.

The specific name is from the Greek εὐχειρ fair-handed.

Gen. CYMONOMUS, A. Milne-Edwards.

1880. *Cymonomus*, A. M.-Edwards, Bull. Mus. Comp. Zoöl., vol. 8, p. 26.

1900. *Cymonomus*, A. M.-E. et Bouvier, Crust. Décap. Travilleur et Talisman, p. 34.
1902. „ A. M.-E. et Bouvier, Mem. Mus. Comp. Zoöl., vol. 27, p. 81.
1903. „ Lankester, Q.J.M.S., vol. 47, p. 450.
1904. „ Doflein, Valdivia Exp., Brachyura, pp. 33, 152, 190, 282.
1905. „ Alcock, Ann. Nat. Hist., ser. 7, vol. 15, p. 565.
1908. „ H. J. Hansen, Ingolf-Exp., Crust. Malac., vol. 3, pt. 2, p. 20.
1916. „ Ihle, Zool. Anzeiger, vol. 46, p. 360, and Siboga-Exp., Mon. 39*b*[1], p. 118.

Cymonomus trifurcus, n. sp.

Plate C.

The present species seems to be nearly allied to the East African form which Doflein figures and briefly describes under the name "*Cymonomus granulatus Valdiviae*, Lank." (*loc. cit.*, pp. 33, 284, pls. 11, fig. 5; 12, figs. 1–3; 38, fig. 8; 44, fig. 7). But the illustration, most suggestive of a real alliance, by a three-pronged rostral plate, is itself distinctive, the true rostrum being in Doflein's form not granular, shorter than the eye-stalks, and more nearly parallel with them. Also his drawing of the third maxilliped shows the fourth joint more strongly produced beyond the insertion of the fifth joint and the principal joint of the exopod extending beyond the endopod.

In the present species there is no suture or line of demarcation dorsally separating the trifurcate rostral plate from the rest of the carapace. The widely-divergent lateral prongs, however, in ventral view, show a little rounded knob apically, white and smooth as preserved, presumably the vestigial eye. Milne-Edwards and Bouvier state that in this genus the segments of the pleon are all distinct in both sexes, but their figures show only six segments. Alcock also speaks of the segments being all distinct. In the form here considered I could only find a pleon with six segments, the second and third being, perhaps, consolidated. The French authors say that the males have two pairs of pleopods modified as sexual organs, nearly resembling those of the *Dromiidea*, except that the terminal article of the second pair is not stiliform. Our South African form, on the contrary, has in this pair a sharp stiletto-like apex, but *in situ* both pairs have their terminals strongly folded inwards instead of being stretched backwards as necessitated in the figures to show the details of their

structure. In the second pair the terminal part is shaped rather like a stocking with a very slender foot and a binding at the knee (really consisting of muscles).

In the first antennae the second and third joints of the peduncle are subequal, each a little shorter than the first and longer than the principal ten-jointed flagellum.

The mandibles are strong, rather short, with the palp apparently slight, three-jointed. The first and second maxillae and the first maxillipeds are in close agreement with those figured by Milne-Edwards and Bouvier for *C. granulatus* (Norman). In their figure of the second maxillipeds they represent the flagellum of the exopod as preceded by a short joint, starting from a point where in our species there is a marginal tooth, but no articulate division of the elongate main joint of the exopod.

In the chelipeds the short, strongly-curved wrist shows some sharp teeth on the inner side. In the second peraeopod the fourth joint is decidedly longer than the finger. In the third peraeopod it is equal in length to the finger. The French authors say in regard to these limbs that the fourth joint is longer than the sixth and a little shorter than the fingers. In the fourth and fifth peraeopods they write that the fingers are "*très arqués*"; but their figure does not give the effect of a sharply-bent hook as found in the present species.

The carapace measures about 7 mm. in length by 6 mm. in breadth.

Locality. Buffalo River N.W. $\frac{1}{2}$ W. 19 miles (East London); depth 300 fathoms. A 884.

Two female specimens, with no limbs, but each containing nine or ten large eggs, agree closely in appearance with the male, one having just the same dimensions of the carapace; in the pleon, however, the outer margins of the first and second segments show almost a continuous curve, instead of a re-entering angle, and the second is the longest of all the segments.

Locality. Cape St. Blaize, N. by E. 73 miles; depth 125 fathoms. A 1612.

Family LEUCOSIIDAE.

(See these Annals, vol. 6, pt. 4, p. 335, 1910.)

Gen. NURSIA, Leach.

1817. *Nursia*, Leach, Zool. Misc., vol. 3, p. 18.
1855. ,, Bell. Tr. Linn. Soc. London, vol. 21, p. 307.
1896. ,, Alcock, J. Asiat. Soc. Bengal, vol. 65, pt. 2, pp. 166, 170, 178.

Alcock notes that in this genus the fourth joint of the third maxillipeds is not much more than half the length of the third joint measured along the inner border, while in *Ebalia* it is a great deal more than half that length. Leach notes that in *Ebalia* it is the last pleon segment that carries a dentiform process, but in *Nursia* the penultimate segment. These considerations point to the inclusion of the species here described in the genus *Nursia*.

Nursia scandens, n. sp.

Plate CVIa.

In general appearance it will be seen that this species is not unlike that described and figured as *Ebalia jordani*, n. sp., by Miss Rathbun in 1906 (U.S. Fish. Comm., p. 889, pl. 15, fig. 3, text-figs. 43, *a*, *b*), where the pleon is of the *Nursia* type, but the maxilliped is undescribed. In our species the fourth joint of the maxilliped is less than half the length of the third joint, the chelipeds are more slender, with the fingers more slender, as they should be for the *Nursia* form, and for the ambulatory limb in the single one that was present the finger is relatively much longer than in *Ebalia jordani*. The latter appears to be a much larger form—length of male type 11·4 mm., width 11·2 mm.; whereas our specimen, evidently by its pleopod an adult male, is in middle line of the carapace only 4·5 mm. long, with a width of 5 mm.; between the front and hind processes the length about equals the width. *E. salamensis*, Doflein, 1904, seems to be distinguished by its pleon.

Locality. Cove Rock, N.W. $\frac{3}{4}$ W. 13 miles; depth 80–130 fathoms. Specimen apparently climbing in a small thicket of *Cerataisis ramosus*, Hickson. A 4049.

Gen. LITHADIA, Bell.

1855. *Lithadia*, Bell, Tr. Linn. Soc. London, vol. 21, p. 305.
1860. ,, Stimpson, Ann. Lyceum. Nat. Hist. Mus. York, vol. 7, p. 238.
1870. ,, Stimpson, Bull. Mus. Comp. Zoöl., vol. 2, pt. 2, p. 159.
1871. ,, Stimpson, Ann. Lyceum. Nat. Hist. New York, vol. 10, p. 115.
1872. *Ebalia* (*Lithadia*), von Martens, Arch. Naturg., vol. 38, pp. 114, 115.
1886. *Lithadia*, Miers, Rep. Voy. Challenger, vol. 17, pt. 49, p. 318.
1901. ,, M. J. Rathbun, U.S. Fish. Comm. for 1900, vol. 2, p. 88.

Lithadia barnardi, n. sp.

Plate CI.

The rather narrow front is scarcely emarginate. It projects a little beyond the small eyes, but being slightly upturned may, according to the point of view, appear to be on a level with them. The specimen figured must be considered abnormal, the antero-lateral wing on the right of the carapace having no counterpart on the left. After the drawing of the plate, two specimens, a male and a female, were examined and showed no trace of such an unusual outgrowth. The whole surface of the carapace is covered with tubercles, diversified by prominent lamellae, six of which in the male are arranged in a forward curve across the middle. In the female the number is reduced to four by coalescence in the two outer pairs. Behind this row in the centre line two other lamellae are placed—a large one near the hind border and a smaller intermediate. The pleon of the female specimen figured firmly enclosed a great number of eggs. The first six segments form a very broad oval, smoothly trilobed, the third to the sixth coalesced, but with suture-markings, the telson triangular, very small. In the male the pleon from the third segment to the apex is narrowly triangular.

The mandibles have a small three-jointed palp. The inner plate of the first maxillae is small and curved, palp-like, but in the wrong position; the palp was not satisfactorily made out. In the third maxillipeds the fourth joint is much more than half the length of the third and extends considerably beyond the long joint of the exopod. The opaque parts of these maxillipeds are tuberculate on the outer lower surface and the exopod is longitudinally grooved on its inner upper surface.

The fingers of the first peraeopods (chelipeds) close completely with the apices crossing; the palms are longer than the fingers and stout, but longer than broad; they are slightly tuberculate, but the three preceding joints, especially the long fourth joint, strongly so. The second to the fifth pairs of peraeopods are small, with the fourth, fifth and sixth joints tuberculate, the fingers setulose.

The carapace of the specimen figured measured approximately 9 mm. long, 9·5 mm. broad; the female from the second locality 9 mm. long, 11 mm. broad, and the accompanying male 8 mm. long, 9 mm. broad.

Localities. Umhloti River, N.W. by W. $2\frac{3}{4}$ miles; depth 25 fathoms. A 504. 32° 53′ S., 28° 12′ E.; depth 45 fathoms. A 508.

The specimens were obtained by Mr. Keppel Barnard, after whom I do myself the pleasure of naming the species.

Gen. LEUCOSIA, Fabricius.

1798. *Leucosia*, Fabricius, Suppl. Ent. Syst., p. 349.
1896. „ Alcock, J. Asiat. Soc. Bengal, vol. 65, p. 209.
1906. „ Nobili, Bull. Sci. France-Belgique, vol. 40, p. 97.
1907. *Leucosides*, Rathbun, Mem. Mus. Comp. Zoöl., vol. 35, p. 68.

The retention of *Leucosia*, Fabricius, and the propriety of ignoring *Leucosia*, Weber, with some similar questions of nomenclature depend on the argument which I have used in Journ. Linn. Soc. Zool., vol. 29, p. 333, 1905.

Leucosia whitei, Bell.

1855. *Leucosia whitei*, Bell, Tr. Linn. Soc. London, vol. 21, p. 289, pl. 31, fig. 2.
1896. „ „ Alcock, J. Asiat. Soc. Bengal, vol. 65, pp. 214, 225 (with synonymy).
1910. *Leucosides whitei*, Rathbun, Mém. Ac. Sci. Denmark, ser. 7, vol. 5, p. 310.

The South African specimen which I refer to this small species is a female, devoid of all the ambulatory limbs, with a carapace 10 mm. long by 9 mm. broad. It is fairly in agreement with Bell's figures and description, the palm of the chelipeds being "tumid, scarcely longer than broad," and in particular the broadly oval pleon of the female has colour markings "interrupted in the middle" which indicate boundaries of coalesced segments. These markings, however, indicate a coalescence of four segments, rather than only three, of which Bell and Alcock speak.

Locality. Umhloti River, N. N.W. 1½ miles; depth 27 fathoms. A 3277.

Family RANINIDAE.

(See Ann. S. A. Mus., vol. 6, pt. 4, p. 339, 1910.)

Gen. RANINOIDES, Milne Edwards.

1837. *Raninoides*, Milne Edwards, Hist. Nat. Crust., vol. 2, pp. 191, 196.

1888. *Raninoides*, Henderson, Rep. Voy. Challenger, vol. 27, pt. 69, pp. 26, 27.
1896. ,, Alcock, J. Asiat. Soc. Bengal, vol. 65, pt. 2, pp. 290, 292.

RANINOIDES SERRATIFRONS, Henderson.

1893. *Raninoides serratifrons*, Henderson, Tr. Linn. Soc. London, ser. 2, vol. 5, pt. 10, p. 408, pl. 38, figs. 10–12.
1896 ,, ,, Alcock, J. Asiat. Soc. Bengal, vol. 65, pt. 2, p. 293.

The carapace from the apex of the serrate rostrum is 18·5 mm. long in the median line, with a breadth of about 10 mm. The sternum between the first three pairs of legs is nowhere linear, increasing in width behind the bases of the chelipeds and then narrowing to a pair of nodules between the basis of the second peraeopods, whence it again widens almost to the interval between the third pair. On the thumb of the chelipeds in our specimen the inner margin has only four denticles, whereas in Henderson's smaller example there were five. The last pair of limbs are small, but not filiform, the terminal joint oval, its distal extremity the broader.

Locality. Point Shepstone, W.N.W. 2 miles; depth 34 fathoms. A 1436.

GEN. COSMONOTUS, Adams and White.

1847. *Cosmonotus*, Adams and White, Pr. Zool. Soc. London, p. 227.
1848. ,, Adams and White, Crust. Voy. Samarang, p. 60.
1852. ,, Dana, U.S. Expl. Exp., vol. 13, p. 404.
1888. ,, Henderson, Rep. Voy. Challenger, vol. 27, pt. 69, p. 32.

COSMONOTUS GRAYII, Adams and White.

1847. *Cosmonotus grayii*, Adams and White, Pr. Zool. Soc., p. 227, 2 figures.
1848. ,, ,, Crust. Voy. Samarang, p. 60, pl. 13, figs. 3, 3 *a*, 3 *b*.
1858. ,, ,, Stimpson, Pr. Ac. Philad., p. 79 (241).
1888. ,, ,, Henderson, Rep. Voy. Challenger, vol. 27, p. 33.
1904. ,, *grayi*, Doflein, Valdivia-Exp., Brachyura, p. 51, pl. 18, figs. 5–8.

Adams and White for their Borneo specimen give the measurements: "Carapace about an inch in length, and half an inch wide." Our specimen is much smaller, the carapace being only 7 mm. long and about 6 mm. between the apices of the antero-lateral pair of denticles. The length indeed is rather less than 7 mm. in the central line in consequence of the deep frontal notch. From the advanced points of this notch the very oblique margin on either side is finely denticulate, ending in a cavity bounded by the comparatively large antero-lateral denticle. As in *Lyreidus*, the third and fourth joints of the third maxillipeds are long and narrow, but here the fourth joint is not longer than the third. The three terminal joints are very small.

Locality. Umvoti River, N. by W. $\frac{1}{4}$ W. 5 miles; depth 56 fathoms, Natal. A 1356.

BRACHYURA ANOMALA.

(See these Annals, vol. 6, pt. 4, p. 341, 1910.)

Family DROMIIDAE.

(See the reference above given, p. 342, and add—

1913. *Dromiidae*, Ihle, Siboga Exp., Dromiacea, vol. 39*b*, p. 3.)

Gen. CRYPTODROMIA, Stimpson.

1858. *Cryptodromia*, Stimpson, Pr. Ac. Sci. Philad., vol. 10, p. 225.
1887. ,, de Man, Arch. Naturg., vol. 53, p. 398.
1901. ,, Alcock, Catal. Indian Brachyura, fasc. 1, p. 48.
1903. ,, Borradaile, Ann. Nat. Hist., ser. 7, vol. 11, p. 299.
1907. ,, Nobili, Ann. Sci. Nat., ser. 9, Zool., vol. 4, p. 145.
1907. ,, Stimpson, Smithson Misc. Coll., vol. 49, p. 172.
1911. ,, Rathbun, Tr. Linn. Soc. London, vol. 14, p. 194.
1913. ,, Ihle, Siboga-Exp., Dromiacea, vol. 39 *b*, p. 32.

Cryptodromia micronyx, n. sp.

Plate CII.

The present species by its globosity is suggestive of Alcock's *Sphaerodromia*, by the broad fourth joint in the first four peraeopods it points to Stimpson's *Petalomera*, but by its characters generally I incline to leave it in *Cryptodromia*.

The rostrum is pretty evenly tripartite but the central tooth is much depressed. A small tooth supervenes between the emerging second antenna and the small eye-stalk. The antero-lateral margins have no teeth, but undulations which indicate positions that four teeth might occupy. The carapace has a smooth shining appearance, with the H marking far to the rear in the male specimen figured, the dimensions being 13 mm. in breadth by 11·5 mm. in length. A female without eggs has the carapace 14 mm. broad and 12 mm. long; another, carrying numerous rather large eggs (2 mm. in longer diameter), measured 16 mm. in breadth, with a length of 13·5 mm. The pleon in the female is broader than in the male but not very dissimiliar.

The cornea of the eyes is pale. The first antennae have a peduncle of three wide joints of irregular shapes, a very slender ten-jointed flagellum accompanied by a stouter one carrying a broad mass of long setae. In the second antennae the second joint is the largest, widening distally like the third joint of the first pair, the following joints quite short, and the slender flagellum longer than the peduncle.

The mandible appears to have a three-jointed palp, but probably the small first joint is consolidated with the second, with a more abrupt bend than that shown by Ihle for *Cryptodromia tumida*, Stimpson. In other respects the mouth-organs of that species as shown by Ihle are in near agreement with what I find in the new species. Only the uppermost lobe in the second maxilla is here narrower than there, and the third joint of the third maxilliped is here longer than the fourth. Seen from the inner side this fourth joint shows a two-fold excavation between the inner and distal margins.

The chelipeds have three nodules on the fifth joint padded with short felt, of which there is a sheet on one side of the palm. The short stout fingers have white tips following a pink tinge (as preserved); seen from one side they have interlocking denticles, but end-on each shows a tridentate apex, that of the fixed finger (or thumb) being the broader; the fourth joint is very broad, with one edge straight, the opposite very convex.

The second and third peraeopods are alike, with many patches of felt, of rugged build, the fourth joint broad, the fifth triangular, the sixth not longer, rectangular, distally clasping the narrow seventh joint, which ends in a short curved horny nail. The fourth peraeopod, not half as long as the second or third, is barely as long as the fifth but much broader, especially as regards the fifth and sixth joints; the sixth joint is scarcely longer than broad, and ends in a minute nail.

The fifth pair have the fourth joint rectangular like that of the preceding pair, but narrower, and followed by a much narrower fifth joint of equal length; the sixth joint is shorter, and perhaps carries a minute nail. In all three specimens the seventh joint appears to have no representative in the fourth and fifth peraeopods other than a microscopic nail. To the smallness of the nail in the second and third pairs reference is made in the specific name. This will be still more applicable to the case of the fourth and fifth pairs if appearances can be trusted; nor is it likely that all three otherwise well-preserved specimens would have suffered precisely the same injuries.

The characters of the large first and small second pleopods of the male are sufficiently shown by the figures.

Locality. Cove Rock, N.E. by E. $\frac{1}{2}$ E. $4\frac{1}{2}$ miles; depth 22 fathoms. A 779.

Gen. CONCHOECETES, Stimpson.

Conchoecetes artificiosus (Fabricius).

(See these Annals, vol. 6, pt. 4, p. 346, 1910, and for fuller synonymy of genus and species see Marine Investigations in South Africa, no. II, p. 19, 1901.)

An ovigerous female specimen, 17 mm. broad and slightly over 16 mm. long, was obtained by Dr. Gilchrist at the locality "Cape Point N. 81° E., 32 miles; depth 460 fathoms." A rather smaller specimen was devoid of its pleon.

Gen. EUDROMIA, Henderson.

1888. *Eudromia*, Henderson, Rep. Voy. Challenger, vol. 27, pt. 69 pp. ix, 13.

1903. ,, Borradaile, Ann. Nat. Hist., ser. 7, vol. 11, p. 302.

The leading character for the distinction of this genus from its neighbours is, as Borradaile expresses it, the "front deeply cleft into two prominent rounded lobes." To this may be added the very small pleopods on the sixth pleon segment of the female, and the sternal grooves of that sex ending together. Some of the characters based on the typical species, *E. frontalis*, Henderson, such as "legs not knobbed or ridged," and "the length exceeding the breadth" of the carapace, would exclude the species now to be described.

Eudromia bituberculatus, n. sp.

Plate CIII.

Behind the two very prominent, broadly rounded, and widely separated lobes of the front the carapace has a pair of large, nearly erect tubercles—a conspicuous feature to which the specific name refers. To the rear of the frontal lobes the margins of the carapace diverge strongly, overlapping the orbits and running out into a conspicuously extended tooth on either side by which the width of the carapace is made to exceed its length, even including the frontal lobes. Further back are two pairs of small teeth, and then the postero-lateral margins bend back beyond the broad and straight hind margin. The pleon of the female is trilobed, closely fringed with setae, and on most of the segments having the hind margin furnished with a central and two lateral pads of setules.

The eyes have a short tumid stalk and a small, pale cornea, almost or quite concealed by the carapace above. In the antennae the first joint of the first pair is the largest and the second joint of the second pair. The palp of the mandible appears to be very small. The palp of the first maxilla is very elongate. In the second maxillae the lowest lobe is large, all the others very slender. The fourth joint of the second maxilliped is broad proximally, narrowing distally. In the third pair the fourth joint is longer than the third—the reverse of the relation which Henderson found in *E. frontalis*. In the present species the second joint seen from the outer (lower) side seems to be in coalescence with the third, but is quite distinct on the inner (upper) side. On the whole the antennae and mouth-organs show strong agreement with those of *Cryptodromia*.

The chelipeds have broad tips to the fingers and interlacing denticles on the confronting margins, the wrist nodulous, and the preceding joint denticulately cristate. The second and third peraeopods are alike and nodulous. The fourth pair are much smaller, with the hand well defined though very slight, and carrying a well-formed nail. The same is the case with diminished hand in the fifth pair.

The pleopod on the sixth segment of the pleon is very small, in striking contrast to those on preceding segments.

The carapace measured 13 mm. from the advanced median point in the central line, or 15 mm. from front to back laterally, the greatest breadth being 16·5 mm.

Locality. Rooiels River, S.W. by S. $\frac{1}{2}$ S. 2 miles; depth 18 fathoms (False Bay). A 858.

Family HOMOLIDAE.

(See South African Crustacea, pt. 2, p. 20, 1902 [in Gilchrist's Marine Investigations in South Africa].)

Gen. LATREILLOPSIS, Henderson.

1888. *Latreillopsis*, Henderson, Rep. Voy. Challenger, vol. 27, pt. 69, p. 21.
1912. „ Ihle, Tijdschr. Ned. Dierk. Vereen., ser. 2, vol. 12, p. 211.
1913. „ Ihle, Siboga-Exp., Mon. 39*b*, p. 77.

Carapace rectangular, with a median spiniform rostrum and a supra-orbital spine on each side. Ocular peduncles with the basal segment narrow, cylindrical, elongate. First and second antennae and third maxillipeds similar to those in *Homola*. Chelipeds of female slender, shorter than second, third, or fourth peraeopods. Fifth peraeopods subchelate. Pleon of female seven-jointed, broad, but with narrow triangular telson.

Latreillopsis alcocki, n. sp.

Plate CIV.

From the type-species, the little *Latreillopsis bispinosa*, Henderson, the present form is distinguished at first sight by its far greater size, and, apart from that sometimes untrustworthy distinction, by various details of structure in regard to the second antennae and the limbs.

The acute rostral spine is here inconspicuous in dorsal view by reason of its depression, although the pair of larger flanking spines ascending obliquely to the rear do not interfere with it, as they are wide apart. Each of the three is attended by a subsidiary tooth at some distance from its base. The gastric region is armed to the rear by a strong upright tooth, preceded by a row of four smaller teeth in a curved line between it and the teeth behind the eyes. Various small teeth or spines stud the carapace and numerous strong teeth project from the descending sides. The length of the carapace is 45 mm. The distance between the apices of the spines against which the eyes rest is 18 mm.; behind the neck the breadth widens to 32 mm. between the tips of the lateral spines, the greatest breadth, 44 mm., being reached at a distance of 28 mm. from the apex of the rostrum. A small central spine is observable on each of the first four segments of the pleon, and a very small one on the distal end of the sixth.

The eye has the effect of hanging on the distally narrowed first segment of the peduncle. In the second antennae the penultimate joint of the peduncle is about five times as long as the ultimate as compared with about three times in the type-species. The flagella were imperfect.

The epistome is divided transversely by a curved ridge which bounds a cavity expressly excavated, it would seem, to receive the extension of the third maxillipeds, since all the other mouth-organs were confined within the buccal frame. This narrows slightly to the rear. The mouth-organs agree very nearly with those figured by de Haan for the genus *Homola*, except that he does not show the curious triangular expansion of the exopod exhibited by this species in the first maxilliped. The mandibular palp is three-jointed. The palp of the first maxilla also appeared to be three-jointed, with the third joint wider than the second, but it is rather difficult to make sure of the true articulation in this membraneous appendage. In the second maxilliped the sixth joint is larger than the fifth or the seventh. In the third maxilliped the seventh joint is longer than the sixth, which in turn is longer than the fifth; the third and fourth joints are subequal in length and breadth, both strongly setose on the inner margin and denticulate on both margins; the long joint of the exopod does not nearly reach the produced inner angle of the fourth joint of the endopod.

The rather slender chelipeds have the fingers fitting closely together, two-thirds the length of the palm, equal to the fifth joint, the whole hand rather longer than the fourth joint, which is not very strongly spinose. The second and third peraeopods are much longer and stronger, with prominent spines on the fourth joint, the finger as long as the fifth joint, about half as long as the sixth, its inner margin furnished with about a dozen graduated spines, increasing in length towards the horny nail; the fourth pair are similar in pattern but rather longer and stronger. In the type-species the sixth joint of these limbs is said to be three times instead of twice the length of the fifth.

The fifth peraeopods are much slighter than the three preceding pairs, but somewhat longer than the chelipeds, this superiority depending on the considerably greater length of the fourth and fifth joints, the latter two-thirds as long as the former and rather more than twice the length of the curved subchelate hand. The base of the hand is widened and furnished with strong spines, among which the curved spinulose finger can impinge its apex. It is rather interesting to note that this apparatus, prevalent in the Homolidae, together

with the subdorsal position of the fifth peraeopods, is found again in the genus *Grypachaeus*, which Alcock instituted in 1895 for a member of the Oxyrrhyncha, placing it in his subfamily Inachinae, a division of the Mamaiidae.

The specific name is chosen out of respect to my friend, Colonel Alcock, F.R.S., whose writings on the Malacostraca can scarcely be too highly valued.

Locality. Algoa Bay; depth 40 fathoms. A 1450.

MACRURA ANOMALA.

Tribe PAGURIDEA.

Family PAGURIDAE.

Gen. PAGURISTES, Dana, 1852.

(See S. African Crustacea in these Annals, vol. 6, pt. 4, p. 351, 1910. In this genus the eye-stalks are long and slender, the third maxillipeds are juxtaposed at base, the fourth peraeopods are not chelate; in both sexes the telson is lop-sided to the left; in the female from the left side of the fourth segment a foliaceous lobe forms a brood-pouch [see Alcock, pp. 24, 31, 1905].)

Paguristes gamianus, Milne Edwards, 1836.

1836. *Pagurus gamianus*, M. Edwards, Ann. Sci. Nat., ser. 2, vol. 6, p. 283.
1837. „ „ M. Edwards, Hist. Nat. Crust., vol. 2, p. 235.
1905. *Paguristes gamianus*, Alcock, Indian Decap. Crust., pt. 2, fasc. 1, p. 157.

The small female specimen which I diffidently assign to this species has a carapace only 8 mm. long, the chelipeds subequal, setose, the second and third peraeopods also having long setae on the upper and lower borders. The eye-stalks are subequal in length to the peduncles of the second antennae and are shorter than the width of the front of the carapace.

Locality. Umhlangakula River, N.W. by N. 7 miles; depth 50 fathoms. A 851.

Paguristes, sp.

A specimen partly dried, with chelipeds and ambulatory limbs detached, seems near to *P. ciliatus*, Heller, as doubtfully re-described

by Alcock in 1905 (*loc. cit.*, p. 34). The carapace is 10 mm. long, the ophthalmic scales well apart, the flagellum of the second antennae 18 mm. long, the acicle curved; chelipeds very unequal, the larger with rows of sharp tubercles on wrist, palm, and fingers; the fourth joint fringed with teeth on inner margin in both members; of the ambulatory limbs one pair has the fifth and sixth joints conspicuously denticulate on the convex margin in one member but only inconspicuously in the other.

Locality. Great Fish Point, N. by W. 7 miles; depth 49 fathoms. A 3268.

Gen. CALCINUS, Dana, 1852.

Calcinus laevimanus (Randall), 1839.

(For the genus and species see these Annals, vol. 6, p. 353, 1910.)

The smoothness of the chelipeds and short ambulatory limbs make Randall's specific name very appropriate. Under the name *Calcinus herbstii*, de Man, the species is well described and figured by Alcock in 1905. Several specimens were collected at Mozambique in November, 1912, by Mr. K. H. Barnard, A 3270, and in October, 1912, at Delagoa Bay, one specimen showing the characteristic colouring of the large left cheliped fairly retained; another, with left cheliped missing and the pleon carrying a *Sacculina*, A 2120.

Along with the Delagoa specimens is a small hermit in general resembling the other two, but with chelipeds entirely different, the right slightly the larger, both with hand and finger tuberculate. Only one of the ambulatory limbs is present, and the body is so extensively plastered with parasites as to suggest that the host may be in consequence abnormal. The parasite, about 2 mm. long, is in shape a rather elongate oval, narrowing to a short three-jointed stalk, of which the shortest joint (so far as visible) is inserted in the host.

Gen. CLIBANARIUS, Dana.

(See these Annals, vol. 6, pt. 4, p. 352, 1910, and add—
1915. Kemp, Mem. Indian Mus., vol. 5, p. 240.)

Clibanarius aequabilis, Dana.

1852. *Clibanarius aequabilis*, Dana, U.S. Expl. Exp., vol. 13, p. 464, pl. 29, figs. 4 *a–f*.
1888. „ „ var. *merguiensis*, de Man, J. Linn. Soc. London, vol. 22, p. 247.

1905. *Clibanarius aequabilis*, var. *merguiensis*, Alcock, Catal. Ind. Decap., pt. 2, fasc. 1, pp. 43, 46, pl. 4, fig. 5 (with synonymy).

A specimen which has lost almost all colour distinctions agrees well with Dana's figures of this small species. The carapace has a length of 9 mm., as in the descriptions by de Man and Alcock; its antero-lateral corners are rounded. The eyes are small, the eye-stalk slender, the ophthalmic scales contiguous. In the chelipeds "the upper surface of the wrist hand and fingers is more or less studded with conical spinules interspersed with setae" (Alcock), and the fingers "have spoon-like excavated tips" (de Man). These tips, like the nails of the ambulatory limbs, are dark. The feet of the third peraeopods are unlike, "the penult joint on left side flattened on outer side, and having a subacute edge above" (Dana). The pleon has a series of four two-branched pleopods on the left side.

Locality. East London. A 1545.

Gen. EUPAGURUS, Brandt, 1851.

(For the tribe, family, and genus, see the General Catalogue, Ann. S. Afr. Mus., vol. 6, pt. 4, pp. 349, 350, 356.)

Eupagurus zebra, Henderson.

1893. *Eupagurus zebra*, Henderson, Tr. Linn. Soc. London, ser. 2, vol. 5, pt. 10, p. 425, pl. 39, figs. 12–15.

1905. ,, ,, Alcock, Indian Decap. Crust., pt. 2, fasc. 1, pp. 124, 126, pl. 11, fig. 5.

The specimens which I am recording under this name show a general agreement with the description and figures supplied by Henderson and Alcock. At the same time there are differences which may eventually justify specific distinction. In that case I venture to propose *parazebra* for the new species.

For identification the leading features are the slenderness of the second and third peraeopods, with the beautiful stripes of colour on those limbs. But a comparison of the large right cheliped with earlier accounts of it suggest either that it is liable to considerable variation or that the present form is specifically distinct. According to Alcock in the large right cheliped the

carpus "is as long as the merus and considerably shorter than the palm," of which "the inner surface is crossed diagonally by a strong ridge." In our specimens the carpus is much longer than the merus and just as long as the palm, which has no diagonal ridge crossing its inner surface, but only a swelling which runs longitudinally towards the movable finger. Henderson does not specify the relative lengths of merus, carpus and palm, but his figure suggests that they agree with those in the South African examples.

Alcock says of the second and third peraeopods, "the dactyli are about twice as long as the two preceding joints combined," but his figure shows that the words "about twice" should be deleted.

The larger South African specimen has a carapace fully 21 mm. long in the middle line, therefore very much longer than Alcock's specimen with length of carapace nearly 8 mm., or than Henderson's, measuring 21 mm. for the whole animal.

Locality. S.E. of East London, lat. 33° 3′ 0″ S., long. 27° 57′ 0″ E.; depth 32 fathoms. Sent by Dr. Gilchrist. No. 47.

Eupagurus spinulentus, Henderson.

1888. *Eupagurus spinulentus*, Henderson, Rep. Voy. Challenger, vol. 27, pt. 69, p. 68, pl. 7, figs. 3, 3 *a*.

1905. „ „ Alcock, Indian Decap. Crust., pt. 2 fasc. 1, p. 176.

The specimens which I diffidently assign to this species agree with Henderson's account of the eyes and the ophthalmic scales, of the acicle, and in general of the limbs, although the furrows and denticulation of the chelipeds are much more pronounced than his figures would suggest. He says that "the terminal segment is composed of four nearly equal and symmetrical lobes." In our specimens it would rather be described as an unlobed oblong. The carapace has on the antero-lateral margin the minute denticle shown in Henderson's fig. 3 *a*.

The only specimen having the right cheliped measured 30 mm. from front of carapace to the end of the telson, while the right cheliped was 37·5 mm. long,

Locality. Umroti River, N. by W. ½ W. 4 miles; depth 27 fathoms. A 1504.

Tribe GALATHEIDEA.

Family PORCELLANIDÆ.

(For the tribe and family see these Annals, vol. 6, p. 360, 1910.)

Gen. PETROLISTHES, Stimpson.

1858. *Petrolisthes*, Stimpson, Pr. Ac. Philad., vol. 10, pp. 227 (65), 241 (79).
1888. „ Henderson, Rep. Voy. Challenger, vol. 27, p. 104 (with synonymy).
1907. „ Stimpson, Smithson, Misc. Coll., vol. 49, p. 181.
1910. „ Rathbun, Pr. U.S. Mus., vol. 38, pp. 558, 599, 616.
1918. „ Rathbun, Bull. 103, U.S. Nat. Mus., p. 134 (fossil).

Stimpson in 1858 gives a list of thirty-four (five of them doubtful) species as belonging to this genus; in his posthumous essay he is contented with twenty-five.

Petrolisthes politus (Gray).

1831. *Porcellana polita*, Gray, Zool. Miscellany, No. 1, p. 14.
1833. „ „ Gray, in Griffith's Animal Kingdom, vol. 13, Crust., p. 312, pl. 25, fig. 2. (*Porcellaria* by error on plate and in index.)
1837. „ „ Milne Edwards, Hist. Nat. Crust., vol. 2, p. 253.
1847. „ „ White, Crust. in Brit. Mus., p. 63.
1858. *Petrolisthes politus*, Stimpson, Pr. Ac. Philad., vol. 10, p. 227 (65).

The description in Griffith's Crustacea is brief: "Purplish-brown, much polished, and punctulate; the carpus above is flat; the front edge has three long serrated teeth; the hinder edge has a spiny ridge near the end; the forehead is triangular, produced, with the margin rather concave." The figure, though rude, shows closer agreement with our specimen than might be expected from the description. In the chelipeds the teeth on the front or inner edge of the carpus are not serrated, and on the hinder or outer edge the spiny ridge of the eight denticles runs all along, though it becomes more conspicuous distally; the figure also faithfully shows the teeth on the transverse distal margin of the carpus, which are not mentioned in the description.

Stimpson considers *Porcellana magnifica*, Gibbes, 1850, to be a synonym of this species. The colouring in our preserved specimen is very attractive, the chelipeds being a bright red, the terminal joints of the ambulatory limbs barred red and white, their broad fourth joints and the carapace of lighter hue, reddish varied with white. This scheme of colouring is suggestive of *Petrolisthes speciosus* (Dana), 1852. *Petrolisthes armatus* (Gibbes), 1850, re-described by Miss Rathbun in 1910, also makes a near approach to the present species.

Locality. Scotburgh, Natal. A 2244. Collected by Mr. K. H. Barnard.

Petrolisthes ornatus, Paulson.

1875? *Petrolisthes ornatus*, Paulson, Zapeste Kievs Obstch. Estestv., vol. 4, pl. 1, fig. 10.

1875. „ „ Paulson, Crustacea of the Red Sea, p. 86, pl. 11, fig. 3.

1878. *Porcellana* (*Petrolisthes*) *mossambica*, Hilgendorf, M. B. Ak Berlin, p. 825, pl. 2, fig. 6.

1907. *Petrolisthes ornatus*, Nobili, Ann. Sci. Nat., ser. 9, Zool., vol. 4 p. 133.

The first of these references I borrow from Paulson, who does not supply the date. The identification of Hilgendorf's species I accept from Nobili.

The carapace about as broad as long, with salient rostrum and convergent lines of tubercles, as also the shape and armature of the chelipeds, are in good agreement with Paulson's description and figure of the species. The specimen is a female, and was collected by Mr. K. H. Barnard.

Locality. Mozambique. A 2206.

Family UROPTYCHIDAE.

Gen. HAPALOPTYX, nov.

Rostrum represented by a small spine. Pleon of female smooth, folding as in *Uroptychus*. Eyes well developed without orbits. Cutting edge of mandible not denticulate. First maxilliped having a broad curved exopod quite devoid of flagellum as in *Munidopsis*. Second

maxilliped with broad straight exopod carrying a flagellum; the last two joints of the endopod invested with many long setae and spines. The third maxillipeds with narrow flagellate exopod. Third joint of endopod fringed with teeth; this joint longer than the fourth, but shorter than the sixth, which with its neighbours at either end is clothed with elongate setae. First peraeopods (chelipeds) of female much shorter than the ambulatory limbs, but longer than the slender minutely chelate fifth peraeopods.

The generic name is derived from ἁπαλός, soft, and πτύξ, a fold.

Hapaloptyx difficilis, n. sp.

Plate CV.

The name *difficilis* is given to this species because with some remarkable features which undoubtedly belong to it there are combined others which occasion considerable perplexity. Of the five pairs of peraeopods only the last pair were observed still in attachment to the body, though along with it were a pair of chelipeds and four elongate spinose ambulatory limbs. Together with this assemblage there occurred a small square-bodied *Megalopa* with narrow pleon and three small detached peraeopods.

Beside the rostral spine the membranaceous carapace has on each side a spine over the base of the eye-stalk and another at each antero-lateral angle, with a small submarginal spine between the antero-lateral and the supra-ocular. From the front the carapace widens with a long curve to the base of the second peraeopod, thence bending inward so as to leave exposed the bases of the third and fourth pairs, and by an angular emargination of the hind border disclosing the first segment of the pleon. On the infolded sides of the carapace there are some prickles not visible in dorsal view.

The eye-stalks are rather stout with dark dilated corneae. The first antennae have a broad basal joint carrying a trifid spine, the second joint much narrower but longer, the third nearly as long as second and first combined, longer than the setose flagellum; the accessory flagellum very small. The second antennae have the terminal joint of the peduncle long and slender with a fine-drawn six-jointed flagellum ending in a long, very thin spine.

The mandible is a broad blade without teeth or serration, carrying a stout three-jointed palp, of which the third joint has four setules at the apex.

Between the first and second maxillae there is a rather close resemblance apart from the latter's possession of the usual vibratory

lamina. As mentioned in the generic character the first maxilliped has no flagellum to its broad curved exopod, thus differing from *Pylocheles*, A. Milne-Edwards, from that author's *Ptychogaster*, and from *Uroptychus*, Henderson. On the other hand, the third maxilliped shows a striking likeness to that in the last-named genus, having its sixth joint longer than any other. The third joint is fringed with twenty-one teeth; the fifth, sixth and seventh joints are profusely furnished with very long setae.

If the detached limbs are correctly allocated (as suggested by the bases of four pairs, these bases being still in attachment to the body) the chelipeds are rather short and slender, the fifth joint very small, the palm widening to the base of the much shorter fingers, which have overlapping acute apices. The following peraeopods differ a little in length and are nearly four times as long as the chelipeds, the fifth joint about half as long as the fourth and two-thirds the length of the sixth, all three slender with spinose margins, the finger very small, curved and spinose. The fifth peraeopods as preserved are rather obstinately folded, with the fifth joint about as long as the chela, of which the small fingers are shrouded in a mass of long stiff setae.

All the segments of the pleon, except the telson, are broad and to some extent trilobed, with fringes of setae. The telson is somewhat broader than long, faintly emarginate. The rami of the uropods are oval, subequal, these and the telson being also fringed closely with long setae. There were twenty-one large eggs firmly enclosed in the pleon, with the fifth peraeopod directed backwards towards them. The carapace has a length of 7 mm., with a breadth of about 6 mm.

Locality. Scotburgh, N.W. by N. 8 miles (Natal); depth 92 fathoms.

MACRURA GENUINA.

Tribe THALASSINIDEA.

(See these Annals, vol. 6, pt. 4, p. 367, 1910.)

Family AXIIDAE.

(See these Annals, vol. 15, pt. 1, p. 9, 1914; vol. 15, pt. 2, p. 58, 1915.)

Gen. AXIUS, Leach.

1815. *Axius*, Leach, Tr. Linn. Soc. London, vol. 11, pp. 335, 343.
1837. *Axia*, Milne Edwards, Hist. Nat. Crust., vol. 2, p. 310.

1880. *Axius*, Boas, Vid. Selsk. Skr., ser. 6, pt. 1, pp. 98 (76), etc.
1895. ,, Faxon, Mem. Mus. Comp. Zoöl., vol. 18, p. 103.
1901. ,, M. J. Rathbun, U.S. Fish. Comm. for 1900, vol. 2, p. 95.
1903. ,, Borradaile, Ann. Nat. Hist., ser. 7, vol. 12, pp. 536, 549.
1906. ,, M. J. Rathbun, U.S. Fish. Comm. for 1903, pt. 3, p. 893.
1914. ,, Balss, Abh. K. Bayer. Ak. Wiss., Suppl., vol. 2, pt. 10, p. 85.
1918. ,, Rathbun, Bull. 103, U.S. Nat. Mus., p. 135 (fossil).

Axius longispina, n. sp.

Plates CVIb and CVII.

The character to which the specific name refers, though not superficial, deserves to be particularised. The vibratory lamina of the second maxilla ends in a spine equal in length to all the rest of the organ. Boas figures a spine in the same position for his *Axius princeps*, but he gives it a length less than a third of the maxilla that carries it, and he does not seem to attribute any importance to so unusual a feature. Apart from this the two pairs of maxillae are in near agreement with those of *A. princeps*, and the same remark applies to the first and second maxillipeds except that in the former the exopod has no such distal narrowing as that shown in Boas's figure. In the long third maxillipeds the fourth joint is considerably longer than the third and only a single tooth diversifies its very setose margin.

Not only from *A. princeps*, but from many other species which have been assigned to *Axius* or its various sub-genera, the present appears to be distinguished by the third and fourth peraeopods, in which the sixth joint has a much greater width than that of the fifth joint, being a very broad oval in the third pair and in both densely fringed with setae. In the fifth pair the sixth joint is not oval, but a little widened distally. In all three pairs the finger is small, not uncinate, but in the fourth pair a little curved.

Of the first antennae the first joint about equals the second and third combined; the two flagella are equal in length, the thicker slightly thickening near the end. The second antennae have a small acicle and a slender flagellum about once and two-thirds as long as the flagella of the first pair

The right-hand cheliped of the first pair is missing; that on the left was probably the larger, being rather massive, with the movable finger curved, its tip crossing that of the slender thumb, which has a setiferous projection one-third of the length from the apex and a

slight backward crook, so that two small intervals are left when finger and thumb meet. The palm is stout, but considerably longer than broad, with a ridge which is continued along the thumb. The fifth joint is short, triangular; the fourth twice as long, with one margin straight, the other strongly curved. The whole limb is only sparingly setiferous, in strong contrast to the following pair and to the two terminal joints in the third, fourth and fifth pairs. In the second peraeopods the fingers of the chela are rather longer than the palm, which has a lateral ridge, such as appears also on the fifth joint.

The first pair of pleopods are uniramous, very slender and moderately setiferous. The four following pairs are richly supplied with plumose setae, the endopod about three times as long as broad, with a narrow retinaculum about one-fourth of the endopod's length, carrying half a dozen hooks or buttons on the apex for linking on to its companion pleopod; the exopod is shorter but much broader than the endopod. The peduncle of the uropods is very small, the endopod transversely triangular, crossed by an indistinct spinuliferous ridge margined to the rear with plumose setae, above which are some shorter spindle-shaped spines or setae; the rather larger exopod has the narrower end pointed backward instead of outward and has no suture.

The carapace of this soft membranaceous specimen was difficult to manipulate. From the short blunt setuliferous rostrum to the middle lobe of the hind margin I make the length 10 mm., and thence to the end of the telson the length of the body was 23 mm. The relative size of the large cheliped may be judged from the length of 9 mm. attained by the hand and fingers, apart from its other joints. The sides of the pleon are setose as far back as the fifth segment, which is shorter than its neighbours. The sixth segment and the tail-fan are in the preserved specimen of firmer consistency than the rest of the body, the sixth segment having a median carina, which, perhaps, commences on the preceding segment and is continued on the telson, but not to the broad setose hind border. The telson slightly contracts near the middle, the sides converging with a gentle concavity to the convex or very obtuse-angled posterior margin.

Locality. Cape Morgan, N.N.W. 7 miles; depth 52 fathoms. A 957.

Tribe SCYLLARIDEA.

(On this tribe see an important note by Calman, Ann. Nat. Hist., ser. 8, vol. 3, p. 442, 1909.)

Family SCYLLARIDAE.

Gen. THENUS, Leach, 1815.

Thenus orientalis (Lund.), 1793.

See these Annals, vol. 15, pp. 61–65, in which the position of this species has been fully discussed. A very small specimen has been taken, in which the length of the carapace in the middle line is slightly less than 8 mm., and the greatest breadth between the external teeth of the orbits is 8·5 mm. In this specimen the eyes are a little withdrawn from the outer margins of the carapace.

Locality. Durnford Point, N.E. by E. 9 miles. Depth 13 fathoms.

INDEX.

EXPLANATION OF PLATES.

Plate XVIII. (Crustacea, Plate XCVIII.)

Dairoides margaritatus, n. g. et sp.

n.s. These letters refer to the neighbouring figures of natural size, roughly representing in dorsal aspect the carapace and pleon, and in lateral view the pair of chelipeds (the smaller with movable finger missing) and two of the ambulatory legs from the fourth to the seventh joint. For true appearance of carapace consult description.

car. A small piece of the carapace as seen by transmitted light, highly magnified.

a.s. First antenna.

m., mx. 1, mx. 2, mxp. 2, mxp. 3. Mandible, first and second maxillae, second and third maxillipeds, to a uniform scale.

prp. Terminal joints of an ambulatory peraeopod, highly magnified.

Pl., plp. 1, plp. 2. Dorsal view of pleon with first and second pleopods, highly magnified.

Plate XIX. (Crustacea, Plate XCIX.)

Xeinostoma eucheir, n. g. et sp.

n.s. Lines indicating natural size of carapace in the male specimen figured below, with first antennae, chelipeds, and (on the left) the peraeopods 2–5, all in dorsal aspect.

Pl. ♂, Pl. ♀. Pleon of male in dorsal aspect, and similarly that of female showing the four pleopods in position on the right.

m., mxp. 2, mxp. 3. Mandible and second and third maxillipeds of a male.

prp. 1, prp. 1, mxp. 3. Chelipeds of a male, the upper figures in dorsal and ventral aspects, the lower showing the companion cheliped in dorsal aspect and in attachment to the third maxilliped for estimate of the relative sizes.

oc. ♀, a.s. ♀, a.i. ♀. Eye, first and second antennae of female.

mx. 1, mx. ♀ 2 ♀, mxp. 1 ♀. First maxilla, part of second maxilla, first maxilliped, of female.

PLATE XX. (Crustacea, Plate C.)

Cymonomus trifurcus, n. sp.

n.s. Lines indicating natural size of male specimen figured below in dorsal aspect, without the limbs, but partially showing antennae and pleon ; with a lower figure of the ventral aspect in part, with the third maxilliped in attachment.

Pl. D., Pl. V. Dorsal and ventral aspects of the unfolded pleon.

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

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

mxp. 3. Third maxilliped, from the inner or upper side, agreeing in scale with the full figure, less magnified than other mouth-parts and the antennae.

prp. 1, prp. 2, prp. 5. First, second, and fifth peraeopods.

plp. 1, plp. 2. First and second pleopods of the male, with terminal part of the second further enlarged.

PLATE XXI. (Crustacea, Plate CI.)

Lithadia barnardi, n. sp.

n.s. Lines indicating natural size of specimen figured below in dorsal view, with first three peraeopods on the right, first, second, fourth and fifth on the left. Carapace probably abnormal on the right front.

Pl. Pleon of female in dorsal view, with telson much more magnified.

ep., mxp. 3, mxp. 3. Epistome and upper and lower surfaces of the third maxillipeds, less highly magnified than the other mouth-organs.

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

prp. 1, prp. 2. First and second peraeopods.

PLATE XXII. (Crustacea, Plate CII.)

Cryptodromia micronyx, n. sp.

n.s. Lines indicating natural size of the carapace in the curved dorsal view of a male specimen, with limbs of the right side in attachment.

Pl. Pleon of the male, incompletely flattened, in dorsal aspect.

a.s., a.i. First and second antennae, more highly magnified.

m., mx. 1, 2. mxp. 1, 2, 3. Mandible, first and second maxillae, first second, and third maxillipeds, uniform in scale with the antennae.

prp. 1, 2, 4, 5. First, second, fourth, and fifth peraeopods, on the same scale as the carapace and pleon.

plp. 1, 2. First pair of pleopods, and one member of the second pair, with much higher magnification of the latter.

Plate XXIII. (Crustacea, Plate CIII.)

Eudromia bituberculatus, n. sp.

n.s. Lines indicating natural size of the carapace in the adjoining dorsal view of a female specimen, with fourth and fifth peraeopods and part of pleon in attachment, the ventral view below showing the left cheliped attached.

oc., prp. 3. An eye, and distal part of third peraeopod on the same scale as the above.

a.s., a.i. First and second antennae more highly magnified, on the same scale as the remaining figures.

m., mx. 1, 2, mxp. 1, 3, plp., plp. Mandible, first and second maxillae, first and third maxillipeds; one of the large pleopods (with rami not quite complete), and the small, last pleopod.

Plate XXIV. (Crustacea, Plate CIV.)

Latreillopsis alcocki, n. sp.

n.s.d. Specimen in dorsal view, natural size, with fourth peraeopod in position on the right and fifth on the left.

n.s.v. Part of specimen, natural size, in ventral view, with first and second peraeopods in position on the right.

oc., a.s., a.i. Eye, and first and second antennae, magnified.

mx. 1, mxp. 1, 2, d. First maxilla, first and second maxillipeds, and dactylus of a peraeopod, to the same scale as eye and antennae.

m., mxp. 3. Mandible and third maxilliped, more highly magnified than the foregoing.

Plate XXV. (Crustacea, Plate CV.)

Hapaloptyx difficilis, n. g. et sp.

n.s. ♀. Lines indicating natural size of female specimen figured below in dorsal aspect, with partial view of the ventral aspect.

Pl. Last four segments of the pleon, flattened out, with the uropods.

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

mx. 1, 2, mxp. 1, 2, 3. First and second maxillae, first, second, and third maxillipeds, on a uniform scale with the eye and antennae.

m. Mandible, more highly magnified than the other parts.
prp. 1. The chelipeds in supposed position on either side of the carapace.
prp. One of the ambulatory peraeopods.
prp. 5. One of the chelate fifth peraeopods, with last three joints more highly magnified.
prp. x. A peraeopod of uncertain allocation.

PLATE XXVIA. (Crustacea, Plate CVIA.)

Nursia scandens, n. sp.

n.s. Lines indicating actual size of carapace figured below in dorsal and ventral aspects (car. D, car. V.).
Pl., Pl. V. Pleon in dorsal and ventral aspects, the latter with one of the pleopods separately shown.
m., mxp. 1, 2, 3. A mandible, and first, second and third maxillipeds.
prp. 1, prp. 3. First and third peraeopods, less magnified than the mouth-organs.

PLATE XXVIB. (Crustacea, Plate CVIB.)

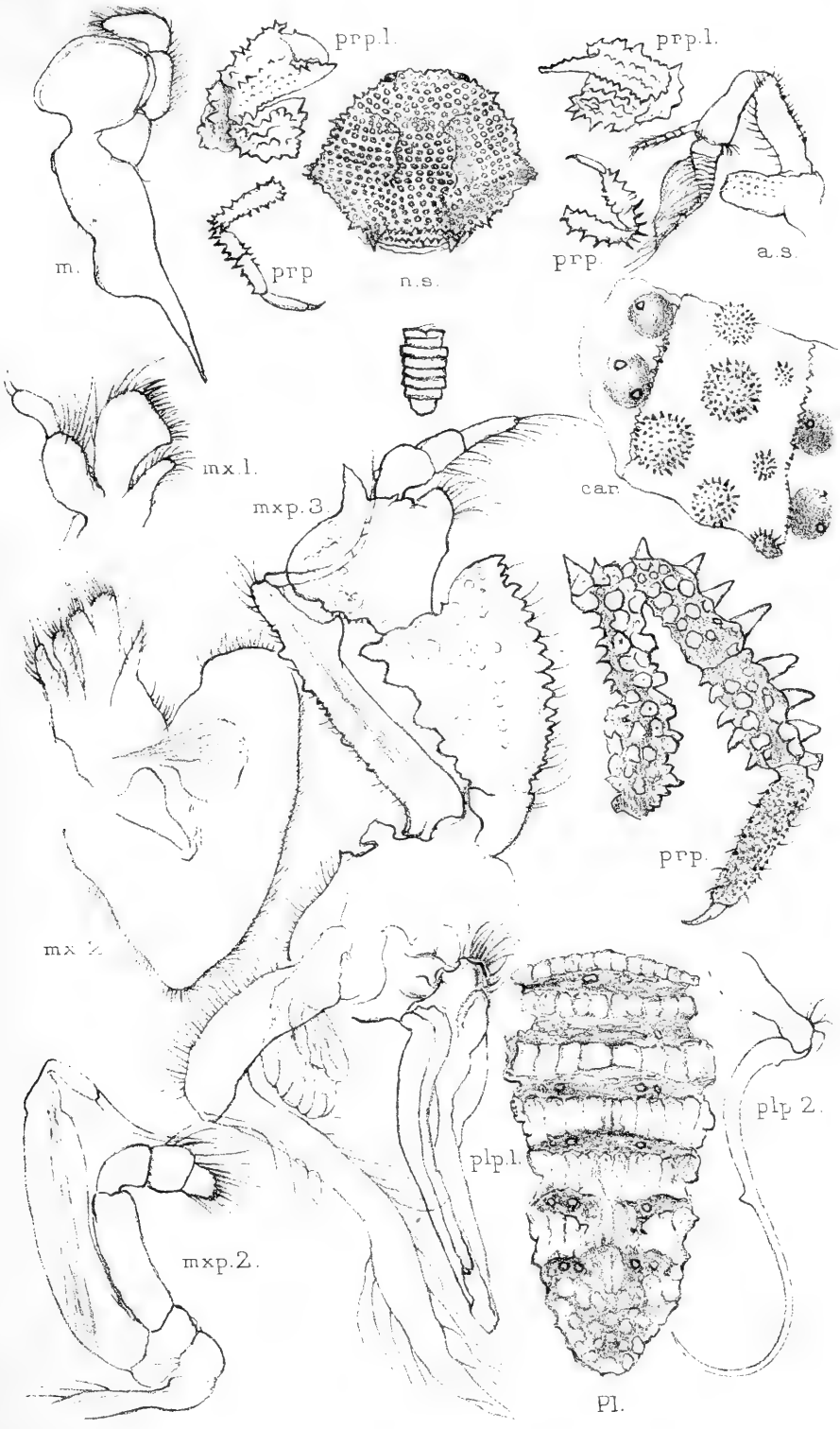
Axius longispina, n. sp.

m., mx. 1, 2, mxp. 1, 2. Mandible, first and second maxillae, first and second maxillipeds, to a uniform scale of magnification.
mxp. 3. Third maxillipeds, less highly magnified than the other mouth-organs.

PLATE XXVII. (Crustacea, Plate CVII.)

Axius longispina, n. sp.

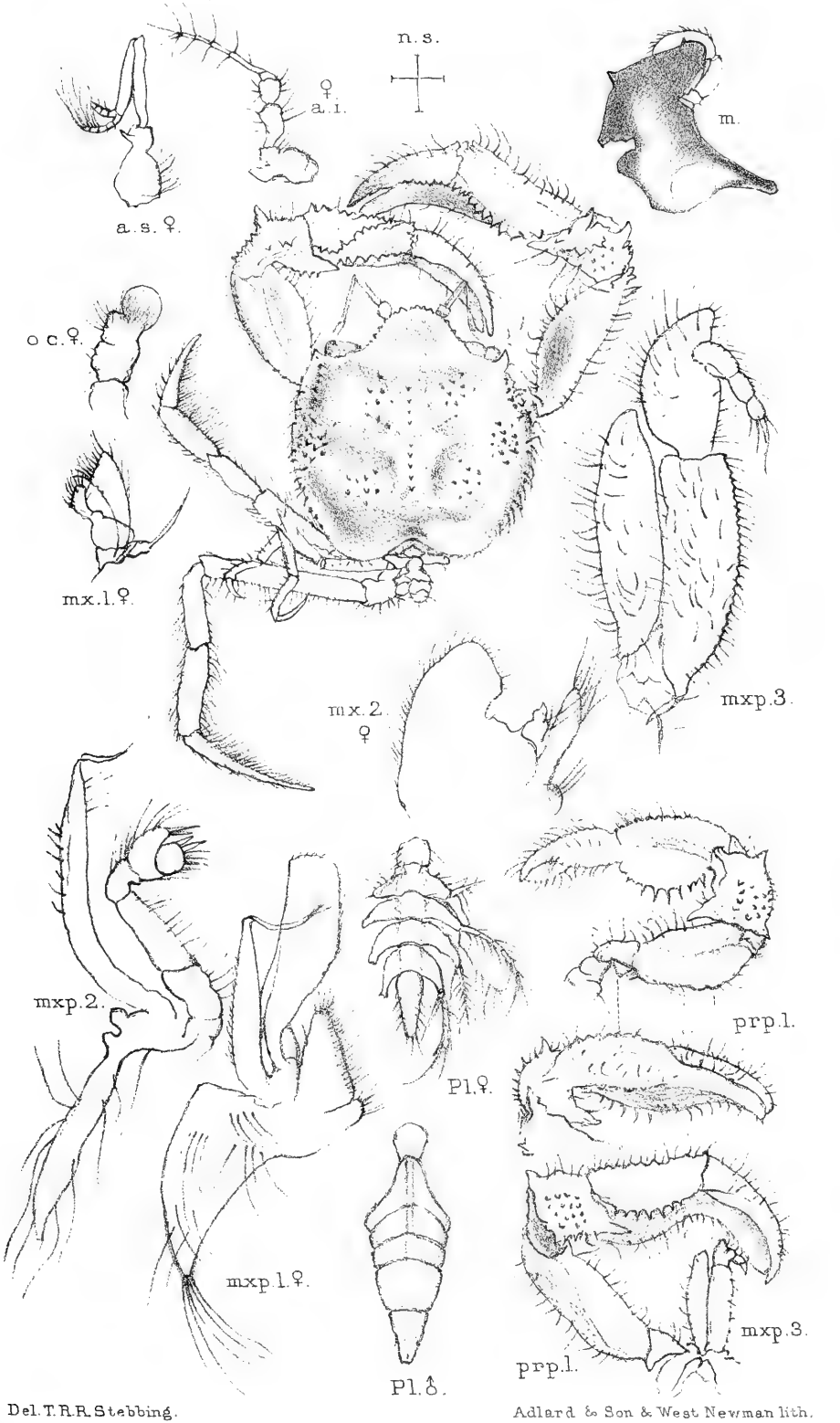
n.s. Line indicating actual length of specimen from which the several parts have been drawn.
a.s., a.i., plp. 1, plp. 4. First and second antennae, first pair of pleopods, and one of the fourth pair, all to the same scale of magnification as the third maxilliped on plate CVIB.
ret. apex of the retinaculum of the fourth pleopod much more enlarged.
prp. 1, 2, 3, 4, 5. The five peraeopods to a uniform scale of magnification.
T., urp. The telson in connection with the uropods and with some other segments of the pleon. In the actual specimen this part of the body was ventrally infolded.



Del. T.R.R. Stebbing

Adlard & Son & West Newman lith.

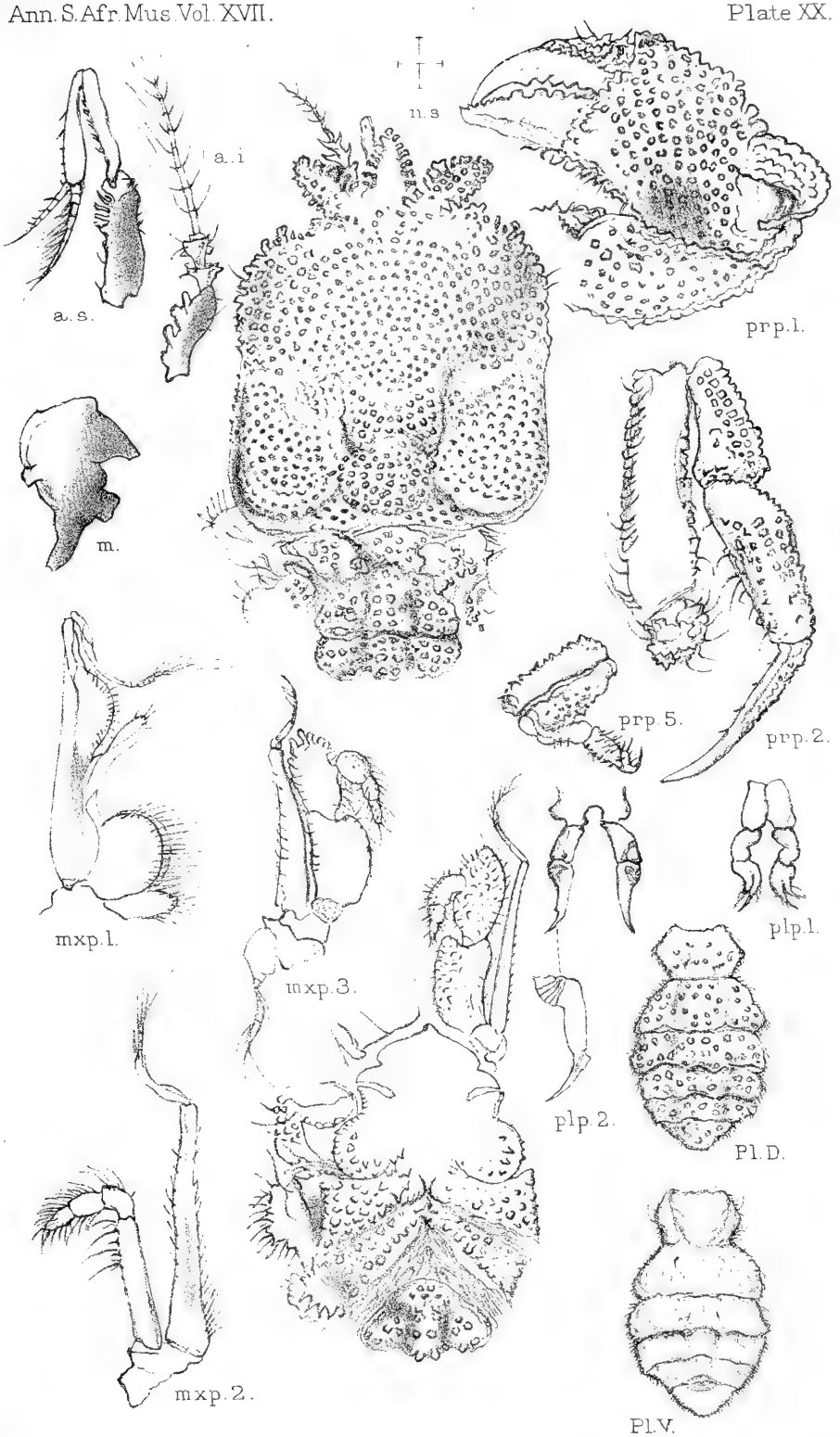
DAIROIDES MARGARITATUS, n.g. et sp.



Del. T.R.R. Stebbing.

Adlard & Son & West Newman lith.

XEINOSTOMA EUCHEIR, n.g. et sp.



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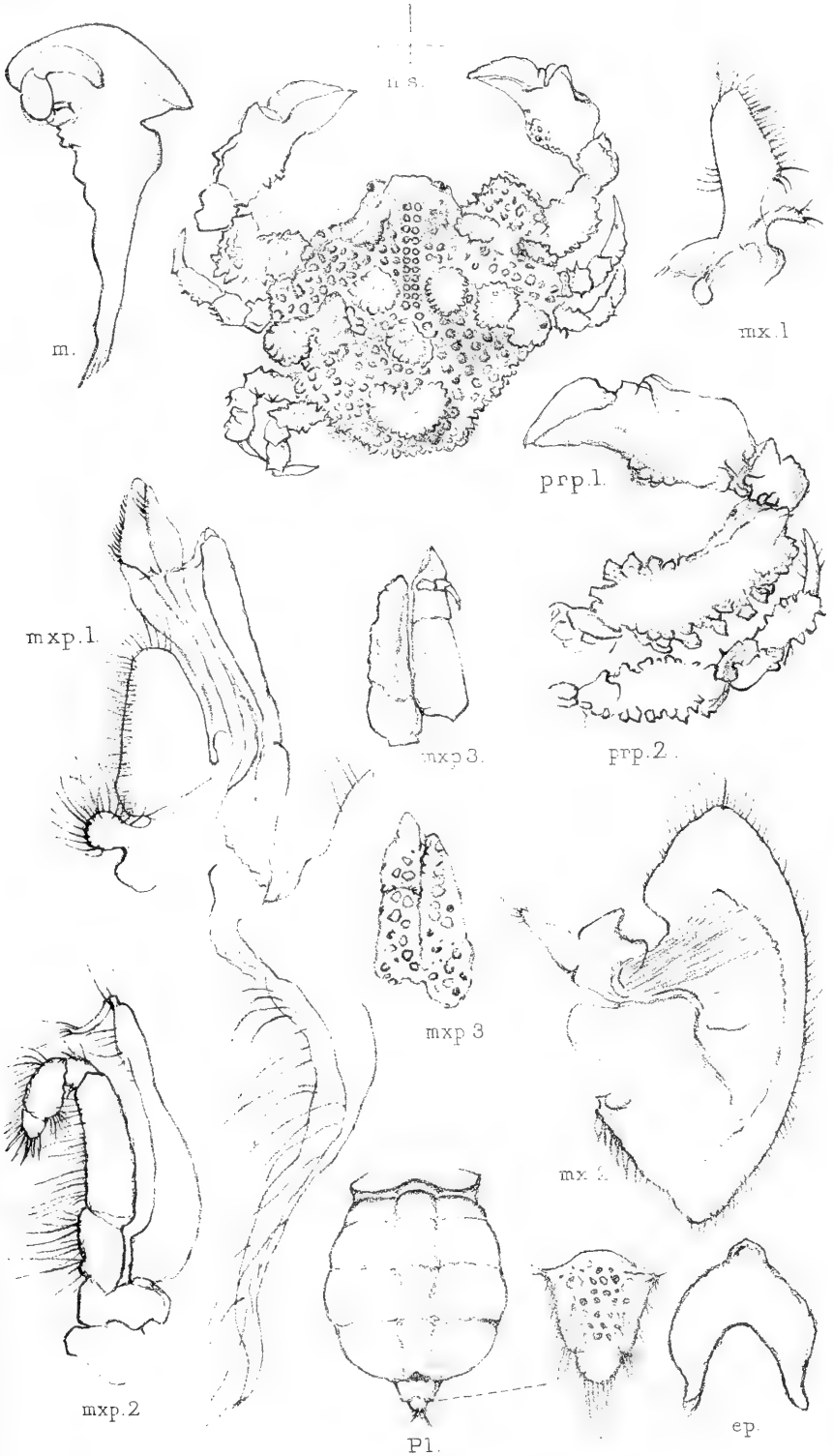
Adlard & Son & West Newman lith.

CYMONOMUS TRIFURCUS, n. sp.



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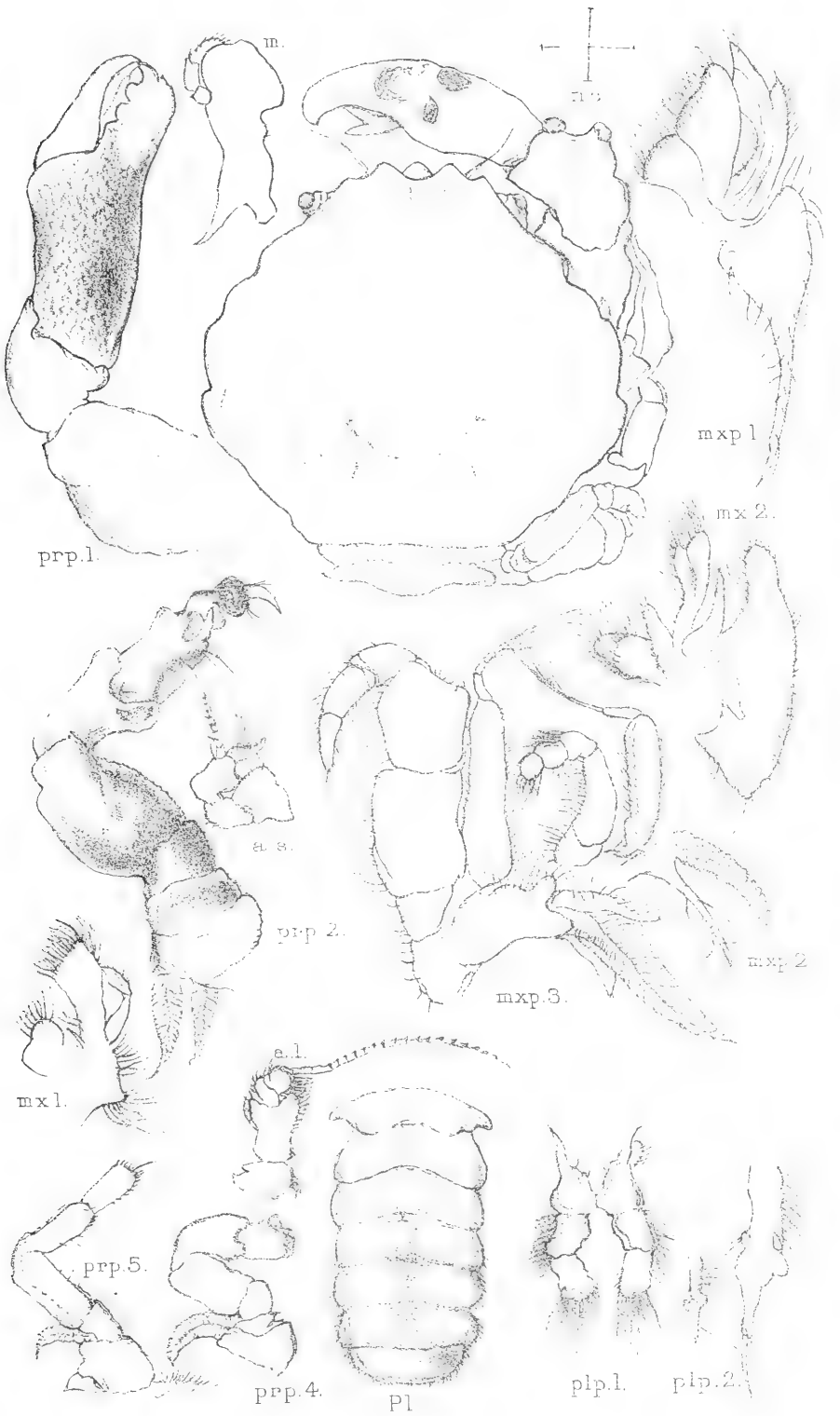
LITHADIA BARNARDI, n. sp



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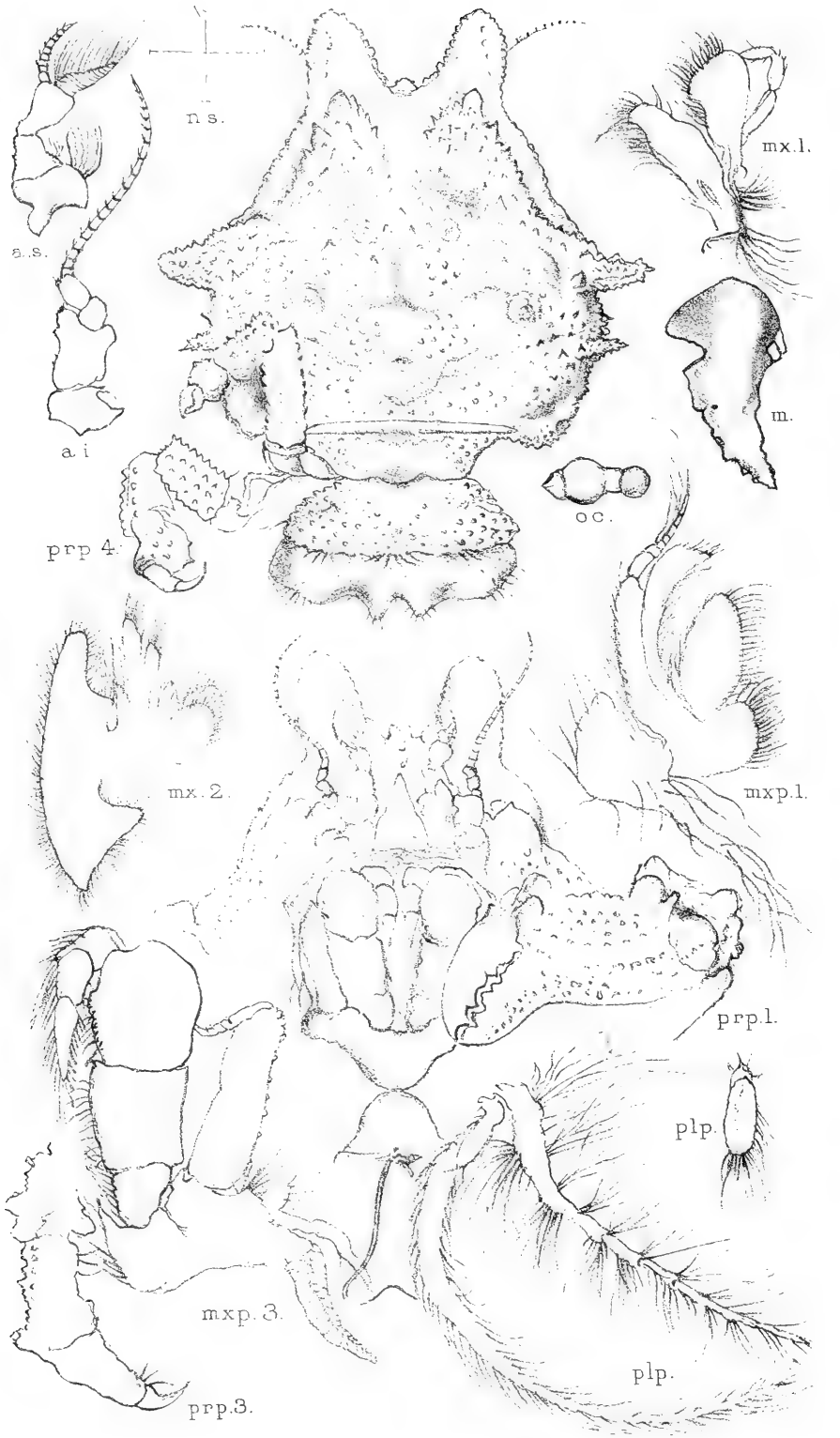
CRYPTODROMIA MICRONYX, n. sp.



Del. T.R.R. Stebbing.

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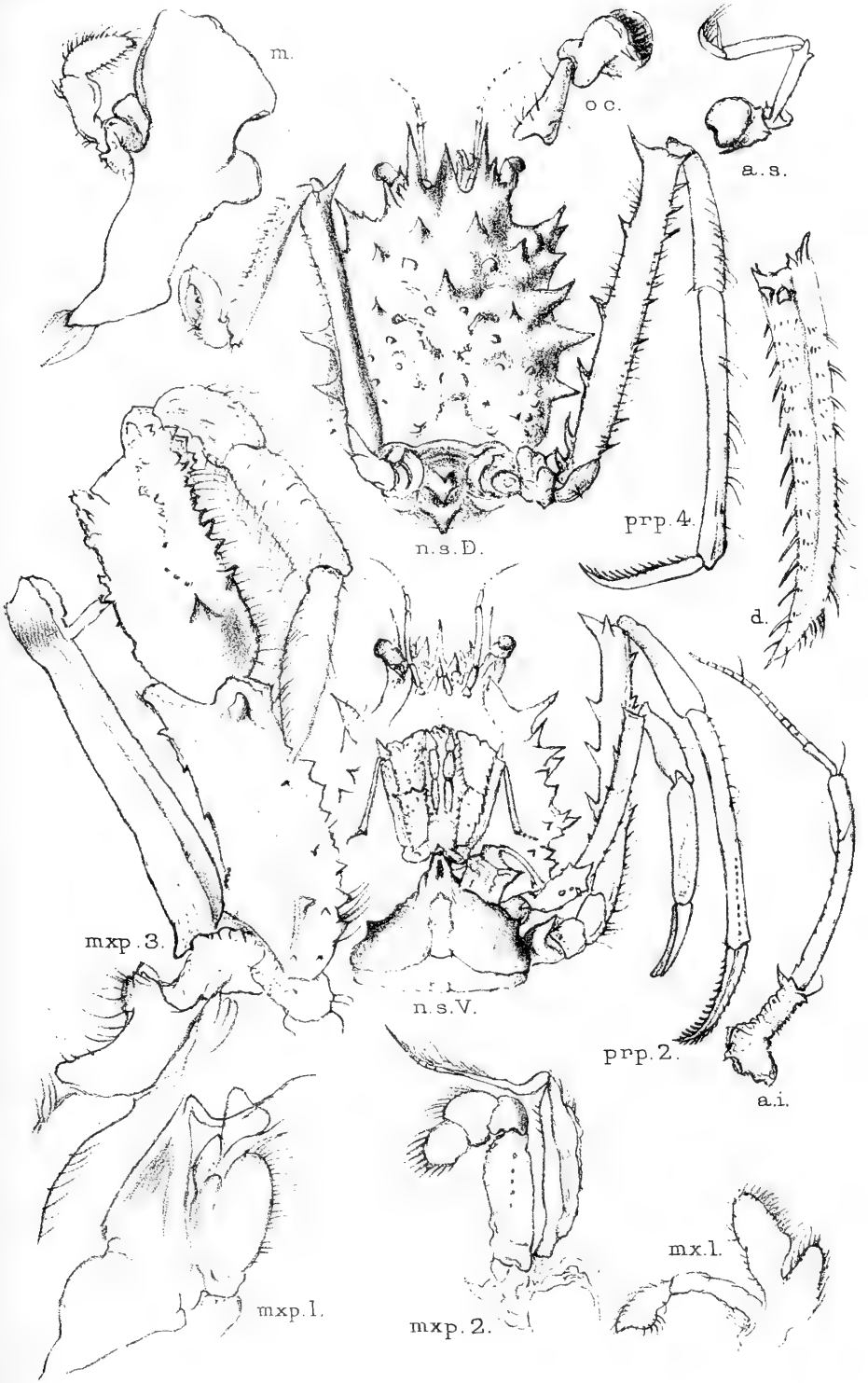
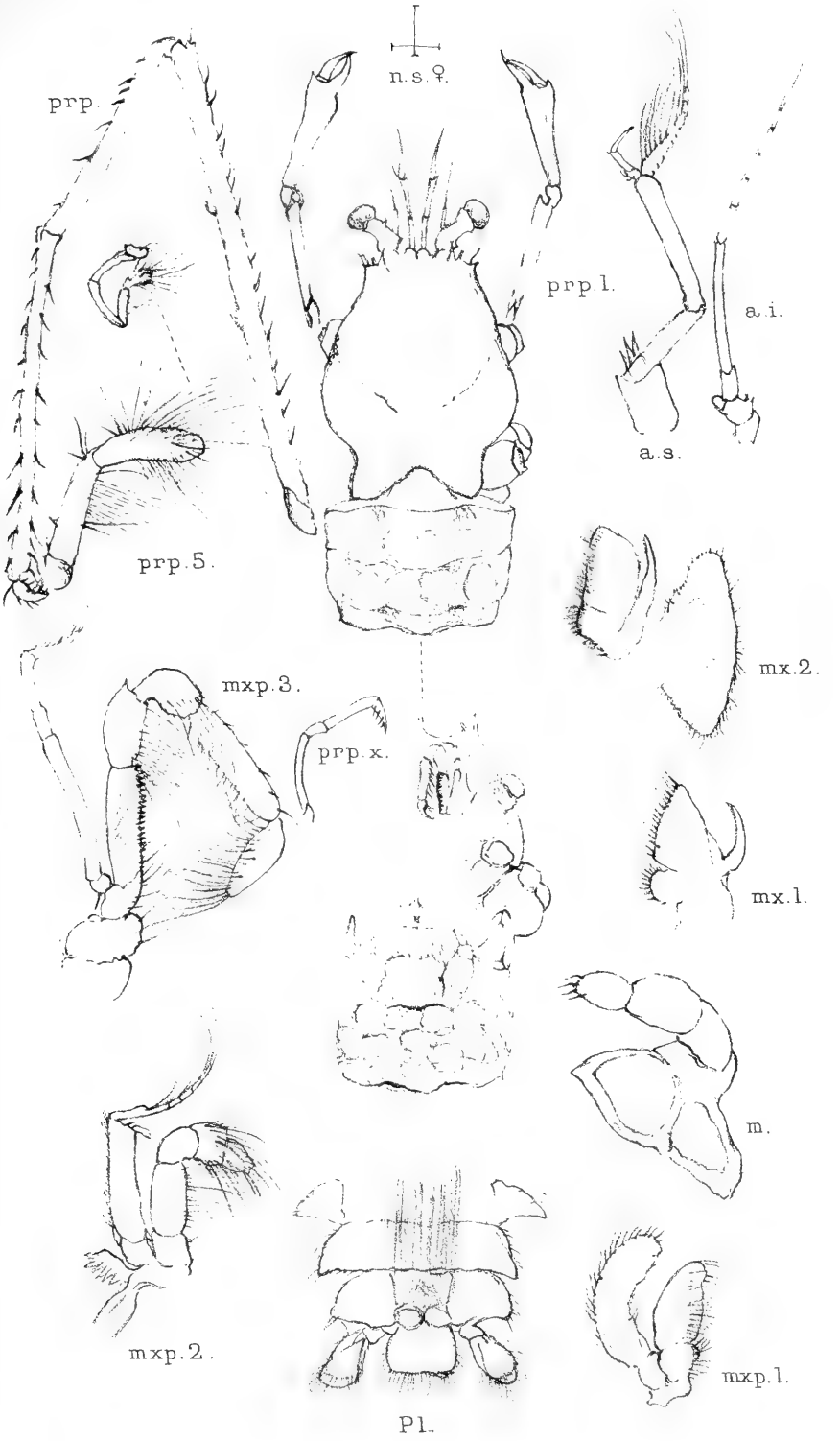
EUDROMIA BITUBERCULATUS, n. sp.



Del. T. R. R. Stebbing.

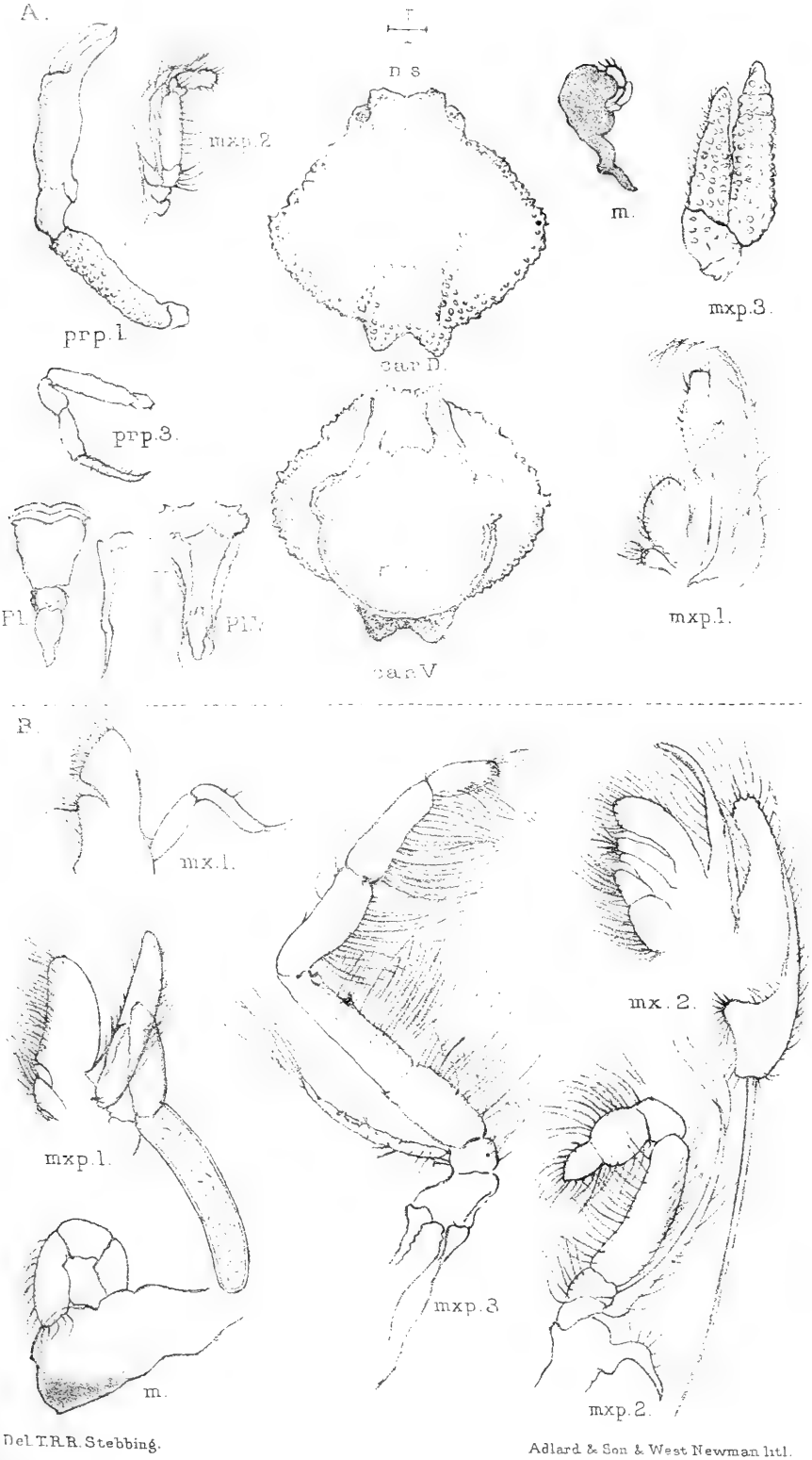
Adlard & Son & West Newman lith.

LATREILLOPSIS ALCOCKI, n. sp.



Del. T.R.R. Stebbing.
Adlard & Son & West Newman lith.

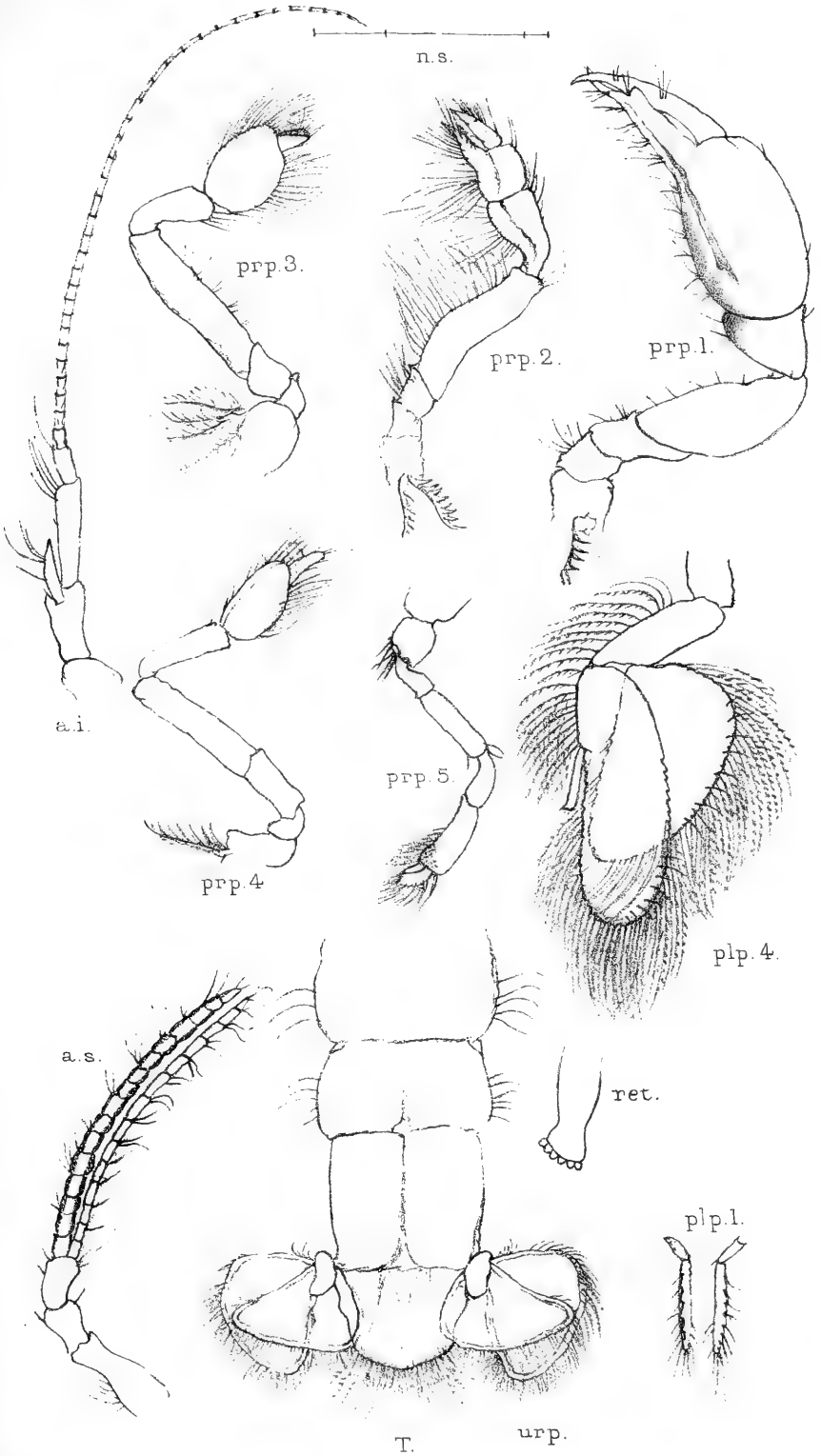
HAPALOPTYX DIFFICILIS. n.g. et sp.



Del T.R.R. Stebbing.

Adlard & Son & West Newman lith.

A. NURSIA SCANDENS, n.sp. B. AXIUS LONGISPINA, n.sp.



Del. T. R. R. Stebbing.

Adlard & Son & West Newman lith.

AXIUS LONGISPINA, n.sp.

10.—*Descriptions of South African Micro-Lepidoptera.*—By E. Meyrick B.A., F.R.S.

VI.*

The types of the following species, sent me by Dr. L. Péringuey, are in the South African Museum.

PTEROPHORIDAE.

Gen. TRICHOPTILUS Wals.

Trichoptilus festus, n. sp.

♂. 16 mm. Head and thorax reddish-ochreous, posterior margin of thorax snow-white. Palpi ochreous, towards base whitish. Abdomen grey, with a white subdorsal stripe on each segment, more or less blackish-edged beneath, two basal segments wholly snow-white. Forewings slightly broader than in *congrualis*; reddish-ochreous, costal half suffused with reddish-fuscous except towards apex; small groups of whitish scales towards dorsum at $\frac{1}{3}$, and in disc before cleft; a bar of white irroration crossing both segments at $\frac{1}{3}$ of their length, and another more defined at $\frac{3}{4}$: cilia dark grey, with white patches on segmental bars and some scattered white hair-scales, on lower margin of first segment and upper margin of second with several scattered black scales on median third, several small blackish patches separated by narrow white bars round apex of both segments, and four subquadrate blackish patches on lower margin of second between base and second white bar. Hindwings dark grey; cilia grey, without black scales on dorsum.

Cape Colony, Capetown, in January (Barnard); one specimen. The example is in fine condition, and the absence of black scales on dorsum of hindwings is natural.

* The previous papers of this series have appeared in vol. v, p. 349 (1909), vol. v, p. 411 (1910), vol. x, p. 53 (1912), vol. x, p. 243 (1914), and vol. xvii, p. 1 (1917).

[Throughout this paper, for "Winthoek" read "Winterhoek." The Great Winterhoek is the culminating peak of the Witzenberg Range in the Tulbagh District of the Cape, and one of several localities which have been visited for the purpose *inter alia* of determining the character of the Microlepidopterous fauna at high altitudes. The specimens should be credited to Mr. R. M. Lightfoot.—Ed.]

Gen. OXYPTILUS Zell.

Oxyptilus variegatus, n. sp.

♂ ♀. 17 mm. Head whitish or whitish-ochreous. Palpi whitish, partially lined with fuscous. Thorax pale ochreous, apical half of patagia white. Abdomen whitish, marked laterally with fuscous. Forewings cleft nearly to middle, segments slender, first acutely pointed, second subfalcate, termen concave, very oblique; pale ochreous, slightly sprinkled with fuscous; first segment suffused with fuscous, more or less extended along costa towards base; a spot of fuscous irroration on dorsum at $\frac{1}{4}$; a blackish dot in disc at $\frac{1}{3}$, followed by a small cloudy white spot; a blackish dot on base of cleft, followed by a small cloudy white spot on base of lower margin of first segment; suffused white bars on first segment at $\frac{1}{3}$ and $\frac{2}{3}$, inwardly oblique from costa, first moderate, second narrower and more oblique, these continued on second segment by less distinct whitish bars; terminal edge of second segment blackish on lower half: cilia pale ochreous, on costa with white patches edged with dark fuscous on segmental bars, on margins of cleft white on segmental bars and mixed with black scales between these, and before and beyond them on first segment, on dorsum with white spots at base and $\frac{1}{3}$ of second segment and at tornus, and some scattered black scales between these. Hindwings dark grey, third segment whitish towards tip; cilia grey, on dorsum with a small patch of black scales at $\frac{3}{4}$ of third segment, and scattered black and white scales between this and base.

Transvaal, Louis Trichardt, one specimen (R. Tucker); also one in my collection from Pretoria.

Gen. PTEROPHORUS Geoffr.

Pterophorus acuminatus, n. sp.

♂. 16–17 mm. Head light brownish, with a whitish line between antennae. Palpi 1, light brownish, edge whitish. Thorax ochreous-whitish, patagia sometimes tinged with brownish. Abdomen ochreous-whitish, more or less mixed with brownish. Forewings cleft to near middle, segments narrow, acute; whitish, more or less wholly suffused with pale brownish-ochreous; costa and basal third of dorsum more or less irrorated with blackish; an elongate blackish dot in disc at $\frac{1}{3}$; a cloudy transverse blackish mark on base of cleft; an elongate

cloudy blackish mark on costa beyond base of cleft, and black dots on extremities of veins 2, 3, 7 and 10: cilia ochreous-whitish, on costa with two dark grey patches, within cleft and on dorsum mostly suffused with dark grey, especially beneath segments towards apex. Hindwings dark grey; cilia light ochreous-grey.

Cape Colony, Gt. Winthoek, 4500 ft.; three specimens. The narrower second segment of forewings and dark grey dorsal cilia distinguish this species from *lienigianus*.

TORTRICIDAE.

Gen. TORTRIX L.

Tortrix sporadias, n. sp.

♂. 15 mm. Head, palpi, and thorax whitish-ochreous. Abdomen whitish. Forewings elongate, slightly dilated, costa slightly arched, without fold, apex obtuse, termen slightly rounded, oblique; whitish-ochreous, thinly strewn with small scattered groups of dark fuscous specks: cilia whitish-ochreous. Hindwings and cilia whitish.

Cape Colony, Vryburg (J. Brown); one specimen.

Tortrix biformis, n. sp.

♂. 15–17 mm. Head, palpi, and thorax whitish-grey-ochreous more or less wholly irrorated and suffused with grey. Antennal ciliations 1. Abdomen grey, anal tuft yellow-whitish. Forewings suboblong, costa slightly arched, without fold, apex obtuse, termen almost straight, oblique; greyish-ochreous: cilia whitish. Hindwings with 3 and 4 sometimes coincident; grey; cilia whitish.

♀. 18 mm. Forewings pointed, termen slightly sinuate, very oblique; pale greyish-ochreous. Hindwings pale grey; cilia whitish.

Cape Colony, Gt. Winthoek, 4500 feet; eight specimens. Closely allied and very similar to the European *rusticana*, but distinguished by the more oblique termen of forewings and whitish cilia. Of the six male specimens sent three have veins 3 and 4 of hindwings connate, as is normal in the genus, and the other three have them coincident, the wings in each specimen being alike on both sides; this is a very singular and remarkable case of variation, but the specimens are unquestionably all the same species. One female has veins 3 and 4 of hindwings coincident; the other specimen has lost its hindwings.

Gen. EPICHORISTA Meyr.

Epichorista cinerata, n. sp.

♂. 20–22 mm. Head and palpi whitish irrorated with dark grey. Thorax whitish-ochreous, anteriorly irrorated with dark grey. Abdomen whitish-yellowish. Forewings elongate, rather dilated posteriorly, costa gently arched, without fold, apex obtuse, termen nearly straight, somewhat oblique; whitish-ochreous, in one specimen veins faintly tinged with grey: cilia whitish-ochreous. Hindwings and cilia ochreous-whitish.

Cape Colony, Gt. Winthoek, 4500 ft.; two specimens.

Epichorista exanimata, n. sp.

♂. 25 mm. Head and thorax whitish-ochreous, face and palpi pale greyish-ochreous. Abdomen ochreous-whitish. Forewings elongate, rather dilated posteriorly, costa gently arched, without fold, apex obtuse, termen nearly straight, rather oblique; whitish-ochreous, posteriorly with a few scattered light ferruginous specks; costa pale ochreous towards base: cilia whitish-ochreous. Hindwings and cilia ochreous-whitish.

Cape Colony, Gt. Winthoek, 4500 ft.; one specimen.

Epichorista phalaraea, n. sp.

♂. 16 mm., ♀. 18 mm. Head, palpi, and thorax brown, in ♂ mixed with dark grey, apex of patagia white. Abdomen grey, in ♂ segmental margins suffused with white and anal tuft snow-white. Forewings elongate, moderate, posteriorly slightly dilated, costa gently arched, apex obtuse, termen nearly straight, rather oblique; brown; markings shining white; a basal patch of irregular markings occupying about $\frac{1}{4}$ of wing, edge obtusely angulated above middle; an irregular somewhat curved median fascia, in both females tending to be interrupted above middle and with a short irregular posterior branch to dorsum; a spot enclosing a small dot of ground colour on costa at $\frac{3}{4}$, and a transverse irregular and variable streak beneath it almost reaching tornus; several slight irregular dots towards apex: cilia in ♂ white with a brownish basal shade, in ♀ whity-brownish with dark grey basal shade. Hindwings in ♂ white, with a grey apical patch and some grey irroration on termen, cilia white; in ♀ rather dark grey, cilia whitish-grey with grey basal shade.

Cape Colony, Table Mountain, 1500 ft., in November and December (Barnard); three specimens (1 ♂, 2 ♀). The white markings probably vary not inconsiderably.

Gen. CNEPHASIA Curt.

Cnephasia macrostoma, n. sp.

♂. 17–18 mm. ♀. 14–16 mm. Head, palpi, and thorax dark grey sprinkled with whitish, palpi 5. Abdomen grey. Forewings elongate, posteriorly dilated, costa slightly arched, apex obtuse-pointed, termen slightly sinuate, oblique; grey sprinkled with whitish; a slender undefined irregular ochreous subcostal streak from base to $\frac{1}{3}$; irregular ill-defined light brownish-ochreous transverse fasciae sprinkled with blackish before and beyond middle and from $\frac{3}{4}$ of costa to tornus, in ♂ paler and hardly defined: cilia grey irrorated with whitish. Hindwings light grey, obscurely darker-marbled; cilia pale greyish.

Cape Colony, Gt. Winthoek, 4500 ft., and Hottentot-Holland Mts. (Barnard); four specimens. The markings are obscure and ill-defined, but the species is recognisable by the very long palpi.

EUCOSMIDAE.

DOLIOCHASTIS, n. g.

Palpi moderate, porrected, second joint densely rough-scaled above and beneath, terminal joint very short. Antennae in ♂ serrulate, minutely ciliated. Thorax without crest. Forewings with 3 from angle, 7 to termen. Hindwings with 3 and 4 separate, nearly approximated and parallel towards base, 5 rather approximated, 6 and 7 closely approximated towards base.

A derivative of *Eucosma*.

Doliochastis homograpta, n. sp.

♂. 13–15 mm. Head, palpi, thorax and abdomen grey. Forewings elongate, posteriorly somewhat dilated, costa slightly arched, without fold, apex obtuse, termen nearly straight, somewhat oblique; grey; costa dark fuscous, marked with pairs of obscure whitish strigulae; dorsum with some dark fuscous strigulae; basal patch more or less mixed with darker, edged by an obscure dark fuscous irregular streak obtusely angulated in middle; central fascia narrow, very irregular-edged, suffused, oblique, dark fuscous; several oblique leaden strigae from posterior costal strigulae; ocellus laterally edged by dull leaden marks reaching half across wing, anterior adjacent to central fascia, posterior almost terminal, preceded by three adjacent black dots: cilia grey. Hindwings and cilia grey.

Transvaal, junction of Crocodile and Marico rivers, in February (R. Tucker); six specimens. Also seen from Rhodesia, Salisbury (Janse).

Gen. EUCOSMA Hüb.

Eucosma querula, Meyr.

Cape Colony, Capetown, in May and June (Lightfoot); Natal, Pinetown, in February (Leigh). Described from New Zealand specimens; it is, however, a discordant species in the New Zealand fauna, and may therefore not improbably have been introduced into that country from South Africa.

Eucosma lochmaea, n. sp.

♂. 20–22 mm. Head, palpi, and thorax dark purplish-ashy-fuscous. Abdomen grey. Forewings elongate, posteriorly somewhat dilated, costa gently arched, without fold, apex obtuse, termen straight, rather oblique; dark fuscous, almost wholly covered with suffused confluent dark purplish-leaden transverse striation from base to a narrow irregular somewhat curved rather oblique central fascia of ground-colour; four pairs of oblique dark purplish-leaden strigulae from posterior half of costa, running into a fasciate blotch limiting ocellus anteriorly; a dark purplish-leaden streak along termen, preceded on lower half by four elongate black dots: cilia dark purple-grey, sprinkled with dark fuscous. Hindwings with 3 and 4 stalked; grey; cilia grey.

Natal, Durban (Marley); four specimens, bred in June from larvae feeding in pods of "sugar-bush," presumably a Leguminous shrub.

Eucosma tenax, n. sp.

♂ ♀. 19–20 mm. Head, palpi, and thorax in ♂ mixed with ochreous, grey, and dark fuscous, in ♀ ferruginous. Antennal ciliations in ♂ nearly 2. Abdomen dark grey. Forewings elongate, posteriorly dilated, costa slightly arched, in ♀ more strongly anteriorly, in ♂ with moderate fold from base to $\frac{2}{5}$, apex obtuse, termen nearly straight, somewhat oblique; ochreous-whitish; markings deep ferruginous, in ♂ much mixed with grey and strigulated with blackish, in ♀ with only a few grey and black scales; basal patch moderate, edge in ♂ nearly straight, little oblique, in ♀ more oblique, obtusely

angulated in middle; central fascia rather broad, evenly wide, oblique, straight, posterior edge with a projection below middle, less marked in ♀ ; an irregular fascia from about ¾ of costa to lower part of termen and tornus, dilated towards costa, especially in ♀, and more narrowed downwards, enclosing one or two whitish dots on costa ; two or three costal dots between these markings ; a small mark on costa before apex, whence a more or less expressed stria runs along upper part of termen: cilia in ♂ grey mixed with ochreous and blackish, in ♀ ferruginous-ochreous, becoming paler towards tips. Hindwings with 3 and 4 connate; grey, rather darker posteriorly (in ♀ specimen missing); cilia light grey, with darker subbasal shade.

Cape Colony, Gt. Winthoek, 4500 ft.; three specimens.

Gen. ARGYROPLOCE Hüb.

Argyroploce orichlora, n. sp.

♂ ♀. 18–19 mm. Head, palpi, and thorax green irregularly mixed with black. Abdomen dark grey. Forewings elongate, posteriorly dilated, costa slightly arched, apex obtuse, termen slightly sinuate, little oblique ; green, with more or less expressed irregular transverse striae of whitish or pale bluish irroration rising from pairs of white costal strigulae separated by small blackish spots; basal patch of more or less developed blackish marking, edge rather oblique, with rounded median prominence; central fascia blackish, irregular, not oblique, discal area before and beyond this more or less variably suffused irregularly with dark green or blackish ; an outwards-oblique streak of blackish suffusion from dorsum before tornus reaching half across wing ; an irregular upwards-oblique blackish streak from middle of termen not reaching costa, sometimes surrounded with dark grey suffusion and some reddish sprinkling ; three black strigulae on lower part of termen ; one specimen is largely suffused generally with dark grey: cilia green with rows of whitish points, somewhat reddish-tinged towards tips. Hindwings grey, veins dark grey, apex and termen suffused with dark grey ; cilia light grey, with dark grey basal shade, tips whitish.

Cape Colony, Oudebosch (1500 ft.) and Table Mountain, in January and February (Barnard); three specimens. Belongs to the *bryana* group, rather numerous in India, of which it is the first African representative.

GELECHIADAE.

Gen. PYCNOSTOLA Meyr.

Pycnostola perlustrata, n. sp.

♂. 14–16 mm. Head pale grey, sidetufts whitish. Palpi ochreous-grey, terminal joint whitish, grey anteriorly. Thorax light grey. Abdomen grey, anal tuft whitish. Forewings narrowly elongate-lanceolate; fulvous-ochreous, veins and margins streaked with light grey sprinkled with dark fuscous; an indistinct dark fuscous dot beneath costa towards base; stigmata indistinct, dark fuscous, plical very obliquely before first discal: cilia light grey, towards base somewhat mixed with white and sprinkled with dark fuscous. Hindwings and cilia light grey.

Cape Colony, Fransch Hoek, in June (Barnard); two specimens. Resembles *illuminata*, but smaller, and immediately distinguished by grey cilia of hindwings.

Pycnostola oeconomica, n. sp.

♂ ♀. 18–19 mm. Head and thorax white, more or less speckled with fuscous. Palpi pale brownish sprinkled with dark fuscous, tuft long, edge white, terminal joint white speckled with dark fuscous. Abdomen whitish irrorated with fuscous. Forewings elongate, very narrow, costa slightly arched, apex acute, termen faintly sinuate, extremely oblique; fuscous, suffused and irregularly mixed with whitish irroration, and more or less streaked with pale yellow-ochreous in disc; stigmata blackish, discal approximated, plical very obliquely before first discal: cilia ochreous-whitish mixed with fuscous. Hindwings grey; cilia whitish-ochreous-grey.

Cape Colony, Matroosberg, 3500 ft., in November (Lightfoot); two specimens.

Pycnostola celeris, n. sp.

♂ ♀. 20–22 mm. Head and thorax white, shoulders sprinkled with grey. Palpi ochreous-whitish sprinkled with dark fuscous, tuft long, edge white, terminal joint white, with anterior edge dark fuscous. Abdomen white, more or less suffused with grey. Forewings elongate, narrow, costa slightly arched, apex pointed, termen slightly sinuate, extremely oblique; whitish (♂) or pale yellow-ochreous (♀), more or less speckled irregularly with fuscous, especially along margins; stigmata small, indistinct, ferruginous-brownish, discal approximated,

plical very obliquely before first discal: cilia whitish, base with a few fuscous specks. Hindwings pale whitish-grey; cilia whitish-ochreous.

Cape Colony, Matroosberg, 3500 ft., in November (Lightfoot); three specimens.

Gen. MEGACRASPEDUS Zell.

Megacraspedus peracuta, n. sp.

♂ ♀. 11–13 mm. Head white, with a dark grey mark on each side of forehead. Palpi white, second joint blackish except apex, tuft very short, terminal joint blackish towards tip. Thorax yellow-whitish, shoulders dark grey. Abdomen blackish-grey. Forewings lanceolate, apex produced, acute; yellow-ochreous, sometimes tinged with grey posteriorly; costal edge white on basal third: cilia light greyish-ochreous, becoming whitish on costa towards middle. Hindwings grey; cilia pale greyish-ochreous.

Cape Colony, Gt. Winthoek, 4500 ft.; four specimens.

Megacraspedus photinopa, n. sp.

♂. 13 mm. Head and thorax white. Palpi white, second joint with a median band of fuscous irroration. Abdomen grey-whitish. Forewings elongate-lanceolate; white; a rather broad whitish-ochreous streak sprinkled with grey and dark fuscous running from base beneath costa to $\frac{1}{3}$, thence obliquely deflected to a small round yellow-whitish spot edged with a few dark scales representing second discal stigma, and a similar streak from middle of base to a more obscure similar spot representing plical stigma; some grey irroration towards costa at $\frac{2}{3}$, and two or three scales on tornus; an apical spot of grey suffusion: cilia whitish, at apex with sharp median and apical grey lines. Hindwings light grey; cilia grey-whitish.

Cape Colony, Table Mountain, in February (Barnard); one specimen.

Gen. EPITHECTIS Meyr.

Epithectis exstincta, Meyr.

In the original example veins 6 and 7 of forewings are stated to rise out of 8, but in two specimens since examined 7 and 8 rise out 6, which must therefore be held to be the normal structure, and on this difference the species should be referred to *Epithectis*.

Gen. TELPHUSA Chamb.

Telphusa limenaea, n. sp.

♂. 12 mm. Head white. Palpi white, second joint mixed with black on basal half, terminal joint with two black bands. Thorax white, shoulders irrorated with dark grey, dorsum with two small black spots anteriorly. Forewings elongate, rather narrow, costa gently arched, apex pointed, termen very obliquely rounded; dark grey, tips of scales very finely whitish; extreme base mixed with black; a broad white antemedian fascia edged with blackish anteriorly and preceded by a brown subcostal mark, its posterior half not reaching costa and marked with a black subcostal dot in an indentation, its posterior margin followed by a brown transverse spot in disc; opposite white costal and tornal spots at $\frac{3}{4}$, their anterior angles connected by a black mark, above and beneath which is some brownish suffusion: cilia whitish (imperfect). Hindwings pale grey; cilia ochreous-whitish.

Cape Colony, Capetown, in December (Lightfoot); one specimen.

Telphusa iriditis, n. sp.

♂. 12 mm. Head iridescent grey-whitish irregularly speckled with blackish. Palpi grey, second and terminal joints each with two bands of blackish irroration, terminal joint thickened with scales. Thorax violet-grey suffusedly irrorated and marked with blackish. Abdomen greyish. Forewings elongate, narrow, costa slightly arched, faintly sinuate towards middle, apex pointed, termen extremely obliquely rounded; purplish-grey speckled with black, with iridescent green reflections; three small spots of black irroration on costa at $\frac{1}{6}$, $\frac{1}{3}$, and middle, each with a small brownish-ochreous spot adjacent beneath, some whitish irroration between these extending obliquely towards disc; a black oblique mark in disc beneath first of these, and a black longitudinal spot beneath second; three small brownish-ochreous tufts towards dorsum from $\frac{1}{3}$ to before tornus; a small brownish-ochreous spot in middle of disc and another at $\frac{2}{3}$; a transverse black spot in disc towards apex, preceded by two brownish-ochreous dots transversely placed; three brownish-ochreous dots on costa and two on termen towards apex, separated with black and with a more distinct small black spot at apex: cilia pale grey with some black specks towards base, round apex with basal area purple-whitish speckled with black. Hindwings light grey thinly scaled towards base, margins and veins suffused with darker grey; cilia light grey.

S.W. Protectorate, Narugas, in January (Lightfoot); one specimen.

Gen. GELECHIA Hüb.

Gelechia albiflora, n. sp.

♂ ♀. 19–20 mm. Head ochreous-white. Palpi ochreous-white, base blackish, terminal joint more or less irrorated with blackish. Thorax ochreous-white, patagia dark fuscous, a spot on each side adjacent to these or (in ♂) whole anterior dorsal half blackish. Abdomen in ♂ ochreous-whitish, apparently becoming dark fuscous posteriorly, in ♀ whitish. Forewings elongate, narrow, costa gently arched, apex tolerably pointed, termen very obliquely rounded; dark ashy-fuscous; an irregular ochreous-white transverse strigula from base of costa; an irregular ochreous-white spot beneath costa at $\frac{1}{5}$; a thick black streak extending along fold from $\frac{1}{5}$ to near middle of wing, interrupted by two ochreous-white spots; an ochreous-white spot in disc slightly beyond second of these, and a larger spot in disc at $\frac{2}{3}$, these more or less surrounded with black and united by a black blotch; opposite small cloudy whitish spots at $\frac{3}{4}$ of costa and tornus tending to unite into a straight line touching this; some irregular whitish scales in disc beyond this: cilia ochreous-white, at base with a few blackish scales. Hindwings ochreous-whitish, with a slight bluish tinge: cilia ochreous-whitish.

Cape Colony, Matroosberg, 3500 ft., in November (Lightfoot); two specimens. Allied to *triplacopis*; the colour of ♂ abdomen might be due to decay.

Gelechia leucodoxa, n. sp.

♂ ♀. 14–15 mm. Head white. Palpi white, base of second joint black, terminal joint more or less closely irrorated with black. Thorax white, shoulders narrowly black. Abdomen whitish. Forewings elongate, rather narrow, costa gently arched, apex pointed, termen very obliquely rounded; light grey, more or less wholly overlaid with ochreous-white; markings blackish; a rather broad basal fascia, outer edge obtusely angulated below middle; a moderate irregular-edged slightly oblique fascia at $\frac{2}{5}$, not reaching dorsum; a rather broad transverse fascia at $\frac{2}{3}$, with anterior projection above middle, and containing an irregular white spot in disc sometimes extending to posterior edge; an irregular apical spot: cilia whitish. Hindwings whitish-grey; cilia whitish.

Cape Colony, Capetown, in February and March (Péringuey, Lightfoot); three specimens. Allied to preceding.

Gelechia catharodes, n. sp.

♂. 22 mm. Head and thorax ochreous-white with a few black scales. Palpi white irrorated with black. Antennal ciliations nearly 1. Abdomen whitish, apical half except anal tuft suffused with grey. Forewings elongate, narrow, costa slightly arched, apex tolerably pointed, termen very obliquely rounded; ochreous-white, irregularly sprinkled with black, mostly towards margins; an irregular blackish transverse subbasal streak, shortly extended along dorsum; stigmata represented by small irregular spots of dense black irroration, plical beneath first discal and touching it, second discal larger and transverse, reaching to near dorsum: cilia ochreous-white with a few black specks. Hindwings whitish-grey; cilia ochreous-whitish.

Cape Colony, Gt. Winthoek, 4500 ft; one specimen.

Gen. COMPSOLECHIA Meyr.

Compsolechia permagna, n. sp.

♀. 30 mm. Head, palpi, and thorax whitish-ochreous, with a few light brownish specks. Forewings elongate, narrow, costa slightly arched, apex obtuse-pointed, termen very obliquely rounded; whitish-ochreous, with scattered light brownish scales; discal stigmata irregular, light ferruginous-brown, with two or three blackish scales; a cloudy light ferruginous-brown line along termen, with a few blackish scales: cilia light ochreous-grey, on costa whitish-ochreous. Hindwings considerably over 1, termen slightly sinuate; pale grey; cilia whitish-grey-ochreous.

Transvaal, junction of Limpopo and Marico rivers (Eriksson); one specimen.

Gen. DICHOMERIS Hüb.

Dichomeris fluitans, n. sp.

♂. 16 mm. Head grey, sidetufts tinged with whitish-ochreous. Palpi dark grey slightly speckled with whitish, second joint with scales rather expanded above towards apex and long projecting apical tuft beneath, terminal joint longer than second, whitish, anterior edge dark fuscous. Thorax pale ochreous-yellowish dorsally tinged with grey, shoulders dark fuscous. Abdomen grey, anal tuft whitish-ochreous. Forewings elongate, narrow, costa gently arched, apex pointed, termen faintly sinuate, extremely oblique; light ochreous-yellowish, dorsal half suffused with brownish-ochreous; a very small

dark fuscous spot on base of costa; discal stigmata small, blackish, an additional dot halfway between first discal and base; an apical spot of dark fuscous suffusion: cilia pale brownish-ochreous, on costa pale yellowish. Hindwings iridescent-grey; cilia light grey.

Natal, Howick (Symons); one specimen.

Gen. ERIDACHTHA Meyr.

Eridachtha cosymbota, n. sp.

♂. 15 mm. Head ochreous-yellow, crown centrally tinged with violet-fuscous. Palpi ochreous-yellow, second joint externally tinged with fuscous except towards apex. Antennae light ochreous-yellowish, becoming greyish-tinged towards apex. Thorax dark violet-grey. Abdomen grey, anal tuft pale ochreous. Forewings elongate, rather narrow, costa slightly arched, apex obtuse-pointed, termen nearly straight, oblique; 7 and 8 stalked; dark violet-grey, suffusedly irrorated with dark fuscous; an obscure cloudy darker spot representing second discal stigma, edged anteriorly by a small roundish ochreous-whitish spot: cilia dark fuscous, tips whitish on termen, an ochreous-whitish costal patch before apex. Hindwings grey, darker towards apex; cilia pale grey, towards base and tips ochreous-whitish.

Cape Colony, Oudebosch (1500 ft.) and Table Mountain, in January and February (Barnard); three specimens.

Gen. BRACHMIA Hüb.

Brachmia ochyrota, n. sp.

♂. 13 mm. Head, palpi, antennae and thorax pale ochreous, second joint of palpi slightly infuscated at base, or sometimes sprinkled with fuscous. Abdomen whitish-ochreous suffused with pale grey. Forewings elongate, posteriorly slightly dilated, costa gently arched, apex obtuse, termen rather obliquely rounded; 7 and 8 stalked, 7 to apex; pale ochreous, sometimes sprinkled with fuscous; a blackish dot on base of costa; stigmata black, plical beneath first discal; a black dot on dorsum beneath second discal, tending to be connected with it by a faint variable fuscous shade; an almost marginal series of black dots round posterior part of costa and termen: cilia pale ochreous. Hindwings whitish-ochreous tinged with grey; cilia whitish-ochreous.

Natal, Howick (Fuller); one specimen; also two in my collection from Pinetown, in September and January (Leigh). Intermediate between *serialis* and *stenictis*.

OECOPHORIDAE.

Gen. TANYZANCLA Meyr.

Tanyzancla diorycta, n. sp.

♂. 16–17 mm. Head, palpi, and thorax greyish-fulvous. Antennal ciliations 3. Abdomen dark grey. Forewings elongate, rather narrow, costa slightly arched, apex obtuse-pointed, termen nearly straight, oblique; deep brownish-fulvous, sometimes variably and suffusedly mixed with grey; a triangular dark grey blotch on dorsum beyond middle, reaching more than half across wing, anteriorly edged by a fine white line; a cloudy irregular dark grey streak from costa at $\frac{3}{4}$ to apex of this blotch, preceded on costa by a slight whitish mark; an oval blotch of ground-colour or light yellow-ochreous in disc above tornus outlined except above with whitish suffusion or a white line and then with dark grey; sometimes an apical blotch of light yellowish suffusion: cilia rather dark grey, base somewhat mixed with brownish-fulvous. Hindwings rather dark grey; cilia grey.

Cape Colony, Gt. Winthoek, 4500 ft.; four specimens. Allied to *chalinitis*.

Tanyzancla semistricta, n. sp.

♂. 21 mm. Head and thorax pale greyish-ochreous. Palpi ochreous-whitish sprinkled with fuscous. Abdomen grey-whitish, segments with basal ochreous bands. Forewing elongate, rather narrow, costa gently arched, apex pointed, termen very obliquely rounded; pale greyish-ochreous with scattered dark fuscous specks; a short slender dark fuscous longitudinal streak from base of costa; a broad irregular dark fuscous longitudinal submedian streak from base to apex, finely attenuated towards base, irregularly narrowed on apical portion, upper edge with slight prominences indicating discal stigmata and finely edged with white between these, beneath with slender irregular branches above and below fold to tornus; slender irregular dorsal and subdorsal dark fuscous streaks from base, meeting just before tornus: cilia ochreous-grey-whitish. Hindwings pale greyish; cilia grey-whitish.

Cape Colony, Capetown, in May (Barnard); one specimen.

Gen. PROTOMACHA Meyr.

Protomacha sosigona, n. sp.

♂. 21 mm. Head white, sidetufts and back of crown tinged with pale ochreous. Palpi fuscous, terminal joint whitish posteriorly. Thorax

pale ochreous-bronzy. Abdomen whitish-ochreous. Forewings elongate, costa moderately arched, apex obtuse-pointed, termen nearly straight, oblique; pale ochreous-bronzy; a white attenuated streak along costa from base to $\frac{3}{5}$, costal edge dark fuscous towards base; stigmata minute, dark fuscous, plical beneath first discal; a curved subterminal series of indistinct minute dark fuscous dots: cilia whitish-ochreous. Hindwings pale greyish; cilia grey-whitish, with faint greyish subbasal shade.

Cape Colony, Zonder End Peak, 3600 ft., in January (Barnard); one specimen.

Gen. DEPRESSARIA Haw.

Depressaria grammatopa, n. sp.

♀. 18 mm. Head and palpi light greyish-ochreous (partially defaced). Thorax light brownish. Abdomen whitish-ochreous slightly sprinkled with grey. Forewings elongate, rather narrow, costa slightly arched, apex obtuse, termen very obliquely rounded; 2 and 3 stalked; light brownish sprinkled with fuscous; first discal stigma represented by an extremely oblique black dash, second by a cloudy blackish dot: cilia pale brownish. Hindwings pale greyish, veins suffusedly darker; cilia pale greyish-ochreous.

Cape Colony, Table Mountain, 2500 ft., in November (Barnard); one specimen.

Depressaria crypsicosma, n. sp.

♀. 20 mm. Head dark fuscous irrorated with white. Palpi whitish, irregularly sprinkled with grey and blackish, terminal joint with two bands of blackish irroration. Thorax whitish-ochreous, anterior half dark fuscous irrorated with white. Abdomen grey-whitish. Forewings elongate, costa gently arched, apex obtuse, termen rounded, rather strongly oblique; 2 and 3 stalked; pale yellow-ochreous; costal edge fuscous, irrorated with whitish, slightly thickened posteriorly, united with a broad marginal band of fuscous suffusion irrorated with whitish extending round apex and termen and continued more narrowly along dorsum to before middle; first discal stigma black, distinct, a minute black dot obliquely before and above it, second represented by an undefined rather dark fuscous dot on edge of terminal band: cilia light grey sprinkled with whitish. Hindwings whitish-grey; cilia grey-whitish.

Cape Colony, Table Mountain, 2500 ft., in November (Barnard); one specimen.

Depressaria communis, n. sp.

♂. 14–15 mm. Head and thorax whitish-fuscous. Palpi whitish, slightly sprinkled with fuscous. Abdomen grey-whitish. Forewings elongate, rather narrow, costa gently arched, apex rounded-obtuse, termen obliquely rounded; 2 and 3 stalked; light fuscous, with very faint pinkish tinge; a black dot towards costa near base; discal stigmata small, blackish, a very small additional dot before and above first, and a few scattered blackish scales towards costa between them, second stigma sometimes edged anteriorly by a faint whitish dot; a marginal series of blackish dots round posterior part of costa and termen: cilia pale grey. Hindwings grey, lighter towards base; cilia whitish-grey.

Cape Colony, Table Mountain, in March (Barnard); two specimens.

Depressaria rhodoscelis, n. sp.

♀. 22 mm. Head pale ochreous, crown suffused with light brownish, tuft of cilia beneath eye light crimson. Palpi whitish ochreous sprinkled with dark grey, second joint suffused externally with rosy-pink. Thorax pale ochreous, with a blackish longitudinal mark on each side of back on posterior half. Tibiae partially suffused with rosy-pink. Forewings elongate, rather narrow, costa gently arched, apex rounded-obtuse, termen very obliquely rounded; 2 and 3 stalked; pale ochreous with a few scattered black scales; a small blackish subdorsal mark near base; a faint fuscous median streak from base to end of cell, and cloudy light fuscous lines along veins 4–8, other veins faintly tinged with fuscous; first discal stigma minute, black, second represented by a white dot surrounded by a few black scales; a series of small indistinct blackish marginal dots round posterior part of costa and termen: cilia whitish-ochreous mixed with pale grey, faintly rosy-tinged round apex. Hindwings light grey, whitish-tinged towards base, apex darker; cilia ochreous-whitish, with light grey basal line, round apex suffused with pale grey.

Cape Colony, Gt. Winthoek, 4500 ft.; one specimen.

Depressaria homogenes, n. sp.

♀. 18 mm. Head whitish-ochreous sprinkled with fuscous, face whitish. Palpi whitish-grey-ochreous, second joint mixed with black anteriorly, terminal joint with base and a supramedian band irrorated with blackish. Thorax greyish-ochreous, posterior extremity grey. Forewings elongate, rather narrow, costa gently arched, apex obtuse, termen very obliquely rounded; 2 and 3 stalked; greyish-ochreous;

costa irregularly strigulated with blackish irroration; a small blackish mark above dorsum near base, posteriorly suffused with grey; first discal stigma represented by a black dot, and another obliquely before and above it, second by a white dot surrounded by fuscous suffusion, which forms a cloudy spot before it and a more diffuse patch beyond it; some small indistinct blackish marginal dots round apex and termen: cilia pale grey sprinkled with ochreous-whitish. Hindwings light grey, darker posteriorly; cilia whitish-ochreous-grey.

Cape Colony, Gt. Winthoek, 4500 ft.; one specimen.

Depressaria panurga, n. sp.

♀. 17 mm. Head brownish. Palpi greyish sprinkled with dark fuscous, terminal joint whitish with basal and median bands of blackish irroration. Thorax brownish, anterior and posterior margins marked with blackish. Abdomen light greyish. Forewings elongate, narrow, costa gently arched, apex obtuse, termen very obliquely rounded; 2 and 3 stalked; brown suffused with fuscous except beneath costa on anterior half, and with rather dark purplish-fuscous on dorsal $\frac{2}{3}$, darkest towards base; costa marked with small obscure dark fuscous spots or strigulae from base to $\frac{3}{4}$; discal stigmata rather large, whitish, first irregularly edged anteriorly with blackish suffusion or irroration, second preceded by an irregular whitish dot or group of scales almost connected with it: cilia light fuscous, slightly whitish-sprinkled. Hindwings light grey; cilia pale greyish.

Cape Colony, Knysna, in October (Péringuey); one specimen.

MELOTELES, n. g.

Head smooth, side-tufts slightly raised; ocelli small, posterior; tongue developed. Antennae $\frac{3}{4}$, in ♂ serrate, minutely ciliated, basal joint moderate, without pecten. Labial palpi long, recurved, second joint thickened with appressed scales, slightly roughened beneath, terminal joint $\frac{2}{3}$ of second, thickened with scales, acute. Maxillary palpi very short, filiform, appressed to tongue. Posterior tibiae clothed with hairs above. Forewings with 1*b* furcate, 2 and 3 stalked from angle, 7 absent, 11 from middle. Hindwings 1, elongate-ovate, cilia $\frac{4}{5}$; 3 and 4 connate, 5–7 nearly parallel.

Meloteles xanthodoxa, n. sp.

♂. 14 mm. Head, palpi, and thorax yellow-ochreous tinged with ferruginous. Abdomen pale ochreous. Forewings elongate, costa gently arched, apex obtuse, termen obliquely rounded; yellow-ochreous

tinged with ferruginous: cilia concolorous. Hindwings and cilia pale yellow-ochreous.

Bechuanaland, Gaberones (Miss Marshall); one specimen.

Gen. CRYPTOLECHIA Zell.

Cryptolechia ammopleura, n. sp.

♀. 33–34 mm. Head and thorax brownish, pale-speckled, side-tufts of crown raised and connivent. Palpi pale rosy-pink speckled with fuscous. Abdomen brown-whitish. Forewings suboblong, posteriorly rather dilated, costa gently arched, apex obtuse, termen nearly straight, little oblique; light grey-brownish, with very obscure irregular transverse striation of purple-fuscous speckling; discal stigmata represented by small faint cloudy spots of similar speckling; costal edge sometimes tinged with pale rosy-pink: cilia pale brownish-grey, basal half speckled with purplish-fuscous. Hindwings and cilia ochreous-whitish, cilia with very faint rosy tinge.

Cape Colony, Capetown, two specimens, bred from larvae feeding in base of receptacle of *Protea mellifera* (*Proteaceae*), pupa stated to be like that of *Lycaena* in shape and attachment. Pupa-case sent, but broken in transit; apparently pupa sat erect on truncate abdomen (as in several other genera of the Depressariad group); surface of pupa-skin curiously freckled with very numerous small groups of minute papillae.

BRIAROSTOMA, n. g.

Head with appressed scales; ocelli posterior; tongue developed. Antennae $\frac{3}{4}$, basal joint moderate, with pecten. Labial palpi extremely long, straight, porrected, second joint very long, expanded with long rough projecting scales above and beneath, terminal joint short, slender, pointed. Maxillary palpi rudimentary. Posterior tibiae clothed with hairs above. Forewings with 1*b* furcate, 2 from towards angle, 7 and 8 stalked, 7 to costa, 11 from somewhat before middle. Hindwings 1, elongate-ovate, pointed, cilia $\frac{3}{4}$; 3 and 4 connate, 5–7 parallel.

Perhaps near *Diocosma*.

Briarostoma pyrrhopsamma, n. sp.

♀. 19 mm. Head and thorax whitish-ochreous faintly rosy-tinged. Palpi ochreous-whitish tinged with rosy, irrorated with dark fuscous. Forewings elongate, costa moderately arched, apex tolerably

pointed, termen very oblique, hardly rounded; ferruginous: cilia light ferruginous, on costa rosy-tinged. Hindwings and cilia ochreous-whitish, cilia faintly rosy-tinged.

Cape Colony, Zonder End Peak, 3600 ft., in January (Barnard). Not in good condition, but a distinct form.

Gen. ISOCRITA Meyr.

Isocrita ithydoxa, n. sp.

♂. 12 mm. Head ochreous-whitish. Palpi whitish, second joint infuscated towards apex, terminal joint suffused with dark fuscous anteriorly. Thorax fuscous mixed with whitish, shoulders dark fuscous. Abdomen light greyish. Forewings elongate, costa gently arched, apex produced, acute, termen extremely obliquely rounded; light brownish, irregularly suffused with whitish and sprinkled with fuscous; a rather broad dark fuscous streak from base of costa to termen beneath apex, posterior half suffused with ground-colour beneath: cilia pale grey mixed with whitish towards base (imperfect). Hindwings pale grey; cilia whitish-grey.

Cape Colony, Upington, in January (Fath. R. Sollier); one specimen.

XYLORYCTIDAE.

Gen. EPORYCTA Meyr.

Eporycta chionaula, n. sp.

♂. 29 mm. Head white, crown partially suffused with pale ochreous. Palpi white, suffused with ochreous-grey anteriorly. Antennal pectinations 1, ciliated. Thorax light ochreous mixed with grey, with a white streak on inner side of patagia. Abdomen whitish, segments with coppery bands. Forewings elongate, costa slightly arched, apex obtuse, termen slightly rounded, rather strongly oblique; light ochreous suffusedly mixed with grey, especially on veins; markings shining snow-white; a streak along costa from base almost to apex, cut by lines of ground-colour on veins 9–11; a moderate streak from base above middle to termen beneath apex, on posterior fourth bisected by a line of ground-colour; streaks between veins 2–5, uppermost very slender and short; streaks above and beneath vein 1*b*, lower one not extended quite to its apex: cilia white, barred with grey on apex,

suffused with light grey on lower part of termen, becoming darker towards tornus. Hindwings light greyish-ochreous; cilia white.

Orange Free State, Smithfield (Kannemeyer); one specimen.

ASAPHARCHA, n. g.

Head with appressed scales, sidetufts loosely raised; ocelli small, posterior; tongue developed. Antennae $\frac{3}{4}$, in ♂ serrulate, shortly ciliated, basal joint moderate, without pecten. Labial palpi long, curved, ascending, second joint reaching base of antennae, much thickened with dense appressed scales, terminal joint as long as second, moderate, acute. Maxillary palpi very short, filiform, appressed to tongue. Anterior tarsi moderate, rather longer than tibiae; posterior tibiae clothed with dense rough scales above. Forewings with 1*b* long-furcate, 2 from angle, 7 and 8 stalked, 7 to costa, 11 from middle. Hindwings 1, trapezoidal-ovate, termen faintly sinuate, cilia $\frac{1}{2}$; 3 and 4 connate, 5 rather approximated, 6 and 7 approximated towards base.

Perhaps related to *Thalamarchis*.

Asapharcha strigifera, n. sp.

♂ ♀. 17–18 mm. Head and palpi ochreous-yellow, base of palpi with a few dark fuscous scales. Thorax ochreous-whitish, anterior margin irregularly marked with dark fuscous suffusion. Abdomen fuscous. Forewings elongate, costa gently arched, apex obtuse, termen slightly rounded, somewhat oblique; ochreous-whitish, costal edge ochreous-yellow; irregularly strewn dark fuscous transverse strigulae arranged along costa from base to about $\frac{3}{4}$, and forming a sparse irregular group towards median third of dorsum, and a denser patch suffused in centre between cell and termen; stigmata dark fuscous, plical somewhat elongate, beneath first discal: cilia whitish-yellowish barred with dark fuscous irroration. Hindwings rather dark grey; cilia whitish-yellowish, with faint greyish subbasal shade.

Transvaal, junction of Crocodile and Marico rivers, in February (R. Tucker); two specimens.

ORNEODIDAE.

I have set forth elsewhere (Exotic Micro-lepidoptera, vol. i, p. 555) the evidence on which I now assign this family to the *Tineina*, as a development from the *Copromorphidae*.

Gen. ORNEODES Latr.

Orneodes habrophila, n. sp.

♂. 14 mm. Head, palpi, thorax, and abdomen whitish; palpi $2\frac{1}{2}$, porrected, second joint with rough projecting hairscales above and beneath, terminal joint half second. Forewings whitish; faint indications of ochreous-yellowish fasciae before and beyond middle, principally on cilia; a narrow grey fascia sprinkled with blackish crossing segments 3–6 at $\frac{4}{5}$ of wing, principally marked on cilia, slenderest on 3: cilia otherwise whitish. Hindwings whitish; an ochreous-yellowish fascia crossing segments 2–6 at $\frac{1}{3}$, narrowest on 2, slightly fuscous-edged posteriorly; cilia whitish, on fascia yellowish.

Zululand, Eshowe (Marley); one specimen. Also Natal, Pinetown, in January (Leigh), one specimen in my collection; expanse 16 mm., forewings with distinct but undefined median fascia of ochreous-yellow suffusion, fascia of hindwings more strongly edged with fuscous.

Orneodes brachyzona, n. sp.

♂. 18 mm. Head white. Palpi $2\frac{1}{2}$, subascending, white, second joint thickened with scales projecting beneath towards apex, suffused with pale ochreous with a lateral streak of dark fuscous irroration except towards apex, terminal joint half second. Thorax grey, anterior third ochreous-white. Abdomen ochreous-whitish, two basal segments grey, third dark fuscous preceded by some white irroration. Forewings white; a blackish-grey basal patch extending on costa to $\frac{1}{5}$ and on dorsum to $\frac{1}{3}$; a blackish dot on costa at $\frac{1}{3}$; a blackish-grey fascia crossing segments 2–5 before middle, connected on fifth with basal patch; a narrow curved yellow-ochreous median fascia crossing wing just beyond this, slightly sprinkled with blackish-grey; a narrow irregular rather curved blackish-grey fascia mixed with whitish crossing segments 2–6 at $\frac{2}{3}$, completed on first segment by a yellow-ochreous spot sprinkled with grey; an ochreous-yellowish grey-sprinkled dot on costa at $\frac{5}{6}$; a blackish dot on each segment before tip: cilia white, on antemedian and postmedian fasciae blackish-grey. Hindwings white; base suffused with blackish-grey; transverse series of small yellowish spots sprinkled with blackish at $\frac{1}{3}$ and $\frac{2}{3}$, a series of blackish dots before these, two between them, and one beyond them towards tip; cilia white.

Cape Colony, Abraham's Kraal, in April (Mrs. v. d. Bijl); one specimen.

GLYPHIPTERYGIDAE.

Gen. PHYCODES Guen.

Phycodes pseliota, n. sp.

♀. 16 mm. Head grey. Palpi white, terminal joint grey. Thorax dark grey sprinkled with whitish. Abdomen grey. Forewings elongate, posteriorly somewhat dilated, costa nearly straight, rather arched towards apex, apex obtuse, termen nearly straight, somewhat oblique; blackish-grey, with close fine transverse striation of whitish points; direct transverse blackish fasciae bordered with violet-silvery-metallic streaks at $\frac{1}{3}$ and $\frac{2}{3}$; blackish spots margined with violet-silvery-metallic streaks at apex and tornus: cilia violet-grey, above tornus with a patch of blue suffusion. Hindwings dark fuscous; an undefined patch of ochreous-yellow suffusion occupying central portion of disc and extending to near base and dorsum; cilia ochreous-whitish, with dark fuscous basal line.

Natal, Durban (Marley); one specimen. Allied to *adjectella*, but distinct by yellow hindwings.

Gen. ATYCHIA Latr.

Atychia infanda, n. sp.

♂. 17–18 mm. ♀. 22 mm. Head and thorax blue-blackish, hairs of collar mixed with pale ochreous. Palpi blackish, white at base and beneath. Antennae blackish, in ♂ unipectinated with short stout lamellae ($1\frac{1}{2}$). Abdomen blackish, segmental margins in ♂ mixed with grey-whitish, in ♀ dark grey. Forewings elongate, posteriorly dilated, costa slightly arched, apex rounded-obtuse, termen rounded, somewhat oblique; dark bronzy-fuscous, with a faint purplish tinge: cilia dark fuscous, extreme tips whitish round apex. Hindwings dark fuscous; a small irregular suffused ochreous-whitish spot in disc slightly before middle, and a smaller one midway between this and tornus; cilia fuscous, with dark fuscous subbasal line, tips whitish.

Cape Colony, Gt. Winthoek, 4500 ft.; three specimens. Allied to *quiris*, but seems constant.

Atychia nycteropis, n. sp.

♂. 13 mm. Head, thorax, and abdomen blackish. Palpi blackish, white towards base and beneath. Antennae blackish, much thickened

with scales, not pectinated. Forewings elongate, posteriorly dilated, costa slightly arched, apex rounded, termen rounded, somewhat oblique; 2 and 3 stalked; blackish, with a faint purple tinge: cilia dark fuscous, extreme tips whitish. Hindwings blackish-fuscous; cilia dark fuscous, extreme tips whitish.

Cape Colony, Gt. Winthoek, 4500 ft.; one specimen.

Gen. SIMAETHIS Leach.

Simaethis entechna, n. sp.

♀. 10 mm. Head and thorax blackish speckled with whitish, face and palpi white sprinkled with dark fuscous. Abdomen dark grey. Forewings somewhat elongate-triangular, costa moderately arched, apex obtuse, termen slightly rounded, somewhat oblique; blackish; a very irregular cloudy pale ochreous-yellowish transverse line at $\frac{2}{5}$, costal extremity white, preceded and followed by fasciae of white irroration; two cloudy ochreous-whitish dots transversely placed in disc beyond middle; a transverse white mark from costa at $\frac{3}{5}$, and an inwardly oblique white mark from dorsum at $\frac{2}{3}$, with some irregular ochreous-whitish and chestnut-brown suffusion indicating a connecting line; an elongate patch of chestnut-brown suffusion beneath costa from before middle to near apex, terminated by an irregular pale ochreous apical blotch, slenderly connected on margin with a small spot on middle of termen; an undefined fascia of scanty white irroration from $\frac{3}{4}$ of costa to tornus: cilia greyish with two blackish shades, with small whitish patches above and below middle of termen. Hindwings dark fuscous; an irregular yellow-ochreous blotch in disc beyond middle; a yellow-ochreous marginal line round apex; cilia whitish, with dark fuscous subbasal line, tinged with reddish basally towards middle of termen.

Natal, Durban (Marley); one specimen.

Gen. GLYPHIPTERYX Hüb.

Glyphipteryx amphipeda, n. sp.

♀. 12 mm. Head and thorax dark bronzy (defaced). Palpi with whorls of dark fuscous white-tipped scales (defaced). Abdomen grey. Forewings elongate, costa gently arched, apex pointed, termen somewhat sinuate, very oblique; golden-bronze; markings violet-silvery-whitish irregularly edged with blackish scales; a rather narrow fascia from costa near base to before middle of dorsum, and another from $\frac{2}{5}$ of costa to $\frac{2}{3}$ of dorsum; an oblique streak from middle of costa reaching half across wing; a narrow slightly sinuate fascia from $\frac{3}{4}$ of costa to $\frac{5}{6}$ of dorsum, and one nearly staight from $\frac{5}{6}$ of costa to tornus; a small

wedge-shaped mark on costa before apex; an elongate blackish mark along upper part of termen, containing two silvery dots: cilia white, with a grey patch round apex, on lower part of termen with a blackish basal line. Hindwings and cilia pale grey.

Cape Colony, Gt. Winthoek, 4000 ft., in April; one specimen, not in good condition, but the species is very distinct and easy of recognition.

Glyphipteryx diplotoxa, n. sp.

♂. 11 mm. Head and thorax dark bronzy-fuscous, with a fine white line on side of crown. Palpi with whorls of black white-tipped scales, roughly projecting at apex of second joint beneath. Abdomen dark grey. Forewings elongate, costa gently arched, apex obtuse, termen slightly sinuate, oblique; dark bronzy-fuscous, posterior half largely suffused with pale bronzy-ochreous; markings shining white; a rather oblique fasciate streak from dorsum at $\frac{1}{4}$ reaching $\frac{2}{3}$ across wing, apex truncate; a narrow slightly curved fascia from before middle of costa to beyond middle of dorsum, rather widened downwards; a narrow slightly curved or bent pale silvery-grey fascia, white on costa, from $\frac{2}{3}$ of costa to dorsum before tornus, edged with dark fuscous anteriorly; three small spots on costa between this and apex; two silvery spots along upper and lower parts of termen, upper edged above by a small black apical spot: cilia white, base within a black median line pale bronzy, indented with white beneath apex, on costa above apex deeper bronze with a blackish projecting apical hook. Hindwings grey; cilia grey, round apex with outer half whitish-grey.

Cape Colony, Table Mountain, in February (Barnard); one specimen.

Glyphipteryx climacaspis, n. sp.

♂ ♀. 10–16 mm. Head dark bronzy-fuscous. Palpi with four whorls of black white-tipped scales, anterior edge of terminal joint black. Thorax dark bronze. Abdomen grey. Forewings elongate, costa gently arched, apex obtuse, termen sinuate, very oblique; 7 and 8 stalked in ♂, separate in ♀; pale shining golden-bronze; costal edge more or less suffused with grey; markings shining silvery-metallic-whitish edged with dark grey; a longitudinal streak from base above middle to $\frac{2}{5}$; a streak along fold from base, beyond apex of preceding bent obliquely down and continued to dorsum at $\frac{3}{4}$; five streaks from costa, first three oblique, first from somewhat before middle, reaching $\frac{4}{5}$ across wing, sometimes touching praetornal streak, second reaching $\frac{1}{2}$ across wing, approaching apex of praetornal streak,

third longer, more or less incurved, touching apex of post-tornal streak, fourth short, direct, fifth running to termen above middle; erect praetornal and post-tornal streaks tinged with violet-golden joined by three black bars usually interrupted to form six spots; a short slender streak on apical edge: cilia whitish-grey, basal half within a bronzy line silvery-metallic. Hindwings grey; cilia whitish-grey.

Cape Colony, Table Mountain (2500 ft.), Zonder End Peak (3600 ft.), Hottentot-Holland Mts. (4000 ft.), from November to March (Barnard); ten specimens.

Gen. CHRYSOCENTRIS Meyr.

Chrysocentris urania, n. sp.

♂ ♀. 13–14 mm. Head light yellow-ochreous (rubbed). Palpi whitish-ochreous, second joint with three blackish rings, with long roughly projecting whitish-ochreous hair-scales beneath, anterior end of terminal joint blackish. Thorax pale bronzy-ochreous transversely barred with blackish (rubbed). Abdomen blackish, segmental margins in ♀ whitish. Forewings elongate, posteriorly rather dilated, costa gently arched, apex obtuse, termen obliquely rounded; ochreous-bronze; numerous small blue or violet-metallic spots partly edged with blackish, viz. a series of about eight transverse marks from costa, posteriorly becoming pale ochreous on costa, about eighteen variable spots arranged in three irregular longitudinal series in disc, and a terminal series of dots: cilia pale ochreous, on basal half ochreous-bronze, suffusedly barred with blackish. Hindwings black; in ♀ several quadrate white spots in disc, very obscurely indicated in ♂; several small white spots towards apex, and a series along termen, in ♀ distinct, in ♂ more suffused; cilia grey, with blackish subbasal shade, obscurely barred with whitish suffusion.

Natal, Inchanga and Krantzkop, in November (Barnard); three specimens.

ELACHISTIDAE.

Gen. ELACHISTA Treitsch.

Elachista merimnaea, n. sp.

♂. 11 mm. Head, palpi, and thorax white. Abdomen light grey. Forewings lanceolate; white, with scattered fuscous specks, denser

towards posterior part of dorsum, and forming a small spot of irroration on costa before apex: cilia white, with a few fuscous specks, above apex with a spot of fuscous suffusion. Hindwings grey-whitish; cilia yellow-whitish.

Cape Colony, Matroosberg, 3500 ft., in November (Lightfoot); one specimen.

SCYTHRIDAE.

Gen. SCYTHRIS Hüb.

Scythris meligastra, n. sp.

♀. 17 mm. Head yellow-ochreous. Palpi ochreous-whitish, terminal joint and upper part of second anteriorly dark fuscous. Thorax ochreous-grey. Abdomen yellow-ochreous. Forewings elongate-lanceolate; ochreous-grey; plical and second discal stigmata blackish: cilia ochreous-grey. Hindwings with 4 and 5 stalked; fuscous; cilia ochreous-grey, paler towards tips.

S. W. Protectorate, Narugas, in January (Lightfoot); one specimen.

Scythris exsoluta, n. sp.

♂. 20 mm. Head, palpi, and thorax light grey. Antennal ciliations 1½. Abdomen light greyish-ochreous. Forewings elongate, narrow, costa slightly arched, apex acute, termen slightly sinuate, extremely oblique; grey, with an elongate patch of whitish suffusion in disc before middle, and obscurely mixed with whitish posteriorly; second discal stigma obscurely darker: cilia light grey mixed with whitish. Hindwings with 4 and 5 stalked; pale grey; cilia pale greyish-ochreous.

Cape Colony, Gt. Winthoek, 4000 ft., in April; one specimen.

Scythris dimensa, n. sp.

♂. 10 mm. Head, palpi, and thorax dark purple-grey. Antennal ciliations ½. Abdomen dark grey. Forewings elongate-lanceolate; dark iridescent-purple-grey; a sharply defined rather narrow whitish median longitudinal streak from base to ¾: cilia grey, towards base suffused with purplish. Hindwings with 4 and 5 separate; dark grey; cilia grey.

Natal, Durban, in March (Marley); one specimen.

PTEROLONCHIDAE.

ANATHYRSA, n. g.

Head loosely rough-haired above, sidetufts raised, spreading, face with appressed scales; ocelli small, posterior; tongue absent. Antennae nearly 1, basal joint moderate, with pecten. Labial palpi very long, nearly straight, ascending, second joint very long, thickened with dense scales, with long rough hair-scales above on posterior half to apex, terminal joint less than half second, projecting from apical hairs, slender, filiform, hardly pointed. Maxillary palpi absent. Posterior tibiae clothed with long hairs above. Forewings with 1*b* furcate, 2 from $\frac{4}{5}$, 3 from angle, 7 to costa, 8 absent, 9 and 10 from near 7, 11 from before middle. Hindwings under 1, ovate-lanceolate, cilia over 1; 2–7 separate, nearly parallel, transverse vein from 3 to 4 outwards-oblique.

A remarkable and interesting form. In one forewing of one specimen veins 5 and 6 are stalked—doubtless only a chance abnormality.

Anathyrsa macroxyla, n. sp.

♀. 30–34 mm. Head white, crown tinged with pale brownish-ochreous posteriorly. Palpi fuscous, terminal joint and long hairs of second white. Thorax white, anterior half tinged with pale brownish-ochreous. Abdomen whitish. Forewings very elongate, rather narrow, costa gently arched, apex pointed, termen faintly sinuate, extremely oblique; shining white; a thick brown supramedian longitudinal stripe from base to apex: cilia white. Hindwings ochreous-whitish; cilia ochreous-whitish, more yellowish-tinged towards base.

Cape Colony, Capetown, in December and February; three specimens.

COLEOPHORIDAE.

Gen. COLEOPHORA Hüb.

Coleophora niphocrossa, n. sp.

♀. 12 mm. Head and palpi white, centre of crown pale yellowish. Antennae white ringed with fuscous, basal joint roughly tufted anteriorly, base of stalk thickened with loose scales. Thorax white, patagia and a central stripe pale yellowish. Abdomen grey, segmental margins suffused with white. Forewings narrowly elongate-lanceolate; rather dark bronzy-brown, dorsal area suffused with bronzy-ochreous;

a narrow white costal streak from base to $\frac{4}{5}$; a slender white dorsal streak from base to near tornus: cilia light grey, on costa white except towards apex. Hindwings pale grey; cilia whitish-grey.

Cape Colony, Capetown, in January (Barnard); one specimen.

SANDALOECA, n. g.

Head smooth; tongue short. Antennae $\frac{5}{6}$, basal joint moderate, without pecten. Labial palpi very long, straight, porrected, second joint thickened with appressed scales, rather roughly projecting beneath towards apex, terminal joint short, loosely scaled, tolerably obtuse. Maxillary palpi obsolete. Posterior tibiae clothed with long hairs above. Forewings with 2 from angle, 2–4 approximated, 5 and 6 absent, 7 and 8 stalked, 7 to costa, 9 approximated, 11 from rather before middle. Hindwings $\frac{3}{5}$, narrow-lanceolate, cilia 3; cell open between 3 and 5, 4 absent, 5 and 7 approximated towards base.

Sandaloeca lathraea, n. sp.

♀. 8–9 mm. Head and thorax pale glossy grey. Palpi whitish, dark fuscous on basal half and beneath throughout. Abdomen light grey. Forewings lanceolate; light glossy grey; a broad suffused glossy white costal streak from base to $\frac{3}{4}$, pointed posteriorly: cilia whitish-grey. Hindwings very pale bluish-grey; cilia whitish-ochreous.

Cape Colony, Steenbrass, Caledon district (Barnard). Bred from portable cases attached to grass-stems (apparently); case elongate, 6 mm. × 2·5 mm., widest about middle and narrowed towards extremities, convex dorsally and with lateral downward-curved flaps so as to be concave ventrally (thus partially stem-clasping), surface even, pale greyish-ochreous, papery, formed of minute filamentous fragments of dubious nature.

ENSCEPASTRA, n. g.

Head smooth; ocelli posterior; tongue developed. Antennae nearly 1, in ♂ simple, basal joint moderately elongate, without pecten. Labial palpi long, straight, porrected, second joint thickened with loose rough scales above and beneath, terminal joint about $\frac{1}{3}$ of second, in ♂ slender, porrected, in ♀ concealed in loose rough scales. Maxillary palpi obsolete. Posterior tibiae clothed with hairs above. Forewings with 2 from angle, 2–4 approximated, 5 absent, 6 and 7 stalked, 7 to costa, 8 absent, 11 from middle. Hindwings $\frac{1}{2}$, narrow-lanceolate, cilia 5; 3 and 4 absent, cell open between 2 and 5, 5 and 6 stalked, 7 closely approximated at base.

ENSCEPASTRA PLAGIOPA, n. sp.

♂ ♀. 11–13 mm. Head and thorax grey, suffusedly mixed with white. Palpi grey sprinkled with white. Abdomen whitish-grey. Forewings narrowly elongate-lanceolate, apex rather produced; grey, closely and suffusedly irrorated with white, in ♂ sometimes almost wholly whitish; plical and first discal stigmata distinct, blackish, plical obliquely anterior: cilia ochreous-whitish, in ♀ greyish-tinged. Hindwings pale grey; cilia ochreous-whitish.

CAPE COLONY, Table Mountain, in February (Barnard); four specimens.

PLUTELLIDAE.

GEN. PISINIDEA Butl.

PISINIDEA EXSUPERANS, n. sp.

♂. 18 mm. Head, palpi, and thorax fuscous suffusedly irrorated with whitish, forehead without projecting tuft, palpi 6. Abdomen fuscous, segmental margins whitish. Forewings elongate, costa gently arched, apex obtuse-pointed, termen nearly straight, rather strongly oblique; fuscous finely and suffusedly irrorated with whitish, with a few scattered dark fuscous scales; an obscure streak of pale ochreous suffusion along fold; a small dark fuscous spot beneath costa near base, and two others representing discal stigmata, these three connected by white suffusion; a series of dark fuscous linear dots round posterior part of costa and termen: cilia whitish speckled with fuscous. Hindwings grey; cilia as in forewings.

CAPE COLONY, Capetown, in April (Haughton); one specimen. Except in the absence of frontal tuft, this species agrees in all respects with the structure of the South American genus *Pisinidea*.

LYONETIADAE.

GEN. BUCCULATRIX Zell.

BUCCULATRIX AGILIS, n. sp.

♂ ♀. 7 mm. Head whitish-grey, more or less mixed with dark fuscous. Thorax grey-whitish irrorated with black. Abdomen light

grey. Forewings lanceolate; whitish irrorated with black; the white ground-colour forms a more or less developed oblique streak from middle of dorsum; an oblique blackish streak from $\frac{2}{3}$ of costa to near tornus, obscured by the dark irroration: cilia whitish-grey, round apex white with lines of black irroration. Hindwings grey; cilia pale grey.

Cape Colony, Kimberley, bred in July from larvae feeding on *Acacia horrida* (Lightfoot); five specimens.

TINEIDAE.

Gen. TINEA Linn.

Tinea trilinguis, n. sp.

♂ ♀. 11–13 mm. Head fulvous. Antennae ochreous-whitish. Thorax dark purple-fuscous, with a whitish-ochreous median stripe. Abdomen whitish-grey. Forewings elongate-lanceolate; 4 and 5, or 5 and 6 sometimes short-stalked (inconstant), 7 and 8 stalked; pale ochreous; a broad dark purplish-fuscous median longitudinal streak from base to apex and upper part of termen, extending at base to costa and dorsum: cilia whitish-ochreous, at apex with a dark fuscous bar. Hindwings with 5 and 6 stalked; light grey; cilia whitish.

Cape Colony, Gt. Winthoek, 4500 ft.; two specimens.

Tinea spilocoma, n. sp.

♂. 8 mm. Head whitish, lower part of face blackish, two blackish spots between antennae. Palpi blackish. Thorax ochreous-whitish, anterior half blackish. Abdomen grey. Forewings elongate, rather narrow, costa gently arched, apex tolerably pointed, termen very obliquely rounded; light ochreous-brown, irregularly mixed with blackish; costal $\frac{2}{3}$ blackish, crossed by an oblique whitish streak at $\frac{1}{4}$, a broader oblique rhomboidal white spot before middle, two parallel oblique white lines at $\frac{2}{3}$, and an inwardly oblique white mark before apex; about six irregular black marks or short rather oblique spots from dorsum, separated by white suffusion; a slender irregular black terminal streak, edged with white anteriorly: cilia whitish-ochreous, basal third suffusedly mixed with blackish, at apex forming a black spot edged above and below by white spots. Hindwings rather dark purplish-grey; cilia grey.

Cape Colony, Hottentot-Holland Mountains, 3000 ft., in March (Barnard). A notable species, more like *cloacella* than any other African form.

Tinea craurota, n. sp.

♂. 10 mm. Head ochreous-whitish (partly rubbed). Palpi dark fuscous, apex of joints whitish. Antennae almost 1, grey. Thorax greyish-ochreous, shoulders mixed with dark fuscous. Abdomen whitish-grey, anal tuft whitish. Forewings elongate, rather narrow, costa gently arched, apex pointed, termen extremely obliquely rounded; 5 and 6 stalked, 7 and 8 stalked; greyish-ochreous, coarsely sprinkled with fuscous; costa suffused with fuscous anteriorly; stigmata represented by rather large roundish fuscous spots mixed with darker, plical obliquely before first discal; margins posteriorly suffusedly mixed with fuscous; cilia pale greyish-ochreous, basal half obscurely barred with fuscous. Hindwings with 5 and 6 stalked; light slaty-grey; cilia whitish-grey.

Cape Colony, Capetown, in January (Barnard); one specimen.

Tinea fortuita, n. sp.

♂. 13 mm. Head pale ochreous, face and sides of crown suffused with ferruginous. Palpi and antennae dark fuscous. Thorax pale ochreous tinged with ferruginous anteriorly, shoulders dark fuscous. Abdomen grey. Forewings elongate, rather narrow, costa moderately arched, apex pointed, termen extremely obliquely rounded; shining pale bronzy-ochreous, with several minute scattered blackish dots, variable in position except one on end of cell; costal edge dark fuscous towards base: cilia whitish-grey. Hindwings and cilia light grey.

Cape Colony, Hottentot-Holland Mountains (Barnard); one specimen.

Tinea chalcoxesta, n. sp.

♂. 14 mm. Head yellow-whitish. Antennae light greyish. Thorax light bronzy. Abdomen grey. Forewings elongate, rather narrow, costa gently arched, apex pointed, termen very obliquely rounded; light shining brassy-bronze: cilia pale grey. Hindwings light prismatic grey; cilia pale grey.

Cape Colony, Gt. Winthoek, 4500 ft.; two specimens.

Gen. MYRMECOZELA Staint.

Myrmecozela territa, n. sp.

♂. 22 mm. Head ochreous-whitish with a few fuscous hairs Palpi whitish, second joint mixed with dark fuscous except apex.

Thorax pale violet-grey mixed with dark fuscous, apex of patagia pale reddish-grey. Abdomen pale greyish-ochreous. Forewings elongate, narrow, costa gently arched, apex obtuse, termen very obliquely rounded; light violet-grey irrorated with dark fuscous; a subcostal series of small blackish spots from near base to beyond middle, and costa spotted with dark posteriorly; a cloudy spot of blackish suffusion in disc at $\frac{2}{3}$, preceded by some pale suffusion: cilia pale grey sprinkled with dark fuscous. Hindwings grey, with slight brassy tinge; cilia pale grey.

Cape Colony, Capetown, in March (Keytel); one specimen. The genus *Myrmecozela* absorbs and supersedes *Amydria*.

HOMALOPSYCHA, n. g.

Head densely rough-haired; ocelli small, posterior; tongue obsolete. Antennae $\frac{3}{4}$, in ♂ serrulate, simple, basal joint moderate, with pecten. Labial palpi moderate, porrected, second joint tufted with dense rough scales beneath, with several projecting lateral bristles, terminal joint much shorter than second, subascending, loosely scaled, tolerably obtuse. Maxillary palpi rather long, several-jointed, folded, filiform. Forewings with 1*b* furcate, 2 from angle, 7 to costa, 11 from $\frac{1}{3}$. Hindwings 1, elongate-ovate, cilia $\frac{1}{5}$; 2–7 separate, 5 and 6 somewhat approximated at base.

Differs from *Prothinodes* by short terminal joint of palpi, and from *Lipomerinæ* by presence of lateral bristles, but probably allied to both.

Homalopsycha aestuaria, n. sp.

♂. 20–21 mm. Head, palpi, and thorax pale ochreous-yellowish. Antennae whitish-grey. Abdomen grey. Forewings elongate, narrow, costa gently arched, apex obtuse-pointed, termen extremely obliquely rounded; pale ochreous-yellowish or whitish-ochreous, dorsal area beneath fold somewhat deeper; four or five scattered blackish specks along fold; costal edge dark grey towards base; a cloudy longitudinal streak of grey suffusion from base beneath costa, sometimes blackish towards base, becoming lighter posteriorly and at middle, separating into two arms composed of faint cloudy neural lines, upper running to posterior portion of costa, lower to lower portion of termen, included area more whitish-tinged, especially towards apex: cilia whitish-ochreous, with whitish apical bar and patches of obscure grey speckling above and below this. Hindwings rather dark grey; cilia pale grey.

Cape Colony, Gt. Winthoek, 4500 ft.; four specimens.

OCHETOXENA, n. g.

Head shortly rough-haired on crown, face with appressed hairs; ocelli small, posterior; tongue short, slender. Antennae $\frac{1}{2}$ (♀), in ♂ very shortly ciliated, basal joint slender, without pecten. Labial palpi moderately long, obliquely ascending, slender, second joint shortly rough-scaled beneath, terminal joint shorter than second, tolerably pointed. Maxillary palpi very short, filiform, porrected. Posterior tibiae rough-scaled above. Forewings with 1*b* furcate, 2 from angle, 3–5 slightly approximated, 7 to termen, 8–10 from near end of cell, 11 from middle, secondary cell defined. Hindwings 1, trapezoidal-ovate, cilia $\frac{1}{2}$; 2 remote, 3 and 4 parallel, 3 from angle, 5 and 6 somewhat approximated towards base, 7 parallel.

Apparently allied to *Mesopherna*.

Ochetoxena phaneraula, n. sp.

♂ ♀. 23–24 mm. Head and palpi grey. Thorax brown, anteriorly suffused with grey. Abdomen whitish-grey. Forewings elongate, moderate, costa gently arched, apex obtuse-pointed, more pointed in ♀, termen faintly sinuate, oblique; brown; costal edge fuscous, darker towards base; a moderately broad shining white median longitudinal streak from base to apex, narrowed at extremities: cilia whitish-grey. Hindwings pale grey; cilia whitish.

Cape Colony, Zonder End Peak, 3600 ft., in January (Barnard); two specimens.

IDIOTECHNA, n. g.

Head with short loose rough hairs; ocelli posterior; tongue developed. Antennae $\frac{2}{3}$, in ♂ minutely pubescent, basal joint moderately elongate, with pecten. Labial palpi moderate, porrected, slender, loosely sealed, terminal joint as long as second, tolerably pointed. Maxillary palpi several-jointed, folded, filiform. Posterior tibiae smooth. Forewings with 1*b* furcate, 2 from angle, 7 to termen, 8–10 rather approximated, 11 from before middle. Hindwings 1, trapezoidal-ovate, cilia $\frac{1}{2}$; 2–7 separate, tolerably parallel, 2 widely remote, 3 from angle.

Allied to preceding.

Idiotechna furcifera, n. sp.

♂. 20 mm. Head white. Palpi white, with a grey lateral line. Thorax white, outer edge of patagia light bronze. Abdomen dark

grey, anal tuft whitish. Forewings elongate, rather narrow, costa gently arched, apex obtuse-pointed, termen slightly rounded, rather strongly oblique; shining bronze; markings snow-white; a costal streak from near base to $\frac{3}{5}$, attenuated posteriorly, costal edge dark fuscous anteriorly; a slender dorsal streak from base to near tornus; a moderately broad streak from middle of base above fold to tornus; a moderately broad streak from middle of disc to apex, with a slender branch from middle of its upper edge running to costa near apex: cilia grey, basal half white. Hindwings and cilia grey.

Cape Colony, Matroosberg, 3500 ft., in November (Lightfoot); one specimen.

Gen. LATYPICA Meyr.

Latypica crispa, n. sp.

♂. 14 mm. Head and palpi white. Thorax white, with a few fuscous scales towards anterior margin. Abdomen whitish. Forewings elongate, rather narrow, costa gently arched, apex obtuse-pointed, termen very obliquely rounded; white, with scattered brownish-ochreous scales, especially posteriorly, margins sometimes strigulated with brown and black scales; markings ochreous or brownish, edged laterally with black strigulae; a small spot on costa near base; subquadrate spots on costa at $\frac{1}{3}$, middle, and $\frac{2}{3}$; more or less developed spots towards $\frac{1}{5}$ and middle of dorsum; first discal stigma blackish edged anteriorly with brownish or ochreous suffusion, second represented by a blackish transverse mark followed by brownish or ochreous suffusion; three small spots on costa posteriorly; a submarginal streak along termen: cilia whitish, with two dark fuscous lines. Hindwings pale grey or whitish-grey; cilia ochreous-whitish.

Natal, Durban (Marley); Cape Colony, Gt. Winthoek, 4000 ft.; two specimens.

Gen. ZELOMORA Meyr.

Zelomora phlyctidota, n. sp.

♀. 12 mm. Head and thorax white, shoulders fuscous. Palpi white, terminal joint longer than second. Abdomen whitish-grey, with large anal tuft of long hairs. Forewings elongate, costa gently arched, apex obtuse, termen obliquely rounded; 7 to termen; white; markings pale violet-fuscous, their margins suffusedly irrorated with black; blotches on costa and dorsum near base; a blotch on costa somewhat

before middle, reaching half across wing, and on dorsum beyond middle opposite to it; an irregular transverse spot from tornus; a blotch suffusedly irrorated with black on costa towards apex; some fuscous black-tipped scales on costa before apex and on termen towards middle: cilia white, somewhat mixed with fuscous on termen. Hindwings whitish-grey; cilia white.

Cape Colony, Steenbrass (Barnard); one specimen.

Gen. PICROSPORA Meyr.

Picrospora lithacopa, n. sp.

♂. 13 mm. Head white. Palpi fuscous, white above. Thorax whitish-fuscous. Abdomen grey, anal tuft whitish. Forewings elongate, costa gently arched, apex pointed, termen faintly sinuate, rather strongly oblique; fuscous, with some scattered whitish scales, towards termen with some whitish suffusion; plical and second discal stigmata very small, blackish: cilia whitish. Hindwings grey; cilia whitish-grey.

Cape Colony, Somerset West Mts., 4000 ft. (Barnard); two specimens. Very similar to the allied *Acorostoma medicata*, but easily separated by the quite different palpi.

Gen. MALLOBATHRA Meyr.

Mallobathra zophaula, n. sp.

♂. 8 mm. Head, thorax, and abdomen dark grey. Palpi whitish. Antennae $\frac{5}{6}$, joints closely set, pubescent. Forewings elongate, costa gently arched, apex obtuse, termen very obliquely rounded; dark purplish suffusedly mixed with grey and dark grey: cilia grey. Hindwings grey; cilia light grey.

Cape Colony, Table Mountain, 2300 ft., in January (Barnard); two specimens.

ENCELIDOTIS, n. g.

Head loosely rough-haired; ocelli small, posterior; tongue well developed. Antennae $\frac{1}{2}$, in ♂ shortly ciliated, basal joint moderate, with tuft or pecten of scales anteriorly. Labial palpi moderately long, slender, porrected, loosely scaled throughout, second joint with two or three apical bristles, terminal joint as long as second, hardly pointed. Maxillary palpi absent. Posterior tibiae thinly haired above. Fore-

wings with 2 from angle, 7 to costa, 11 from before middle. Hindwings 1, elongate-ovate, thinly clothed with long scales, cilia 1; 2–7 tolerably parallel.

Encelidotis ochrophragma, n. sp.

♂ ♀. 13–14 mm. Head white, centre of crown mixed with fuscous, lower part of face dark fuscous. Palpi dark grey, more or less mixed with white. Thorax white, shoulders fuscous. Abdomen pale grey. Forewings elongate, rather narrow, costa gently arched, apex tolerably pointed, termen very obliquely rounded; white, irregularly strewn with small brownish-ochreous dots or irregularly mixed with scales; an irregular brownish-ochreous spot in disc before middle; a rather narrow brownish-ochreous transverse fascia at about $\frac{2}{3}$: cilia white. Hindwings pale grey; cilia whitish.

Cape Colony, Gt. Winthoek, 4500 ft.; four specimens.

Gen. BARBAROSCARDIA Wals.

Barbaroscardia metaclina, n. sp.

♂. 11 mm. Head whitish. Palpi dark fuscous, hair-scales and apex whitish. Thorax whitish mixed with light ochreous, shoulders suffused with dark fuscous. Abdomen dark grey, scales of segmental margins whitish-grey. Forewings elongate, narrow, costa gently arched, apex tolerably pointed, termen very obliquely rounded; whitish irregularly mixed with pale ochreous; markings grey mixed with black; a spot on costa almost at base; a narrow irregular transverse fascia at $\frac{1}{3}$; a narrow rather oblique fascia beyond middle, tending to be interrupted above and below middle; a triangular blotch on costa at $\frac{4}{5}$, and sometimes a small spot on middle of termen beneath it: cilia whitish, obscurely spotted with pale ochreous sprinkled with grey. Hindwings light grey; cilia ochreous-whitish.

Cape Colony, Gt. Winthoek, 4500 ft.; two specimens.

Gen. NARYCIA Steph.

Narycia isoxantha, n. sp.

♂. 13 mm. Head, palpi, antennae, and thorax light ochreous-yellow. Abdomen grey. Forewings elongate, costa gently arched, apex obtuse, termen very obliquely rounded; light ochreous-yellow: cilia concolorous. Hindwings grey; cilia whitish-grey.

S.W. Protectorate, Grootfontein, in December (Lightfoot); four specimens.

Gen. CTENOCOMPA Meyr.

Ctenocompa zascia, n. sp.

♂. 16–17 mm. Head, palpi, thorax, and abdomen dark grey. Antennal pectinations 5. Forewings elongate, posteriorly dilated, costa gently arched, apex obtuse, termen rounded, oblique; 8 and 9 stalked or usually coincident; dark grey, basal area slightly sprinkled with blackish and whitish; a slightly incurved median fascia of dark fuscous irroration, preceded by a narrower fascia of whitish irroration; area beyond this suffusedly irrorated with whitish towards margins and slightly in disc, with a dark fuscous transverse spot on costa at $\frac{2}{3}$, and a smaller one beyond it: cilia grey, base mixed with whitish. Hindwings dark grey; cilia grey or grey-whitish.

Cape Colony, Gt. Winthoek, 4500 ft.; three specimens. The genus *Ctenocompa* includes and supersedes *Struthisca*.

Gen. MELASINA Hüb.

Melasina cylindraula, n. sp.

♂. 24–25 mm. Head and thorax grey-whitish. Palpi short, slender, grey. Antennae slender, pectinations 4. Abdomen whitish-grey. Forewings elongate, posteriorly rather dilated, costa gently arched, apex obtuse, termen slightly rounded, rather strongly oblique; 7 to termen; fuscous-grey, more or less suffusedly irrorated with whitish; veins posteriorly more or less marked with fine indistinct darker fuscous lines: cilia light fuscous suffused with whitish. Hindwings light grey; cilia grey-whitish.

Cape Colony, Matroosberg, 3500 ft., in November (Lightfoot); two specimens, bred from cylindrical cases about 20 mm. × 5 mm., formed of a single series of longitudinally placed segments, in one case of hollow grass-stems, in the other (I think) stems of *Juncus*, with irregular ends.

Melasina marmarodes, n. sp.

♀. 17–18 mm. Head, palpi, and thorax white, slightly sprinkled with grey, palpi short. Abdomen pale grey, anal tuft grey-whitish. Forewings elongate, costa moderately arched, apex obtuse-pointed, termen faintly sinuate, oblique; light grey irregularly mixed and suffused with white, with irregularly scattered blackish scales; the white suffusion indicates an irregular longitudinal median streak on posterior half of wing, partly edged with black scales: cilia white, with obscurely indicated greyish median shade. Hindwings pale grey; cilia whitish-grey or whitish.

Cape Colony, Knysna, bred in October (Péringuey); two specimens. Larva in stout cylindrical cases, one of these composed of twigs as long as the case, arranged longitudinally, the other of miscellaneous fragments arranged promiscuously. Pupa with two basal segments of abdomen fixed, each segment with a transverse dorsal series of very short numerous spines near basal margin. A peculiar species, perhaps related to *sisyraea*.

Melasina stupea, Wall.

Orange Free State, Petrusberg, in April (Miss J. Skaife). Wallengren's description is correct and sufficient; the species is allied to *aedifica*.

Melasina fossoria, n. sp.

♂. 19–21 mm. Head whitish-ochreous. Palpi whitish, mixed with dark fuscous except towards tips. Antennal pectinations 5. Thorax grey mixed with whitish, anteriorly suffused with dark fuscous irroration. Abdomen grey, anal tuft whitish-ochreous. Forewings elongate, costa gently arched, apex rounded-obtuse, termen somewhat rounded, rather oblique; grey, much suffused with whitish; a basal fascia of dark fuscous suffused irroration, continued as a broad streak along costa to $\frac{2}{5}$, thence rather obliquely across wing to near dorsum, again angulated and continued to near costa at $\frac{4}{5}$, with a branch to tornus; a similar spot on costa beyond middle, and three or four small spots on costa posteriorly: cilia ochreous-whitish, barred with dark fuscous irroration. Hindwings light fuscous-grey; cilia ochreous-whitish, with faint fuscous subbasal shade.

Transvaal, junction of Crocodile and Marico rivers, in February (R. Tucker); two specimens.

Melasina nigrescens, n. sp.

♂. 14 mm. Head, palpi, thorax, and abdomen dark fuscous, palpi moderate, densely scaled. Antennal pectinations 5. Forewings moderate, costa moderately arched, apex rounded, termen rounded, slightly oblique; all veins separate; dark fuscous; sometimes a faint, cloudy, darker spot on end of cell: cilia dark fuscous. Hindwings and cilia dark fuscous.

Cape Colony, Table Mountain, 2500 ft., in November (Barnard); two specimens. Allied to *indigena*.

Melasina homopercna, n. sp.

♂. 12–13 mm. Head, palpi, thorax, and abdomen dark fuscous, palpi moderate, densely rough-scaled. Antennal pectinations 2. Fore-

wings moderate, costa moderately arched, apex rounded-obtuse, termen rounded, somewhat oblique; 7 and 8 stalked; dark purplish-fuscous: cilia concolorous. Hindwings and cilia dark fuscous.

Cape Colony, Table Mountain, 2500 ft., in November (Barnard); three specimens. Taken in company with the preceding, to which it is exceedingly similar, but immediately distinguished by the different antennal pectinations, as well as the stalked veins 7 and 8 and slightly different shape of forewings.

ELLOCHOTIS, n. g.

Head densely rough-haired; ocelli small, posterior; tongue very short. Antennae $\frac{3}{5}$–$\frac{2}{3}$, in ♂ simple, basal joint short, without pecten. Labial palpi moderately long, porrected, second joint with long projecting apical tuft of rough hair-scales beneath, terminal joint very short, slender, pointed, almost concealed. Maxillary palpi rudimentary. Posterior tibiae clothed with hairs above. Forewings with 1*b* furcate, 2 from angle, 7 to costa, 8 out of 7 or absent, 11 from before middle. Hindwings 1, elongate-ovate, cilia $\frac{3}{4}$; 2–7 nearly parallel.

Apparently allied to *Eucryptogona*.

Ellochotis infausta, n. sp.

♂. 15–16 mm. Head, palpi, and thorax rather dark fuscous. Abdomen grey. Forewings elongate, costa gently arched, apex obtuse-pointed, termen very obliquely rounded; bronzy-grey, suffusedly irrorated with dark fuscous: cilia bronzy-greyish, with subbasal and apical dark bluish-fuscous lines. Hindwings rather dark grey; cilia grey, with dark fuscous subbasal shade.

Cape Colony, Gt. Winthoek, 4500 ft.; six specimens.

ADELIDAE.

Gen. CEROMITIA Zell.

Ceromitia arata, n. sp.

♂. 14–15 mm. Head white. Thorax white, patagia mixed with grey. Abdomen whitish-grey. Forewings elongate, rather narrow, costa gently arched, apex obtuse, termen very obliquely rounded; light grey suffused with white, with fine irregular dark fuscous lines on all veins, and scattered dark fuscous scales between them: cilia light

grey suffused with white. Hindwings prismatic-hyaline, with thinly strewn pale grey hairs; cilia grey-whitish.

Cape Colony, Prince Albert, in June (Mrs. v. d. Bijl); three specimens.

Ceromitia spatalodes, n. sp.

♂ ♀. 17–18 mm. Head whity-brownish, crown white posteriorly. Palpi moderate, light greyish. Thorax whitish, patagia pale violet-grey. Abdomen pale grey. Forewings elongate, costa gently arched, apex obtuse, termen rounded, rather strongly oblique; pale shining violet, obscurely mottled with grey, slightly whitish-sprinkled in disc; discal stigmata well marked, dark fuscous: cilia whitish-grey. Hindwings light prismatic grey; cilia whitish-grey.

Cape Colony, Oudebosch, 1500 ft., in January (Barnard); two specimens. Nearest to *elongatella* and *mitrata*.

NEPTICULIDAE.

Gen. NEPTICULA, Heyd.

Nepticula panconista, n. sp.

♂. 5 mm. Head light yellowish. Thorax grey-whitish irrorated with blackish. Abdomen grey. Forewings lanceolate; grey-whitish irrorated with blackish: cilia whitish, towards base sprinkled with blackish. Hindwings grey; an expansible light yellow pencil of hairs from base beneath costa; cilia whitish-grey.

Cape Colony, Capetown, in January (Barnard); one specimen. Allied to *crypsixantha*, which, however, has the head blackish.

PROTOTHEORIDAE.

Gen. PROTOTHEORA, Meyr.

Head with short rough scales, posteriorly with longer rough spreading hair-scales, face short; ocelli small, posterior, tongue rudimentary. Antennae in ♂ hardly $\frac{1}{3}$, rather thick towards base, tapering, moderately and evenly pubescent-ciliated over whole surface, in ♀ shorter, slenderer, minutely pubescent. Mandibles more or less developed. Labial palpi in ♂ moderately long, porrected, wholly clothed with dense rough hair-scales diminishing to apex, joints concealed, in ♀ considerably longer, similar. Maxillary palpi short, filiform, 3-jointed, porrected. Thorax with large rough erect tuft of scales at posterior

extremity. Abdomen rather slender. Legs rather long, slender, middle tibiae with two short apical spurs, posterior tibiae thinly haired above, with median and apical pairs of short spurs. Forewings elongate, costa slightly arched, apex obtuse, dorsum and termen nearly evenly curved but tornus slightly marked, dorsal margin strongly ciliated like termen to base, with strong membranous prominence at base (jugum); neuration as described. Hindwings somewhat under 1, elongate-trapezoidal-ovate (more parallel-sided than forewings), cilia $\frac{1}{2}$; neuration as described.

I substitute the above amended description for that previously published. I have already stated elsewhere ('Exotic Microlepidoptera,' vol. 2, p. 229) that Mr. R. J. Tillyard, in New South Wales, being interested by my notice of this family, was at pains to obtain some material from the South African Museum for dissection, and I am indebted to him for the communication of the following information, viz.: (1) that there were two species probably confused under my description of *P. petrosema*; I had myself suspected this, and have now received further material representing four species in all; (2) that mandibles were present in both species, minute and difficult of detection in *petrosema* proper, but in the other species as large as in *Micropteryx* and very similar; and (3) that I had overlooked the presence of maxillary palpi concealed in the hairs of labial palpi, which I find to be correct. With the aid of the fresh material I have made other corrections as above. The distinctness and interest of the family are thus in fact augmented, and it is eminently worthy of the attention of local collectors.

The four following forms are similar in general appearance, but are abundantly distinct by the genitalia; these are complex, and I am indebted to Mr. Barnard, of the South African Museum, for careful drawings of them. Finding their homologies difficult of comprehension, I submitted the drawings to Mr. F. N. Pierce, well known as a specialist in these organs, calling his attention to their analogy with the structures of *Hepialus hectus*, and am much indebted to him for explaining to me their correct nature, and have accepted his views. In brief there are three pairs of appendages, viz. (1) an upper pair, the uncus; (2) a middle pair, the gnathos; (3) a lower pair, the valvae. These can be readily recognised and their differences are sufficient for the diagnosis of the species, but they by no means exhaust the complexities of the structure, which would require a series of figures. The uncus and gnathos are appendages of the 10th segment and enclose the anus above and below respectively; the valvae are appendages of the 9th segment.

Prototheora petrosema, Meyr.

♂ ♀. 22–23 mm. Head, palpi, and thorax fuscous, finely speckled with white, apex of thoracic crest dark fuscous. Abdomen grey, segmental margins whitish. Forewings light brownish-ochreous, with a pattern of fuscous irrorated with whitish specks, viz. an irregular basal patch, narrow irregular fasciae before and beyond middle, and a subterminal fascia broadly dilated upwards, these narrowly connected in middle, in ♀ traversed by a white streak which runs from base of costa through middle of disc to near termen and thence to apex, partially edged with blackish scales; distinct blackish marks on upper edge of this between fasciae in both sexes; fuscous spots speckled with whitish on costa between these fasciae, sometimes suffusedly confluent with them: cilia fuscous, tinged with whitish, on termen base sometimes obscurely barred with whitish and fuscous. Hindwings grey; in ♀ an erect subdorsal brush-like tuft of long whitish hairs near base; cilia pale grey. Genitalia of ♂; uncus forming two moderate slender curved converging spine-like processes; gnathos forming two long down-curved diverging stronger spine-like processes; valvae long, slender, slightly expanded near apex, tolerably pointed, clothed with rather long hairs.

Cape Colony, Capetown, in April and May (Lightfoot); three specimens (2 ♂, 1 ♀). The tuft on hindwings in ♀ is a quite exceptional structure; it appears to be natural, but needs confirmation in a second specimen.

Prototheora serruligera, n. sp.

♂. 21–25 mm. Head, palpi, and thorax fuscous, finely speckled with white (thorax mostly defaced). Abdomen grey, segmental margins whitish. Forewings light brownish-ochreous; an irregular white median stripe from base to beyond cell, thence much thickened irregularly and running to costa near apex, edged with some scattered blackish scales, upper edge more strongly blackish-margined before and beyond middle; costal area above this anteriorly suffused with fuscous, posteriorly with three fuscous fasciate spots speckled with whitish, connected with median streak; a dark fuscous terminal line: cilia pale grey, towards base whitish. Hindwings light grey; cilia grey-whitish. Genitalia of ♂; uncus forming two long very slender remote rather curved converging spine-like processes; gnathos forming two very long down-curved laterally sinuate parallel slender pointed processes, sharply serrate on outer edge; valvae short, broad, apex bilobed.

Cape Colony, Hottentot-Holland Mountains, 4000 ft. (Barnard); two specimens.

Prototheora quadricornis, n. sp.

♂. 18 mm. Head, palpi, and thorax fuscous speckled with whitish, apex of thoracic crest dark fuscous. Abdomen grey, segmental margins mixed with whitish. Forewings fuscous; a slender irregular sinuate white median streak from base to beyond cell, upper edge with three subtriangular sinuations filled with blackish, lower edge shortly marked with blackish, alternating with these and at extremity; undefined blotches of dark fuscous irroration on costa at base, before and beyond middle, and towards apex; some whitish irroration from extremity of streak to costa before apex, followed by some dark fuscous suffusion: cilia grey. Hindwings grey; cilia pale grey. Genitalia of ♂ (described from drawings, the abdomen of the single specimen having been removed and retained in South African Museum); uncus forming two long slender strongly curved converging spine-like processes, base between them wide, dilated, with a prominence beneath; gnathos forming two long downcurved diverging stout acute hooked processes; valvae long, slender, attenuated towards apex and slightly hooked, clothed with short hairs.

Cape Colony, Capetown (Barnard); one specimen.

Gen. METATHEORA Meyr.

This genus, based on a species from Natal, *parachlora* Meyr., is distinguishable from *Prototheora* by the fringe of projecting hair-scales on anterior legs beneath.

Metatheora corvifera, n. sp.

♂. 22–23 mm. Head, palpi, and thorax dark fuscous, speckled with whitish, palpi somewhat longer than in *petrosema* ♂. Abdomen rather dark fuscous. Forewings fuscous mixed with dark fuscous, with scanty whitish speckling indicating irregular undefined marblings; cilia fuscous, with a subbasal line of whitish speckling. Hindwings and cilia rather dark grey. Genitalia of ♂; uncus forming two long slender spreading curved spine-like processes; gnathos forming two broad laterally compressed acute-pointed moderate projections, serrate on dorsal edge, diverging, and with tips curved outwards; valvae long, slender, clothed with moderate hairs.

Cape Colony, Table Mountain, in February (Barnard); five specimens.

INDEX.

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

(Plates XV–XVII.)

No. 6.—Further Additions to the List of Marine Isopoda.

The present report deals with 73 species, of which 45 are described as new to science and 12 have not hitherto been recorded from South African waters.

The greater part of the material is derived from the rich collections made by the Cape Government trawler s.s. "Pieter Faure." That the material has not been available sooner is due to the fact that many large bottles labelled "Varia—to examine" had never been examined, and consequently contained a mixed assortment of Sponges, Hydroids, Alcyonaria, Polychaets, Crustacea, etc.

Moreover, while going through the collection of sponges for the purpose of extracting the spongicolous barnacles (*Acasta* and *Balanus* spp.) many Isopods and Amphipods inhabiting galleries and burrows in the sponges were brought to light.

The Amphipods cannot be dealt with on this occasion, but so far as the Isopods are concerned this paper may be regarded as a final report on the "Pieter Faure" material preserved in the Museum.

The fauna-list of South African marine Isopods now includes close on 170 species, so far as recorded in the reports of Mr. Stebbing and myself, including the present paper. But that this is not a complete list of the fauna is shown by the fact that the German South Polar Expedition,* during its very brief stay in these waters, captured the following 5 additional new species:

Heterotanais (?) *capensis.*
Eurydice natalensis.
Astacilla setosa.
Antias uncinatus.
Microniscus ornatus.

Moreover, it is probable that the list will be further increased when the report on the Isopods collected by the German Deep-sea Expedition is published. For in other groups of marine animals the "Valdivia" collected material of great importance for the study of the South African fauna. Other reports dealing with the Isopodan fauna, which may be expected to follow, are those on the collections of Dr. L. Schultze and Dr. W. Michaelsen.

* Vanhöffen, Deutsche Südpolar Exp. Bd. 15, Hft. 4, Isopoden, 1914. This paper I have not been able to consult.

The most interesting feature of the material herein dealt with is the presence of 2 species, heretofore only known from the North Atlantic, namely, *Sphyrapus malleolus* N. & S. and *Agathotanais ingolfi* Hansen. Other examples of "bipolarity" among the Isopods and Amphipods have already been recorded in previous papers.

The specimens of these 2 species were sorted out from about 120 c.c. of plankton taken in "coarse tow-net on beam-trawl, Cape Point N. 89° E. distant 36 miles, 700 fathoms, August 20, 1903." This small quantity of material contained, besides numbers of minute Gateropods, Pteropods, Chaetognaths, larval Polychaets, Ostracods, Copepods and many Amphipods, the following species of Isopods:

Apseudes australis n. sp. . . .	2 specimens.
Sphyrapus malleolus N. & S. . .	3 ,,
Agathotanais ingolfi Hansen . .	1 ,,
Gnathia sp.	4 ,,
Neoarcturus oudops Brnrd. . .	48 ,,
Haploniscus dimeroceras n. sp. . .	68 ,,
Eugerda sp.	2 ,,
Macrostylis spiniceps n. sp. . .	1 ,,
Rhabdomesus bacillopsis n. sp. . .	2 ,,
Ilychthonos capensis n. g. et sp. .	6 ,,
Pseudomunnopsis beddardi (Tatt.) .	5 ,,
Ilyarachna affinis n. sp. . . .	4 ,,
,, *crassiceps* n. sp. . .	2 ,,
Eurycope sulcifrons n. sp. . .	10 ,,
,, *quadrata* n. sp. . .	9 ,,
,, *fusiformis* n. sp. . .	3 ,,

Of these, *Haploniscus*, *Eugerda*, *Rhabdomesus*, *Ilychthonos*, *Pseudomunnopsis*, *Ilyarachna* and *Eurycope* are genera new to the South African region; and the 2 specimens of *Rhabdomesus* are the first complete specimens discovered since the "Challenger" obtained the first fragmentary examples of the genus.

On the previous day the "Pieter Faure" had dredged in nearly the same locality *Pseudanthura lateralis* Richardson, an aberrant Anthurid only known from deep water off the West African coast.

The haul on August 20 was probably often surpassed as far as actual number of species is concerned, but scarcely in respect of interest and importance. It shows what vast possibilities still remain for increasing our knowledge of the fauna of South Africa, especially of the denizens of the deep water off the Cape Point.

In this connection the remarks made by Hansen* in discussing the

* Dan. Ingolf Exp. vol. 3, 3; Crust. Malacostr. 2, p. 3, 1913.

extraordinary results obtained by a system of careful sieving on board the Danish exploring vessel "Ingolf" may be quoted:

". . . a considerable quantity of the mud hauled up by dredge or trawl . . . was sifted under water in smaller portions in a sieve clothed with silk gauze No. 7 used by millers. . . . In this way hundreds of small animals as *Tanaidacea, Asellota,* etc., were gathered. Other deep-sea expeditions could certainly have arrived at corresponding results if their methods of dealing with the bottom material had been more satisfactory; it may be considered quite certain that hundreds of species of small Crustacea, etc., lived in the bottom material hauled up by the "Challenger" and later great European and North American expeditions, and were flushed again into the sea."

In connection with the subdivision of the *Valvifera* some general remarks are made on the morphology of the male sexual appendages.

In conclusion I would beg indulgence for any slips which may have crept in. The paper has been prepared during the period of the war, when it has been impossible to avail myself of the kindness of my friends and correspondents in England and elsewhere, who have helped me so much in the preparation of my previous papers by copying figures and descriptions from works not to be found in this country.

The MS. of this paper was completed before Hansen's 1916 paper reached me, and therefore the discussion of several points of morphological interest has had to be postponed for a future occasion.

Family APSEUDIDAE.

1880. *Apseudidae* Sars, Arch. Naturg. Christian, vol. 7, p. 6.
1910. ,, Stebbing, Tr. Linn. Soc. Lond. zool. vol. 14, pt. 1, p. 85 (references).
1913. ,, Nierstrasz, Siboga Exp. monogr. 32*a*, p. 3.

Gen. APSEUDES Leach.

1814. *Apseudes* Leach, Edinb. Encycl. vol. 7, p. 404.
1914. ,, Barnard, Ann. S.A. Mus. vol. 10, pt. 11, p. 327*a* (references).
1914. ,, Vanhöffen, Deutsch. Südpol. Exp. vol. 15, pt. 4, p. 461.

Apseudes avicularia Brnrd.

1914. *Apseudes avicularia* Barnard, l.c. p. 329*a*, pl. 27A.

Since this species was described from a single ♀ specimen, two ♂ specimens have come to light. They agree with the original specimen

in the peculiar character of the 6th pleon segment and telson, and in the appendages except the 1st peraeopod (gnathopod).

Side-plate of 1st free segment quadrate but not produced. Flagellum of 1st antenna 5-jointed, of 2nd 3–4-jointed.

The 1st peraeopod is very stout and robust, 2nd joint oval, nearly as broad as long, 4th and 5th short and stout, together equal to the 2nd, 6th a little longer than 2nd, inner margin of thumb with a tubercle in the middle and a crenulate cutting-plate nearer the apex, finger indistinctly denticulate with a larger tubercle in the middle and another nearer the hinge; no exopod.

Male appendage on 7th segment a small, knob-like process.

In neither of the specimens could any pleopods be found, except the 1st pair in one of them. If this were indeed a normal characteristic the species would require a new genus for its reception; but I am unwilling to do this until more material has been collected. Live specimens would be the best, but as the only 3 specimens I have so far come across have been picked out of a multitude of various Amphipods, Isopods, Polychaets, *débris*, etc., after a day's collecting, only by a very fortunate chance will a live one be secured.

Length: 2 mm.

Colour: White, eyes black.

Locality: Buffel's Bay (False Bay). 1/3/15. (K.H.B.) 2 ♂♂. (S.A.M. No. A3307.)

Apseudes agulhensis n. sp.

(Plate XV. Fig. 1.)

Body very narrow and elongate. Carapace longer than broad, lateral margins evenly sinuous, rostrum broader than long, triangular with slightly sinuous margins and acute apex. Ocular lobes not spiniform but ending in a minute acute point.

Peraeon segments 2 and 3 wider than long, 4–7 subquadrate, only 5 and 6 with a small acute point on the antero-lateral angles. Side-plate of segment 2 acutely produced.

Pleon segments 1–5 laterally obtuse, 6 not quite as long as 1–5 together, twice as long as broad, scarcely tapering, apex obtuse.

First antenna, 1st joint 5 times as long as wide, margins entire, 2nd equal to width of 1st, 3rd shorter, flagellum 8-jointed, equal to 1st peduncular joint, accessory flagellum half length of main one, 3-jointed.

Second antennae a little longer than peduncle of 1st, 2nd joint linear, scale linear, half length of 2nd joint, 4th and 5th subequal, flagellum equal to 3rd–5th peduncular joints, 6-jointed.

Epistome unarmed.

First peraeopods both lost.

Second peraeopod, 4th–6th joints moderately expanded, 6th not wider than 4th or 5th, 4th and 5th with one spine, 6th with 2 spines on outer apex, 4th with one spine on inner apex, 5th with 2, 6th with 4 on inner margin, finger $\frac{3}{4}$ length of 6th ; exopod not seen.

Peraeopods 3–7 moderately slender.

Uropod slender, outer ramus twice length of peduncle, 3-jointed, inner ramus as long as pleon, ca. 16-jointed.

Length: 3 mm. ; *breadth :* ·5 mm.

Colour: White, eyes apparently not pigmented.

Locality: Cape St. Blaize N. by E., distance 73 miles. 125 fathoms. 1 (? ♂). s.s. "Pieter Faure." 21/12/99. (S.A.M. No. A3836.)

Very close to *A. intermedius* Hansen, 1895, but distinguished by the shorter rostrum, the presence of lateral points on segments 5 and 6 only, and by the absence of the epistomal spine.

Apseudes australis n. sp.

(Plate XV. Fig. 2.)

Body elongate, slender, glabrous. Carapace longer than broad, widening posteriorly, rostrum simple, triangular with a very slender acute apex, ocular lobes triangular with spiniform apices, eyes absent ; lateral margins biconvex, with a shallow rounded notch marking the limits of 1st peraeon segment, dorsal surface with shallow grooves.

Second (1st free) segment with rounded lateral portions and a shallow transverse dorsal groove ; segment 3 narrower than 2, with a shallow transverse dorsal groove, antero-lateral angles rounded, postero-lateral angles shortly but acutely produced ; segment 4 a little longer than 3 but narrower, antero-lateral angles produced in outstanding spiniform processes, postero-lateral angles rounded ; segments 5 and 6 similar, longer than broad, narrow in front and widening posteriorly, side margin with an outstanding spiniform process, postero-lateral angles rounded ; segment 7 shorter and narrower than the preceding, widening distally, with rounded postero-lateral angles but without spiniform processes.

Side-plates distinct, on segment 2 produced forwards as spiniform processes, on 3 much smaller but forming little acute points on antero-lateral angles of the segment, on 4–6 forming small acute points on postero-lateral angles, on 7 extremely small and not visible dorsally.

Pleon segments 1–5 laterally produced in spiniform processes, directed straight outwards on the first 3, slightly recurved on the last

2 segments. Telson as long as all the preceding pleon segments together, narrow, parallel-sided, slightly widening before the insertion of the uropods, then tapering rapidly to a subacute apex.

Ventral surfaces of peraeon segments 1–7 and pleon segment 1 each with a long straight spiniform process.

First antenna, 1st joint elongate, narrow, 2nd half length of 1st, 3rd very short, flagellum shorter than peduncle, ca. 11-jointed, accessory flagellum 4-jointed.

Second antenna equal to peduncle of 1st, 2nd joint narrow, linear, with a narrow, linear scale, 5th shorter than 4th, flagellum 6-jointed.

Epistome with a prominent straight spine.

First peraeopod moderately slender, 5th joint equal to 2nd, 4th shorter, 6th slender, thumb long and narrow, inner margin faintly crenulated, setulose, finger matching thumb, evenly curved, nail on both thumb and finger rather long; exopod with 2 linear joints, 2nd with 4 setae.

Second peraeopod slender, the distal joints narrower than the proximal ones, 5th and 6th both shorter than 4th, both linear; exopod as in 1st peraeopod.

Third to 6th peraeopods slender, distal joints moderately setose.

Seventh peraeopod short, 3-jointed, 2nd longer than 1st, 3rd very short, unarmed; absent altogether in the smaller (2·5 mm.) specimen.

Uropod, only one ramus present, probably the outer, 4-jointed.

Length: 5 mm.; *breadth:* ·75 mm.

Colour: In spirit white.

Locality: Cape Point N. 89° E., distance 36 miles. 700 fathoms. 2 immature specimens. s.s. "Pieter Faure." 20/8/03. (S.A.M. No. A4136.)

This is evidently an immature form, as shown by the small undeveloped 7th peraeopod in the large specimen. The species to which it seems nearest is *A. simplicirostris* Norm. & Stebb. (Tr. Linn. Soc. Lond. vol. 12, 1886, p. 91, pl. 18, fig. 1) from the North Atlantic, 1263 fathoms. There is a close resemblance in the general body form and the structure of the individual segments, in the antennae, the narrow linear distal joints of the 2nd peraeopod, and the armature in the 3rd–6th peraeopods.

On the other hand there are distinct differences: in the Cape specimens the carapace is broader across the front, the rostrum lacks the bulbous projections at its base, the ocular lobes are much longer, the side-plate on segment 2 is acutely produced, and there is a greater relative difference between the anterior and posterior width of the 5th–7th peraeon segments.

Trichapseudes n. g.

Carapace composed of fused head and 1st peraeon segment. Ocular lobes distinct. Pleon composed of 6 segments. Antenna 2 with scale at end of long 2nd joint. Mandible normal but with very large 3-jointed palp fringed with pulmose setae. Maxilliped with plumose setae on 4th–6th joints. Peraeopods 1 and 2 normal, both with exopods, that on the 2nd relatively large. Peraeopods 3–7 normal. Pleopods reduced to the 3 anterior pairs, each with 2 narrow, uniarticulate rami. Uropod with outer ramus much longer than inner.

This genus bears a strong likeness to *Kalliapseudes* Steb., 1910, in having a large mandibular palp and in the development of plumose setae on the palp of the mandible and maxilliped. In other respects, however, it is allied to the typical *Apseudes* except in having only 3 pairs of pleopods. In this latter feature it is paralleled only by *Pagurapseudes* Whitelegge, 1901, in which there are never more than 3 pairs, often only one or even none (cf. also *Apseudes avicularia* Brnrd. supra).

Trichapseudes tridens n. sp.

(Plate XV. Figs. 3–8.)

Body moderately stout, with short setae developed sparingly on the anterior segments, more numerously on the posterior segments and pleon.

Carapace a little longer than broad, rostrum tridentate, the median tooth longest; ocular lobes distinctly defined, apically acute, dorsal surface with moderately deep grooves, postero-lateral margin fringed with plumose setae.

First 3 free peraeon segments subequal, with the lateral portions distinctly marked off by dorsal grooves and notches on posterior margins; segments 4 and 5 (free) subequal, a little longer than the anterior ones; segment 6 a little longer than half the length of 5. Side-plates distinct on all the segments.

Pleon segments 1–5 subequal, together a little longer than peraeon segment 5, lateral portions with outstanding plumose setae; telson about as broad as long, triangular, tapering to a bifid apex.

Antenna 1, 1st joint elongate, inner margin with 3 sharp teeth in middle, 2nd half length of 1st, 3rd shorter than 2nd, inner and outer flagella with at least 12 and 17 joints respectively, inner with plumose (?), outer with simple setae.

Antenna 2, 1st joint produced on inner side, twice as broad as long, with plumose setae on inner margin, 2nd elongate, with plumose setae

and 2 teeth on inner margin, scale a little longer than 3rd, apex acute, with 3–4 setae, 3rd–5th joints slightly increasing in length and decreasing in width, flagellum at least 10-jointed, with plumose setae.

Epistome with a long thin spine arising from the middle; upper lip bilobed.

Lower lip, lobes broad, apically truncate, with a setose 2nd joint inserted on outer apex, outer margin denticulate.

Mandible, cutting-edge 4-dentate, secondary cutting-edge tridentate, spine-row with ca. 5 bifid spines arising from a projecting process, molar well developed, palp very large and strong, 3-jointed, 2nd longest, 3rd longer than 1st, all the joints fringed on inner margin with long plumose setae.

Maxilla 1 normal, inner plate with 3 apical setae, palp with 1 long and 4 shorter apical setae.

Maxilla 2 normal.

Maxilliped, 2nd joint broader than long, 4th with plumose setae on both margins, 5th longer than 4th, 6th subequal to 4th, 5th and 6th fringed with plumose setae on inner margins; no epipod was found.

Peraeopod 1 (gnathopod) large and stout, similar in both sexes, 2nd joint not twice as long as broad, posterior margin fringed with plumose setae, 4th triangular, lower margin with plumose setae and 3 spines on apex, 5th triangular, larger than 4th, 6th large, ovoid, a little broader than long, anterior margin evenly curved, palm transverse with 2 strong teeth in middle, lower margin concave, with 4 acute teeth on basal half, finger matching palm, closing on inside of the palmar teeth, with a tooth about in middle of its inner margin; exopod not very large, 2nd joint ovate and carrying about 7 plumose setae around its margin.

Peraeopod 2, 2nd joint with anterior margin densely fringed with plumose setae, 2 spines at base, lower margin with 2–3 plumose setae, 4th with plumose setae on both margins, anterior apex with a long spine, 5th with 1 stout dentiform spine on both upper and lower apex as well as spine-setae and setae, 6th equal to 5th but narrower, lower margin with 3 stout spine-teeth, upper and lower apices with 1 stout spine, 7th shorter than 6th, with stout secondary unguis and a tooth in middle of lower margin; exopod very large, 2nd joint ovate, its margin closely and deeply indented, with a plumose seta arising from each intervening denticle.

Peraeopods 3 and 4, 2nd joint with several plumose setae on both margins, 4th and 5th with 1 stout spine-tooth on lower apex and a plumose seta on upper apex, 6th longer than 5th, lower margin with 6

(3rd peraeopod) or 7 (4th) spine-teeth, upper margin setose, 7th $\frac{2}{3}$ length of 6th, curved, a seta in place of the secondary unguis.

Peraeopods 5 and 6 similar to the preceding, 4th joint with 3 spine-teeth on lower apex, 5th with 2 rows of 4 and 5 spine-teeth on lower margin, 6th equal to 5th, lower margin with 5 spine-teeth, upper apex with several serrulate setae, 7th $\frac{2}{3}$ length of 6th, as in the preceding peraeopods.

Peraeopod 7 similar but no teeth on 4th and 5th joints, lower margin of 6th with 4 spine-teeth.

Pleopods reduced to the 3 anterior pairs, each biramous, the rami narrow, uniarticulate, inner a little longer than outer, both fringed with plumose setae.

Uropod, peduncle short, outer ramus 3-jointed, inner at least 9-jointed.

Length : 6 mm. ; *breadth :* 1·25 mm.

Colour : In spirit pale brownish or yellowish, eyes dark.

Locality : 33° 6′ S., 28° 11′ E. (off East London). 85 fathoms. ♂ ♂, ovigerous ♀ ♀ and juv. ; Umkomaas River NW. by W. $\frac{1}{2}$ W., distant 5 miles. (Natal) 40 fathoms. 1 juv. ; Hood Point N. by W. $\frac{1}{2}$ W., distant 11 miles. 49 fathoms. 1 ovigerous ♀ ; Nanquas Peak N. $\frac{3}{4}$ W., distant 21 miles (Algoa Bay), 63 fathoms. 1 ♂, 1 juv. ; between Roman Rock and Cape Recife. 17 fathoms. 1 ♂ ; s.s. "Pieter Faure." 28/1/99, 31/12/00, 15/7/01, 23/9/01 and 12/12/98. (S.A.M. Nos. A4122-4, A4176 and A4553.)

Besides the outstanding features mentioned in the diagnosis of the genus, there is one other which is almost equally remarkable, namely, the exopod of the 2nd peraeopod. This is very much larger than in any other species in the family, although *Pagurapseudes spinipes* Whitelegge makes a somewhat near approach in this respect.

The large size in the present species is evidently due to the environment. The specimens were taken amongst sponges on muddy ground and all were coated and clogged with a very fine deposit. Especially so was this in the case of the setae, making it sometimes difficult to say whether the setae were plumose or simple, as it is quite impossible to remove the deposit completely.

In such surroundings the branchial cavity would soon become choked and useless, were it not for the effective strainers at its entrance. The inhalent current has to pass through 4 series of plumose setae before reaching the branchial cavity ; first the fringe of setae on the postero-lateral margin of the carapace, then that on the *posterior* (upper in the natural flexed position of the limb) margin of the 2nd joint of the 1st peraeopod, then that on the *anterior* margin

of the 2nd joint of the 2nd peraeopod, and lastly the plumose 2nd joint of the exopod on the latter peraeopod.

Another point of interest is the complete absence of a deposit on the pleopods. This is due to their being enclosed in a kind of cavity formed by the folding under of the terminal part of the pleon, similar to what has happened in the *Brachyura*. This cavity is protected laterally by the fringe on the pleon segments themselves and by the development of plumose setae on both margins of the 2nd joint of peraeopods 5–7. The recurved uropods follow the dorsal curve of the pleon. The animal bears a strong likeness to an Amphipod of the genus *Corophium*.

Gen. SPHYRAPUS N. & S.

1886. *Sphyrapus* Norman & Stebbing, Tr. Linn. Soc. Lond. vol. 12, p. 97.
1896. „ G. O. Sars, Crust. Norw. vol. 2, p. 8.

Sphyrapus malleolus N. & S.

1886. *Sphyrapus malleolus* Norman & Stebbing, l.c. p. 98, pl. 22, figs. 2, 3.
1896. „ „ Bonnier, Ann. Univ. Lyons, vol. 26, p. 665, pl. 31, fig. 1.
1905. „ „ Richardson, Bull. U.S. Nat. Mus. no. 54, p. 52, fig. 40.

The specimens call for no remarks on structure, since they agree, even to details, with the original description and figures.

The occurrence of this species in deep water off the Cape is another example of so-called "Bipolarity." Other instances among the Isopoda are *Aega monophthalma* Johnst. and *Pseudanthura lateralis* Richards (infra), and among the Amphipoda *Epimera cornigera* and *Byblis gaimardi*. It is nearly certain that this phenomenon is due in large measure to the incompleteness of our oceanographical investigations and will tend to disappear as these become more extensive and complete.

Length: ♂ 4 mm., ♀ 4·5 mm.; *breadth:* ♂ 1 mm., ♀ 1 mm.

Colour: In spirit pinkish white, surface glistening.

Locality: Cape Point N. 89° E., distant 36 miles. 700 fathoms. 2 ♂ ♂, 1 nonovigerous ♀. s.s. "Pieter Faure." 20/8/03. (S.A.M. No. A4135.)

Geogr. Distribution: S. of Cape Farewell, Greenland, 1450 fathoms (Norm. & Stebb.).

Family TANAIDAE.

1853. *Tanaidae* (part) Dana, U.S. Expl. Exp. vol. 13, p. 792.
1913. ,, Hansen, Dan. Ingolf Exp. vol. 3, pt. 3, Crust. Malac. 2, p. 18.
1913. ,, Nierstrasz, Siboga Exp. monogr. 32*a*, p. 20.
1914. ,, Barnard, Ann. S.A. Mus. vol. 10, pt. 7, p. 197 (references).

Gen. PARATANAIS Dana.

1852. *Paratanais* Dana, U.S. Exp. vol. 13, p. 799.
1884. ,, Sars, Arch. Math. Naturv. vol. 7, p. 32.
1884. ,, Haswell, Proc. Linn. Soc. N.S.W. vol. 9, p. 1042.
1886. ,, Norman & Stebbing, Tr. Linn. Soc. Lond. vol. 12, p. 107.
1896. ,, Sars, Crust. Norw. vol. 2, p. 16.
1913. ,, Nierstrasz, Siboga. Exp. monogr. 32*a*, p. 38.

Paratanais euelpis n. sp.

Body cylindrical. Head plus 1st peraeon segment longer than broad, anterior margin straight with a minute median point, eyes and ocular lobes distinct. Peraeon segment 2 slightly shorter than 3, 3 and 4 subequal, 5 and 6 subequal, 7 slightly shorter than 6, the extreme anterior portion of each segment narrower than the rest and marked off by a distinct transverse furrow. Pleon of same width as peræon, equal to last 2 peræon segments together, the 6 segments distinct, telsonic segment broader than long, apically obtuse.

Antenna 1 stout, 1st joint twice as long as broad, 2nd and 3rd broader than long, flagellum 1-jointed, tipped with several setae, no sensory filaments.

Antenna 2, 1st joint short, upper surface of 2nd and 3rd flat with a sharp inner edge, the two antennae fitting closely together, inner edge in 3rd apically produced into an acute tooth, lower surface of 2nd and 3rd also keeled, 4th (? 1st flagellar joint) nearly as long as 2nd, 5th shorter than 4th, tipped with setae and with obscure indications of a minute 6th joint.

Mouth-parts in ♂ not aborted.

Epistome not very prominent.

Lower lip, lobes rather narrow ovate, apices subacute.

Mandibles normal, cutting-edges bifid, a strong secondary cutting-edge in left.

Maxilla (1), outer plate with 8–9 spines.

Maxilliped, 2nd joint not very long, inner plate large, subquadrate, 2 obtuse teeth and a seta on truncate distal margin near inner angle, distal margin near outer angle finely serrulate and setulose, epipod short, ovate.

Peraeopod 1 (gnathopod), similar in both sexes, incisive process on thumb of 6th joint rising distally to a rounded bifid apex, 7th smooth, moderately stout, evenly curved.

Peraeopod 2 slender, 3rd joint very small, 4th longer than 5th, 6th longer than 4th, 7th plus unguis equal to 6th, very slender, the unguis twice the length of joint itself.

Peraeopods 3 and 4 similar but stouter, 4th and 5th joints subequal, their hinder apices produced.

Peraeopods 5–7, 2nd joint stout, 4th and 5th subequal, 6th only a little longer than 5th, but more slender, hinder apices of 4th–6th and distal margin of 5th with a recurved unciform process, inferior margin of 5th convex and finely setose, 7th $\frac{1}{2}$ length of 6th, unguis shorter than joint, curved.

Pleopods developed well in both sexes, rami subequal and furnished with long plumose setæ.

Uropod short, peduncle as long as broad, inner ramus twice length of peduncle, 2-jointed, 2nd joint rather shorter than 1st, outer ramus not quite equal to 1st joint of inner ramus, 1-jointed (perhaps 2-jointed, but suture very obscure and doubtful).

Length: Littoral specimens 4 mm., deeper water specimens 6 mm.; *breadth:* ·5 mm. and ·75 mm. respectively.

Colour: Littoral specimens in life yellowish-white, eyes black; deeper water specimens in spirit dirty pink, eyes reddish-brown.

Locality: Sea Point near Cape Town. 26/2/14. (K.H.B.) 1 ♂, 1 ovigerous ♀, 8 juv.; Cape St. Blaize N. by E., distant 73 miles. 125 fathoms. 3 specimens; Lion's Head SE. $\frac{1}{4}$ E., distant 32 miles (Table Bay). 126 fathoms. 9 specimens living in a sponge covering the gastropod *Argobuccinum murrayi* (Smith). s.s. "Pieter Faure." 21/12/99 and 8/3/00. (S.A.M. Nos. A2697, A3824 and A3833.)

This species is very likely synonymous with Vanhoffen's *Heterotanais* (?) *capensis* 1914. Up to the present I have not been able to consult Vanhoffen's paper.

Distinguished from *P. batei* Sars by the stout peræopod I with shorter finger and thumb and stronger incisive process on the latter; from *atlanticus* Dollfus by the finger and thumb being shorter than the rest of the hand; and the latter distinction applies to *elongatus* Dana, though on the whole this species is nearest to the Cape species. *P. ignotus* Chilton has a 5-jointed inner ramus of the uropod.

Gen. AGATHOTANAIS Hansen.

1913. *Agathotanais* Hansen, l.c. p. 63.

Agathotanais ingolfi Hansen.

1913. *Agathotanais ingolfi* Hansen, l.c. p. 64, pl. 6, figs. 5*a*–5*o*.

A single specimen agrees with Hansen's description and figures. The carapace is perhaps a trifle broader posteriorly, with slightly more rounded postero-lateral angles, and the grooves between the pleon segments seem a little more pronounced; but beyond these unimportant details I can detect no differences.

As specific differences are not likely to be found in the 2nd maxillæ and as the specimen was very stiff and brittle, I did not attempt to dissect out these appendages and thus cannot supply the only detail missing in Hansen's diagnosis of the genus.

Length : 2·5 mm.; *breadth :* ·5 mm.

Colour : In spirit chalky white.

Locality : Cape Point N. 89° E., distant 36 miles. 700 fathoms. 1 ♂. s.s. "Pieter Faure." 20/8/03. (S.A.M. No. A4137).

Geogr. Distribution.—S. of Iceland and Greenland, 788–1199 (Danish) fathoms.

Gen. LEPTOCHELIA Dana.

1849. *Leptochelia* Dana, Amer. J. Sci. ser. 2, vol. 8, p. 425.
1866. „ Bate & Westwood, Br. sess. Crust. vol. 2, p. 132.
1886. „ Norman & Stebbing, Tr. Linn. Soc. Lond. vol. 12, p. 108.
1896. *Dolichochelia* Stebbing, Ann. Mag. Nat. Hist. ser. 6, vol. 17, p. 49.
1896. *Leptochelia* id. ibid. p. 156.
1898. „ Dollfus, Mem. Soc. zool. Fr. vol. 11 [1897], p. 40.
1900. „ Stebbing in Willey's Zool. Res. pt. 5, p. 614 (references).
1902. „ Moore, Bull. U.S. Fish. Comm. vol. 20 [1900], p. 165.
1902. „ Richardson, Tr. Conn. Ac. Sci. vol. 11, p. 279.
1905. „ id. Bull. U.S. Nat. Mus. No. 54, p. 22.
1905. „ Stebbing in Herdman's Ceylon Pearl Fish. Suppl. Rep. 23, p. 5.
1905. „ Smith, Mitt. Stat. Neapel. vol. 17, p. 335.
1909. „ Hansen, Nath. Meddel, 1909, p. 227.

LEPTOCHELIA SAVIGNYI (Kröyer).

1900. *Leptochelia lifuensis* Stebbing, l.c. p. 616, pl. 54 C (♀), D (♂), and pl. 55 B (♂).
1900. ,, sp. Borradaile, Proc. Zool. Soc. Lond. 1900, p. 797, pl. 51, figs. 2–2*c*.
1905. ,, *lifuensis* Stebbing, l.c. p. 7, pl. 1*c* (♂ ♀).
1907. ,, ,, Nobili, Mem. R. Ac. Sci. Torino, ser. 2, vol. 57, p. 414.
1910. ,, ,, Stebbing, J. Linn. Soc. Lond. vol. 31, p. 216.
1918. ,, *dubius* id. Ann. Durban Mus. vol. 2, pt. 2, p. 62, pl. 9 A.

The specimens are nearest to the Ceylon specimens as regards the 1st peraeopods (gnathopods) and the 1-jointed outer ramus of the uropod.

In the Durban specimen the gnathopod is much more strongly developed than in the Cape specimens so far discovered.

Length: 3–3·5 mm.

Colour: Yellowish-white, posterior margins of the segments rather deeper in tint, eyes blackish-brown.

Locality: St. James and Buffel's Bay (both in False Bay). 15/2/14 and 29/9/13. (K.H.B.) 2 ♂ ♂; Buffel's Bay. 1/3/15. (K.H.B.) 6 ♀ ♀; Durban. 19/7/15. (H. W. Bell-Marley) 1 ♂. (S.A.M., Nos. A2691, A3092, A3306 and A3849.)

Geogr. Distribution: Loyalty Islands and Isle of Pines (Stebbing); Funafuti (Borradaile); Ceylon (Stebbing); Tuamotu Archipelago and Gambier Islands, 1–8 metres, amongst Corallines and pearl oysters (Nobili); Red Sea, Suez (Stebbing), etc.

FAMILY GNATHIIDAE.

GEN. GNATHIA Leach.

For references to the family and genus see Barnard, Ann. S.A. Mus. vol. 10, pt. 7, p. 200, 1914; and add:

1914. Vanhöffen, Deutsche Südpol. Exp. vol. 15, pt. 4, p. 487.
1916. Cooper, Ann. Mag. Nat. Hist. (8), vol. 18, p. 124.

GNATHIA SPONGICOLA n. sp.

(Plate XV. Fig. 9.)

Male.—Head concave in front, anterior margin with two small

bosses some little distance apart, the margin between these being at a lower level and having a minute median point, the oblique ridges from the eyes to the posterior margin each bearing 3–5 small tubercles, the largest being just above the posterior margin of eye and itself minutely denticulate ; in some specimens there are also one or two fine setules. Eyes prominent.

Peraeon segments 2 and 3 (1st and 2nd free) subequal in length, not quite as wide as head, the lateral portions somewhat swollen, more prominent in some specimens than in others ; segment 4 slightly longer and narrower, not separated by a marked constriction from segment 3, its lateral portions also rather swollen ; segment 5 nearly separated into two lateral, rather swollen portions on account of the anterior margin of segment 6 almost meeting segment 4 ; segment 6 with rather swollen lateral portions.

Pleon nearly as long as peraeon, normally carried bent beneath the body, telson with slightly convex sides, apex acute, with two setae.

Female.—Twice as long as broad. Head with a slight notch on anterior margin. Fifth peraeon segment a little longer than 4th or 6th.

Larva.—Head truncate, eyes prominent.

Labrum acutely pointed.

Antenna 1 ♂, 3rd joint longest, flagellum 5-jointed, its third joint longest.

Antenna 2 ♂, 5th joint subequal to 4th, flagellum 8-jointed.

Mandible ♂, greatest breadth less than, though in some specimens nearly equal to, length, apex acute, inner margin straight, denticulate almost to the apex, tooth on outer margin very prominent.

Maxilliped, 2nd joint produced on inner distal angle, 4th joint of palp not incurved.

Peraeopod 1 ♂, 1st joint tapering, inner margin setose, 2nd joint oval, tipped with setae ; in ♀ apparently only 2-jointed but with a nick in 1st joint indicating the fusion of 2 joints.

Peraeopods 2 and 3 ♂, 2nd joint sparsely tuberculate on upper anterior margin, 3rd scabrous and setose in peraeopod 2 but tuberculate in peraeopod 3 on lower (hind) margin, 4th and 5th with large tubercles on lower margin, 6th with numerous close-set serrations and 2 larger spine-setae, one in the middle of, the other at the apex of the lower margin.

Peraeopods 4–6 similar but the tubercles on the 2nd joints are on the upper posterior margin and those on the 3rd–5th joints are stronger.

In the ♀ the peraeopods are without tubercles except slight ones on

4th and 5th joints of the anterior peraeopods; in other respects similar to those of the ♂ though more slender.

Pleopods with 2 hooked setae on inner margin of peduncle, and narrow subequal rami.

Uropod, outer ramus shorter and narrower than inner, both with plumose setae.

Length: ♂ 5 mm., ♀ 4 mm.; *breadth:* ♂ and ♀ 2 mm.

Colour: In spirit pinkish or yellowish, eyes reddish, mandibles white.

Locality: Table Mountain S. by E. ¾ E., distant 58 miles. 190 fathoms. 6 ♂♂, 2 ♀♀, 2 juv.; Cape Point NE. ¼ N., distant 18 miles. 135 fathoms. 15 ♂♂, 15 juv.; Lion's Head N. 67° E., distant 25 miles. 130 fathoms. 1 ♂. s.s. "Pieter Faure." 3/4/02, 27/2/02 and 28/3/00. In large Hexactinellid sponges. (S.A.M. Nos. A4147–9.)

Gnathia spongicola var. minor n.

The only points of difference between these specimens and the typical form are the smaller size, the smaller and more numerous tubercles on the head, the nearly obsolete lateral swellings of the peraeon segments, the stouter antennae and peraeopods, the absence on the 6th joints of the peraeopods of the fine serrations.

The oblique ridges on the head bear a row of rather regularly arranged little tubercles or granules.

These small differences may be ascribed to habitat. The variety lives in burrows in a branching sponge, the branches of which are 4–7 mm. in diameter, whereas the typical form inhabits galleries in large massive sponges.

Each burrow is about 5 mm. long and a little over 1 mm. broad, and is occupied by a ♂ and an ovigerous ♀. The ♂ was found either sitting in the mouth of the burrow with the mandibles just projecting or clasping the ♀. In this latter position the hinder part of the ♂ overlies the anterior part of the ♀, which is clasped by the 3 posterior pairs of peraeopods of the ♂.

Length: ♂ and ♀ 3 mm.; *breadth:* ♂ 1·25 mm., ♀ 1·5 mm.

Colour: In spirit yellowish, posterior peraeon segments in ♂ purplish, eyes dark, mandibles white.

Locality: Buffel's Bay (False Bay). 30 fathoms. s.s. "Pieter Faure." 4/10/98 and 26/4/00. (S.A.M. Nos. A4150 and A4151.)

Gnathia disjuncta n. sp.

(Plate XV. Fig. 10.)

Male.—Head concave in front, anterior margin with 2 small

setiferous lobes close together on the median line, the oblique ridges with a low rounded tubercle just above the posterior margin of eye and another larger and forwardly directed further back; behind these tubercles the surface of the head shows a number of points, which do not appear to be granules but are very distinct. Eyes not very prominent.

Peraeon segments 2 and 3 subequal in length, equal to head in width; segment 4 slightly narrower, not separated by a constriction from segment 3; segment 5 completely separated into two lateral portions by the meeting of segments 4 and 6 in the middle line; none of the segments swollen laterally.

Pleon not as long as peraeon, telson with slightly convex sides, apex acute, with 2 setae.

Female.—Nearly twice as long as broad. Head with a very slight notch on anterior margin. Peraeon segments ruptured, relative lengths of the segments consequently impossible to determine.

Antenna 1 ♂, 3rd joint slightly the longest, flagellum 4 jointed, 2nd joint much the largest.

Antenna 2 ♂, 4th and 5th joints subequal. Flagellum 4-jointed.

Mandible ♂, greatest breadth less than length, apex not slender, subacute, inner margin gently convex, quite smooth; tooth on outer margin very prominent, its front margin slightly denticulate.

Maxilliped, 2nd joint produced on inner distal angle, 4th joint of palp not incurved.

Peraeopod 1 ♂, semicircular, not tapering, outer margin slightly emarginate, inner margin setose, 2nd joint rather elongate oval, tipped with setae; in ♀ 2-jointed, with a nick in 1st joint.

Peraeopods 2 and 3 ♂, 3rd–5th joints strongly tuberculate on lower margins, 6th joint with 1 apical spine and 1 in middle of lower margin.

Peraeopods 4–6 similar, but the tubercles not quite so large as in the anterior peraeopods

Peraeopods in ♀ more slender than in ♂, with only a single apical tubercle on the 4th and 5th joints

Pleopods with 2 hooked setae on peduncle and narrow subequal rami.

Uropod, outer ramus narrower and stouter than inner, both with plumose setae.

Length: ♂ 3·5 mm., ♀ 3 mm.; *breadth:* ♂ 1·5 mm., ♀ 1·75 mm.

Colour: In spirit yellowish, eyes dark, mandibles white.

Locality: Knysna Heads NE. ¾ E., distant 3 miles. 40 fathoms. 2 ♂♂, 1 ♀. s.s. "Pieter Faure." 11/10/00. (S.A.M. No. A4152.)

This species is closely allied to the preceding. In both the medio-

dorsal constriction of the 5th peraeon segment is peculiar, though foreshadowed by the longitudinal groove, more or less broad, in certain other species, notably *G. dentata* Sars and *abyssorum* Sars; but in no other species does the 6th segment approach the 4th.

Gnathia sp.

Female.—Body not quite twice as long as broad. Head with rounded entire anterior margin. The lateral margins of the head show a slight bulging in the place where the eye should be, but there is no trace of pigment or corneal lenses.

Antennae as described for Larva 1.

Maxilliped, inner distal angle of 2nd joint acutely produced, 4th joint of palp not incurved.

Peraeopod 1 apparently only 1-jointed, the sutures between the normal 3 joints being impossible to trace.

Telson much longer than its basal width, sides slightly concave, apex subacute, with 2 setae.

Larva 1.—4 mm. × ·75 mm. Head triangular, broader at base than long, lateral margin straight, antero-lateral angles excavated for the insertion of the antennae, front margin truncate between the antennae. No trace of eyes.

Telson as in ♀.

Head, pleon and all the parts of the peraeon which are strongly chitinised are covered with little specks more opaque than the rest of the integument.

Peraeon segments 2 and 3 subequal; 4th chitinised laterally and in the middle, where there is a large rounded plate; 5th chitinised laterally only; 6th chitinised nearly for the whole width but not on the anterior margin.

Antennae not much longer than greatest width of head, in antenna 1 3rd joint longest, flagellum 5-jointed, 1st very short, 2nd longest; in antenna 2 5th joint considerably longer than 4th, flagellum 5-jointed.

Labrum long, ovoid, apex emarginate.

Larva 2.—5 × 1 mm. Similar to the last but more swollen.

Larva 3.—5 × 1·5 mm. Similar, but the antennae are here twice as long as the greatest width of the head, the joints proportionately the same in length, though more slender. Peraeopod 1, 3rd and 4th joints subequal, 6th longest, unguis strong and curved, no recurved denticles or serrations.

Length: ♀ 5 mm.; *breadth:* 3 mm.

Colour: In spirit ♀ colourless, larvae yellowish, the two largest having the swollen middle segments brown.

Locality: Cape Point N. 89° E., distant 36 miles. 700 fathoms. 1 "spent" ♀, 3 larvae. s.s. "Pieter Faure." 20/8/03. (S.A.M. No. A4138.)

Owing to the absence of the ♂ it is impossible to assign a specific name to these specimens.

Family ANTHURIDAE.

1814. *Anthuridae* Leach, Edinb. Encycl. vol. 7, pp. 387, 433.
1910. ,, Stebbing, Tr. Linn. Soc. Lond. vol. 14, pt. 1, p. 90 (references).
1914. ,, Barnard, Ann. S.A. Mus. vol. 10, pt. 11, p. 334a.

Gen. ANTHURA Leach.

1814. *Anthura* Leach, l.c. p. 404.
1868. ,, Bate & Westwood, Br. sess. Crust. vol. 2, p. 157.
1880. *Haliophasma* Haswell, Proc. Linn. Soc. N.S.W. vol. 5, p. 476.
1881. *Anthura* Chilton, Tr. N.Z. Inst. vol. 14, p. 172.
1882. ,, id. ibid. vol. 15, p. 72.
1886 ,, Norman & Stebbing, Tr. Zool. Soc. vol. 12, p. 121.
1893. ,, Stebbing, Hist. Crust. p. 331.
1900. ,, id. in Willey's Zool. Res. pt. 5, p. 619.
1914. ,, Sexton, J. Mar. Biol. Ass. vol. 10, pt. 2, p. 236.

One of the chief distinguishing characters of this genus is the 3-jointed maxilliped. This has been well figured by Mrs. Sexton (l.c. p. 241, figs. 7, 8). In fig. 6 Mrs. Sexton has figured an abnormal maxilliped in which the terminal joint still shows a distinct suture, so that there appear to be 4 joints in all. The present specimen exhibits the same peculiarity, though as there is only the one specimen it is impossible to say whether this is normal or not. But it shows the danger, as pointed out by Mrs. Sexton, of dividing the family into genera according to the number of joints in the maxillipeds when only a limited amount of material is at hand.

In this genus there is only one species which is at all thoroughly known—namely, *A. gracilis* Mont. *A. flagellata* Chilton, 1882, from New Zealand, agrees with *gracilis* in having a truncate telson. *Haliophasma maculata* Haswell, 1881, from Australia, has been redescribed by Chilton in 1881 under the name of *Anthura affinis*. This species has a linguiform telson and is closely allied to the species described

below, presuming that the mouth-parts, which are as yet unknown, are like those of the typical *A. gracilis*.

Haswell's other species, *Haliophasma purpurea*, 1880, also from Australia, is easily distinguished by the 3 longitudinal ridges on the telson; the true systematic position of this species is also still uncertain.

Anthura linguicauda n. sp.

Male.—Body narrow, smooth. Head longer than broad, with minute median point. Eyes well developed. Peraeon segments nearly flat dorsally, rounded ventrally, 1–5 subequal, 6 and 7 subequal and shorter than the others, 4–6 each with a rounded pit.

Pleon segments 1–5 together nearly equal to peraeon segments 6 and 7, sutures distinct. Telson ovate, tapering to a narrowly rounded apex, sparsely fringed with simple setae.

Antenna 1, 1st joint slightly the largest, 2nd and 3rd subequal, flagellum extending to end of 3rd peraeon segment, ca. 22-jointed, with dense whorls of long setae.

Antenna 2, 2nd joint largest, grooved, 3rd–5th joints increasing in length, flagellum a little longer than 5th, 4-jointed, sparsely setose.

Mandible, 1st and 3rd joints of palp subequal.

Maxilliped, 3rd joint slightly narrower than 2nd, showing at about $\frac{1}{4}$ of its length from the base a distinct transverse suture, indicating a coalesced joint. Apex of terminal joint truncate and slightly emarginate, with 5–6 setae. Epipod half length of 2nd joint, oval.

Peraeopod 1 stout, 5th joint with apex bluntly projecting, 6th broadly ovate, palm convex at base, excavate distally, setose, finger plus unguis impinging against apex of 5th, inner margin with 2 small lobes.

Peraeopods 2 and 3 moderately stout, 5th joint underriding 6th, 6th equal to 3rd, parallel-sided, inferior margin setose.

Peraeopods 4–7 similar, but 5th joint not underriding 6th; peraeopod 7 not shorter or more slender than the preceding ones.

Pleopod 1, outer ramus not indurated, inner ramus not much smaller than outer.

Pleopod 2, inner margin of peduncle with 4 hooked setae, stylet arising half way along inner margin of inner ramus, straight, apex blunt, not reaching apex of ramus.

Uropod, inner ramus nearly reaching telsonic apex, 2nd joint nearly twice as long as broad, oval, fringed with long setae, outer ramus not very widely separated from its fellow, ovate, outer distal margin slightly concave, apex subacute, margin fringed with long setae.

Length: 10·5 mm.; *breadth*, 1 mm.

Colour: In spirit pinkish, eyes red.

Locality: Umhlangakulu River NW. by N., distant 7 miles (Natal). 50 fathoms. 1 ♂, amongst sponges. s.s. "Pieter Faure." 14/3/01. (S.A.M. No. A4172.)

Gen. APANTHURA Stebb.

1900. *Apanthura* Stebbing, in Willey's Zool. Res. pt. 5, p. 621.
1910. ,, id. l.c. p. 93.
1914. ,, Barnard, l.c. p. 340a.

This genus possesses normally a 5-jointed maxilliped. The following species, however, while agreeing in all other respects with the diagnosis, possesses a 6-jointed maxilliped. Moreover there are indications that the 4th joint is really composed of 2 joints, this being the only case known of an Anthurid exhibiting the full number of joints normal in the Isopoda.

Apanthura serricauda n. sp.

(Plate XV. Figs. 11, 12.)

Body moderately elongate. Head ¾ length of 1st peraeon segment, about as broad as long. Eyes small, oval.

Peraeon segment 1 shorter than the following segments, 7 shorter than 1. Pleon segments distinct in both sexes, short, all 5 together equal to 6th peraeon segment. Telson increasing in width distally, apex semicircularly rounded, serrate and setose.

Antenna 1 short and stout, 1st joint a little larger than 2nd, 2nd and 3rd about equal in length, flagellum equal to 3rd joint, obscurely 2-jointed.

Antenna 2, 3rd and 5th joints subequal, 4th shorter, flagellum equal to 5th joint, very obscurely 3-jointed.

Maxilliped narrow, 1st joint obscure, 3rd short, 4th nearly as long as 2nd with obscure indications of a suture across the middle, 5th half as long as 4th, 6th minute, tipped with setae, inner plate as long as 2nd joint, epipod ¾ length of 2nd joint, narrow, oval.

Remaining mouth-parts as described for *A. africana* Brnrd.

Peraeopod 1, 5th joint with a very small produced point on inner apex, 6th ovate, palm perfectly straight and entire, 7th plus unguis nearly as long as palm.

Peraeopods 2 and 3 similar to 1st but weaker, palm with a spine near the apex.

Peraeopods 4–7 more slender than the preceding, 5th joint underriding 6th, inner margin of 5th with 2 spines, of 6th with 1 apical spine, margins of 6th smooth.

Uropod, lower ramus as long as telson, 2nd joint as long as broad, rounded, distal margin serrate and setose; upper ramus longer than 1st joint of lower ramus, broadly ovate, apex blunt, outer margin serrate and setose.

Length: 5 mm.; *breadth,* ·5 mm.

Colour: Uniform yellowish-white, eyes black.

Locality: Sea Point, near Cape Town. 29/11/13 and 26/2/14. (K.H.B.) 1 ♂, 1 ♀ with embryos, 12 juv.; St. James and Buffel's Bay (False Bay). 15/2/14 and 1/3/15. (K.H.B.) 1 ♂, 1 ♀ with embryos. (S.A.M. Nos. A2620, A2698, A2692 and A3303 respectively.)

Gen. EXANTHURA Brnrd.

1914. *Exanthura* Barnard, Ann. S.A. Mus. vol. 10, pt. 7, p. 336a.

No further specimens of the type-species *E. macrura* have up to the present been found, but two other specimens have been discovered among the "Pieter Faure" material. One of these is an ovigerous ♀, the other is without definite sexual characters, but seems to be an immature ♂. The spiniform process of the 1st antenna may prove to be a male character in this genus.

Exanthura filiformis (Lucas).

1849. *Anthura filiformis* Lucas, Anim. Artic. de l'Algérie, p. 63, pl. 5, fig. 8.

1886. „ „ Norman & Stebbing, Tr. Zool. Soc. vol. 12, p. 130.

Male (?).—Body very narrow, head and dorsal surface of peraeon pitted. Head longer than broad, with a minute median point. Eyes well developed. Peraeon segments dorsally flat, with a low but distinct lateral keel, segments gradually increasing in length to 5th. 6th a little shorter than 5th, 7th half length of 6th, segments 3–6 each with a narrow longitudinal pit. Ventral surface rounded.

Pleon segments 1–5 subequal to 7th peraeon segment, fused but with distinct sutures dorsally and laterally; no trace of keels but the dorsal surface is flat; telson half as long again as pleon segments 1–5, parallel-sided in its basal half, then tapering, the tapering becoming more rapid on approaching the subacute apex, a median longitudinal keel extending from base to apex, distal margin sparsely clothed with plumose setae.

Antenna 1, 1st joint largest, outer margin produced in a large recurved, spiniform process, 2nd and 3rd subequal, flagellum not quite as long as peduncle, 6-jointed, 1st joint very short, 2nd longest, 6th and 7th minute.

Antenna 2, 2nd joint largest, grooved, 3rd–5th joints gradually increasing in length, flagellum shorter than 5th joint, 3-jointed. Flagella of both antennae sparsely setose.

Upper lip triangular, apically incised.

Lower lip, lobes apically tapering, with a small apical projection.

Mandibles, cutting-edge obscurely crenulate, cutting plate with recurved teeth, molar not very prominent, palp stout, 1st and 3rd joint subequal, 2nd longer, 3rd apically setose.

Maxilla 1 6-toothed.

Maxilliped 4-jointed, 1st not very distinct, 3rd largest, 4th short, rounded, with a few apical setae, epipod short, oval.

Peraeopod 1 stout, 2nd joint widening rapidly from a narrow base, without distal projection, 5th small, triangular, inferior apex subacute, not projecting, 6th large, oblong, scarcely narrowing distally, palm short, slightly concave in distal half, sparsely setose, finger plus unguis longer than palm, overlapping apex of 5th, inner margin finely denticulate.

Peraeopods 2 and 3 fairly stout, third joint $\frac{2}{3}$ length of 2nd, 4th distally as wide as long, 5th underriding 6th, which is equal to 3rd, slightly ovate, inferior margin sparsely setose, with a stout apical spine, finger shorter than 6th.

Peraeopods 4–7 similar but 5th joint not underriding 6th, with a spine on inferior apex ; peraeopod 7 not appreciably shorter or more slender than the preceding ones.

Pleopod 1 large, outer ramus opercular, indurated, outer surface with one median longitudinal groove and another just within the outer margin, the surface between the grooves pitted, distal margin densely fringed with plumose setae, inner ramus thin, scarcely half as wide as outer ramus.

No stylet showing on pleopod 2.

Uropod, inner ramus not quite reaching telsonic apex, ventral surface of 1st joint strongly keeled, 2nd shorter than 1st, subtriangular, longer than its basal width, apex rounded, inner margin straight, outer margin straight or slightly concave, densely fringed with plumose setae, outer ramus not meeting its fellow, reaching just beyond apex of 1st joint of inner, ovate, outer distal margin concave, apex acute, whole of outer margin densely fringed with plumose setae.

Ovigerous ♀.—Body not very narrow, dorsal surface of head and peraeon pitted. Head as broad as long, with minute median point. Eyes well developed. Peraeon segments dorsally slightly convex, segment 2 longest, segments 3–6 shorter than the preceding, subequal, a little longer than broad, 7 half length of six, a slight circular pit on segments 3–6.

Pleon segments 1–5 longer than peraeon segment 7, fused, but with the sutures distinct dorsally and laterally, 2 low rounded dorsal submedian longitudinal ridges; telson about as long as rest of pleon plus peraeon segment 7, lanceolate, swelling slightly in basal third, then tapering gradually to the subacute apex, a median longitudinal keel extending from base to apex, swelling out at the base where there is a deep oval median pit; distal margin densely clothed with long plumose setae.

Antenna 1, 1st joint largest but not swollen, 2nd and 3rd subequal in length, flagellum not quite as long as peduncle, 7-jointed, 1st joint short, 2nd largest, 6th and 7th minute.

Antenna 2, 2nd joint largest, grooved, 3rd–5th joints gradually increasing in length, flagellum a little longer than 5th peduncular joint, 5-jointed, 5th joint minute. Flagella of both antennae sparsely setose.

Mouth parts as described above.

Peraeopod 1 stout, 2nd joint very narrow at base, swelling very rapidly, without distal projection, 5th small, subtriangular, inferior apex bluntly projecting, 6th large, oval, produced backwards almost to level of base of 3rd, narrowing distally, palm straight, sparsely setose, finger plus unguis as long as palm, inner margin denticulate.

Peraeopods 2–7 and pleopod 1 as described above.

Uropod as described above, but 2nd joint of inner ramus oval, inner and outer margins convex.

Length: ♂ 23 mm., ♀ 13 mm.; *breadth:* head 1 mm., 6th peraeon segment ♂ 1·5 mm., ♀ 2 mm.

Colour: In spirit ♂ brownish, eyes dark, ♀ yellowish, eyes reddish.

Locality: Lion's Head SE. ¼ E., distant 50 miles (off Cape Peninsula). 230 fathoms. 1 ♂; Cape St. Blaize N. by E., distant 73 miles. 125 fathoms. 1 ovigerous ♀. s.s. "Pieter Faure." 2/4/02 and 21/12/99. (S.A.M. Nos. A4012 and A3825.)

Geogr. Distribution: Algeria (Lucas).

The "male" specimen agrees so exactly with Lucas's description that, in spite of the brevity of the latter, it seems impossible to assign this specimen to any other species. Some future student may be in a position to compare Algerian (or Lucas's type) specimens with the

present description, and if necessary will rename the South African specimens. For the present, problematical differences cannot be used as a reason for separating the forms.

E. filiformis is easily distingished by its keeled telson. No other species in the family has a keeled telson except *Haliophasma purpurea* Haswell, and this species (whose generic position is still uncertain) has 3 longitudinal keels. *E. macrura* Brnrd. has slight indications, at the base, of 3 keels or rather of 2 submedian grooves, but they are very indistinct and do not reach more than half way towards the apex.

Gen. PARANTHURA Bate & Westw.

1866. *Paranthura* Bate & Westwood, Br. sess. Crust. vol. 2, p. 163.
1914 „ Barnard, Ann. S.A. Mus. vol. 10, pt. 11, p. 347a (references).

Paranthura punctata (Stimps.).

1855. *Anthura punctata* Stimpson, Proc. Ac. Nat. Sci. Philad. vol. 7, p. 392.
1914. *Paranthura* „ Barnard, l.c. p. 348a, pl. 29 c.

A fine specimen from the "Pieter Faure" collection leaves no doubt that the specimens mentioned in my previous paper were rightly assigned to Stimpson's species. The specimen came from just outside False Bay and is yellowish with black speckling on the dorsal surface. The sex is not apparent, but it is probably an immature female.

Length: 15 mm.; *breadth*: 1·5 mm.

Locality: Cape Hangklip N. by E., distant 12 miles. 73 fathoms. 1 specimen. s.s. "Pieter Faure." 19/11/03. (S.A.M. No. A4168).

The specimen was found in the central cavity of a calcareous sponge of the genus *Leuconia*.

Gen. PSEUDANTHURA Rich.

1911. *Pseudanthura* Richardson, Bull. Mus. d'Hist. Nat. Paris, 1911, No. 7, p. 523.

This genus was instituted to receive an Anthurid collected off the coast of Dakar in deep water by the "Talisman." It is characterised by the rudimentary outer ramus of the uropod—a feature quite unique in the family. Although two specimens were found, the nature of the mouth parts was left undetermined. Moreover for purposes of specific

determination Richardson's description is lacking in detail, *e. g.* the 1st peraeopod is described as "prehensile with a large propodus." Nor has the species been figured.

In spite of this, I think there can be little doubt that the Cape specimens are specifically the same as the "Talisman" specimens.

The genus belongs to that section of the *Anthuridae* which has styliform mouth-parts, these appendages being somewhat similar to those of the genus *Calathura* N. & S.

Pseudanthura lateralis Rich.

(Plate XV. Figs. 13–16.)

1911. *Pseudanthura lateralis* Richardson, l.c. p. 524.

Miss Richardson's description applies to the Cape specimens, but in addition the following details may be given.

The specimens are smaller, but the relative lengths of the head and peraeon and pleon segments are the same as given for the type-specimens. The sex of the latter is not mentioned, but they seem to have been females to judge by the description of the 1st antenna. The male possesses the same ventral process on the 1st peraeon segment and the 2 dorsal tubercles on segments 2 and 3.

Antenna 1 ♂, 1st joint larger than 2nd plus 3rd, 2nd and 3rd shorter and stouter than in ♀, flagellum of 10 distinct joints, of which the first 4 are swollen and broader than long, the rest slender and longer than broad, the first 6 joints densely setose.

Antenna 2, 2nd joint the stoutest, but 5th longest, flagellum in ♂ 10-jointed.

Upper lip tapering to a subacute apex.

Lower lip with acute apices.

Mandibles stout and not very elongate, apices acute, palp stout, 1st joint shortest, 3rd a trifle shorter than 2nd, distal half of its margin with a regular row of setae.

Maxilla 1 long, slender, apically serrulate.

Maxilliped, 2nd joint produced acutely on inner apex, palp composed of 1 or possibly 2 joints; epipod small, oval.

The mouth-parts bear a strong likeness to those of *Calathura norvegica* as figured by Sars in Crust. Norw. vol. 2, pl. 19.

Peraeopod 1 alike in both sexes, but rather stronger in the ♀, surface of all the joints scaly, 2nd equal to 3rd–5th joints together, narrow proximally, swelling rapidly, 3rd $\frac{2}{3}$ length of 2nd, 4th strongly produced on anterior margin so that breadth is here twice length, 5th

small, subtriangular, with 4–5 spinules on inferior margin, 6th large, as long as 2nd, regularly oval, no tooth or projection at base of inferior margin, which is spinulose, finger reaching to apex of 5th, slender, curved, limits of finger and unguis not distinct.

Peraepods 2 and 3 slender, 4th joint $\frac{1}{4}$ length of 3rd, 5th half 4th, underriding 6th, which is longer than 4th plus 5th, but shorter than 3rd, inner margin with 8–9 stout, cilium-bearing spines, 7th a little more than $\frac{1}{2}$ length of 6th.

Peraepods 4–6, 5th joint a little longer than 4th, not underriding 6th, inner margin with 2–3 spines, 6th a little longer than 5th, inner margin with 3–5 spines, 7th equal to 5th.

Peraeopod 7 conspicuously shorter than the preceding, the proportions of the joints the same, inner margin of 6th with 3 spines.

Pleopod 1 operculiform, outer ramus indurated, with straight inner margin and convex setose outer margin, apex acute, inner ramus delicate, only $\frac{1}{3}$ as long and as wide as outer, tapering to a fine point.

Pleopod 2 in ♂, inner ramus a little shorter than outer, male stylet twice length of inner ramus, apically curved, with the tip acute and uncinately recurved.

Uropod, inner ramus folding under and reaching to the apex telson, inner margin with a long seta in a small notch towards the apex, outer distal margin serrate, apex subacute, outer ramus on the outer margin of the basal third of inner ramus, movable but small and scale-like, with 2–3 apical setules.

Length: ♂ 16 mm.; ♀ 18 mm.

Colour: In spirit dirty white.

Locality: Cape Point N. 86° E., distant 43 miles. 900–1000 fathoms. 1 ♂, 2 ♀♀. s.s. "Pieter Faure." 19/8/03. (S.A.M. No. A3832.)

Geogr. Distribution: Near Dakar, W. Africa, 930–3200 metres.

Family EURYDICIDAE.

1905. *Eurydicidae* Stebbing in Herdman's Ceylon Pearl Fish. Suppl. Rep. 23, p. 10.
1914. ,, Barnard, Ann. S.A. Mus. vol. 10, pt. 11, p. 350a.

Gen. CIROLANA Leach.

1818. *Cirolana* Leach, Dict. Sci. Nat. vol. 12, p. 347.
1914. ,, Barnard, l.c. p. 351a (references).
1914. ,, Vanhöffen, Deutsche Südpol. Exp. vol. 15, pt. 4, p. 496.

Cirolana cranchii Leach.

1818. *Cirolana cranchii* Leach, Dict. Sci. Nat. vol. 12, p. 347.
1890. „ „ Hansen, Vid. Selsk. Skr. ser. 6, vol. 5, pp. 321, 341, pl. 3, figs. 3–3*l*.
1914. „ *vicina* Barnard, Ann. S.A. Mus. vol. 10, pt. 11, p. 351a, pl. 30B.
1917. „ *cranchii* Stebbing, ibid. vol. 17, pt. 1, p. 15.

Stebbing has expressed the opinion that *vicina* and also *parva* Hansen might well be merged into *cranchii*. With regard to *vicina*, after having examined further specimens, I am disposed to agree, but not with regard to *parva*, which seems to be distinguished by the frontal lamina and the more broadly rounded telsonic apex.

Cirolana fluviatilis Stebb.

(Plate XV. Fig. 19.)

1902. *Cirolana fluviatilis* Stebbing, S. Afr. Crust. pt. 2, p. 52.

Since the frontal lamina is an important character in distinguishing the species of this genus and was not described by Stebbing, a description and figure of it are given here.

In a co-type from Stebbing the frontal lamina is twice as long as broad, very slightly broader anteriorly than posteriorly, sides straight, anterior margin semicircularly rounded. It does not meet the anterior margin of the head, the bases of the first antennae being contiguous.

Three specimens from East London (R. M. Lightfoot, 1914, S.A.M. No. A2849) and several from Zwartkops River, Port Elizabeth (Mrs. T. V. Paterson, S.A.M. No. A2254), have the crenulations on the hind margins of the peraeon segments and the tubercles on the pleon segments almost or quite obsolete and the interrupted keels on the telson very indistinct.

On the other hand two more specimens from Zwartkops River (Mrs. Paterson, S.A.M. No. A2268) show these features very clearly, and the keels on the telson are composed of 5 or 6 separate elongate tubercles; consequently in this case there is a strong temptation to unite this species with *C. pleonastica* Stebb.

The colour of fresh specimens is a clear semi-transparent lemon-yellow, but the animals are usually much coated with mud; eyes black.

Cirolana littoralis n. sp.

(Plate XV. Fig. 17.)

Body smooth. Head with a very narrow median point separating

the 1st antennae. Frontal lamina meeting the rostrum, about as broad as long, anterior margin obtusely pointed, a prominent and outstanding *transverse* ridge across the middle, but not produced into a horn.

Peraeon and pleon segments not denticulate on posterior margin. Fifth pleon segment without free margins.

Telson a little longer than broad, triangular, lateral margins straight, apex subacute, with 8 short, stout spines and a few plumose setae.

Antenna 1 reaching to end of peduncle of antenna 2, flagellum 13-jointed.

Antenna 2 reaching to 3rd peraeon segment, flagellum 26-jointed.

Mouth-parts normal.

Peraeopod 1, 3rd joint with 1 spine on inner margin, 4th with 6 stout apically truncate spines on inner margin, inner apex of 5th with 1 spine-seta set between 2 tubercles, 6th with 4 spines alternating with small rounded tubercles.

Peraeopod 2, 3rd joint with 3 apical and 2 smaller subapical spines on inner margin, outer apex bluntly produced, with 3 stout spine-setae, 4th with 9–10 stout blunt spines on inner margin, outer apex with 1 spine, inner apex of 5th with 3 spines and a tubercle below them, inner margin of 6th with 4 spines alternating with 4 small rounded tubercles.

The other peraeopods moderately slender, 2nd joint of 5th–7th peraeopods not expanded or furnished with long setae.

Uropod, inner ramus reaching apex of telson, distal margin with a few short plumose setae and 8 stout spines, apex subacute, outer distal margin with a few short plumose setae and 3 spines, outer ramus a little shorter, ovate, apex bifid, outer margin with 6 stout spines, inner distal margin with 4 stout spines and some plumose setae, inner apex of peduncle reaching half-way along inner ramus.

Length: 12–13 mm.; *breadth:* 4 mm.

Colour: Yellowish-white speckled with dark grey, eyes black.

Locality: Saldanha Bay. 5/9/12. (K.H.B.) 1 specimen; Dyer's Island. April, 1915. (J. Drury.) 1 adult and 1 juv. (S.A.M. Nos. A2465 and A3383.)

In the shape of the frontal lamina this species closely resembles *C. schiödtei* Miers, 1884, from the Arafura Sea, but lacks the two setose tracts on the telson which are so conspicuous in Miers' figure, although not mentioned in his description.

Cirolana meinerti n. sp.

(Plate XV. Fig. 18.)

Body smooth. Head with a minute median point, not reaching the frontal lamina and not (or only partially) separating the 1st antennæ.

Frontal lamina pentagonal, twice as long as broad, apex acute, distal oblique margins shorter than the straight side margins.

Peraeon segment smooth, microscopically and sparsely punctate.

Pleon segment 4 with ca. 12 indistinct little denticles on posterior margin, segment 5 without free margins and with ca. 12 little denticles, of which the 2 central ones are the largest, on the posterior margin.

Telson longer than broad, triangular, margins slightly convex, apex subacute, distal margins set with plumose setae and 7–8 rather slender and widely separated spines; dorsal surface with a patch of short setae on either side of the middle line near the apex.

Antenna 1 reaching to end of peduncle of antenna 2, 1st and 2nd joints indistinct, flagellum 22-jointed.

Antenna 2 reaching to end of 3rd peraeon segment, 4th and 5th joints subequal, flagellum 32-jointed.

Mouth-parts normal.

Peraeopod 1, 3rd joint with 2 spine-setae on outer apex, 4th with 4 short stout spines at base and 2 at apex on inner margin, inner margin of 6th with 4 spines, of which the 4th is at the apex and much larger than the others, margin between the spines strongly denticulate.

Peraeopod 2, 3rd joint with 2 long spines on outer apex and 3 short stout ones on inner apex, 4th with 3 long spines on outer apex, inner margin with 5 stout spines near base and 3 on apex, 5th with 3 spines on inner apex, inner margin of 6th with 4 spines, the 4th at the apex and much larger than the others, margin between the spines feebly denticulate.

Peraeopods 5–7 moderately slender, well armed with spines, 2nd joint not setose, inner distal margin indistinctly serrulate.

Male appendages on 7th segment short, stout, apically blunt, their distance apart more than the width of one of them.

Pleopod 2, inner margin of peduncle with 4 hooked setae, stylet in ♂ a little longer than ramus, straight, tapering to an acute apex, minutely setulose.

Uropod, inner ramus reaching to telsonic apex, apex subacute, distal margin with ca. 8 slight notches, each with a rather slender spine, and thickly fringed with plumose setae, outer margin with plumose setae

and distally ca. 4 spines, outer ramus a little shorter, both margins with plumose setae, inner distal margin with 3–4 spines.

Length: 20 mm.; *breadth:* 6·5 mm.

Colour: In spirit dirty pinkish.

Locality: Cape Morgan N. ½ W., distant 10 miles. 77 fathoms. 1 ♂. s.s. "Pieter Faure." 26/7/01. (S.A.M. No. A3837.)

This species resembles *C. schiödtei* Miers in having 2 setose tracts on the telson, and is named after Schiödte's collaborator. In respect to the frontal lamina this species differs widely from *schiödtei*, but is closely allied to *cranchii* Leach, in which, however, the dorsal surface is perfectly smooth.

Cirolana palifrons n. sp.

(Plate XV. Figs. 20, 21.)

Body strongly convex, smooth, minutely granular on the posterior portions of the peraeon segments and on the side-plates. Head moderately immersed in 1st peraeon segment, anterior margin strongly convex, produced over and hiding the bases of 1st antennæ. Eyes moderately large.

Peraeon segment 1 longest, segments 2–6 subequal, 7th a little shorter than 6th, 5th–7th each with a shallow groove on the posterior margin. Side-plates on segments 2–4 quadrangular, on segments 5–7 produced beyond posterior margins of their segments, apices subacute, that on segment 5 with 1, those on segments 6 and 7 with 2, oblique keels.

Pleon segment 1 completely hidden under last peraeon segment, segment 2 not produced, 3 and 4 laterally produced, 4 overlapping 5, posterior margins of 2–5 crenulate.

Telson triangular, apex subacute, 2 small tubercles at the base on either side of 2 median keels; the right-hand keel runs straight to the apex, the other diverges to a lobe on the left margin, evidently the result of an injury, so that it is impossible to say how close together the two keels are normally; lateral margins and apex densely fringed with plumose setae.

Frontal lamina pentagonal, longer than broad, anterior margin biconcave with median point, which just meets the median point on front of head, side margins straight, slightly converging to the straight base.

Antenna 1, 1st and 2nd joints short, distinct, 3rd a little longer, flagellum 7-jointed.

Antenna 2 incomplete.

Mouth-parts normal.

Peraeopods much broken, apparently without distinctive features, 1–3 with stout blunt spine-tubercles on inner margins of 3rd–5th joints, 2nd joints of peraeopods 5–7 without fringes of setae.

Male appendages on 7th segment a little distance apart, curved towards one another, short, stout.

Pleopod 1, outer ramus twice as broad as inner ramus.

Pleopod 2, outer ramus considerably broader than, but not twice as broad as, inner ramus, stylet in ♂ $\frac{1}{4}$ as long again as ramus, slightly incurved distally, tapering evenly.

Uropod, inner apex of peduncle produced, margins of both rami with dense fringe of plumose setae, outer apex of inner ramus subacute.

Length: 9 mm.; *breadth:* 3·5 mm.

Colour: In spirit yellowish, eyes dark.

Locality: 33° 6′ S., 28° 11′ E. (off East London). 85 fathoms. 1 ♂. s.s. "Pieter Faure." 28/1/99. (S.A.M. No. A4125.)

The specific name from *pala* (a shovel), in allusion to the projecting front of the head.

Cirolana cingulata n. sp.

(Plate XV. Figs. 22, 23.)

Body strongly convex, glabrous. Head nearly completely immersed in 1st peraeon segment, anterior margin not strongly convex, 5 transverse grooves across the whole width of head, including the eyes, the hindermost one only punctate-striate. Eyes moderately large.

Peraeon segment 1 longest, 2–6 subequal, 7 a little shorter; segment 1 with a transverse groove on posterior margin with 3 rows of punctae in front of it, inferior lateral margin with 2 grooves; segment 2 with 1 transverse groove and 2 rows of punctae, segment 3 with 2 grooves with an intervening row of punctae, segment 4 with 4 grooves (2 of them being really only punctate-striate), segments 5–7 each with 4 grooves, the last groove in each case having its anterior margin minutely crenulate. Side-plates on segments 2–4 quadrangular, each with 1 oblique ridge, on segments 5–7 slightly produced, with subacute apices and 2 oblique ridges with an intervening groove.

Pleon segment 1 completely hidden under last peraeon segment, segment 2 visible only laterally, not produced, segments 3 and 4 laterally produced, 4 overlapping 5, 2–5 each with a transverse row of granules or denticles.

Telson triangular, apex subacute, 2 small tubercles at base on either side of a broad median ridge which runs to apex and is ornamented with 2 punctate-striate grooves, rest of the surface with scattered

granules; lateral margins and apex densely fringed with plumose setae; there are indications also of spines on the apex, but these have been broken off.

Frontal lamina about as long as broad, anterior margin convex, projecting freely and not meeting the median point of head; antero-lateral angles rounded, sides straight.

Antenna 1, 1st and 2nd joints short, distinct, 3rd a little longer, flagellum shorter than peduncle, 5-jointed.

Antenna 2, flagellum 15-jointed.

Mouth-parts normal.

Peraeopods very much broken, but apparently without distinctive features, 2nd joints of peraeopods 5–7 without fringes of setae.

Male appendages on 7th segment a little distance apart, curving towards one another, short, stout.

Pleopod 1, outer ramus very broad, more than twice as wide as inner.

Pleopod 2, outer ramus not twice as wide as inner, stylet $\frac{1}{4}$ as long again as ramus, slightly incurved distally, tapering evenly.

Uropod, inner apex of peduncle produced, margins of both rami densely fringed with plumose setae, distal margin of inner ramus also with strong spines, outer apex of inner ramus sub-bifid.

Length: 9 mm.; *breadth:* 3 mm.

Colour: In spirit greyish, eyes dark.

Locality: 33° 6′ S., 28° 11′ E. (off East London). 85 fathoms. 1 ♂. s.s. "Pieter Faure." 28/1/99. (S.A.M. No. A4126.)

Gen. CONILORPHEUS Stebb.

1905. *Conilorpheus* Stebbing in Herdman's Ceylon Pearl Fish. Suppl. Rep. 23, pp. 11, 13.

1908. „ id. S.A. Crust. pt. 4, p. 46.

Conilorpheus scutifrons, Stebb.

1908. *Conilorpheus scutifrons* Stebbing, l.c. p. 46, pl. 31.

In the original description of the genus Stebbing made the narrowness of the head and body one of the distinguishing features of the genus; but when describing the second species he remarked that only the narrowness of the head could be considered as distinctive. Up to the present only one male of both species has been known.

The "Pieter Faure" collection contains a specimen of both sexes, so that I am able to describe the female, thereby showing that the width of the body relatively to its length is largely a sexual feature.

The ♂ measures 9 mm. × 3 mm. The head is longer and squarer than in Stebbing's figure (dorsal view) and has 3 transverse rugae between the eyes. The anterior peraeopods are broken off at the 2nd joints. As in Stebbing's figure, the 1st pleon segment is distinct, the 2nd showing very faint traces of tubercles, in other respects agreeing with Stebbing's description.

The ♀ measures 6 mm. × 3 mm. It agrees with the ♂ in general, the head being as described above. The transverse grooves on segments 1–3 and those on the posterior side-plates and the tubercles on segments 5–7 much more pronounced than in the ♂. There are also distinct traces of tubercles on segments 3 and 4. The tubercles on the pleon and telson are likewise much more prominent, pleon segment 2 with a row of small but distinct tubercles. Pleon segment 1 is completely hidden under the last peraeon segment.

Locality: 33° 53′ S., 25° 51′ E. 26 fathoms. 1 ♂; Umkomaas River NW. by W. ½ W., distant 5 miles. 40 fathoms. 1 ♀. s.s. "Pieter Faure." 6/12/98 and 31/12/00. (S.A.M. Nos. A4081 and A4083.)

Gnatholana n. g.

Head narrow, immersed in 1st paraeon segment, with a small median process. Frontal lamina not distinct, being fused with the median process of head. Pleon segment 1 completely hidden under last peraeon segment, 4th overlapping 5th. Antenna 1 with 1st and 2nd joints indistinctly separated. Epistome, upper lip and mandibles directed forwards. Mandibles very stout, the cutting process much produced, conical, apically acute, secondary cutting-edge, molar and palp normal. Maxilla 1 with outer plate unusually large. Maxilliped with inner plate very small, with 1 coupling hook. Pleopod 1 not indurated, peduncle not longer than broad, inner ramus half width of outer. Pleopod 2 with male stylet arising from base of ramus. Uropod with peduncle internally produced, outer ramus much smaller than inner.

This genus is remarkable for the great development of the mandibles. It is distinguished from *Hansenolana* and *Conilorpheus*, the other genera with relatively narrow head immersed in 1st peraeon segment, by the absence of a distinct frontal lamina.

Gnatholana mandibularis n. sp.

(Plate XV. Figs. 24, 25.)

Body strongly convex. Head scarcely half the width of the body, a little broader than long, deeply immersed in 1st peraeon segment,

anterior margin slightly convex on either side between the eyes and the short, squarish median process. Eyes moderately large, on the lateral margins.

Peraeon segment 1 embracing the head, nearly twice as long as 2, segments 2–5 increasing slightly in length, 6 and 7 shorter; segments 3–6 with a slight transverse groove across the middle of the segment, all the segments except the 1st with the posterior margin setose, more strongly so on the posterior segments, segments 5–7 in addition with a transverse row of pointed tubercles on the posterior margin.

Side-plates on segments 2–4 quadrangular, as long as their segments, those on segments 5–7 moderately produced, apically subacute.

Pleon segment 1 entirely concealed by 7th peraeon segment; segment 2 bounded laterally by the last pair of side-plates, segments 3 and 4 produced laterally, 4 overlapping 5, segments 2–5 each with a transverse row of granules and setae.

Telson about as broad as long, triangular, margins sinuous, apex narrowly rounded, with long plumose setae and 6 spines, dorsal surface irregularly and not densely granulate, setose.

Frontal lamina completely fused with the median process of head.

Epistome and upper lip projecting forwards, both broader than long, upper lip a little longer than epistome, distal margin emarginate, lateral angles rounded.

Antenna 1 reaching to middle of peraeon segment 1, 1st and 2nd joints rather indistinctly separated, together a little longer than 3rd, flagellum subequal to peduncle, 9-jointed.

Antenna 2 reaching to end of peraeon segment 1, 4th and 5th joints subequal, flagellum scarcely as long as peduncle, 14-jointed.

Mandible very stout, projecting forwards, cutting process strongly chitinised, brown, acute, slightly incurved, secondary cutting-edge (proportionately) very small, 4 dentate, molar normal, serrate, palp small, 1st and 2nd joints equal, 3rd shorter.

Maxilla 1, outer plate large, with 13 spines, the largest ones faintly denticulate, inner plate much smaller than outer, with 3 very stout plumose setae.

Maxilla 2, outer and middle plates subequal, inner considerably shorter, its innermost setae stouter than the rest.

Maxilliped, 2nd joint longest, but not elongate, 4th and 5th broadest, 6th and 7th much narrower than 5th, inner plate very small, with 1 coupling-hook.

Peraeopod 1, 4th joint scarcely produced on anterior apex, 5th small, underriding 6th, 6th cylindrical, twice as long as broad, inner margins of 4th–6th with respectively 9, 3, 14 strong curved spines.

Peraeopods 2 and 3 similar, but 3rd and 4th joints stouter, 4th produced on anterior apex, inner margins of 4th–6th with respectively 6, 2, 3 spines, those on 4th stout and short, the others more slender but not as long as those on peraeopod 1, inferior apex of 3rd also with 2 stout spines.

Peraeopods 5–7 increasing in length, 2nd joint without plumose setae, 3rd–6th rather strongly armed with spines.

Male appendages on 7th peraeon segment short, a little distance apart.

Pleopod 1 not indurated, peduncle broader than long, inner margin with 5-hooked setae, outer ramus broadly ovate, inner ramus only half the width of outer.

Pleopod 2, inner ramus broader than in pleopod 1, but not nearly as broad as outer ramus; stylet attached at base, $\frac{1}{3}$ as long again as ramus, tapering gradually to a subacute apex.

Uropods large in proportion to telson, peduncle produced on inner apex, inner ramus broadly ovate, outer ramus much smaller, ovate, both rami with the dorsal surface setose and the margins strongly armed with spines and plumose setae.

Length: 5·5 mm.; *breadth:* 2·5 mm.

Colour: In spirit yellowish-brown, eyes black.

Locality: 33° 6′ S., 28° 11′ E. 85 fathoms. 1 ♂. s.s. "Pieter Faure." 28/1/99. (S.A.M. No. A4118.)

Family CORALLANIDAE.

1890. *Corallanidae* (part) Hansen, Videns. Selsk. Skr. ser. 6, vol. 5, pt. 3, p. 280.
1914. ,, Barnard, Ann. S.A. Mus. vol. 10, pt. 11, p. 357a (references).

Gen. LANOCIRA Hansen.

1890. *Lanocira* Hansen, l.c. pp. 313, 391, 395.
1914. ,, Barnard, l.c. p. 359a (references).

Lanocira capensis Brnrd.

1913. *Lanocira* sp? Tattersall, Tr. Roy. Soc. Edinb. vol. 49, pt. 4, p. 880.
1914. ,, *capensis* Barnard, l.c. p. 359a, pl. 31A.

Although in the original description certain characters were pointed out in which this species differed from *L. gardineri* Stebb., there yet remained the possibility that it might be found later to be identical

with the Indian Ocean species. Further specimens are now available which render possible a more complete definition of the Cape species, proving that this species is distinct from any of the other species of the genus.

In the ♂ previously examined the characteristic features were so slightly developed that they were overlooked, but with the clue afforded by the new specimens they can be just distinguished; the two lots of specimens are thus undoubtedly conspecific. In the original description mention was made of the horn on the head and the 2 ocular tubercles; there is in addition a slight concavity on the 1st peraeon segment, being a continuation of that on the head. In the fully developed ♂ there is a tubercle on either side of this hollow and also a short transverse ridge-like median tubercle on the posterior margin of the same segment (1st). Thus there are altogether *six* elevations on the head and 1st peraeon segment. This is the diagnostic feature of the species.

In the ♀ the median point of the head is prominent and margined but not upturned; behind it is a very shallow median longitudinal cavity.

The surface of the body in both sexes is rather coarsely pitted, the setae arising from these pits; the pitting remains the same irrespective of the setose covering. This pitting causes the posterior margins of the 7th peraeon segment and 1st and 2nd pleon segments, especially the lateral portions of the latter segment, to appear as if crenulate or denticulate.

The ♀ is always more densely setose than the ♂.

The frontal lamina is somewhat variable in shape and proportions, but appears to be at least as long as broad, usually a little longer than broad, the lateral margins slightly thickened and raised, converging to a narrow base.

Maxilla 1 in the adult ♂ and the larger ♀♀ is stronger, in some cases very like that of *zeylanica* Stebb.

The ♂ appears to assume its full complement of dorsal tubercles at a length of about 7·5 mm. and grows to a length of 10 mm. Ovigerous ♀♀ range from 7·5 mm. to 11 mm. in length. Specimens taken between tide-marks do not seem to grow as large as those from deeper water.

Colour: Spirit specimens are dull pinkish, with a few black pigment specks still visible.

Additional localities: Kalk Bay. 1 immature ♂ (R. M. Lightfoot), low tide. Bakkoven Rock NW. by W., distant 2 miles. 24 fathoms. 1 ♂, 2 ovigerous ♀♀; Buffel's Bay. 30 fathoms. 1 ♂; Cape

Hangklip N. by E., distant 12 miles. 13 fathoms. 1 ♂, 2 juv.; off Cape Hangklip. 2 ovigerous ♀ ♀. s.s. "Pieter Faure." 11/11/02, 26/4/00, 19/11/03, and April, 1898. (S.A.M. Nos. A2709, A3827, A3885, A4076 and A4117 respectively.)

All the localities are situate in False Bay. The specimens from the "Pieter Faure" collection were all taken out of galleries in various kinds of sponges, one being also found in the central cavity of a *Leuconia*-like sponge.

The following specimens are kept separate for these reasons: they appear to be exactly like the typical form, but differ in the shape of the frontal lamina. This has the basal portion rather deeply set and more or less covered by the epistome, so that it appears *wider than long.* It thus presents a very different appearance from that of the typical specimens. In these latter the *whole* of the frontal lamina can be seen without depressing the epistome, and moreover it is considerably narrower. As in the typical form a certain amount of variation can be observed, so that a perfect transition from one to the other may yet be found.

Unfortunately no adult ♂ was found amongst these specimens, so their specific identity must for the present remain doubtful.

In the ♀ the front margin of the head is not quite so prominent and is less distinctly margined, and the dorsal surface shows not the slightest trace of a longitudinal concavity.

Length: Ovigerous ♀, 9–11·5 mm.; *breadth:* 4·5–5 mm.

Colour: As noted above.

Locality: 34° 7′ S., 25° 43′ E. (off Cape Recife). 56 fathoms. 1 immature ♂; Umkomaas River NW. by W. ½ W., distant 5 miles (Natal). 40 fathoms. 1 juv. ♂, 3 ovigerous ♀ ♀, 1 juv.; Rockland Point NW. ¼ N., distant 2 miles (False Bay). 1 ovigerous ♀, 1 juv.; 33° 53′ S., 25° 51′ E. (Algoa Bay). 26 fathoms. 1 ovigerous ♀; Seal Islands SW. ½ S., distant 1 mile (False Bay). 11 fathoms. 2 ovigerous ♀ ♀; Bakkoven Rock NW. by W., distant 2 miles (False Bay). 24 fathoms. 1 ovigerous ♀; Tugela River N. by W. ¾ W., distant 15 miles (Natal). 40 fathoms. 2 juv. s.s. "Pieter Faure." 14/11/98, 31/12/00, 8/6/00, 6/12/98, 12/11/02, 11/11/02, and 10/1/01. (S.A.M. Nos. A3891, A4077, A4079, A4080, A4084, A4178–9 respectively.)

Cryptoniscan Parasite.

On one of the specimens A4084 were found 2 Cryptoniscan larvae, which may be referable to the genus *Clypeoniscus* (see p. 431), but as no female was present their correct identification remains uncertain.

Eyes absent. Basal joint of antenna 1 with 6–8 teeth. Antenna 2–5-jointed. Side-plates tectinate. Peraeopods as in *Clypeoniscus*.

Family CYMOTHOIDAE.

For references see Stebbing, S.A. Crust. pt. 1, p. 55 ; and Barnard, Ann. S.A. Mus. vol. 10, pt. 11, p. 371.

Gen. CYMOTHOA Fabr.

1793. *Cymothoa* Fabricius, Entomol. Syst. vol. 2, p. 503.
1884. „ Schiödte & Meinert, Naturh. Tidsskr. ser. 3, vol. 14, p. 223.
1903. „ Lanchester, Proc. Zool. Soc. Lond. 1902, pt. 2, p. 377.
1905. „ Richardson, Bull. U.S. Nat. Mus. No. 54, p. 247.

Cymothoa borbonica Sch. & Mein.

1884. *Cymothoa borbonica* Schiödte & Meinert, l.c. p. 282, pl. 10, figs. 7–10.
1904. „ „ Stebbing, in Gardiner's Fauna Mald. & Lacc. Arch. vol. 2, pt. 3, p. 709.

A single specimen answering to the description and figures of Schiödte & Meinert.

Length : 27 mm. ; *breadth :* 11 mm.

Colour : In spirit, uniform yellowish.

Locality : Durban. 1 ♀. s.s. "Pieter Faure." 14/2/01. (S.A.M. No. 15097.)

Geogr. Distribution : Isle of Bourbon (Schiödte & Meinert) ; Maldives, from gills of a parrot-fish (Stebbing).

Gen. LIVONECA Leach.

1818. *Livoneca* Leach, Dict. Sci. Nat. vol. 12, p. 351.
1884. „ Schiödte & Meinert, l.c. p. 340.
1892. „ Kölbel, Ann. Naturh. Hofmus. vol. 7, No. 3, p. 105.
1905. „ Richardson, Proc. U.S. Nat. Mus. vol. 29 [1906], p. 445.
1909. „ id. ibid. vol. 37 [1910] p. 87.
1910. „ id. Wash. Bur. Fish. Doc. 736, p. 23.
1911. „ id. Bull. Mus. d'Hist. Nat. 1911, No. 7, p. 526.
1912. „ id. Proc. U.S. Nat. Mus. vol. 42, p. 173.

LIVONECA RAYNAUDI M. Edw.

1840. *Livoneca raynaudii* M. Edwards, Hist. Nat. Crust. vol. 3, p. 262.
1846. „ *novaë-zealandiae* White, List Crust. Brit. Mus. p. 106 (descr. nulla).
1884. „ *raynaudii* Schiödte & Meinert, l.c. p. 367, pl. 15, figs. 9–13.
1901. „ „ Whitelegge, Sci. Res. "Thetis," pt. 3, p. 236.
1910. „ „ Stebbing, Gen. Cat. S.A. Crust. p. 425.

An adult ♂ and ♀ and an immature specimen were taken from the mouth and gills of a Sucker-fish (*Chorisochismus dentex* Pall.) caught at low-water near Cape Town. Both ♂ and ♀ are quite symmetrical.

Length: ♂ 18 mm., ♀ 30 mm. (S.A.M. No. A2856.)

Geogr. Distribution: Cape of Good Hope (M. Edwards); New Zealand, Tasmania, Japan (Schiödte & Meinert); New South Wales, 32–78 fathoms (Whitelegge).

FAMILY SPHAEROMIDAE.

For references see Barnard, Ann. S.A. Mus. vol. 10, pt. 11, p. 374, and add:

1909. Chilton, Subantarctic Is. N. Zealand Crust. p. 653.
1910. Richardson, Wash. Bur. Fish. Doc. 736, p. 30.
1914. Stebbing, Proc. Zool. Soc. Lond. 1914, pp. 351 and 944.

GROUP HEMIBRANCHIATAE.

GEN. SPHAEROMA Bosc.

1802. *Sphaeroma* Bosc. Hist. Nat. Crust. vol. 2, p. 182.
1908. „ Stebbing, S.A. Crust. pt. 4, p. 49.
1909. „ Budde-lund, in Völtzkow, Reise in Ost-Afrika, vol. 2, pt. 4, p. 303.
1910. „ Richardson, Proc. U.S. Nat. Mus. vol. 38 [1911], p. 81.
1911. „ Stebbing, Rec. Ind. Mus. vol. 6, pt. 4, p. 181.

SPHAEROMA TEREBRANS Bate.

1866. *Sphaeroma terebrans* Bate, Ann. Mag. Nat. Hist. (3), vol. 17, p. 28, pl. 2, fig. 5.
1866. „ *vastator* id. ibid. p. 28, pl. 2, fig. 4.
1897. „ *destructor* Richardson, Proc. Biol. Soc. Wash. vol. 2, p. 105, text-figs.

1904. *Sphaeroma terebrans* Stebbing, Spolia Zeylan. vol. 2, pt. 5, p. 16, pl. 4.
1905. „ *destructor* Richardson, Bull. U.S. Nat. Mus. no. 54, p. 282, figs. 294–298.
1908. „ *terebrans* Stebbing, c. p. 49.

Two specimens were kindly given to me by Mr. E. C. Chubb, the Curator of the Durban Museum, who had obtained a goodly number at Isipingo on the Natal coast.

The following points may be noted as bearing on the question of the above synonymy and the difference of opinion between the different authorities: in the smaller (♂) specimen, measuring 9 mm., there are indications of a transverse ridge on the 2nd and 3rd peraeon segments, and a strong ridge on the 4th, but not so prominent as in the Ceylon specimens; there are 4 distinct series of tubercles on peraeon segments 5–7 and the anterior fused portion of the pleon, the 2 submedian tubercles on the telson are flanked on either side by a tubercle and *the whole surface of the telson is irregularly granular.*

In the other (♀) specimen, measuring 10 mm., only the 4th and 5th peraeon segments have transverse ridges, the 6th and 7th segments with 4 tubercles each. The two submedian tubercles on the 5th segment in the ♂ and the 6th in the ♀ are transversely elongate, not circular, as if they were in process of forming a transverse ridge or represented the remains of a former complete ridge. The anterior part of the pleon in the ♀ is crushed, but the telson is similar to that of the ♂.

A larger series would probably show a greater amount of variation, but the above two specimens are enough, it seems to me, to break the force of Miss Richardson's arguments that *destructor* is a valid species. The granulated telson of the present specimens is exactly represented in Richardson's (1905) fig. 297 of the telson, and the description, "tuberculated with low but distinct tubercles, each one surmounted by a small tuft of stiff hairs or bristles," is surely applicable to Stebbing's figure of the Ceylon specimens. As Stebbing remarks, the coating of dirt obscures the structure, and in cleaning this off the hairs are almost certain to disappear to a large extent.

Moreover the sides of the telson are stated to be incurved in Stebbing's specimens but straight in the Florida specimens. Here again it is difficult to see any difference between the figures of the respective specimens except that in the latter the apex is a little more broadly rounded, but the sides appear to be equally incurved.

As regards the serrations on the outer ramus of the uropods, the

present ♀ specimen has 4, the ♂ only 3, not counting the apical one. This therefore is also a variable feature.

The epistome has not yet been described by either author. In the present specimens it is triangular, nearly equilateral, the greatest width across the arms being about equal to the lateral margin, which is slightly emarginate, the upper lip is not sunk in so far as to reach the middle of the epistome, the apex is bluntly rounded and the surface granular and rugulose.

Male stylet on pleopod 2 not developed.

Both specimens were infested with *Iais pubescens* (Dana).

Sphaeroma walkeri Stebb.

1905. *Sphaeroma walkeri* Stebbing in Herdman's Ceylon Pearl Fish. Suppl. Rep. 23, p. 31, pl. 7.
1910. ,, ,, id. J. Linn. Soc. Lond. vol. 31, p. 220.
1917. ,, ,, id. Ann. Durb. Mus. vol. 1, pt. 5, p. 444, pl. 23.

These specimens correspond with Stebbing's Ceylon specimens. Flagellum of antenna 1 ca. 10-jointed, that of antenna 2 12–16-jointed, with the basal joints more strongly setose than in Stebbing's figure, especially in the ♂. The raised rim around the telsonic apex is very well marked.

Pleopod 2 in ♂ with stylet half as long again as inner ramus, scarcely tapering, apex blunt. Male appendages on 7th peraeon segment close together but not contiguous, stout, apically blunt. Outer ramus of uropod with 4–6 teeth, not counting the apical tooth, 5 being the usual number.

Length: 7 mm.

Colour: Mottled grey on a lighter ground, the base of the telson usually free from markings.

Locality: Durban, July, 1915 (H. W. Bell-Marley). 2 ♂ ♂, 4 juv.; Durban, 5 fathoms. 1/5/17 (H. W. Bell-Marley). ♂ ♂ and ♀ ♀. (S.A.M. Nos. A3847 and A4575.)

Geogr. Distribution: Ceylon and Suez (Stebbing).

On one of the adults a specimen of *Iais pubescens* (Dana) was found.

Gen. ZUZARA Leach.

1818. *Zuzara* Leach, Dict. Sci. Nat. vol. 12, pp. 341, 344.
1840 ,, M. Edwards, Hist. Nat. Crust. vol. 3, p. 211.

1874. *Cyclura* Stebbing, J. Linn. Soc. Lond. vol. 12, p. 146 (nom. preocc.).
1878. *Cycloidura* id. Ann. Mag. Nat. Hist. (5), vol. 1, p. 36.
1905. *Zuzara* Hansen, Q. J. Micros. Sci. vol. 49, pt. 1, pp. 103, 104, 119.
1906. „ Richardson, Proc. U.S. Nat. Mus. vol. 31 [1907], p. 12.
1910. *Cycloidura* Stebbing, Gen. Cat. S.A. Crust. p. 431.
1910. *Zuzara* Baker, Tr. Roy. Soc. S. Austral. vol. 34, p. 83.
1914. *Cycloidura* Vanhöffen, Deutsche Südpol. Exp. vol. 15, pt. 4, p. 511.

Vanhöffen in the paper cited has discussed *C. perforata* and *Stimpsoni*, retaining them in the genus *Cycloidura*. In the same year I instituted the genus *Parisocladus* for these two species. As I have not been able to consult Vanhöffen's paper, the discussion as to the correct genus for these same species must be postponed.

Zuzara furcifer n. sp.

(Plate XV. Figs. 26, 27.)

Male.—Body non-setose, minutely granulate, chiefly on the posterior margins of the peraeon segments. Head with a small median tubercle on the anterior margin, flanked on either side by 3 other inconspicuous tubercles. Peraeon smooth, 7th segment with a long median process reaching back to $\frac{3}{4}$ length of the telson, apically bifid. Two tubercles on the posterior margin of the lateral portions of 7th segment. Side-plates nearly vertical, 2–5 not greatly narrowed below, postero-inferior angles subacute, a low keel at the junctions of segments 5–7 with their side-plates.

Pleon segments 2–4 distinct though closely fused. Telson convex, 2 pairs of small tubercles near the base, 2 more pairs a little beyond the middle and more widely separated, apex ending in a projection with a rounded notch on either side. The points bounding these notches as well as the median projection apically blunt. The latter is about $\frac{1}{3}$ length of the process on the 7th peraeon segment, and bears a small tubercle on its upper surface at the base and is raised some little way above the lateral points, so that there is a distinct ventral groove.

Antenna 1 reaching to end of 1st peraeon segment, 1st joint twice as long as broad, 2nd $\frac{1}{3}$ length of 1st, flagellum equal to peduncle, 10-jointed.

Antenna 2 reaching to end of 3rd peraeon segment, 5th joint a trifle longer than 4th, flagellum equal to peduncle, 11-jointed.

Epistome tapering proximally to a subacute apex, lateral margins concave.

Maxilliped, 4th–6th joints lobed, inner plate with 1 coupling-hook.

Peraeopod 1, inner apex of 4th and 5th joints with 1, of 6th with 2, stout apically bifid spines, inner margin of finger denticulate, secondary unguis and seta well developed. Outer margin of 3rd joint of peraeopods 2–7 with a few rather long setae. Inner margin of 4th–6th joints of all the peraeopods furry, less so on 6th joint of peraeopod 7.

Male appendages on 7th peraeon segment fairly stout, apically blunt, their distance apart equal to the width of one of them.

Pleopods 1–3 with 4-hooked setae on inner apex of peduncle. Male stylet on pleopod 2 nearly twice length of ramus, tapering evenly.

Pleopods 3–5 with 2-jointed outer ramus. Outer margin of outer ramus of 4th and outer margins of both rami of 5th pleopod with short regularly spaced setae.

Uropods large, lamellate in ♂, inner ramus reaching just beyond apex of telsonic process, outer ramus a little further beyond that, both rami ovate, margins entire and non-setose.

Length: 5·75 mm.; *breadth* (across peraeon segment 7): 3 mm.

Colour: Uniform greyish-white.

Locality: Port Elizabeth. January, 1915. (Mrs. T. V. Paterson.) 1 ♂. (S.A.M. No. A3084.)

Gen. CYMODOCE Leach.

1814. *Cymodoce* Leach, Edinb. Encycl. vol. 7, p. 433.
1914. ,, Barnard, Ann. S.A. Mus. vol. 10, pt. 11, p. 386 (references).

This genus is very well represented in South African waters, no fewer than 10 species having been recorded; the present paper adds 6 more. The value of the new material lies in the fact that in 4 cases the ♂ and ♀ could be definitely correlated. The specimens were taken out of galleries and borings in sponges, as a rule only one ♂ and one ovigerous ♀ inhabiting each burrow. This is an exceedingly valuable method of collecting and the sponges obtained on any expedition should be thoroughly examined. Unless the ♂ and ♀ are found together, it is next to impossible to correlate the sexes with any certainty.

For this reason it is greatly to be regretted that a fine ♂ of *Cilicaea latreillei* Leach was found in a burrow unaccompanied by its ♀. The sponge was a globular form of the genus *Hircinia*, and contained a spherical chamber about 1½ inches in diameter with an opening to

the exterior only just wide enough to accommodate the crustacean ($\frac{1}{2}$ inch). It would be interesting if experiments could be instituted, say with some of the common European species of *Cymodoce*, to discover if these "dwellings" are constructed as a normal means of protection, or only by a pair for the special purpose of hatching a brood in safety.

To be determined also is the manner in which they are made, for they are undoubtedly made by the crustaceans themselves. In the above case, moreover, the dwelling was made deliberately, not a mere taking advantage of a chance crevice or hollow in the sponge.

White has described a *Sphaeroma spongiosum* which, according to Hansen, has been assigned to *Cymodoce* in the British Museum collection by Miers. The species comes from Australia and presumably was found inhabiting sponges, but I have not been able to consult the original description.

Cymodoce setulosa (Stebb.).

1902. *Exosphaeroma setulosa* Stebbing, S.A. Crust. pt. 2, p. 68, pl. 12B.
1914. *Cymodoce setulosa* Barnard, l.c. p. 389.

In 1914 I expressed the opinion that this "species" could not be regarded as the ♀ of *valida*, as Hansen thought, on account of there being other ♀ specimens more in accordance with the ♂ of *valida*. I have since been able to examine 2 co-types of *setulosa* received back from Stebbing. One of them is a ♂ having the appendages on the 7th peraeon segment well developed and the stylet on pleopod 2 also quite distinct though not separated from the ramus. Evidently therefore the specimen is nearly full grown and probably no great change would occur in the ornamentation after the final moult. *C. setulosa* must consequently be regarded as a perfectly good species, the diagnostic features being as mentioned by Stebbing and founded on a ♂ specimen.

The other specimen is smaller and may be either ♂ or ♀ as far as one can tell. It does not help much in deciding what are the characters of the ♀.

Cymodoce tuberculosa Stebb. var. tripartita Rich.

(Plate XV. Fig. 28.)

1873. *Cymodoce tuberculosa* Stebbing, Ann. Mag. Nat. Hist. (4), vol. 12, p. 95, pl. 3, fig. 1.
1902. „ „ Whitelegge, Sci. Res. "Thetis," pt. 4, p. 258, fig. 28 (maxilliped).

1908. *Cymodoce tuberculosa*, Baker, Tr. Roy. Soc. S. Austral. vol. 32, p. 140, pl. 3, figs. 12–15.
1910. ,, ,, id. ibid. vol. 34, p. 76, pl. 21, figs. 1–20.
1910. ,, ,, var. *bispinosa* id. ibid. p. 78, pl. 21, figs. 21–23, pl. 22, figs. 1–7.
1910. ,, *tripartita* Richardson, Wash. Bur. Fish. Doc. 736, p. 29, fig. 27.

For the sake of comparison the following description may first be given.

Male.—Body strongly convex, nearly parallel-sided, minutely granular, setulose, more especially laterally. Head with the anterior margin rounded and minutely denticulate, median process prominent, completely separating the 1st antennae and meeting the epistome, with a small knob, sometimes bifid, on its upper surface. Head and 1st peraeon segment without additional sculpturing. Segments 2–6 each with 2 transverse rows of small tubercles; segment 7 also with 2 rows, but the rows not so distinctly separated from one another; tubercles larger on segments 6 and 7 than on the others.

Pleon segment 4 with 2 *widely separated*, pointed processes, curving slightly inwards and downwards and reaching to just beyond the middle of telson, both inner and outer margins fringed with stiff setae; lateral portion of segment 4 also with a fringe of stiff setae on hind margin.

Telson broader than long, surface covered with granules which are rather larger than those on the rest of the body, in the middle 2 submedian white upstanding glabrous tubercles, somewhat chisel-shaped; apex deeply notched, the lateral lobes bifid and reaching a little beyond the narrowly rounded, entire median lobe; all the lobes with long setae, distal margin with a small tooth just internal to the insertion of the uropods.

Antenna 1, 1st joint with 5 marginal teeth, increasing in size distally, another rather larger tooth immediately ventral to the 1st tooth, flagellum 6-jointed.

Antenna 2, 4th and 5th joints with several long setae on outer margin, flagellum ca. 10-jointed.

Epistome with the process obscurely bifid, or sometimes with indications of 4 teeth.

Maxilliped as figured by Whitelegge.

Male appendages on 7th peraeon segment close together, elongate, slender, tapering to acute apices.

Pleopod 2 as figured by Baker.

Pleopod 3, outer ramus with a distinct though incomplete transverse suture.

Pleopod 4, 2nd joint of outer ramus with 1 plumose seta on apex.

Pleopod 5 with the usual squamose patches on outer apex.

Uropod, outer ramus reaching very little, inner ramus very far, beyond telsonic apex, the former deeply bifid, the latter with the 3 little curved teeth on the apex as described by Baker (1908).

Length: 5 mm.; *breadth:* 2·5 mm.

Colour: In spirit yellowish.

Locality: Umhloti River N. by W. $\frac{1}{2}$ W., distant 8 miles. 40 fathoms. 1 ♂; Umkomaas River NW. by W. $\frac{1}{2}$ W., distant 5 miles. 40 fathoms. 7 ♀ ♀; Port Shepstone N., distant 8 miles. 36 fathoms. 1 ♂. s.s. "Pieter Faure." 18/12/00, 31/12/00 and 14/3/01. (S.A.M. Nos. A4155–6–7 respectively.) In each case found inhabiting siliceous sponges.

Geogr. Distribution: Australia (Stebbing: *tuberculosa*); New South Wales, 25–50 fathoms (Whitelegge); South Australia, in sponges (Baker: *tuberculosa* and var. *bispinosa*); Philippine Islands, inside a pearl oyster (Richardson: *tripartita*).

From the above description it will be seen that the South African specimens belong to the form described by Miss Richardson as *tripartita*. The similarities are the *widely* separated processes on pleon segment 4, and the additional tooth on the lower margin of 1st joint of 1st antenna. The fact that in some of the specimens there are indications of 4, though in most cases only of 2, teeth on the epistomial ridge shows the variability of this feature and consequently its unimportance. With regard to differences, these specimens lack the 2 larger granules on the inner ramus of the uropod, the inner ramus and the processes of the 4th pleon segment are considerably longer, and the median lobe of the telson is distinctly separated from the lateral lobes.

The last three differences might well be ascribed to differences in age; judging from the figure the Philippine specimens were about 3·5 mm. in length, as against 5 mm. in the present examples. A comparison with the figure of *tripartita* leaves little doubt that the Philippine specimens are merely a younger stage.

It may be noted that, whereas the figure is labelled "male" and the description corresponds with the figure, it is stated that "two males and two females were collected" without any indication whether the females resembled the males or, if not, in what respects they differed.

There remains the further question of the relationship of this form

to Baker's var. *bispinosa*. The differences lie in the extra tooth on the 1st joint of the 1st antenna, the bifid lateral lobes of the telsonic apex, and the less widely separated processes on pleon segment 4. None of these appear to me to be sufficiently important as specific characters to separate *tripartita* from *tuberculosa*. But I have thought it useful to retain the former name as a varietal name to indicate the difference in position of the processes, which is the most noticeable feature.

It seems quite possible, even probable, that when a larger series is available the typical form will be found to be the not fully adult stage of *bispinosa*, in spite of Baker's opinion. The only valid variety will then be *tripartita*.

Cymodoce japonica Rich. var. natalensis n.

(Plate XVI. Figs. 1, 2.)

1906. *Cymodoce japonica*, Richardson, Proc. U.S. Nat. Mus. vol. 31 [1907], p. 7, fig. 11 (male).
1906. „ *affinis*, id. ibid. p. 11, fig. 15 (female).
1910. „ *japonica* id. ibid. vol. 37, p. 92.
1910. „ „ id. Wash. Bur. Fish. Doc. 736, p. 28.
1910. „ „ Thielemann, Abh. Bay. Ak. Wiss. II, Suppl. Bd. 3 Abh. p. 53, figs. 48–51.

Besides *C. japonica* and *C. affinis* Miss Richardson is also the authoress of *C. acuta* (1904, Proc. U.S. Nat. Mus. vol. 27, p. 38, figs. 8–10, Japan), and has had the opportunity of comparing the actual specimens. When uniting *affinis* with *japonica* in 1910 Miss Richardson expressed the opinion that *acuta*, though very much like the ♀ of *japonica* (i.e. *affinis*), is the ♀ of an unknown ♂ probably similar to *japonica*.

Were it not for this expresion of opinion, I should unhesitatingly have made both *japonica* and *affinis* synonyms of the earlier *acuta*. From the figures and descriptions no differences can be observed between *acuta* and *affinis* except the presence of 2 points on the 4th pleon segment in the former and their absence in the latter. These, however, may have been so poorly developed as to have been overlooked (*cf.* remarks by Thielemann, l.c. p. 56).

C. acuta is about 10 mm. in length, *affinis* and *japonica* 17½ mm. A "small specimen" of a ♂ is doubtfully referred to this species (1910, l.c. p. 92), distinguished by longer uropods and the *thick* (*sic*) hairs on the body.

In comparison with these the South African specimens are almost

dwarfs, the ♂ measuring only 6·5 mm. The body is thickly clothed all over with *longish* hairs, the telson being more sparsely covered than the rest; the young ♂ and the ♀ are glabrous except for a few short hairs, mostly on the lateral margins.

In the adult ♂ the anterior pair of tubercles on the telson are larger than represented in the figure of *japonica*, transversely oval, and when the body is unrolled fit closely against the pair on the 4th pleon segment, the adjacent margins of the respective tubercles being straight. The posterior tubercles on the telson are flat-topped and setiferous. Telsonic apex and the median lobe broader than in Richardson's figure. Uropod with both rami projecting beyond the telsonic apex. Maxilliped with the lobes on 5th–7th joints very elongate and narrow, as in *C. tuberculosa* Stebb. Male appendages on 7th peraeon segment close together, long and slender. Male stylet on 2nd pleopod half as long again as ramus, slightly tapering, apex subacute.

Ovigerous ♀ with the telson apically blunter than in the figure of *affinis*, and the inner ramus of uropod reaching a little beyond telsonic apex. Both rami of uropod apically blunt. The 2 tubercles on 4th pleon segment as well as those on the telson small but distinct. Mouth-parts modified.

Immature ♂ resembling the ♀ but with the tubercles a little more strongly developed.

In other respects the specimens agree with Richardson's descriptions, so that apart from the smaller size and the relative lengths of the telson and uropods in both sexes there are no very marked characters separating the South African from the Japanese specimens.

A further comparison may also be instituted with *C. bicarinata* Stebb. (1904, Gardiner's Fauna Mald. & Lacc. Archip. vol. 2, pt. 3, p. 712, pl. 52B, and 1905, Herdman's Ceylon Pearl Fish. Suppl. Rep. 23, p. 42, pl. 10c). In size there is scarcely any difference. The apex of the telson, at least in the Ceylon specimen, closely resembles that of the Natal specimens. The differences are as follows: *bicarinata* has 2 distinct longitudinal keels on the telson, ending in bosses, and a median swelling at the base of the median lobe, and also lacks the distinct tubercles on the 4th pleon segment and at base of telson; whereas in the Natal specimens the telson can scarcely be said to be keeled, there is no swelling at the base of the median lobe, and the 2 anterior pairs of tubercles are very distinct and characteristic. Further the lobes of the distal joints of the maxilliped are much more elongate in our specimens than in the figures of *bicarinata*.

Both *bicarinata* and *japonica* are stated to be very closely allied to *C. pilosa* M. Edw. (1840, Hist. Nat. Crust. vol. 3, p. 213), and the question arises whether it would be better to "lump" all the forms together, with or without varietal names for the local forms, or to separate them under distinctive names. At present, however, the published information about all the forms is inadequate; for instance, neither Richardson nor Thielemann have described the maxilliped in *japonica*. It is on the form of the maxilliped and the presence of the *four* tubercles on the telson that I have relied in assigning the Natal specimens to *japonica* rather than to *bicarinata*. The variety is characterised by the *anterior* pair on the telson being *stronger* than the posterior pair.

Length: ♂ 6·5 mm., ♀ 5·5 mm.; *breadth:* ♂ and ♀ 3 mm.

Colour: In spirit yellowish, the tubercles in the adult ♂ white.

Locality: Umkomaas River N.W. by W. ½ W., distant 5 miles (Natal). 40 fathoms. 1 adult and 1 immature ♂, 1 ovigerous ♀, in sponges. s.s. "Pieter Faure." 31/12/00. (S.A.M. No. A4160.)

Geogr. Distribution: Japan and Korea, surface, 59 and 846 fathoms (Richardson); Philippine Islands (Richardson); Japan (Thielemann).

C. bicarinata has been recorded from the Maldive Archipelago and Ceylon; *C. pilosa* from the Mediterranean.

Cymodoce cryptodoma n. sp.

(Plate XVI. Figs. 6, 7.)

Body strongly convex, parallel-sided, minutely granulose, more especially posteriorly, sparsely setulose, the setae mostly developed on the lateral and posterior portions. Head with anterior margin rounded, with a small triangular median point. Head and anterior peraeon segments without additional sculpturing. Peraeon segments 6 and 7 with two transverse rows of small conical tubercles.

Pleon segment 4 entire.

Telson in ♂ with 2 submedian broad ridges or longitudinally elongated bosses, both posteriorly truncate with the margins so formed denticulate, dorsally with a median moderately sharp keel, feebly denticulate, setose and in profile convex, following the curve of the telson; in ♀ with 2 low rounded submedian bosses; apex deeply notched in ♂, the median lobe reaching the same level as the lateral lobes, a semicircular row of granules just anterior to the base of the median lobe, distal margin minutely denticulate; in ♀ apex feebly notched, the median lobe scarcely or not projecting beyond the lateral lobes, distal margin not denticulate.

The granulose sculpturing everywhere much less distinct in the ♀ than in the ♂.

Flagella of 1st and 2nd antennae respectively 7- and 10-jointed.

Male appendages on 7th peraeon segment close together, stout, apically subacute.

Pleopods 1–3, peduncle with 3-hooked setae; male stylet on 2nd half as long again as ramus, tapering very little, apex blunt, both margins minutely spinulose all along.

Uropod in ♂, outer ramus ovate, apex acute, outer margin with 1–2 obscure teeth, inner margin with 3 distinct teeth, inner ramus extending well beyond telsonic apex, ovate-lanceolate, apex acute, outer margin denticulate, both margins of both rami setulose; in ♀ outer ramus short, ovate, apically acute, inner margin with 2 denticles, inner ramus reaching to telsonic apex, oblong, apically truncate, outer distal angle subacute, distal margin obscurely crenulate.

Length: ♂ and ♀ 6·5 mm.; *breadth:* 2·5 mm.

Colour: In spirit pinkish-white.

Locality: Umhloti River N. by W. ½ W., distant 8 miles. (Natal.) 40 fathoms. 1 ♂, 4 ♀ ♀, in sponges. s.s. "Pieter Faure." 18/12/00. (S.A.M. No. A4158.)

Cymodoce tetrathele n. sp.

(Plate XVI. Fig. 3.)

Male.—Body strongly convex, nearly parallel-sided, minutely granular and densely covered on the head, anterior peraeon segments and telson with short setae, posterior peraeon and anterior pleon segments comparatively free from setae, these being present mainly on the lateral portions. Head with anterior margin rather strongly angular, minutely granular just above insertion of 1st antennae, with a minute median point. Head and anterior peraeon segments without additional sculpturing. Segment 5 with 2 more or less distinct transverse rows of tubercles; segments 6 and 7 with 2 distinct rows of tubercles, though on segment 7 the 2 rows are not so clearly separated.

Pleon segment 4 with 2 more or less distinct transverse rows of granules.

Telson broader than long, with 2 transverse rows of minute white granules immediately behind the posterior margin of the 4th pleon segment, central portion raised into 2 submedian conical bosses, setose especially on the outer side, each with a pointed glabrous white apical tubercle; behind these bosses 2 contiguous white glabrous conical

tubercles; apex moderately deeply notched, the median lobe reaching about to the level of the lateral lobes.

Flagella of antennae 1 and 2 respectively 18- and 20-jointed.

Male appendages on 7th peraeon segment close together, tapering to subacute apices.

Pleopods 1–3, peduncle with 3-hooked setae; male stylet on 2nd half as long again as ramus, very slightly tapering, minutely spinulose all over, apex subacute.

Uropod, both rami extending well beyond telsonic apex, inner ramus subulate, apically acute, outer ramus narrow, a little shorter than inner, apically bifid, both rami setulose all over.

Length: 15 mm.; *breadth:* 8 mm.

Colour: In spirit yellowish.

Locality: 33° 9′ S. 28° 3′ E. (off East London). 47 fathoms. 2 ♂♂ in sponges. s.s. "Pieter Faure." 28/12/98. (S.A.M. No. A4159.)

Cymodoce cavicola n. sp.

(Plate XVI. Figs. 4, 5.)

Body in both sexes with very short and sparse setae, chiefly on the posterior part of the body, and more noticeable in the young than the adult; entire surface of head (including epistome and basal joints of 1st antennae), peraeon and pleon finely and closely pitted, the pits being most noticeable on the telson.

Head with moderate-sized median point. Peraeon segments, in addition to the pitting, each with a transverse band of small granules on the posterior margin, more distinct on the posterior segments than on the anterior ones, and not quite so noticeable in the ♀ as in the ♂.

Pleon segments 1-4 also with a few minute granules in addition to the pitting; segment 4 not produced or lobed.

Telson in ♂ with 2 submedian bosses in the centre, distal margin finely crenulate, apical notch rather wide, but shallow, median lobe triangular, extending as far as the lateral lobes, and, like them, terminating in a tiny point, the points on the lateral lobes curved outwards; in ♀ like that of the ♂ except that the distal margin is scarcely perceptibly crenulate and the apical lobes are blunt.

Antenna 1, basal joints entire, flagellum ca. 14-jointed.

Antenna 2, flagellum ca. 8-jointed.

Maxilliped, lobes on 5th–7th joints not greatly elongate. Mouthparts in ♀ modified.

Peraeopod 1, spines on inner margin of 4th–6th joints respectively 2, 3 and 4.

Male appendages on 7th peraeon segment contiguous, moderately long, tapering to subacute apices.

Pleopods 1–3, peduncle with 3-hooked setae; male stylet on 2nd one-third as long again as ramus, not tapering much, apex blunt.

Uropod in ♂, inner ramus scarcely reaching level of telsonic apex, widest across the middle, outer margin therefore angular, apex narrowly truncate, outer distal margin crenulate, outer ramus very short, ovate, outer margin crenulate, upper surface of both rami pitted; in ♀ similar but outer apical angle of inner ramus more acute, and the crenulations on both rami less distinct.

Length: 14 mm.; *breadth:* 5·5 mm.

Colour: In spirit pinkish.

Locality: Rockland Point NW. ¼ W., distant 2 miles (False Bay). 23 fathoms. 1 ♂, 1 ovigerous ♀, and 1 juv., in a calcareous sponge. s.s. "Pieter Faure." 8/6/00. (S.A.M. No. A4162.)

Cymodoce excavans n. sp.

(Plate XVI. Figs. 8, 9.)

Body covered all over with very short and thick pubescence. Head with a moderate-sized median point. Peraeon segments not sculptured. Pleon segments 1–4 also not sculptured, segment 4 not produced or lobed. Telson in ♂ with 2 submedian conical tubercles in the middle, apical notch deep, median lobe reaching to level of the lateral lobes, tapering to a narrowly rounded apex, apices of the lateral lobes blunt; in ♀ with only 2 barely discernible elevations in place of the tubercles, apical notch very shallow, all 3 lobes apically obtuse and of the same length.

Antenna 1, basal joints entire, flagellum ca. 10-jointed. Flagellum of antenna 2 ca. 12-jointed.

Maxilliped, lobes of 5th–7th joints rather elongate, but not so greatly as in *tuberculosa*.

Mouth-parts in ♀ modified.

Pereaopod 1, spines on inner margin of 4th–6th joints respectively 4, 3 and 4.

Male appendages on 7th peraeon segment close together, short, apically acute.

Pleopods 1–3, peduncle with 3-hooked setae; male stylet on 2nd one-third as long again as ramus, apically subacute.

Uropod in ♂, outer ramus extending beyond telsonic apex, ovate-lanceolate, apex acute, outer distal margin crenulate, outer ramus extending to level of telsonic apex, ovate-lanceolate, apex acute, both

margins crenulate; in ♀ rami comparatively shorter than in ♂, inner ramus only just extending to telsonic apex, both rami more ovate.

Length: 10 mm.; *breadth:* 4·5 mm.

Colour: In spirit pinkish or yellowish.

Locality: Cape Hangklip N. by E., distant 12 miles (False Bay). 13 fathoms. 1 ♂ and 1 ovigerous ♀ in a gallery in a sponge; Rockland Point NW. ¼ W., distant 2 miles (False Bay). 23 fathoms. 1 ♂. s.s. "Pieter Faure." 19/11/03 and 8/6/00. (S.A.M. Nos. A4163 and A4174.)

Group EUBRANCHIATAE.

Gen. CYMODOCELLA Pfeffer.

1887. *Cymodocella* Pfeffer, Jahrb. Wiss. Anst. Hamb. vol. 4, pp. 18, 20, 69.

1914. „ Barnard, Ann. S.A. Mus. vol. 10, pt. 11, p. 421 (references).

Cymodocella cancellata n. sp.

(Plate XVI. Figs. 10–14.)

Male.—Body without setae or pilosity, surface between the segments with very minute honeycombed reticulation. Head with anterior margin nearly straight, thickened, with a small projecting point separating 2 circular pits for the insertion of the 1st antennae, a transverse ridge between the eyes, obscurely quadrituberculate. In front of this ridge are 2 submedian tubercles and a median group of 3, of which the middle one is the largest; a tubercle on inner margin of eye and 2 submedian ones just above the front margin of head. Rest of the surface minutely granular. Eyes normal in size.

Peraeon segment 1 with antero-inferior angles reaching well forward, inferior margin thin; centre of segment with a transverse row of 6 large round-topped tubercles; posterior margin with a raised transverse ridge, swelling out into 10 rounded tubercles; rest of the surface irregularly granulate.

Peraeon segments 2–6 each with a raised transverse ridge across the centre, swelling out into 10 rounded tubercles, the outermost being just above the junction with side-plate; a more or less regular row of granules in front of and behind the ridge on each segment.

Peraeon segment 7 with a similar ridge forming the hind margin and somewhat projecting, especially the two submedian tubercles, anterior portion of the segment granular.

Side-plates deep, narrowing to a subacute apex, 6th somewhat blunter, the sutures with segments fairly well marked, each with a ridge which is a continuation of that on the segment, swelling out into a large rounded tubercle at the junction with the segment and thence narrowing to the apex.

Pleon granular, except the first segment, which is smooth, bilobed and partly concealed, suture of 2nd and 3rd segments not easily distinguished among the granules, posterior margin of 4th finely tuberculate, 2 submedian tubercles being more prominent than the rest; a large lateral round-topped tubercle and a smaller adjacent one appear to belong to the 4th segment and not to the telson, but the suture is difficult to trace.

Telson of the normal *Cymodocella* type, but with 2 large submedian apically acute projections; whole surface of telson deeply pitted, each projection with a large triangular pit on upper surface with several granules in it.

Antenna 1 inserted into a rounded pit on anterior margin of head, 1st and 2nd joints thickened and indurated, roughly quadrangular in section, 2nd nearly half length of 1st, 3rd shorter than 2nd, more slender and inserted at right angles to 2nd, flagellum a little more than twice length of 3rd joint, 6-jointed.

Antenna 2 longer than 1st, peduncular joints increasing in length, flagellum equal to peduncle, 9-jointed.

Epistome rather large, proximal end blunt, lateral margins gently concave; upper lip not projecting much from the arms of the epistome, distal margin setose.

Lower lip as in *C. sublevis* Brnrd. (l.c. pl. 36B).

Mandibles, cutting-edge obscurely bidentate, secondary cutting-edge in left only, bidentate, spine-row with 1 spine in left, 3 in right, molar strong, denticulate, palp slender with both 2nd and 3rd joints a little longer than 1st.

Maxilla 1 with 8 spines on outer plate and 3 plumose setae on inner.

Maxilla 2 with 8 spine-setae on outer and middle plates; inner plate setose with 2 stout plumose setae on inner distal margin.

Maxilliped with 4th–6th joints more produced internally than in the figure of that of *C. sublevis*.

Peraeopods similar to those of *sublevis*, but rather stouter, fur on margins of 4th–6th joints thicker, armature of the joints similar; peraeopod 2 not greatly longer or more slender than 1.

Male appendages on 7th peraeon segment contiguous at base, but slightly separated distally, stout, apically subacute and excavate on inner distal margin.

Pleopods 1–3, peduncle with 3 hooked setae; inner ramus in 1st and 2nd half as long again as outer; rami in 3rd subequal; male stylet on 2nd $2\frac{1}{2}$ times as long as ramus, apically enlarged into an ovate spatulate form, the inner margin with recurved serrations.

Uropods not reaching telsonic apex, inner ramus subtriangular, widening distally, distal margin excavate, outer ramus much smaller than inner, ovate, apically blunt.

Length: 5 mm.; *breadth:* 2·5 mm.

Colour: In spirit, whitish-brown, the tubercles and telsonic processes whiter than the rest.

Locality: Cove Rock NE. by E. $\frac{1}{2}$ E., distant 4 miles (off East London). 22 fathoms. 1 ♂. s.s. "Pieter Faure." 6/8/01. (S.A.M. No. A3831.)

This pretty species is named after the cancellate appearance of the sculpturing on the peraeon segments. A somewhat similar development of dorsal tubercles is found in two other South African Sphaeromids: *Exosphaeroma porrectum* Brnrd. and *Sphaeramene polytylotos* Brnrd.

Gen. CASSIDIAS Rich.

1916. *Cassidias* Richardson, Proc. U.S. Nat. Mus. vol. 31 [1907], p. 20.
1910. „ Thielemann, Abh. K. Bay. Ak. Wiss. II. Suppl. Bd. 3 Abh. p. 56.
1914. *Vallentinia* Stebbing, Proc. Zool. Soc. Lond. 1914, p. 351 (nom. preocc.).
1914. *Euvallentinia* id. ibid. p. 944.

In 1905 Hansen suggested that a new genus was necessary for Cunningham's *Cymodocea darwinii* and in 1914 Stebbing acted on this suggestion, apparently overlooking the fact that Miss Richardson had already in 1906 instituted a suitable genus, and indeed had placed *C. darwinii* in it. This genus is *Cassidias*, of which the type-species is *C. argentinea* Rich.

Richardson's definition of the genus is as follows: "Mouth-parts of ♀ metamorphosed. Seventh segment of thorax not produced backwards in any process. Abdomen composed of 2 segments, the 1st of which is not produced backward in a median process. Terminal abdominal segment with a narrow notch, which is sometimes concealed dorsally, but a groove is formed beneath by the infolding of the margins. Both branches of the 4th pair of pleopods are similar, fleshy, with transverse folds and without marginal setae. The exopod of the 3rd pleopod is 2-jointed. The branches of the uropods are similar, the outer one being capable of folding under the inner one."

It must be noted that this definition is based on the female only; for the sexual differences one must turn to *C. darwinii*. Here the male seems to differ from the female in the greater development of the boss on the telson, the swelling of the lateral portions of the 5th peraeon segment, and the development of a tooth on the base of the hand of the 1st peraeopod (gnathopod).

Here a difficulty arises in regard to the present species. The sexual differences are very much more pronounced than in *C. darwinii*. In fact, the rudimentary character of the inner ramus of the uropods might even be thought to necessitate the erection of a new genus. And this may indeed become necessary in the future, but for the present I prefer to place the new species in the genus *Cassidias* because the male of the type-species remains unknown. Very probably when it is discovered it will be found to resemble that of *darwinii* more or less closely, and a new genus can then be made for the species described below.

In 1910 Thielemann described a third species—*C. trituberculata* from Japan. This also is known only from the female, and in the character of the telsonic apex differs rather conspicuously from the type-species. In other respects it seems to be a true *Cassidias*, the unmodified mouth-parts possibly being due, as Thielemann remarks, to immaturity. Nevertheless, when the male is discovered, it would not be surprising if it had to be removed to another genus.

Both *C. argentinea* and *darwinii* inhabit the southern portions of Southern America and the neighbouring islands.

Cassidias africana n. sp.

(Plate XVI. Figs. 15–17.)

Body strongly convex, nearly parallel-sided, anteriorly (at least) almost smooth, glabrous. Head with anterior margin slightly angular, with a short blunt median process. Head and 1st peraeon segment minutely shagreened. Peraeon segments with the posterior margins becoming increasingly more granulose posteriorly, the granules on segments 5 and 6 being more or less distinctly segregated into 2 transverse rows. Each side-plate with a little tuft of soft setae.

Pleon segment 4 entire, its posterior margin granulose, the lateral sutures also marked with granules, one tuft of setae on the lateral portion of segment 4 and another submedianly.

Telson broader than long, surface granulose, the central portion in ♂ produced into a long, though stout, median process, apically subacute, reaching back considerably beyond the telsonic apex; in ♀ a similar though very much smaller process, not nearly reaching the

telsonic apex; distal margin in ♂ minutely serrulate, apex with a simple narrow slit similar in both sexes.

The ♂ is everywhere more strongly granulose than the ♀.

Antenna 1, 1st joint stout, anterior apex not produced along 2nd joint, flagellum ca. 8-jointed.

Antenna 2, flagellum ca. 2-jointed.

Mouth-parts in ♀ modified. Maxilliped in ♂ with 4th–6th joints lobed.

Peraeopods with a few pectinate spines on inner margins of 4th–6th joints, these joints also minutely setulose on inner margins, but not furry.

Male appendages on 7th peraeon segment short, stout and apically blunt, their distance apart equal to the width of one of them.

Pleopod 1, peduncle very broad, inner apex with 3 hooked setae; inner ramus much broader than long, triangular, outer ramus longer than broad, oblong, apically truncate.

Pleopod 2 similar to 1st, male stylet inserted near the apex of inner ramus, equal in length to the ramus, consequently extending considerably beyond the ramus, rather stout, apically blunt.

Pleopod 3 similar, but inner ramus larger, outer ramus 2-jointed.

Pleopods 4 and 5, both rami with strong transverse folds, outer margin of outer ramus of 4th pleopod with fine setules.

Uropod in ♂ with the inner ramus reduced to a mere point on the peduncle, outer ramus elongate, stout, cylindrical, but flattened on the inner surface and widening distally, rather strongly granulose, especially distally, where 2–3 of the granules are like little teeth projecting inwards, setose chiefly on the outer distal margin; in ♀ the rami not altered, inner ramus oblong, outer ramus rather smaller, ovate, both rami apically truncate, with their margins sparsely setulose.

Length: ♂ 5·5 mm., ♀ 5 mm.; *breadth:* ♂ 2·5 mm., ♀ 2 mm.

Colour: In spirit, yellowish.

Locality: Umkomaas River NW. by W. ½ W., distant 5 miles. 40 fathoms. 3 ♂♂, 6 ovigerous ♀♀; Tugela River N. by W. ¾ W., distant 15 miles. 40 fathoms. 2 ♂♂, 2 ♀♀. s.s. "Pieter Faure." 31/12/00 and 10/1/01. In both cases living in sponges. (S.A.M. Nos. A4153 and A4154.)

Group PLATYBRANCHIATAE.

Artopoles n. g.

Body elliptical, depressed, the margin ciliate. Head laterally enclosed by the 1st peraeon segment. Peraeon segment 7 not as

wide as segment 6 and not forming part of the lateral margins. Telson apically obtuse. Epistome produced forwards between the 1st antennae as a narrow spiniform process. 1st and 2nd joints of antenna 1 expanded. Maxilliped with 4th–6th joints inwardly produced, 7th joint neither long nor slender. Peraeopods normal, the anterior ones without natatory setae and with the 6th joint not enlarged, 4th joint of peraeopod 1 not produced. Inner ramus of pleopod 1 twice as long as broad. Outer ramus of pleopod 3 undivided. Uropod with peduncle and inner ramus fused, lamellate, outer ramus rudimentary, minute, tubercular.

This genus is closely allied to *Paracassidina* Baker, but differs in the 1st peraeopod and the narrow 7th peraeon segment. The degeneration of the outer ramus of the uropod has been carried further, and the antero-lateral angles of the 1st peraeon segment are more produced.

In general shape there is a striking though superficial likeness between the present species and the South Australian *Amphoroidella elliptica* Baker, belonging to the Eubranchiate group.

Wishing to dedicate this genus to Mr. W. H. Baker, who has very materially increased our knowledge of the South Australian Sphaeromids, and finding that with various suffixes the name is pre-occupied, I have taken the liberty of translating it into Greek.

Artopoles natalis n. sp.

Female.—Body depressed, the central portion slightly convex, elliptical, the margins finely ciliate, dorsal surface minutely shagreened. Head embraced laterally by the 1st peraeon segment, anterior margin slightly arcuate with a small blunt median point. Eyes moderately prominent.

Peraeon segment 1 produced forwards laterally, where it is more than twice as long as in the centre. Segments 2–4 short dorsally and laterally; segment 5 considerably longer laterally than dorsally; segment 6 shorter laterally than segment 5, segment 7 not reaching the lateral margins.

Pleon segments 2–4 (the 1st is invisible) fused, only segment 2 reaching the lateral margins.

Telson basally forming part of the lateral margin, then rapidly narrowing to the broadly rounded, subtruncate apex, central portion slightly vaulted dorsally.

Epistome projecting forwards between the 1st antennae as a narrow spiniform process.

Antenna 1 with first 2 joints expanded, 1st longer than broad,

2nd as long as 1st on its anterior margin, the anterior (outer) margin longer than the inner, 3rd joint slender, extending as far as outer apex of 2nd, flagellum a trifle longer than 3rd peduncular joint, 5-jointed, with sensory setae.

Antenna 2 extending to end of 1st peraeon segment, 1st–3rd joints subequal, 4th and 5th slightly longer, subequal, flagellum subequal to peduncle, 7–8-jointed.

Mouth-parts normal. Maxilliped with 4–6 joints equally produced internally, 7th joint rather short and stout, almost obovate, apex rounded.

Peraeopods rather stout, subequal; peraeopods 1 and 2 similar, 1 a little stouter, with the 4th joint broader, outer apex of 4th with a very strong apically pectinate spine, inner apex of 4th and 5th in peraeopod 1 with a smaller pectinate spine, in peraeopod 2 with a seta, unguis strong, secondary unguis at apex of 7th joint tubercular; peraeopods 3 and 5, outer apex of 4th joint with a strong pectinate spine; peraeopod 4, apices of 4th and 5th joints with a strong pectinate spine; peraeopod 6 similarly armed, with 2 similar spines on each side of the median one on 5th joint; peraeopod similarly armed, but the median spine on 5th joint long, extending to apex of unguis and flanked with 4 spines, 5th joint relatively longer than in the preceding peraeopods; inner margins of 4th–6th joints in all the peraeopods smooth.

Pleopod 1, inner ramus twice as broad as long, outer margin concave, setae on both rami long.

Pleopods 2 and 3, outer ramus narrower than inner. Inner apex of peduncle in pleopods 1–3 with 3 hooked setae. Outer ramus of pleopod 3 undivided.

Pleopod 4, both rami thin, nonsetose, undivided.

Pleopod 5, rami thin, nonsetose, outer ramus divided, squamiferous processes not prominent.

Uropod, peduncle and inner ramus completely fused, lamellate, as long as telson, outer ramus a minute but distinct tubercle inserted in a notch quite near the base of the outer margin.

Length: 4 mm.; *breadth:* 3·25 mm.

Colour: Pale straw, with scattered irregular pigment-specks, eyes black.

Locality: Natal coast, 6 fathoms, off coral. 1 non-ovigerous ♀, 2 juv. (H. W. Bell-Marley), May, 1917. (S.A.M. No. A4566.)

This interesting form was received too late for figuring in the present paper.

Tribe VALVIFERA.

This tribe contains two main families, the *Astacillidae* and *Idoteidae*, with two other families, the *Pseudidoteidae* and *Amesopodidae* intermediate in characters between them. The differences between these families consist in the shape of the body, the structure of the anterior peraeopods, the proportional size of the ramus of the uropod and the presence or absence of a second (rudimentary) ramus, the structure of the first pair of pleopods, and a feature to be mentioned below. As regards the first pleopods the *Idoteidae* have a short peduncle with soft, simple, unornamented rami; the *Astacillidae* have a long peduncle with the rami frequently transformed in shape and modified, and more or less strongly chitinised.

Of the intermediate families the *Pseudidoteidae* combine the Idoteid shape and anterior peraeopods with the Astacillid uropod and first pleopod; the same is true of the *Amesopodidae* except that the body-shape is intermediate and the character of the first pleopod is unknown.

Turning to the features distinguishing this tribe from all the others I may mention one which has not, so far as I am aware, been insisted on—the position of the opening of the vasa deferentia in the male. In Isopods generally (and in Amphipods) the vasa deferentia open on the *seventh peraeon* segment, either about the middle of the segment or on the posterior margin.

In the *Valvifera*, however, the openings have shifted on to the *first pleon* segment. The two positions can be well seen by comparing a Sphaeromid with an Idoteid.

Bate and Westwood (Brit. Sess. Crust. vol. 2, pp. 368, 380) quite correctly describe the *position* of the male-stylets (through which the vasa deferentia open) in *Arcturus longicornis* and (with figure) *Idotea tricuspidata* (= *baltica*). On the other hand Gerstaecker (Bronn's Thierreich, Bd. 5, Abt. 2, p. 101) does not mention specially for the *Valvifera* the position of the openings of the vasa deferentia in the text, but figures them for *Idotea* (*Mesidotea*) *entomon* on the first pleon segment (pl. 4, fig. 12). Sars represents the male-stylets of *Idotea baltica* as on the seventh peraeon segment (pl. 32).

In all the examples of *Valvifera* that I have examined the male-stylets open on the *first pleon* segment, although I have been guilty of carelessness in this respect in my recent descriptions of South African *Valvifera*.

So much for the *position* of the openings of the vasa deferentia. In the majority of Isopods they do not open flush with the ventral surface

but at the apices of two processes called penes—penial filaments or male-stylets. Gerstaecker (l.c. p. 102) gives *Idotea* and *Aega* as examples in which such processes are absent, and his figure of *I. entomon* supports this. But this is certainly wrong for *Idotea*, unless *I. entomon* is an exception, for in all the species of *Idoteidae* which I have examined (all those recorded from South Africa and Plymouth) these processes are very evident. As can be seen by dissection they are traversed by the vasa deferentia.

Thus it may be stated that in the *Valvifera* the vasa deferentia open at the end of styliform processes on the first pleon segment.

But within the tribe the two main families are sharply divided by the fact that the processes are separate in the *Idoteidae* * and united into a single process in the *Astacillidae*. At any rate this latter statement is correct for all the South African species, for *Astacilla longicornis*, *Arcturella danmonensis*, *A. dilatata*, *Arcturus baffini*, *Antarcturus antarcticus* and *A. meridionalis*. I am indebted to Dr. Calman for examining the last four species. Thus I am unable to understand Bate and Westwood's statement (l.c. p. 368) that in *A. longicornis* "there is a pair of minute organs terminated by two somewhat cultrate plates"; in the specimens I have examined there is only a single median process tapering slightly to a blunt apex.

Similarly when Koehler (Bull. Inst. oc. Monaco, No. 214, p. 18), describing the male of *Arcturopsis senegalensis*, says: "entre les deux pleopodes [de la premiere paire] se trouve le double penis habituel," and again (l.c. p. 52) for *Astacilla mediterranea*, "le penis . . . a la forme habituelle," there must be some mistake in this author's observation. Calman also in 1909 (Lankester's Treatise Crust. p. 212) states that there is only the single penis in the *Arcturidae* (=*Astacillidae*).

The vasa deferentia still remain separate throughout their whole length and open by separate orifices at the apex of the fused processes. The coalescence of the two processes in the *Astacillidae* is most probably to be ascribed to the narrowing of the body.

Unfortunately the published accounts of *Amesopous richardsonae* Stebb. and *Pseudidotea bonnieri* Ohlin gave no indication of the character of the copulatory processes in these intermediate families. From the character of the first pleopod and the uropod in *P. bonnieri* I feel sure that there is a single median process; such is also probably the case in *A. richardsonae*, but of this one cannot be certain. On applying to Mr. Stebbing for light on this point, he very kindly re-

* *Synidotea hirtipes* forms an exception, having a single process, which is, however, not narrow as in the Astacillids but broad and apically blunt.

examined the type-specimen of *Amesopous* but failed to find the organ in question, owing possibly, so he says, to the specimen not being fully adult.

Coming now to the new genus described below, *Holidotea*, we find a form which in general facies is a true Idoteid, apparently belonging to the group with dorsal eyes containing *Mesidotea* and *Chiridotea*, but without the cleft margins of the head characteristic of these genera. Rather unexpectedly, however, it has only a single median process and a modified first pleopod, and is therefore far removed from the true Idoteids. On the other hand, peraeopods 2–4 *are* Idoteid in structure and resemble somewhat those of *Pseudidotea bonnieri*.

The relationships between the families are set out in the following table:

	Idoteidae.	*Pseudidoteidae.*	*Amesopodidae.*	*Astacillidae.*
Body form .	Flattened	Flattened	Flattened	Cylindrical
Peraeon segment 4	Never elongate	Never elongate	Not elongate	Often elongate
Peraeopod 1 .	Prehensile, often subchelate	Prehensile	Stout, setiferous	Slender, setiferous
Peraeopods 2–4	Stout	Stout (moderately)	2 stout, 3 and 4 absent	Slender, setiferous
Penis . .	Double	Single (at least in *Holidotea*)	?	Single
Pleopod 1 .	Soft, simple	Chitinised, modified	?	Frequently chitinised and modified
Ramus of uropod	Large	Small	Small	Small
Second ramus of uropod	Absent	Present	Present	Present

Family PSEUDIDOTEIDAE.

1901. *Pseudidoteidae* Ohlin. Svenska Exp. Magellan. vol. 2, p. 276.
1905. „ Stebbing in Herdman's Ceylon Pearl Fish. Suppl. Rep. 23, p. 43.

Holidotea n. g.

Head with lateral margins not cleft. Eyes dorsal. Side-plates distinct on all segments except first. Pleon composed of a single segment with two incomplete basal grooves. Flagellum of second antenna 2-jointed. Inner plate of first maxilla with 3 plumose setae.

Maxilliped 7-jointed. First peraeopod stout, 6th joint ovate. Second to fourth peraeopods longer and more slender, 6th joint slender, finger straight. Fifth to seventh peraeopods stout. Uropod with a minute ramus. Vasa deferentia opening by a single median process on first pleon segment.

The first portion of the generic name refers to the uncleft lateral margins of the head.

Holidotea unicornis n. sp.

(Plate XVI. Figs. 18–23.)

Body smooth but with a thick felty covering of dirt and often Diatoms and Vorticella; more convex in ♂ than ♀. Head twice as broad as long, anterior margin broadly excavate, lateral margins entire, straight or slightly emarginate, antero- and postero-lateral angles quadrate; central portion of head convex and gibbous, simple in ♀ but armed in ♂ with a large flat triangular tooth or horn arising from the posterior margin, the posterior face of the tooth concave, apex subacute, sides denticulate. Eyes prominent, dorsal, circular.

Peraeon segments 1–4 subequal in length, 2 and 3 wider than 1 and 4, segments 5–7 decreasing in width, 5 abruptly narrower than 4, all the segments dorsally smooth except 5–7 in ♂, each of which bears 2 obscure submedian tubercles. Side-plates distinct on all the segments except 1st, those on 2–4 subtriangular in ♂, the antero-lateral angles being prominently produced and subacute, quadrate and not so produced in ♀, 5–7 in both sexes shallow, with rounded margins. Segment 4 in ♂ with a median ventral spiniform projection.

Pleon ovate, widening slightly and then tapering to a subacute apex, lateral margins evenly convex, with 2 little notches at the base indicating the 2 incomplete basal sutures, both rather indistinct; dorsal surface in ♂ with 2 short submedian keels (being a continuation of the ornamentation on the peraeon segments 5–7) and a circular median tubercle just beyond the centre, in ♀ smooth.

Antenna 1 reaching to middle of 3rd joint of antenna 2, 1st joint stout, 2nd nearly as long but more slender, 3rd much shorter than 2nd, flagellum as long as 2nd, tipped with setae.

Antenna 2 reaching to end of 2nd peraeon segment, 2nd joint stout, 3rd–5th becoming successively more slender and a little longer, 2nd and 3rd joints triangular in section, the three margins denticulate, more strongly so in ♂ than ♀; surface of 4th, especially towards apex, scabrous, flagellum subequal to 5th joint, 2-jointed, 2nd joint a little shorter than 1st and tipped with a few setae and a gently curved spine.

Upper and lower lips and mandible normal; molar rather prominent.

Maxilla 1, inner plate with 3 plumose setae, outer plate with 9 almost simple spines.

Maxilla 2, outer and middle plates each with 3 setae.

Maxilliped 7-jointed, 5th joint largest (except 2nd), 7th small, inner plate broad, apically truncate, coupling-hook apparently absent, epipod ovate-lanceolate.

Peraeopod 1 rather stout, subchelate, 4th joint abruptly wider than 3rd or (to a less extent) 5th, inner margin of 4th–6th joints crenulate and armed with spine-setae, 6th ovate, finger straight with small accessory unguis and a transverse row of setae near the base.

Peraeopods 2–4 longer and more slender than 1st, 4th joint abruptly wider than 5th and (to a less extent) 3rd, outer apical angle denticulate, 6th longest (except 2nd), narrow, finger $\frac{2}{3}$ length of 6th, slender, with small accessory unguis.

Peraeopods 5–7 stout, 3rd–5th joints subequal, their outer surfaces denticulate, 6th equal to 4th plus 5th, its outer margin, especially apically, scabrous or denticulate, finger stout, gently curved, with a slender spine in place of the accessory unguis.

Marsupial plates on 2nd–4th segments large, overlapping.

Male appendage or penis attached to 1st pleon segment between the bases of 1st pleopods, slender, apex bilobed, reaching to the end of the peduncle of 1st pleopods.

Pleopod 1 in ♂, peduncle long with 3 hooked spines near the base of inner margin, inner ramus reduced, shorter than peduncle, feebly setose, outer ramus not quite twice length of peduncle, tapering, curved outwards at the apex; inner margin straight and smooth, outer concave before the bent apex and set with spines, which become more closely set and longer distally; apex with a little notch hidden in setules; the peduncle and outer ramus are more strongly chitinised and have a yellowish tinge.

Pleopod in ♀ considerably smaller than 2nd, peduncle with 3 hooked spines in middle of inner margin, outer margin setose, inner ramus reduced, shorter than peduncle, inner margin setulose, outer ramus a little longer than peduncle, tapering to a blunt apex, outer margin setose.

Pleopod 2, peduncle short, without hooked spines, rami equal in length, outer broader than inner, apices truncate, apices and outer margin of outer ramus with long plumose setae; stylet in ♂ as long as inner ramus, straight, distal half narrower than basal half, apex subacute, margins distally minutely crenulate.

Pleopods 3–5 ovate-lanceolate.

Uropod tapering, inner margin straight, outer evenly convex, setose ramus very small, tipped with a spine and setules; the presence or absence of a second, concealed, ramus could not be determined owing to the impossibility of removing the dirt.

Length: ♂ 5·5 mm., ♀ 6·25 mm.; *breadth*, ♂ 2·5 mm., ♀ 3 mm.

Colour: In spirit dirty pinkish, eyes reddish.

Locality: Walker Point (near Knysna) NE. by N. ½ N., distant 7 miles. 47 fathoms. ♂ ♂, ovigerous ♀ ♀ and juv.; Knysna Heads N., distant 10 miles. 52 fathoms. ♂ ♂, ♀ ♀ and juv.; Cape Seal W. by N. ½ W., distant 7 miles. 39 fathoms. 1 ♀; Agulhas Bank (without more exact locality, depth or date). 1 ♂, 5 ♀ ♀. s.s. "Pieter Faure." 11/10/00, 2/7/02 and 20/4/06. (S.A.M., Nos. A3863, A4116, A4188 and A4189 respectively).

Family ASTACILLIDAE.

For references see Barnard, Ann. S.A. Mus. vol. 10, pt. 7, p. 206, 1914, and add:

1913. Richardson, 2me Exp. Antarc. franç. Isopodes, p. 14.

It is with great regret that, on the vexed question of the number of marsupial plates in the members of this family, I find myself in opposition to Prof. Koehler. This author (1911, Bull. Inst. oc. Monaco, No. 214) has stated that in all the species examined by him the number of pairs of marsupial plates is *constantly three*. Amongst these species was *Astacilla longicornis* (Sow.).

A. longicornis is a common species at Plymouth, and is found both on Hydroids and among the spines of *Echinus esculentus*. I have recently examined nearly 50 female specimens of this species in various stages and in every case I have been able to find *four* pairs of marsupial plates. In the immature nonovigerous stage the pair on the 1st segment are quite as clearly defined as in the ovigerous stage. This pair does not increase in size so much as the 2nd and 3rd pairs and does not take any part in the formation of the actual brood chamber. The two plates overlie the "vibratory plates" of the maxillipeds, and, like these, evidently help to aërate the brood chamber.

In the nonovigerous specimen of *A. mediterranea* mentioned below all 4 pairs of plates are very distinctly seen. They have not reached their full size yet, and the 1st pair embrace the vibratory plates instead of overlapping them.

In this latter specimen the 1st–3rd pairs are very easy to observe (without any dissection), because they are in an early stage of development. They are more sac-like than the fully developed plates and

contain a large amount of coagulated granular matter. At a later stage, as seen in *A. longicornis*, this granular matter becomes greatly reduced and is restricted to the basal and central portion of the plate, which has become very much thinner and is surrounded by a perfectly transparent border. In fact, in the 1st plate of *A. longicornis* by far the greater portion of the plate is transparent. Consequently, I believe, it is due to this transparency and the fact that the plate lies *flat* against the ventral surface that this 1st pair of plates has been overlooked.

Possibly also the method of preservation may account for it. At any rate, Koehler's statement must be regarded as incorrect.

In *Arcturella corniger* (Stebb.) there are also definitely four pairs of marsupial plates, as I have previously recorded in the description of *A. hirsutus*, which proves to be a synonym of *corniger* (see below). But in the species of *Arcturella* described below I believe there are truly only three pairs of plates present.*

On a further point also I am obliged to differ from the said author.

The genus *Arcturopsis* was founded to receive certain forms which were closely allied to *Arcturella*, but were said to differ in the presence of a ventral process on the 3rd (or in one species on the 5th) peraeon segment in the ♂. This process was developed to a varying degree, and was stated to occur in no other Astacillid ("il ne se rencontre chez aucun autre Arcturidé"). When describing *Arcturopsis hirsutus* in 1914, I placed it in this genus on account of a small tubercle on the 3rd segment in the ♂, which, though not developed to any such size as in Koehler's species, was evidently homologous.

On revising, however, all the species of Astacillids at my command for the present paper, I found an exactly similar process on the 3rd segment in *Arcturella danmonensis* (Stebb.) and in *Astacilla longicornis*. I then applied to Prof. G. O. Sars to know if such a process was present in the type-species of the genus, *Arcturella dilatata* Sars. Prof. Sars kindly examined his specimens and corroborated my belief that *A. dilatata* did possess a process, albeit only "small, somewhat conical, anteriorly pointing" (Sars. in litt. 5/8/16). He also confirmed my observation of its presence in *A. longicornis*.

Dr. Calman, to whom also I mentioned the matter, kindly examined some species in the British Museum collection with the result that he

* Note to p. 191 in Hansen, Dan. Ingolf. Exp., iii, 5, 1916. The presence of a 5th pair of marsupial plates in *Arcturus baffini* is rather astonishing in view of the strongly prehensile nature of the 5th peraeopods and the position assumed by the body. Hansen found 5 pairs also in two species of *Pleuroprion*; but this is less remarkable as this genus is more Idoteid in shape.

confirmed Sars' report of the presence of a process in *A. dilatata* and also in *Arcturus baffini*; "but it is so small in the latter case that it can hardly be regarded as of systematic importance" (Calman in litt. 31/7/16). Calman states that it is absent in *Antarcturus antarcticus* and *meridionalis*. It is also absent in the specimens I described in 1914 as the male of *Antarcturus kladophoros* Stebb., in *Astacilla bacillus* n. sp. and in the only two of the new species assigned to *Arcturella* of which the male is known.

It seems, therefore, that no great importance can be attached to the presence or absence of such a process, and that it cannot be used to delimit the genera in this family. But its presence in *Arcturella dilatata* renders unnecessary the genus *Arcturopsis*, which must therefore sink into synonymy.

But Koehler described one species in which the process was on the *fifth* segment—namely, *A. melitensis*; he did not, however, think that a new genus was necessary for this species and so placed it in *Arcturopsis*. On the contrary, I think he might well have instituted another genus for it, and I propose here, since *Arcturopsis*, void ab initio, cannot be used, the name—

Arctopsis n.g.

Like *Arcturella* Sars, but with a ventral process on the *fifth* peraeon segment in the male.

One species: *A. melitensis* (Koehler) 1911.

Gen. ASTACILLA Cordiner.

1795.	*Astacilla*	Cordiner, Singular Subjects of Nat. Hist. sect. Astacillae.
1893.	„	Stebbing, Hist. Crust. p. 370.
1897.	„	Sars, Crust. Norw. vol. 2, p. 87.
1901.	„	Ohlin, Svenska Exp. Magellan, vol. 2, p. 266.
1905.	„	Stebbing in Herdman's Ceylon Pearl Fish. Suppl. Rep. 23, p. 46.
1905.	„	Richardson, Bull. U.S. Nat. Mus. No. 54, p. 323.
1911.	„	Koehler, Bull. Inst. oc. Monaco, No. 214, pp. 1, 44, etc.
1914.	„	Vanhöffen, Deutsche Südpol. Exp. vol. 15, pt. 4, p. 523.

Astacilla bacillus n. sp.

Body perfectly smooth, non-granular, nonsetose. Limits of head and peraeon segment 1 scarcely visible. Eyes horizontally pear-

shaped, narrowing posteriorly. Antero-lateral angles of 1st peraeon segment subacute. Peraeon segments 2 and 3 subequal. Peraeon segment 4 in ♂ exceedingly elongate and slender, a little over half the total length (11 mm.), in ♀ moderately slender, a little less than half the total length (4 mm.), the antero-lateral angles slightly projecting. Segment 5 larger and deeper than segments 6 and 7, which are subequal. No ventral process on either 3rd or 5th segment in ♂.

Pleon longer than last 3 peraeon segments together, composed of 2 short segments in advance of the telson, which has an angular tooth on the lateral margin and a subacute apex.

Antenna 1, 2nd and 3rd joints both shorter than 1st, flagellum longer than peduncle.

Antenna 2, flagellum 2-jointed, with terminal unguis, lower margin with one row of denticles situate on inner side.

Peraeopod 1 geniculate between 2nd and 3rd joints, 3rd and 4th joints subequal, 5th equal to 3rd plus 4th, 6th a little shorter than 5th, 7th short without unguis but tipped with setae, 5th and 6th densely setose.

Peraeopods 2–4 increasing in length, projecting straight in front, not geniculate, 4th and 5th joints subequal, 6th a little longer, all three with long plumose setae.

Three pairs of marsupial plates. The inset-piece of that on the 4th segment can here scarcely be called an "inset" piece for it is equal in length to $\frac{1}{4}$ of the total length of the plate, subtriangular in shape, and separated from the main portion by a slightly angular suture, nonsetose. The plate is probably not fully developed, but any further development would probably affect only the transverse width and not the relative lengths of the anterior and posterior margins.

Male appendage on 1st pleon segment narrow-pyriform, tapering to an acute apex.

Pleopod 1, peduncle with 4 hooked spines on middle of inner margin, rami subequal, not modified in ♂.

Pleopod 2 in ♂, stylet half as long again as ramus, stout as far as apex of ramus and then narrowing rapidly to the deeply bifurcate apex.

Uropod, concealed ramus with 2 apical setae.

Length: ♂ 20 mm., ♀ 10 mm.; *breadth:* ♂ 1 mm., ♀ 1 mm.

Colour: In spirit pale yellowish, eyes reddish.

Locality: Walker Point, NE. by N. $\frac{1}{2}$ N., distant 7 miles (off Knysna). 47 fathoms. 1 nonovigerous ♀; O'Neil Peak, NNW. $\frac{1}{4}$ W.,

distant 8 miles (Zululand). 55 fathoms. 1 ♂. s.s. "Pieter Faure." 11/10/00 and 28/2/01. (S.A.M. Nos. A3862 and A4129.)

This species is named after the extraordinarily slender form of the male. I see no reason to doubt that the male and female are conspecific.

The structure of the marsupial plate on the 4th segment is quite different from that of *A. longicornis*, *deshayesii* or *mediterranea* as figured by Koehler.

Astacilla mediterranea Koehler.

1911. *Astacilla mediterranea* Koehler, l.c., p. 44, figs. 25–29.

The single female agrees so well with Koehler's description that I think there can be no doubt as to the specific identity. In one or two details there is a slight difference, and in one point a comparison is not possible because Koehler does not mention it. A future comparison of South African specimens with the types may therefore possibly lead to the former being separated as a *variety*, though scarcely I think as a new species.

In the first place there are scarcely any setules developed on the tubercles, in which connection see the remarks on the variability of a similar feature in *Arcturella corniger* infra. The tubercles on the head and 1st peraeon segment curve gently forwards. The tubercle on the 3rd peraeon segment is much smaller than in Koehler's figure, and there is in addition a similar, though even smaller, tubercle on the 2nd segment; both these tubercles curve backwards and are merely the slightly more developed forms of the granules or "squamules" which are distributed generally over the whole surface.

The median tubercle on the 4th segment is not symmetrical in profile as in Koehler's figure, but has a more gradual anterior, a steeper and more abrupt posterior, slope. Of the posterior median tubercle (anterior to the one on the posterior margin) only one is developed, and that immediately in front of and almost contiguous with the large one on the posterior margin. On either side of this latter tubercle, *i. e.* on the upper postero-lateral angles of the segment, is a small conical process which may correspond with that which Koehler describes as on the *inferior* angle.

Secondly, the point on which Koehler is silent: the lateral margin of the 4th segment is slightly turned out horizontally instead of continuing in the same plane as the rest of the segment, forming a very shallow groove which is quite smooth and free from granules. On the margin itself, however, is a very regular row of granules, and

a further similar row runs along the extreme upper margin of the side-plate.

Assuming that these two rows are absent in the Mediterranean form, this feature and the conical processes on the posterior margin would seem to be a valid reason for giving a varietal name to the South African form.

Eyes subtrigonal rather than oval.

Flagellum of antenna 2–3-jointed; 3rd joint very small, without any row of denticles along the lower margin. In Koehler's specimens the flagellum was serrulate.

Four pairs of marsupial plates, that on the 1st segment very distinct and almost as large as those on segments 2 and 3, which have probably not reached their full development, that on segment 4 also not fully developed since in the anterior part they scarcely meet in the middle line, but posteriorly they are fused in the middle line so that the presence of an inset-piece is not determinable.

The specimen contains several irregular masses of yolk-granules representing maturing ova, and shows in the appendages the new skin developing under the old, so that the next moult will see the full development of the marsupial plates.

Length: 7·5 mm.; *breadth:* 1 mm.

Colour: In spirit yellowish, eyes reddish.

Locality: Umkomaas River, NW. by W. ½ W., distant 5 miles. 40 fathoms. 1 nonovigerous ♀ on the Gorgonacean *Villogorgia mauritiensis* Ridley. s.s. "Pieter Faure." 31/12/00. (S.A.M. No. A4144.)

Geogr. Distribution: Villefranche, Mediterranean (Koehler).

Gen. ARCTURELLA Sars.

1897. *Arcturella* Sars, Crust. Norw. vol. 2, p. 92.
1904. ,, Norman, Ann. Mag. Nat. Hist. (7), vol. 16, p. 448.
1908. ,, Stebbing, S. A. Crust. pt. 4, p. 51.
1911. ,, Koehler, l.c. pp. 4, 39.
1911. *Arcturopsis* id. ibid. p. 8.

Reasons have already been given for merging *Arcturopsis* in the earlier *Arcturella*. There seems to be no essential difference between them unless one considers the relative lengths of the 4th segment in the male; in *A. dilatata* and *danmonensis* it is not longer than the *rest of the body posterior to it*, though it varies somewhat, being much shorter in the former, but in the latter only a little shorter, or even, in one Plymouth specimen I have seen, equal to the rest of the body

behind it. In Koehler's species of *Arcturopsis*, on the other hand, the 4th segment is greatly elongate, exceeding in length the rest of the body behind it. Opinions may differ as to this being of generic importance, but it seems scarcely necessary to consider it so, for there always remains the possibility of discovering transitional forms. In fact *lineata* and *corniger* are examples, the former having the 4th segment equal to, the latter a little longer than, the posterior portion of the body.

Sars' definition must be slightly modified; flagellum of antenna 2 1–3-jointed, with 2 rows of denticles on the lower surface; 3rd peraeon segment in male with (typically), but sometimes without, a ventral process, when present more or less strongly developed; outer ramus of pleopod 1 in male not modified.

In the course of studying the specimens belonging to this genus, I have been confronted in one case with a difficulty similar to that which arose in the case of the genus *Cymodoce*, namely that of correlating the male and female. The facts were as follows:

A ♂ and ♀ were taken from a bottle, P.F. No. 15817, the contents of which were all dredged on the same day and in the same spot. These were the only Astacillids taken in that haul, and would be regarded as conspecific under the usual working hypothesis and unless evidence to the contrary were forthcoming.

In fact this ♂ agrees perfectly in structure with the ♂♂ here assigned to *lineata* which were taken in association with the ♀♀ entirely different from the ♀ from bottle 15817. Since then it is better to presume that the sexes are similar rather than dissimilar, even in a family in which sexual dimorphism is a common phenomenon, the following morphological reason points against the ♂ and ♀ from bottle 15817 being conspecific; the ornamentation of the 4th peraeon segment in the ♂♂ and ♀♀ of *lineata*, taken in the same haul, consists in both cases of 2 mediodorsal tubercles.

Key to the South African Species of Arcturella.

A. Width of 4th peraeon segment in ♀ less than length, in ♂ very much less. Body in both sexes subcylindrical.
Flagellum of antenna 2, 2- or 3-jointed.
i. A small ventral process on 3rd segment in ♂. Body in ♀ normally hirsute and strongly tuberculate . . *corniger* (Stebb.).
ii. No ventral process. Body in ♀ glabrous and feebly tuberculate . . . *lineata* (Stebb.).

B. Width of 4th segment in ♀ greater than length. Body in both sexes depressed. Flagellum of antenna 2 1-jointed.

i. Segment 4 in ♀ tuberculate . . . *pustulata* n. sp.

ii. Segment 4 in ♀ not tuberculate.

a. Outer margin of 2nd joint of antenna 2 entire. Peraeopod 5 (in ♀ at least) with 2nd joint longer than all the other joints together . . . . . *longipes* n. sp.

b. Outer margin of 2nd joint of antenna 2 notched. Peraeopod 5 with 2nd joint shorter than all the rest together . *brevipes* n. sp.

ARCTURELLA CORNIGER (Stebb.).

1873. *Arcturus corniger* Stebbing, Ann. Mag. Nat. Hist. (4), vol. 12, p. 96 (♀).
1908. *Arcturella* (*?*) „ id. l.c. p. 51.
1913. *Antarcturus ornatus* Tattersall, Tr. Roy. Soc. Edinb. vol. 49, pt. 4, p. 889, pl., fig. 5 (♀).
1914. *Arcturus* (*?*) *corniger* Barnard, Ann. S.A. Mus. vol. 10, pt. 7, p. 207.
1914. *Arcturopsis hirsutus* id. ibid. p. 207, pl. 19A (♂ ♀).

At the time I described *A. hirsutus* I was not aware of the publication of Tattersall's paper, and in comparing the species with Stebbing's *corniger* I pointed out certain characters which then seemed to me to distinguish the two species. Further examples have since been discovered among the "Pieter Faure" collections which enables me to establish the above synonymy.

In the first place a comparison of the figures of *ornatus* and *hirsutus* leaves no doubt that they are conspecific.

Secondly, the new material shows the extreme variability of the dorsal tubercles and setae on the 4th peraeon segment of the ♀, thus affording a series uniting all three forms.

Setae in ♀ seem to be normally present, though varying in quantity, but frequently the body is perfectly glabrous. The anterior median tubercle is not as large in any of my specimens (except one from Sebastian Bluff) as in Stebbing's example, but is usually present, though absent in the specimens described as *hirsutus*. The apices of all the tubercles vary from pointed to blunt. The three posterior tubercles show the greatest amount of variation. They may be low, rounded-topped knobs, or moderately high blunt tubercles or high spiniform projections. This last form is shown in the figure of *hirsutus*,

but may reach an even greater development; *ornatus* shows a very moderate development of tubercles. Or again, the two tubercles on the posterior margin may coalesce to form a rounded transverse ridge which occasionally develops a third (median) tubercle between the two normal ones.

The tubercle on the 1st segment is usually more prominent than those on the 2nd and 3rd segments.

In the specimen from Sebastian Bluff the two posterior tubercles on the head are equal in height to the length of the head, but normally all 4 tubercles are not at all prominent.

The tubercles on the 4th marsupial plate vary from 2 to 7.

The flagellum of antenna 2 in both sexes has 2 rows of denticles on the under surface, not only the one on the inner margin as in my original description. Tattersall could not see any in his specimen of *ornatus*, but I think they must have been present; they are rather difficult to make out sometimes, especially the row on the *outer* inferior margin. The suture between the 2nd and 3rd joints is also very obscure sometimes, the third joint appearing to consist merely of the apical tooth or unguis.

The male appendage, which I described as situate on the 7th peraeon segment, is really on the 1st pleon segment.

Of the variety *subglaber* no further examples have come to light. Nor have I found any transitional forms between this and the typical form, so that I still keep it as a variety.

Additional Localities: Bakkoven Rock NW. by W., distant 2 miles (False Bay). 24 fathoms. 2 ♂♂, 3 ♀♀; Walker Point (near Knysna), NE. by N. ½ N., distant 7 miles. 47 fathoms. 10 ♂♂, 3 ♀♀; Sebastian Bluff W. by N. ¾ N., distant 6 miles. 28 fathoms. 1 ♀. s.s. "Pieter Faure." 11/11/02, 11/10/00 and 5/7/00. Also several ♂♂ and ♀♀ from the previously recorded locality off Robben Island.

Arcturella lineata (Stebb.).

1873. *Arcturus lineatus* Stebbing, Ann. Mag. Nat. Hist. (4), vol. 12, p. 97, pl. 3A, fig. 3 (♂).
1875. „ „ id. ibid. (4), vol. 15, p. 187.
1914. „ (?) „ Barnard, Ann. S.A. Mus. vol. 10, pt. 7, p. 207.

Body glabrous, minutely granular in ♂, subcylindrical. Head not broader than long, antero-lateral processes rounded with a point on outer margin near apex, surface smooth. Peraeon segments 2 and 3 slightly widening in ♀; segment 4 much longer than wide, in ♂ 18 : 8,

in ♀ 12 : 8, in ♂ coffin-shaped, with a small medio-dorsal tubercle in the anterior half and another near the posterior margin, the latter hook-shaped and pointed backwards, some granules larger than the rest along the lateral margins, in ♀ slightly wider anteriorly than posteriorly, sides nearly straight, a low rounded medio-dorsal tubercle in the anterior half and another on the posterior margin, the posterior margin itself somewhat thickened and elevated; segments 5 and 6 with rounded side-plates only partly visible in dorsal view, segment 5 in ♂ with a small median tubercle on both anterior and posterior margins, segment 6 in ♂ with one on the posterior margin only, segment 7 with subacute side-plates.

Pleon segments 1–3 slightly widening, but 3 not laterally projecting, its posterior margin distinctly trilobed, telson tapering to a truncate apex.

Antenna 2, 2nd joint toothed on outer margin, 3rd and 4th in adult ♂ tuberculate on inner lower surfaces, 1 or 2 tubercles also on 5th, this latter joint in ♀ with very minute denticles on lower inner margin; flagellum 2-jointed, with 2 rows of small denticles on lower surface.

Peraeopods 2–4 relatively long.

Peraeopod 5, 2nd joint scarcely equal to width of segment 4 and shorter than all the other joints together.

Marsupial plates, three pairs, inset piece of that on 4th segment extending along whole posterior margin, setulose.

Male appendage on pleon segment 1 apically blunt.

Pleopod 2, male stylet half as long again as ramus, rather stout, apex deeply bifurcate in adult, acute in immature specimens.

Concealed ramus of uropod with 3 setae.

Length: ♂ 11 mm., ♀ 9 mm.; *breadth:* ♂ and ♀ 1·5 mm.

Colour: In spirit, largest specimen yellowish, eyes reddish; other specimens pinkish-brown or whitish, covered with minute dark pigment-specks, eyes reddish or black.

Locality: False Bay. 1 juv. ♀ on *Gorgonia flammea*; (?) Agulhas Bank. 1 ovigerous ♀ and 2 juv. ♀ ♀ on *Gorgonia albicans.* (L. J. Irvine.) 1915; Algoa Bay. 20 fathoms. 1 ♂; 34° 19′ S., 25° 52′ E. 100 fathoms. 1 ♂, 2 juv. ♂ ♂, 3 ovigerous and 1 juv. ♀ ♀; False Bay. 22 fathoms. 1 ♂. s.s. "Pieter Faure." 12/12/98, 1/11/98 and 30/10/02. (S.A.M. Nos. A3072, A4140, A4141, A4142 and A4059 respectively.)

Stebbing received his specimen from Port Elizabeth.

In this species there is some variation, albeit slight, in the development of the dorsal tubercles, especially on segments 5 and 6 in ♂;

in some specimens these are quite distinct and pointed, in others blunt and very indistinct.

The ♂ of this species closely resembles in general appearance that of *A. corniger*, but may be easily distinguished by the absence of any ventral process on the 3rd peraeon segment and by the hook-like shape of the posterior tubercle on the 4th segment.

Arcturella pustulata n. sp.

(Plate XVI. Fig. 24.)

Female.—Body glabrous, moderately depressed. Head wider (across the eyes) than long, antero-lateral angles subacute, with a minute point in the middle of outer margin, front margin strongly concave, dorsal surface quite smooth. Eyes large, oval. Peraeon segment 1 without visible suture separating it from the head; segments 2 and 3 gradually widening; segments 1–3 quite smooth; segment 4 wider (across the anterior margin) than long, lateral margins not greatly expanded, nearly straight, converging posteriorly, smooth except for the tubercles in the posterior half, which are arranged thus: 2 in each of the postero-lateral angles, a small one immediately in front of a larger one, a little in front of these 2 large submedian tubercles, the extreme postero-lateral angles also bluntly tubercular; side-plate on segment 4 quadrangular.

The relative development of the tubercles, however, is subject to some variation as in *corniger*. The 10 mm. long ovigerous ♀ No. A4145 has only very faint traces of the 2 submedian tubercles, and the smaller postero-lateral ones are entirely absent, whereas the pair of large ones is strongly developed, being at least ½ mm. in height.

Young specimens up to 7 mm. are quite smooth dorsally. A specimen 8 mm. long shows the 2 submedian tubercles and the 2 large postero-lateral ones; another also 8 mm. long shows only the 4 postero-lateral tubercles.

The tubercles are low and rounded; even when strongly developed they are apically blunt.

Segment 5 longer than either 6 or 7; side-plates on these 3 segments pendulous, not completely visible in dorsal view.

Pleon with the first 3 segments very slightly wider than the telson, the 3rd not laterally prominent, all the sutures very indistinct, telson without any lateral teeth or projections, apex subacute, shallowly notched.

Antenna 2, 2nd joint with strong tooth on outer margin, 5th with a row of very minute denticles along lower inner margin, flagellum of

a single joint, with 2 rows of denticles along the lower margin, that on inner side containing a larger tooth about half-way along, a large stout tooth on the lower margin at base of the terminal unguis.

Peraeopods 2–4 relatively long, apex of 5th joint of peraeopod 4 nearly reaching apex of antero-lateral angle of head.

Peraeopod 5, 2nd joint $\frac{2}{3}$ length of segment 4, shorter than all the other joints together.

Three pairs of marsupial plates, that on 4th segment with a setulose inset-piece extending nearly the whole length of the posterior margin.

Concealed ramus of uropod with 5 unequal setae.

Length: Ovigerous ♀ 8·25–10 mm.; *breadth:* 2·25 mm.

Colour: In spirit yellowish or pinkish, eyes dark reddish.

Locality: Umkomaas River NW. by W. $\frac{1}{2}$ W., distant 5 miles. 40 fathoms. 1 ovigerous ♀ on the Gorgonacean *Villogorgia mauritiensis* Ridley; Durnford Point NE. by E., distant 9 miles. 13 fathoms. 12 juv. ♀♀. s.s. "Pieter Faure." 31/12/00 and 8/2/01. Natal coast. 6 fathoms. 1 ovigerous ♀, 3 juv. "on coral." (H. W. Bell-Marley.) May, 1917. (S.A.M. Nos. A4145, A4143 and A4567.)

Arcturella longipes n. sp.

(Plate XVI. Figs. 25, 26.)

Body glabrous, minutely shagreened, greatly depressed, especially in ♀. Head, together with peraeon segment 1, as wide as long, the lateral projections not produced beyond the antero-lateral point, dorsal surface with 2 small acute tubercles between the eyes in ♂, smooth in ♀. Eyes large, oval. Peraeon segment 1 with moderately distinct suture separating it from head; segments 2 and 3 widening gradually in ♀, segments 1–3 apparently each with a small median tubercle in ♂, but these portions rather bruised, smooth in ♀; segment 4 longer than broad (10 : 8) in ♂, broader than long in ♀ (width equal to combined length of segments 3 and 4), in ♂ oblong with equal posterior and anterior margins and nearly straight sides, smooth except for one median hook-like tubercle near the posterior margin, directed backwards, in ♀ anterior margin greater than posterior, sides slightly sinuous, entirely smooth; side-plate of segment 4 in ♀ projecting forwards as an acute point; segment 5 not greatly larger than 6 or 7, 5 and 6 with rounded side-plates completely visible in dorsal view, 7 with subacute postero-lateral angles, all 3 segments smooth in both sexes.

Pleon with first 3 segments widening gradually, 3rd projecting

laterally beyond telson, which tapers to a narrow truncate apex, without lateral teeth, dorsal surface smooth.

Antenna 2, 2nd joint with an entire straight outer margin, lower margins of 3rd–5th joints not tuberculate in ♂, flagellum of a single joint with terminal unguis, lower margin with 2 rows of denticles, with a slightly larger denticle at the base of the unguis in ♀ only.

Peraeopods 2–4 relatively long, especially in ♀, 5th joint reaching the lateral process of head.

Peraeopod 5, 2nd joint in ♀ equal to length of segment 4, longer than all the other joints together, in ♂ lost; peraeopods 5–7 with a small setiferous elevation in the middle of hind margin of 2nd joint, most marked on peraeopods 6 and 7, especially in ♂.

Three pairs of marsupial plates, that on 4th segment with setulose inset-piece extending nearly the whole length of posterior margin.

Pleopods 1 and 2 and male appendage mutilated.

Concealed ramus of uropod with 3 setae in ♂, 3–4 in ♀.

Length: ♂ 10 mm., ♀ 9 mm.; *breadth:* ♂ 2 mm., ♀ 2·5 mm.

Colour: In spirit yellowish, eyes reddish or black.

Locality: Table Bay, 22 fathoms. 1 somewhat bruised and mutilated ♂; Cape St. Francis NE., distant 29 miles. 75 fathoms. 1 ovigerous ♀. s.s. "Pieter Faure." 5/3/00 and 19/2/02. (S.A.M. Nos. A3830 and A4058.)

This species is easily distinguished from the other species by the unnotched 2nd joint of antenna 2, the 2nd joints of peraeopods 5–7 and the laterally projecting 3rd pleon segment, also the acute side-plate on segment 4 in the ♀.

Arcturella brevipes n. sp.

(Plate XVI. Fig. 27.)

Female.—Body glabrous, very faintly shagreened, greatly depressed. Head wider than long, lateral processes rounded, with a small point on outer margin near the apex, dorsal surface smooth. Eyes large, oval. Peraeon segment 1 with very indistinct suture separating it from head; segments 2 and 3 gradually widening; segment 4 much wider than long, width across anterior margin being equal to length of segments 1–4 together, narrower posteriorly, sides distinctly sinuous, surface smooth; segments 5 and 6 with rounded side-plates; segment 7 with subacute side-plates; all the segments smooth.

Pleon segments 1–3 very slightly wider than telson, 3rd not projecting laterally, telson tapering to a subacute truncate apex.

Antenna 2, 2nd joint toothed on outer margin, 5th joint smooth, flagellum of a single joint, its lower margin with 2 rows of denticles and a larger tooth at base of unguis.

Peraeopods 2–4 short, 6th joint (not 5th) of peraeopod 4 reaching beyond eyes.

Peraeopod 5, 2nd joint about $\frac{2}{3}$ length of segment 4, but shorter than the other joints together.

Three pairs of marsupial plates, that on 4th segment with setulose inset-piece extending nearly whole length of posterior margin.

Concealed ramus of uropod with 4 setae.

Length: 9 mm.; *breadth:* 3 mm.

Colour: In spirit yellowish, eyes reddish.

Locality: ? Agulhas Bank. 3 ovigerous and numerous juv. ♀ ♀ on *Gorgonia albicans* (J. L. Irvine). 1915; False Bay. 22 fathoms. 1 ovigerous ♀. s.s. "Pieter Faure." 30/10/02. (S.A.M. Nos. A3884 and A4139.)

This species is named in allusion to the most easily noticeable difference between it and the preceding species.

Gen. NEOARCTURUS Brnrd.

1914. *Neoarcturus* Barnard, Ann. S.A. Mus. vol. 10, pt. 7, p. 213.

The discovery of the female shows that this genus is remarkably close to *Arcturus*, differing only in the composition of the pleon and the 3-jointed flagellum of antenna 2.

Neoarcturus oudops Brnrd.

1914. *Neoarcturus oudops* Barnard, l.c. p. 214, pls. 18c and 19b.

The original description was based on a single male and is confirmed by an examination of the present specimens except in one point: the male appendage was stated to be on the 7th peraeon segment, whereas really it is on the 1st pleon segment.

The female differs in no way from the male except in being broader across peraeon segments 2–4; segment 4 is not longer than the others. The sculpturing is the same, but more prominent than in the male, especially the lateral tubercles on the posterior ridges.

Maxilliped like that of ♂, without vibratory plate.

Peraeopod 2, 2nd joint a little longer than 4th joint.

Three pairs of marsupial plates. Side-plates on segments 2–4 produced backwards and downwards as acute processes supporting the marsupial plates.

Pleopod 1, peduncle with two hooked spines on inner margin and

several denticles on outer, outer ramus a little longer than peduncle, elongate-ovate, apex blunt, inner ramus as long as peduncle and half the width of outer ramus, narrow, apex subacute, apices and outer margin of both rami setose.

Pleopod 2, rami subequal, elongate-oblong, apices rounded-truncate, setose.

Locality: Cape Point N. 89° E., distant 36 miles. 700 fathoms. Several ♂ ♂ and ♀ ♀ with embryos. s.s. "Pieter Faure." 20/8/03. (S.A.M., No. A4070.)

Although not remarked upon in my original description, this species bears an extraordinary resemblance to *Arcturus myops* Beddard (1886, Challeng. Rep. vol. 17, p. 100, pl. 22, figs. 5–8, pl. 25, fig. 8) from 700 fathoms off New Zealand. The two species agree in having only low rounded elevations, unpigmented and unfacetted, in place of eyes and in the sculpturing, but are easily distinguished by the shape of the telson.

Family STENETRIIDAE.

1905. *Stenetriidae* Hansen, Proc. Zool. Soc. Lond. 1904, vol. 2, pt. 2, p. 315.

Gen. STENETRIUM Haswell.

1881. *Stenetrium* Haswell, Proc. Linn. Soc. N.S.W. vol. 5, p. 478.
1905. ,, Hansen, l.c. pp. 303, 316.
1906. ,, Nobili, Mem: Ac. R. Torino, ser. 2, vol. 57, p. 414.
1914. ,, Barnard, Ann. S.A. Mus. vol. 10, pt. 7, p. 217.
1914. ,, Vanhöffen, D. Südpolar Exp. vol. 15, pt. 4, p. 546.

Up to the present time only one species of this genus has been known from South Africa—*S. crassimanus* Brnrd. Four additional species are described below, so that the genus is now as well represented in South Africa as in the West Indies.

Moreover, in examining these latter species, I have become aware of a character which is common to all five species, although I had overlooked its presence in *crassimanus*—namely, a median longitudinal ventral keel on all the peraeon segments in both sexes. There is no mention of such a keel in the descriptions of any of the other species, but it would be scarcely correct to presume its absence, for it may not have been considered important enough for the diagnosis of the species. In the South African species, however, there are slight differences which are enough to separate the species without referring to other characters.

The four species here described are named after four Portuguese navigators famous in early Cape history.

Stenetrium dagama n. sp.

(Plate XVI. Figs. 28 and 29.)

Body with a few long scattered hairs, chiefly on the lateral portions. Antero-lateral angles of head acute, not incurved, rostrum broader than long, antero-lateral angles rounded-quadrate, anterior margin straight. Eyes narrow oblong, curved.

First peraeon segment scarcely longer than second, its antero-lateral angles fairly prominently produced, acute. Ventral keel raised into a rather high process on segments 1–4, acute on 1st, rounded on 2–4, keel not so high on segments 5–7, the posterior angles acute, dentiform. The anterior processes are not so strong in the female, but otherwise the keel is similar.

Pleon about as broad as long, lateral margin with only one tooth, distal margin obscurely trilobed, the median lobe more prominent, subacute.

First antenna, 1st joint largest, 2nd shorter than 3rd, flagellum composed of ca. 15 joints indistinctly separated.

Second antenna, outer apex of 1st joint acute, but not produced or dentiform, with 2–3 setae, 3rd joint longer than 1st plus 2nd, scale broadly ovate, apically setose, 4th very short, 6th a trifle longer than 5th, flagellum longer than peduncle, with many indistinctly separated joints.

Mouth-parts as described for *crassimanus*; upper lip distally feebly emarginate, spine-row with 8 serrate spines in left mandible, ca. 18 in right, 2nd joint of maxilliped not so long, 6th less abruptly narrower than 5th, epipod reaching to middle of 5th, inner plate with 5 coupling-hooks.

First peraeopod ♂, all joints densely clothed with long setae, 3rd and 4th joints strongly produced anteriorly, the apices, however, not very acute, 5th not produced, 6th subtriangular, greatest width equal to length; hind margins scarcely more than $\frac{1}{2}$ length of palm, which is crenulate, with 2 more distinct teeth near the hinge and a fringe of regularly spaced spinules; a large stout spine on the rounded defining angle, finger as long as palm, inner margin regularly spinose. In ♀ similar but smaller.

Second to seventh peraeopods as in *crassimanus*.

First pleopod ♂, peduncle with 2–3 setae at base of each ramus, rami narrow, thrice as long as broad, with marginal setae only and

without the parallel sculpturing found in the other species. Operculum in ♀ tapering to a bifid apex. The other pleopods as in *crassimanus*.

Uropod, outer ramus a trifle shorter than inner, both rami with long simple setae.

Length: 7·5 mm.; *breadth:* 2·25 mm.

Colour: In spirit yellowish-white, eyes brownish.

Locality: Vasco da Gama Peak N. 71° E., distant 18 miles (off Cape Point). 230 fathoms. 4 ♂ ♂, 6 ♀ ♀ (with ova and embryos) among the outer spicules of an Hexactinellid sponge (*Pheronema*); Table Mountain S. by E. ¾ E., distant 58 miles. 190 fathoms. 2 ♂ ♂ amongst siliceous sponges. s.s. "Pieter Faure." 4/5/00 and 3/4/02. (S.A.M. Nos. A2855 and A4075.)

In the key given by Hansen (l.c. p. 316) this species comes under B.a.β.; the form of the first peraeopod is somewhat similar to that of *siamense* Hansen, but the absence of lateral projections of the head in this latter species offers a ready mark of distinction.

Stenetrium dalmeida n. sp.

Body nearly smooth, glabrous except for a few isolated setae on the pleon and the antero-lateral angles of the peraeon segments. Head with the antero-lateral angles acutely produced, not incurved, rostrum broader than long, antero-lateral angles quadrate, anterior margin straight. Eyes narrow oblong, curved.

Peraeon segments 1–4 subequal, each with a shallow transverse groove across the middle, antero-lateral angles of 1–3 acutely produced, of 4 quadrate. Ventral keel obsolete on all the segments except 3 and 4, where it forms a blunt process, and on 7, where it forms a backwardly directed spine on the posterior margin.

Pleon very little longer than broad, lateral margin with only one tooth, distal margin arcuate with a fairly prominent acute median lobe.

Antenna 1, 1st joint largest, 2nd shortest, 3rd a little longer than 2nd but more slender, flagellum of 12 joints.

Antenna 2, 1st joint acutely but not strongly produced on outer apex, scale on 3rd ovate, apically setose, 6th a little longer than 5th, flagellum longer than peduncle, multiarticulate.

Mouth-parts normal.

Peraeopod 1 in ♂, 3rd and 4th joints strongly and very acutely produced on outer apex, 5th not produced, 6th sub-triangular, a little broader than long, palm a little oblique with one strong acute tooth in the centre and another near the hinge (both teeth lacking in the smaller ♂, 5 mm. long), one small spine on the defining angle, finger

matching palm, lower margin of 5th and 6th moderately setose; the right limb in the largest specimen is smaller and less developed than the left one, having been perhaps regenerated. In ♀ 3rd and 4th joints apically produced, 5th not produced, 6th longer than broad, palm transverse, shorter than hind margin, setose, defining angle a right angle but rounded, with one strong spine, finger matching palm, spinulose.

Pleopod 1, peduncle without setae, outer margins of the rami evenly convex, length of the rami a little more than twice as long as wide, with surface sculpturing but only marginal setae.

Operculum in ♀ tapering to a subacute entire apex.

Uropods lost.

Length: 7·5 mm.; *breadth*: 2 mm.

Colour: In spirit pinkish, eyes dark red.

Locality: Lion's Head SE. ¼ E., distant 50 miles (off Cape Peninsula). 230 fathoms. 2 ♂ ♂; Cape Point NE. ¼ N., distant 18 miles. 135 fathoms. 1 nonovigerous ♀. s.s. "Pieter Faure." 2/4/02 and 27/2/02. (S.A.M. Nos. A4013 and A4121.)

This species is superficially very close to *S. dagama*, but is distinguished by the difference in the ventral keels, the 1st joint of antenna 2, armature of the palm of peraeopod 1, the absence of the dense covering of setae and the very acute apices of the 3rd and 4th joints of the same peraeopod. The 1st peraeopod in the ♀ is also quite different in the two species, on the presumption that the limb in the single ♀ specimen of the present species has reached its full development.

Stenetrium diazi n. sp.

(Plate XVI. Figs. 30–32.)

Body with a few long scattered setae, chiefly on the lateral portions. Antero-lateral angles of head acute, not incurved, teeth forming the inner angles of the sockets for the second antennae somewhat blunt, rostrum broader than long, antero-lateral angles subacute, anterior margin slightly concave. Eyes reniform.

First peraeon segment longer than 2nd, the antero-lateral angles produced forwards to the level of the eyes, acute. Keel on segments 1–4 low, rounded, in each segment surmounted by a small acute denticle, keel on segments 5–7 with the posterior angles in each segment acutely produced.

Pleon about as broad as long, lateral margin with a single tooth, distal margin obscurely trilobed (as in *occidentale* Hansen).

First antenna, 1st joint largest, 2nd and 3rd subequal, each equal to ½ the 1st, flagellum with 10 indistinctly separated joints.

Second antenna, 1st joint acutely produced to end of 2nd, apex with a denticle and 4 setae, 3rd rather longer than 1st plus 2nd, scale of equal width throughout, 4th very short, 6th a trifle longer than 5th, flagellum longer than peduncle, with many joints.

Mouth-parts as in *crassimanus*; upper lip distally feebly emarginate, spine-row with 6 spines in left mandible, 14 in right, 6th joint of maxilliped less abruptly narrower than 5th, inner plate with 6 coupling-hooks.

First peraeopod ♂ elongate, 2nd joint longer than 3rd–5th together, anterior margin with a strong laminar tooth at base in the adult, 3rd anteriorly produced to middle of 4th, 4th likewise produced nearly to end of 5th, 5th not produced, 6th as long as 2nd, oblong, widening very slightly distally, inferior margin slightly sinuous, palm short, transverse, with 2 strong, closely apposed, apically blunt teeth, a smaller tooth near the hinge, defining tooth very strong, apically subacute, palm and hind margin laminar and thinner than rest of joint, as in *crassimanus*, finger projecting beyond defining tooth, inner margin with a few simple spinules, outer margin setose, inferior margins of 4th–6th joints densely setose.

First peraeopod ♀ shorter, 2nd joint without basal tooth, 3rd–5th joints as in male, 6th not longer than 3rd plus 4th, oblong, widening distally, width ⅔ length, inferior margin straight, palm slightly convex, transverse, nearly as long as inferior margin, with one small tooth in middle, and a series of spinules, defining angle rounded, with one strong spine, finger matching palm, inner margin with serrate spinules, inferior margins of 4th–6th joints densely setose.

Second to seventh peraeopods as in *crassimanus*.

First pleopod ♂, peduncle with one pair of small setae, rami broader than in *crassimanus*, widening for ⅔ length, then strongly contracting, outer margin thus angular, with surface sculpturing but with marginal setae only. Operculum in ♀ tapering to a bifid apex.

Rest of the pleopods normal.

Uropod, outer ramus shorter than inner, both with long simple setae.

Length: ♂ 6 mm., ♀ 5 mm.; *breadth:* ♂ 1·5 mm., ♀ 1·25 mm.

Colour: Creamy-white, eyes black.

Locality: Buffel's Bay (False Bay). 1/3/15. (K.H.B.) 2 ♂♂, 3 ♀♀ (1 ovigerous), 4 juv. (S.A.M. No. A3309.)

This species comes under A.a. in Hansen's key and is most closely allied to *crassimanus* Brnrd.

STENETRIUM SALDANHA n. sp.

(Plate XVI. Figs 33 and 34.)

Body with a very few setae on the lateral portions only. A low, broad, rounded dorsal ridge runs throughout the peraeon and pleon, most noticeable on the latter but nowhere prominent. Antero-lateral angles of head prominent, acute, not incurved, teeth forming the inner angles of the sockets of the 2nd antenna prominent, acute; rostrum very prominent, longer than broad, tapering to an acute point in ♂, subacute in ♀. Eyes reniform. First segment of peraeon scarcely longer than 2nd, antero-lateral angles fairly prominently produced, acute. Keel on segments 1–4 rather high, with the anterior angles dentiform and subacute, posterior apices of keel on segments 5–7 acute, dentiform, that on segment 7 being very prominent, curved backwards, spiniform.

Pleon distinctly longer than broad, lateral margin with a single tooth, distal margin obscurely trilobed.

First antenna, 1st joint largest, 2nd and 3rd subequal, flagellum of 12 indistinctly separated joints.

Second antenna, outer apex of 1st joint acute, but not produced or dentiform, 3rd equal to 1st plus 2nd, scale obovate, apically setose, distal peduncular joints and flagellum lost in both specimens.

Mouth-parts as in *crassimanus*; upper lip distally feebly emarginate, spine-row with 6 spines in left mandible, 12 in right, maxilliped with 6th joint half width of 5th, inner plate with 5 coupling-hooks, epipod reaching to end of 5th joint.

First peraeopod ♂ stout, 2nd joint subequal to 3rd–5th together, 3rd and 4th acutely produced but not strongly anteriorly, 5th not produced, 6th only a little longer than greatest width, which is across the nearly transverse palm, palm a little shorter than hind margin, straight, with one pointed denticle in middle and a series of stout serrulate spines, the rounded defining angle with one long stout serrulate spine, finger matching palm, inner margin with serrulate spines, 4th–6th joints moderately setose, inferior margin of 6th rather densely setose. In ♀ similar but smaller and weaker, palm without a denticle.

Second to seventh peraeopods as in *crassimanus*.

First pleopod ♂ intermediate between that of *crassimanus* and that of *diazi*, outer margin moderately angular, with surface sculpturing and marginal setae only. Operculum in ♀ tapering to a bifid apex.

Rest of the pleopods as in *crassimanus*.

Uropods lost in both specimens.

Length: ♂ 6 mm., ♀ 5 mm.; *breadth:* ♂ 1·75 mm., ♀ 1·5 mm.

Colour: In spirit whitish, eyes reddish.

Locality: Cape St. Blaize N. by E., distant 73 miles. 125 fathoms. 1 ♂ and 1 nonovigerous ♀; Cape Point NE. ¼ N., distant 18 miles. 135 fathoms. 1 ♀. s.s. "Pieter Faure." 21/12/99. (S.A.M. Nos. A3826 and A4120.)

This species also comes under B.a.*β.* in Hansen's key, and as regards the first peraeopod might form a separate group with *dagama*. The shape of the rostrum, however, is so different from that of any other species in the genus, excepting *crassimanus*, and, to a lesser degree, *chiltoni* Stebb., that it stands quite apart.

Stenetrium crassimanus Brnrd.

1914. *Stenetrium crassimanus* Barnard, Ann. S.A. Mus. vol. 10, pt. 7, p. 217, pl. 20A.

The ventral keel on the peraeon is slighter than in the 3 species just described. In segments 1 and 2 in ♂ it is raised into a spiniform forwardly directed process, in ♀ only feebly raised, in segments 5–7 the posterior apices are feebly dentiform in both sexes.

The inner plate of the maxilliped was originally stated to have only 3 coupling-hooks; on re-examination of the mounted specimen, however, I find there are 5.

Family JAERIDAE.

1910. *Jaeridae* Stebbing, J. Linn. Soc. Lond. vol. 31, p. 224 (references).

Gen. JANIRA Leach.

1814. *Janira* Leach, Edinb. Encyl. vol. 7, p. 434.
1914. „ Barnard, Ann. S.A. Mus. vol. 10, pt. 7, p. 219 (references), and pt. 11, p. 436.

Janira angusta n. sp.

(Plate XVII. Figs. 1–3.)

Male.—Body dorsally smooth, margins with several stiff, moderately long setae, becoming more numerous on the pleon. Head about as broad as long, antero-lateral angles subquadrate, lateral margins entire, anterior margin slightly sinuous with a minute median point. Eyes rather small, ovate, set within the lateral margins, facets few in number.

Peraeon segment 1 longest, antero-lateral angles acute, 2nd segment similar but with the antero-lateral angles not so much produced and

less acute, 3rd and 4th with antero-lateral angles rounded. Posterior 3 segments well distinguished from the anterior ones, the 7th longest, the postero-lateral angles rounded.

Pleon longer than 7th peraeon segment, longer than broad, oval, slightly tapering distally, lateral margins entire.

Antenna 1 reaching nearly to end of 4th joint of antenna 2, 1st joint largest, 2nd and 3rd together equal to 1st, but not so stout, flagellum 4-jointed, not distinguishable from peduncle.

Antenna 2, 3rd joint with distinct scale, 4th–6th joints subequal, 6th indistinguishable from flagellum, which consists of ca. 18 indistinctly separated joints and is equal to 4th–6th peduncular joints together.

Upper lip rather long, apically rounded.

Lower lip with rather broad lobes, inner apical angles setulose.

Mandibles, cutting-edge 4-dentate, secondary cutting-edge not visible, spine-row apparently absent in left, in right with ca. 8 spines, palp with the 3 joints subequal, 3rd curved and spinulose along inner margin.

Maxillae 1 and 2 as in *J. capensis* Brnrd.

Maxilliped, 2nd joint twice as long as broad, 4th and 5th broad, 6th and 7th much narrower than 5th, inner plate with two coupling-hooks, epipod reaching to end of 4th joint, narrow-lanceolate, outer margin angular.

Peraeopod 1 stout, 2nd joint flask-shaped, 4th shorter than 3rd, 5th oval, enlarged, palm and hind margin subequal, defining angle obtuse and blunt, palm with 6 stout spines, 6th (finger) equal to palm, stout, inner margin straight, unarmed, 7th short, biunguiculate.

Peraeopods 2–7 similar to one another, normal (as in *J. maculosa* Leech, but rather stouter than in Sars' figures in Crust. Norw. vol. 2, pl. 40), triunguiculate.

Pleopod 1, peduncle narrowing rapidly from base, thence divided into two divergent branches as long as basal portion, rounded and setose apically. There is no distinction between the basal and distal portions and no suture to indicate the limits of peduncle and ramus (if present).

Pleopod 2 ovate, apically subacute, ramus arising near apex, penial filament longer than peduncle.

Rami of the other pleopods narrow.

Uropod equal to the greatest width of the pleon, outer ramus shorter and narrower than inner, apically acute, inner ramus apically rounded.

Length: 3 mm.; *breadth:* ·5 mm.

Colour: White, eyes black.

Locality: Buffel's Bay (False Bay). 1/3/15. (K.H.B.) 1 ♂. Low-tide. (S.A.M. No. A3372.)

The chief peculiarities of this species are in the 1st pleopods and the 1st peraeopods, the latter bearing at first sight a strong likeness to the gnathopod of an Amphipod.

Gen. HAPLONISCUS Rich.

1908. *Haploniscus* Richardson, Proc. U.S. Nat. Mus. vol. 35 [1909], p. 75.
1914. ,, Vanhöffen, Deutsch. Südpol. Exp. xv, 4, p. 557.
1916. ,, Hansen, Dan Ingolf Exp. iii, 5, p. 28.

This genus was instituted to receive a species from the Arctic ocean described by Sars as *Nannoniscus bicuspis* but which differed in several respects from the type-species, *N. oblongus*. At the same time Miss Richardson added two new species from deep water off the Atlantic coast of N. America.

There is one interesting feature in this genus which has not been commented upon by either Sars or Miss Richardson, namely, the structure of the telson. The lateral portions of the ventral surface have grown over and completely fused, if one may so express it, so as to form a chamber containing the 3rd–5th pleopods.

This chamber in the species described below is spacious owing to the high vaulting of the ventral surface; in the other species it is impossible to tell from the figures whether this surface is vaulted or not.

A somewhat similar chamber, containing the 2 pairs of maxillae and the mandibles, is formed by the sides of the head and closed in by the maxillipeds with their epipods, leaving a small aperture in front through which the food can enter.

The structure of the telson and probably also of the "buccal" chamber may be interpreted as an adaptation to habitat. All the species of the genus live at great depths, and although the nature of the bottom is not recorded in the case of the previously known species, it may be assumed to be a fine mud as in the case of the present species. Contrary to expectation there are no plumose straining setae round the edges of the operculum. There are a few widely spaced simple setae on the outer margin of pleopod 2 in ♂, and on the operculum in ♀. The anal opening is quite separate from the branchial chamber.

Haploniscus dimeroceras n. sp.

(Plate XVII. Figs. 4–7.)

Body nearly parallel-sided, whole of the dorsal and sternal surfaces minutely and closely pitted. Head about twice as broad as long,

anterior margin nearly straight, with a slight median point, side margins straight or very slightly emarginate in ♂, with the antero-lateral angles rounded but prominent, in ♀ gently convex without prominent antero-lateral angles.

Peraeon segments 1–4 short but gradually increasing in length, antero- and postero-lateral angles of the side plates rounded-quadrate; segment 5 equal to 4 in length, segments 6 and 7 decreasing in length, antero-lateral angles of side-plates on 5 rounded-quadrate, on 6 and 7 rounded, postero-lateral angles on all three segments acute.

Pleon a little narrower at base than peraeon segment 7, about as long as broad in ♂, a little shorter in ♀, narrowing very slightly posteriorly; side margins concave and sinuous in ♂, slightly convex in ♀, apex rounded, postero-lateral angles strongly acute and produced in ♂, nearly equal to $\frac{1}{2}$ length of telson, in ♀ acutely produced but very little beyond the rounded apex. Upper surface in both sexes with 2 minute submedian tubercles in the middle.

The ventral surface of peraeon segments 1–4 in ♂ is moderately convex, of segments 5–7 and of the pleon strongly vaulted; in the ♀ the pleon is vaulted but all the peraeon segments are concave so as to accommodate the developing embryos.

Antenna 1, 1st joint stout, ovate, 2nd as long as 1st but very slender, more so in ♂ than ♀, 3rd $\frac{1}{3}$ in ♂, in ♀ $\frac{1}{5}$ length of 2nd and equally slender, flagellum slender, nearly as long as peduncle, composed of 5 nearly equal joints in ♂, in ♀ of 1 stout and 2 long joints, the apical joint setose.

Antenna 2, peduncle stout, longer and stouter in ♂ than ♀, 3rd joint longer than 1st plus 2nd, with a stout spiniform upstanding dorsal projection at base, 4th short, 5th longer than 4th but shorter than 3rd, 6th equal to 3rd and ending in a narrow subacute point, the suture between 5th and 6th clear but the joints not freely moveable on one another, flagellum inserted before the apex of 6th, extremely slender, not quite as long as 5th plus 6th peduncular joints, composed of 8 setiferous joints.

Mouth-parts as figured by Sars for *H. bicuspis* (Norweg. N. Atlant. Exp. 14, p. 122, pl. 10, 1885), only the mandibular palp a little more slender.

Epistome prominent, triangular, the projecting anterior subacute apex visible from above.

Peraeopods as in *H. bicuspis*, similar to one another, but becoming longer and more slender posteriorly.

Three pairs of marsupial plates attached to segments 2–4, large, without marginal setae.

Pleopod 1 in ♂, the two peduncles closely united throughout their length but with a distinct suture, rami distinct, slightly diverging, apically rounded, a small tooth on outer margin.

Operculum in ♀ broader than long, evenly rounded, margin sparsely setose, surface scabrous.

Pleopod 2 in ♂, peduncle ovate, tapering to a subacute apex, inner margin nearly straight, minutely serrulate distally, inner ramus (stylet) geniculate, 1st joint short, 2nd reaching to apex of peduncle, swelling out in middle, apically blunt.

The other pleopods as figured for *H. bicuspis*.

Uropod uniarticulate, setose.

Length: 2·5 mm.; *breadth:* 1 mm.

Colour: In spirit chalky white.

Locality: Cape Point, N. 89° E., distant 36 miles. 700 fathoms. Bottom green mud. Several ♂ ♂ and ovigerous ♀ ♀. s.s. "Pieter Faure." 20/8/03. (S.A.M. No. A4069.)

The specific name referring to the marked difference between the peduncle and flagellum of antenna 2, sharply distinguished from all the other species by antenna 2.

In this species the degree to which the postero-lateral angles of the pleon are produced differs in the two sexes, the ♀ resembling *H. bicuspis* (of which only the ♀ is known), the ♂ resembling *H. retrospinis*. Of the latter both sexes are known but there is no sexual difference.

Family MUNNIDAE.

1882. *Munnidae* Sars, Vidensk. Forhl. Christ. No. 18, p. 17.
1897. „ G. O. Sars, Crust. Norw. vol. 2, p. 105.
1905. „ Richardson, Bull. U.S. Nat. Mus. No. 54, p. 479.

Gen. PARAMUNNA Sars.

1866. *Paramunna* G. O. Sars, Beretn. Zool. Reise ved. Kyst. Christ. p. 31.
1897. „ id. l.c. vol. 2, p. 111.
1910. „ Stebbing, Gen. Cat. S.A. Crust. p. 435.

Stebbing in 1910 described *P. laevifrons* from South Africa, thereby reducing the character of the bilobed head, which Sars regarded as of generic value, to specific value. Tattersall had in 1905 (Fish. Irel. Sci. Inv. 1904, 2, p. 18) instituted the genus *Metamunna* to include a form also without frontal lobes, but which possessed certain features akin to *Pleurogonium* Sars. As he did not dissect out the mandibles

it is uncertain whether *Metamunna* should be regarded as closer to *Paramunna* or *Pleurogonium*. One cannot help feeling that *Metamunna* has a very short 3-jointed palp, and is not really distinct from *Paramunna*. The serrate pleon is very like that of *P. bilobata* Sars, whereas both *laevifrons* and the following species have an entire margined pleon.

Paramunna concavifrons n. sp.

(Plate XVII. Figs. 8, 9.)

Head broadly produced in front, anterior margin concave. Eyes situate on the pedunculate lateral portions, rather small. Peraeon oval, gradually decreasing in width posteriorly, the lateral portions of all the segments rounded. Pleon oval, lateral margins entire, apex shallowly bifid.

Antenna 1 6-jointed, the 3rd peduncular joint scarcely distinguishable from the flagellar joints.

Antenna 2, 3rd joint subequal to 5th, 4th small, 5th and 6th elongate, 6th a little longer than 5th, flagellum 10-jointed.

Upper lip rounded distally.

Mandibles, molar prominent, palp very small, 3-jointed.

Maxilla 1, inner plate with 2 setae.

Peraeopod 1 stout, inner apex of 5th joint blunt but prominent, setose, 6th ovate, finger not overlapping apex of 5th, with a prominent accessory unguis.

The other peraeopods fairly slender, 6th joint longest, finger biunguiculate.

Operculum of ♀ pear-shaped, apex truncate.

The pleopods and uropods were not satisfactorily dissected out.

Length: 1–1·5 mm.; *breadth:* ♂ ·5 mm., ♀ ·75 mm.

Colour: White with peraeon segments 1–4 greyish-brown, eyes black.

Locality: Mouille Point near Cape Town, November, 1913. 1 juv., and 26/2/14, 1 ♂, 1 ovigerous ♀, 1 juv. (K.H.B.); Durban. July, 1915, 1 nonovigerous ♀. (H. W. Bell-Marley.) (S.A.M. Nos. A3080, A3090 and A3838.)

Gen. KUPHOMUNNA Brnrd.

1914. *Kuphomunna* Barnard, Ann. S. A. Mus. vol. 10, pt. 11, p. 438.

Kuphomunna rostrata Brnrd.

1914. *Kuphomunna rostrata* Barnard, l.c. p. 438, pl. 38c (♂).

Since the first description of this species, based on a single ♂ much overgrown with extraneous matter, further specimens have come to light, including the ♀.

Male.—The front margin of the head is really more produced than in the original figure. The rostrate process appears to be the epistome.

Female.—Head of the same shape as in ♂. The epistome not nearly so produced as in ♂, but projecting slightly beyond the front margin of head, simply rounded.

Peraeon segment 1 not enlarged as in ♂, in fact, scarcely as long as segment 2.

Mouth-parts as in ♂. The absence of the mandibular palp was omitted in the diagnosis of the genus.

Peraeopod 1 less stout than in the ♂, 4th joint not apically produced, 5th not much broader than base of 6th, without spines.

Operculum longer than broad, somewhat pyriform, apex truncate.

The other peraeopods, the pleopods and uropods as in ♂.

Length: ♀ 1·75 mm.; *breadth:* 1 mm.

Colour: White, mottled dorsally with grey.

Locality: Buffel's Bay (False Bay). 28/9/13 and 1/3/15. (K.H.B.) 1 ♂, 5 ovigerous ♀♀ and 1 juv. ♀. (S.A.M. Nos. A2543 and A3308.)

Family DESMOSOMIDAE.

1893. *Munnopsidae* (part) Stebbing, Hist. Crust. p. 383.
1897. *Desmosomidae* Sars, Crust. Norw. vol. 2, p. 118.
1908. „ Richardson, Proc. U.S. Nat. Mus. vol. 35 [1909], p. 81.
1911. „ id. Bull. Mus. d'Hist. Nat. Paris, 1911, No. 7, p. 530.

Gen. ? EUGERDA Mein.

1890. *Eugerda* Meinert, Crust. Malacostr. Cruise of the "Hauch," p. 194.
1897. „ Sars, l.c. pp. 127, 252.

Two mutilated specimens are in the collection, but as they both lack the 1st peraeopods and the uropods it is impossible to ascertain with certainty whether they should be assigned to this genus or to *Desmosoma* Sars. From the character of the 1st peraeon segment

I have decided to place them in this genus but not to assign any specific name, merely giving the following brief description.

Head large, ovoid, not much produced in front. Peraeon segment 1 narrower than head and very short; segments 2 and 3 longer and about as wide as head; segment 4 a little narrower, posterior margin strongly convex, *i. e.* the postero-lateral angles are absent; segments 5 and 6 much narrower than 4, longer than broad, oblong; segment 7 apparently very short and appearing more like a short 1st pleon segment, but it is exactly in this region that the specimens are most mutilated. Side-plates on segments 1–4 acutely but shortly produced. Pleon ovate, apex broadly rounded. Antenna 1, 1st joint oblong, rest of antenna consisting of 4 slender joints, the proximal one inserted apically into 1st. Epipod of maxilliped narrow-lanceolate, apex acute, sides nearly straight. Pleopod 1 in ♂, peduncle not tapering, lateral margin slightly emarginate, apex subacute, ramus distinct, inserted obliquely, apex truncate and setulose. Operculum in ♀ oval, longer than broad. Pleopod 2 in ♂, peduncle nearly semicircular, apex acute, stylet reaching to apex, distal half very slender.

Length: 3·25 mm.; *breadth:* ·75 mm.

Colour: In spirit whitish.

Locality: Cape Point N. 89° E., distant 36 miles. 700 fathoms. 1 ♂, 1 ♀. s.s. "Pieter Faure." 20/8/03. (S.A.M. No. A4067.)

Gen. MACROSTYLIS Sars.

1864. *Macrostylis* G. O. Sars, Vidensk. Selsk. Forhl. Christ. 1863.
1886. ,, Beddard, Challeng. Rep. vol. 17, p. 173.
1890. *Vana* Meinert, Crust. Malacostr. Cruise of the "Hauch," vol. 3, p. 195.
1897. *Macrostylis* Sars, Crust. Norw. vol. 2, pp. 120, 250.
1916. ,, Hansen, Dan. Ingolf Exp. iii, 5, p. 75.

Macrostylis spiniceps, n. sp.

(Plate XVII. Figs. 10–12.)

Male.—Body smooth, glabrous. Head broader than long, anterior margin not greatly produced, straight, postero-lateral angles acutely produced. Peraeon segments 1 and 2 subequal, postero-lateral angles of 1 acute, of 2 subacute; segment 3 longer, especially at the sides, postero-lateral angles acutely produced; segments 4–7 sharply marked off from the anterior segments, gradually decreasing in width, 4 shortest, 5 and 6 subequal, postero-lateral angles of each produced into acute

spiniform processes. All the segments with a medio-ventral, straight, spiniform process.

Pleon a little longer than broad, lateral margins convex proximally, concave distally, with a few minute setules, postero-lateral angles quadrate, distal margin very slightly produced.

Antenna 1 rather more developed than usual in the genus, stout, the 3 peduncular joints not differing greatly in size, flagellum 2-jointed, 1st shorter, 2nd longer than any of the peduncular joints, both joints with apical tufts of long filamentous sensory setae.

Antenna 2, first 3 joints short, 4th long and slender, 5th a little shorter than 4th, flagellum very slender, a little longer than 4th joint, ca. 10-jointed.

Mouth-parts normal, as figured by Sars for *M. spinifera*. (Crust. Norw. vol. 2, pl. 51.)

Peraeopod 1 as in *spinifera*, but 5th joint subequal to 3rd and 7th only half length of 6th.

Peraeopod 2 as in *spinifera*, but 3rd and 4th joints with setae on lower apices, 5th slender and equal to 3rd.

Peraeopod 3 similar to that of *M. longiremis* (Mein.) (Sars, l.c. Suppl. pl. 2), but 5th joint narrower in proportion to width of 4th, the armature of the joints the same.

Peraeopod 4 as in *longiremis* but 5th joint relatively narrower.

Peraeopods 5 and 6 as in *spinifera*.

Peraeopod 7 as in *spinifera* but 5th joint $\frac{1}{2}$ as long again as 2nd, 6th $\frac{1}{4}$ as long again as 2nd, 7th plus unguis $\frac{1}{2}$ length of 6th.

Pleopod 1 in ♂, peduncles indurated, narrow, tapering slightly to subacute apices, rami narrow, projecting beyond apices of peduncles, slightly expanding, apices rounded and setulose.

Pleopod 2 in ♂, peduncle indurated, narrow, slightly curved, the inner margin being concave, outer margin distally serrulate, with a plumose seta arising from each notch, stylet reaching to, but not beyond, apex of peduncle, basal joint stout, 2nd joint proximally stout then narrowing rapidly to a fine point, outer ramus apparently absent.

Uropods lost.

Length: 3 mm.; *breadth:* 75 mm.

Colour: In spirit chalky white.

Locality: Cape Point N. 89° E., distant 36 miles. 700 fathoms. 1 ♂. s.s. "Pieter Faure." 20/8/03. (S.A.M. No. A4132.)

This species is easily distinguished from the other three species of the genus by the spinous processes of the head and the greater development of the 1st antennae.

Gen. RHABDOMESUS Rich.

1886. *Ischnosoma* (part) Beddard, Challeng. Rep. vol. 17, p. 39.
1908. *Rhabdomesus* Richardson, Proc. U.S. Nat. Mus. vol. 35 [1909], p. 81.
1914. ,, Vanhöffen, Deutsche Südpol. Exp. vol. 15, pt. 4, p. 560.

The "Challenger" obtained two species of this interesting genus in the Southern oceans: *R. bacillus* (Bedd.) from 1800 fathoms off Melbourne and *R. bacilloides* (Bedd.) from 1450 fathoms off Valparaiso. There was only one specimen of each species and both were fragmentary. Great interest therefore attaches to the two specimens in the "Pieter Faure" Collection, not only because they are from a new locality but mainly because they are complete except for the long and extremely slender peraeopods and 2nd antennae. A description of the mouth-parts can therefore be given and Beddard's description of the pleopods confirmed.

The only example since obtained is *R. inermis*, taken by the "Gauss" in the Antarctic Ocean.

Rhabdomesus bacillopsis n. sp.

(Plate XVII. Fig. 13.)

Male.—Body very elongate, glabrous. Head broader than long, somewhat immersed in the 1st peraeon segment, anterior margin slightly convex. Peraeon segment 1 shorter than 2, its lateral parts directed forwards and embracing the base of the head. Segments 2 and 3 subequal, the lateral portions prominent and rounded. Segment 4 anteriorly similar to 3, the posterior portion much narrowed, elongate, cylindrical, the whole segment a little longer than segments 1–3 together. Segment 5 longer than 4, anteriorly narrow and cylindrical, posteriorly widening, the lateral portions directed backwards. Segments 6 and 7 subequal, a little shorter than 2 or 3. All the segments, including 7, bear on the lateral portion a strong spiniform projection which is curved forwards on the anterior 4 segments, backwards on the 3 posterior ones.

Pleon segment 1 very short and narrower than segment 2, which is shield-like, ovate, apically rounded.

Antenna 1 reaching back to 3rd peraeon segment, basal joint somewhat triangular, followed by one very slender, elongate and strongly indurated joint, flagellum still more slender, shorter than the preceding long joint, 4-jointed, ending in 2 long unequal setae.

Antenna 2 broken off at the 3rd joint in both specimens.

Mandible, cutting-edge 4-dentate, secondary cutting-edge bidentate, spine-row with 6 spines, molar prominent, palp absent.

Lower lip with the lobes ovate, somewhat incurved, apices rounded, with a tuft of setae.

Maxillae 1 and 2 normal.

Maxilliped, 2nd joint longest, 3rd rather narrow, 4th and 5th broader than 3rd, 6th much narrower than 5th, not strongly lobed internally, 7th narrower than 6th, inner plate with 2 coupling-hooks; epipod reaching to base of 5th, ovate, apex subacute, outer margin straight, angular near the base.

Peraeopods all broken off at the 2nd joint in both specimens; the 2nd joint of all the peraeopods is elongate and very slender.

Pleopod 1 in ♂ strongly indurated, very similar to Beddard's figure of that of *bacilloides*, but apices of peduncles and rami not prominent.

Pleopod 2 in ♂ as in Beddard's figure of that of *bacilloides*, but the stylet apically not tapering so gradually, more abruptly acute.

Uropod 2-jointed, 1st joint short, 2nd a little more than twice length of 1st, tipped with 2 setae.

Length: 7 mm.; *breadth* across broadest part: ·75 mm.; across narrow part: ·25 mm.

Colour: In spirit porcelain white.

Locality: Cape Point N. 89° E., distant 36 miles. 700 fathoms. Bottom green mud. 2 ♂ ♂. s.s. "Pieter Faure." 20/8/03. (S.A.M. No. A4066.)

Ilychthonos n. g.

Body moderately elongate. Head nearly globular, not excavate for the insertion of the antennae. Peraeon segment 1 not very short, not embracing the head; segments 4 and 5 not elongate, not much narrower than 3. Pleon consisting of one segment only. Antenna 1 short. Only the basal joints of antenna 2 known. Mouth-parts normal; mandibular palp reduced and feeble, 3rd joint minute, unarmed, molar well developed; 6th joint of maxilliped not lobed internally. Peraeopods 1–4 slender, increasing length, 5th joint in peraeopods 3 and 4 elongate; peraeopods 5–7 a little stouter, moderately spinose. First pleopods in ♂ with peduncles fused basally, rami indistinct. Operculum in ♀ ovate, keeled, apically cleft. Pleopod 2 in ♂ with stylet rather stout, reaching a little beyond apex of peduncle. Uropod uniramous.

This genus is near to the typical genus *Desmosoma*, but differs in having a well-developed molar but a reduced palp on the mandible.

The apically-cleft operculum in the ♀ is unique, also the fused basal portions of the 1st pleopods in ♂.

Perhaps congeneric with *Syneurycope* Hansen, 1916.

Ilychthonos capensis n. sp.

(Plate XVII. Figs. 14–16.)

Body smooth, glabrous. Head strongly convex in profile, in dorsal view nearly circular, a little broader than long, lateral portions not developed, frontal margin not produced but declivous between the bases of 1st antennae. Peraeon segment 1 a little broader than head, a little more than twice as broad as long, not embracing head; segment 2 a little longer and wider, not twice as broad as long; segments 3 and 4 subequal, posterior margins shorter than anterior margins; antero-lateral angles of all 4 anterior segments rounded; segments 5–7 together not nearly as long as the 4 anterior ones together, segment 5 longer at the sides than dorsally, 6 of equal length throughout, 7 longer dorsally than at the sides, its posterior margin straight. Side-plates on segments 1–4 not very distinct.

Pleon of a single segment, at least without visible suture between the short basal and the longer distal portions, the latter broad proximally, contracting suddenly to a much narrower distal part which is apically subacute.

Antenna 1, 1st joint moderately stout, conical, 2nd inserted apically, a little longer than 1st, 3rd a little longer than 2nd, flagellum equal to 2nd plus 3rd, with ca. 12 indistinctly separated joints.

Only the basal joints of antenna 2 remaining, 1st joint with a spine on lower outer apex.

Upper lip rounded, minutely setulose.

Lower lip, inner apices of lobes quadrate, with a rather strong tuft of setules.

Mandible, cutting-edge 4–5 dentate, secondary cutting-edge bifid, spine-row with 3 fimbriate spines, molar well developed, palp small, unarmed, 1st joint shorter than 2nd, 3rd minute, indistinctly separated from 2nd, tipped with 1 setule.

Maxillae 1 and 2 normal.

Maxilliped, 2nd joint longest, 4th and 5th broad, inner distal margin of 5th with 3 denticles, 6th and 7th small but well developed, 6th not lobed internally, epipod very large, reaching to 5th joint, nearly twice width of maxilliped, ovate, apex narrowly rounded, outer margin angular.

Peraeopods 1–4 slender, increasing in length posteriorly, very feebly

armed, especially peraeopods 3 and 4, in these latter 5th joint very elongate and slender.

Peraeopods 5–7 a little stouter than the anterior ones, slightly decreasing in length posteriorly, 5th and 6th joints with moderately numerous outstanding spines, inner apex of 6th joint in peraeopod 7 with 1 spine almost as long as the 7th joint plus unguis.

First pleopods in ♂, peduncles narrow, apparently set on a completely fused basal portion, apices truncate, rami not distinct.

Operculum in ♀ ovate, apex cleft for $\frac{1}{4}$ its length, keel moderately strong and extending as far as the cleft, outer distal margins with plumose setae.

Pleopod 2 in ♂, peduncle narrow-ovate, apex subacute, outer distal margin with plumose setae, stylet rather stout, straight, reaching a little beyond apex of peduncle, outer ramus small.

Uropod uniramous, 2-jointed, the joints subequal, both tipped with setae.

Length: 5 mm.; *breadth:* 1 mm.

Colour: In spirit chalky white.

Locality: Cape Point N. 89° E., distant 36 miles. 700 fathoms. 2 ♂ ♂, 4 nonovigerous ♀ ♀. s.s. "Pieter Faure." 20/8/03. (S.A.M. No. A4030.)

Family MUNNOPSIDAE.

For references see Barnard, Ann. S.A. Mus. vol. 10, pt. 7, p. 225, and add:

1914. Vanhöffen, Deutsche Südpol. Exp. vol. 15, pt. 4, p. 582.

Gen. PSEUDOMUNNOPSIS Hansen.

1916. *Pseudomunnopsis* Hansen, Dan. Ingolf Exp. iii, 5, p. 160.

Pseudomunnopsis beddardi (Tatt.).

(Plate XVII. Figs. 17, 18.)

1905. *Munnopsoides beddardi* Tattersall, Fish. Irel. Sci. Invest. 1904, ii, p. 26, pl. 6, figs. 1–8.

1916. *Pseudomunnopsis* „ Hansen l.c. pp. 10, 160, pl. 14, figs. 3*a–m*.

Body glabrous. Head about as broad as long, strongly convex in profile, anterior margin slightly convex. Peraeon segment 1 curving forwards laterally, embracing the basal part of the head, shorter and narrower than segment 2, segments 2–4 subequal in length, 4 a little narrower than 3, all 4 segments with a transverse ridge both on the

posterior and on the anterior margins, the anterior one more prominent than the posterior, especially medianly, and in one ♀ specimen produced into an acute median tooth on segments 1–3; the presence of these teeth is evidently a variable feature but cannot be called discontinuous, as the greater prominence of the ridge in the medio-dorsal line shows clearly how such teeth can be developed. Peraeon segment 5 nearly equal to segments 1–4 together, 6 and 7 very short. Side-plates on segments 1–4 only.

Pleon a little longer than peraeon segment 5, narrow-ovate, widest in the middle, apex bluntly rounded.

Antenna 1 reaching in ♂ to end of 4th, in ♀ to beginning of 3rd peraeon segment, 1st joint stout, conical, apex blunt, 2nd inserted before apex of 1st, only $\frac{1}{3}$ width of 1st at the place where 2nd is inserted, 3rd $\frac{1}{2}$ width and $\frac{1}{2}$ length of second, flagellum longer than peduncle, 9-jointed in ♀, 1st joint very short, 2nd twice as long as any of the following, in ♂ with a short 1st joint and a long 2nd joint, composed of a large number of partly fused joints.

Only the basal joints of antenna 2 remaining.

Mandible conical, tapering to a subacute, feebly bifid apex, molar, spine-row and palp entirely absent.

Maxillae 1 and 2 as figured for *beddardi* Tattersall (l.c. p. 26, pl. 6).

Maxilliped, 2nd joint longest, 3rd very short, 4th broad, inner margin concave, inner apex acute, slightly produced, 5th as broad as but scarcely $\frac{1}{2}$ as long as 4th, inner margin sinuous, inner apex acute, slightly produced, 6th and 7th very slender, 7th a little longer than 6th, epipod reaching to apex of 4th joint, ovate-lanceolate, inner plate with 2 coupling-hooks (termed "sensory processes" in the description of *beddardi*).

Peraeopod 1 short, 2nd joint longest, nearly equal to 3rd–5th together, 4th shortest, broader than long, 5th equal to 3rd, somewhat ovate, inner margin convex, with 3 spine-setae distally, 6th as long as but only $\frac{1}{2}$ width of 5th, 7th scarcely $\frac{1}{2}$ length of 6th.

Peraeopods 2–4 except the 2nd joints, lost in all the specimens.

Peraeopods 5–7 very slender, 2nd and 3rd joints subequal, 4th very short, 5th a little longer than 3rd, apparently without any setae, 6th subequal to 3rd, narrow-ovate, widened slightly distally, setae on one margin only, 7th absent.

Pleopod 1 in ♂ reaching to apex of pleon, peduncles contiguous throughout their entire length, fused but with distinct suture, very narrow, widening slightly before the blunt apex, ramus very small, inserted obliquely on inner apex.

Operculum in ♀ reaching to apex of pleon, nearly circular when flattened out, but in the natural position folded longitudinally, roof-like.

Pleopod 2 in ♂ reaching to apex of pleon, peduncles large, semicircular, fused along the straight inner margins but with distinct suture, in natural position folded longitudinally, roof-like, slightly diverging distally where the short, geniculate, apically subacute inner rami (stylets) are inserted, the rami not projecting beyond the apices of the peduncles.

Uropod slender, uniramous, 2nd joint a little longer than 1st.

Length: ♂ 3·5 mm., ♀ 4 mm.; *breadth:* across anterior part of body ♂ 1 mm., ♀ 1·25 mm. Another ♀ measures 5·5 × 1·5 mm. and the anterior half of another (ovigerous) ♀ measures 2 × 2 mm.

Colour: In spirit pinkish-white.

Locality: Cape Point N. 89° E., distant 36 miles. 700 fathoms. Bottom green mud. 2 ♂ ♂, 3 ♀ ♀, 2 fragments. s.s. "Pieter Faure." 20/8/03. (S.A.M. No. A4068.)

Geogr. Distribution: W. coast of Ireland, 199–382 fathoms (Tattersall); Davis Strait, 1435 fathoms and Faroe Is., 463–515 fathoms (Hansen).

Gen. ILYARACHNA Sars.

1863. *Mesostenus* G. O. Sars, Chr. Vid. Selsk. Forhl. 1863, p. 211 (nom. preocc.).
1870. *Ilyarachna* id. Christ. Fjord. Dybvands Fauna, 1869, p. 44.
1886. ,, Beddard, Challeng. Rep. vol. 17, p. 76.
1896. ,, Bonnier, Ann. Univ. Lyons, vol. 26, p. 608.
1897–8 ,, Sars, Crust. Norw. vol. 2, p. 134.
1901. ,, Ohlin. Bih. Sv. Vet. Akad. vol. 26, pt. 4, No. 12, p. 37.
1905. ,, Tattersall, Fish. Irel. Sci. Inv. 1904, ii, p. 28.
1911. ,, Richardson, Bull. Mus. d'Hist. Nat. Paris, 1911, No. 7, p. 533.
1914. ,, Vanhöffen, Deutsche Südpol. Exp. vol. 15, pt. 4, p. 591.

Ilyarachna affinis n. sp.

Body smooth, glabrous. Head broader than long, with a transverse ridge on both anterior and posterior margin. Peraeon segments 1–3 subequal, 4 longer distally, its anterior margin curved forwards, antero-lateral angles, especially those of segment 2, acute, segments

5–7 narrower than 4, gradually decreasing in width, 5 shortest dorsally, 6 shortest laterally, 7 of equal width throughout, all the segments with transverse ridges marking the anterior and posterior margins, the anterior ones on segments 1–3 very faintly denticulate in two of the specimens; side-plates distinct on first 4 segments.

Pleon a little longer than 6th and 7th peraeon segments together, only a little narrower at base than 7th segment, basal margin straight with a transverse ridge, narrowing to a subacute apex, lateral margins straight except for a slight convexity above the insertion of the uropods.

Antenna 1, 1st joint subtriangular, outer apex subacutely produced, with 2 spines, outer margin with 2 spines near base and 1 in middle, inner margin with 3 spines just before insertion of 2nd joint, 3rd more slender than 2nd and a little longer, flagellum about equal to 2nd plus 3rd joints, 6-jointed, 1st joint shortest.

Only the basal joints of antenna 2 remaining.

Mouth-parts as figured by Sars for *I. longicornis* (1897, l.c. pl. 59).

Peraeopod 1 also as in *longicornis*. All the other peraeopods lost.

Operculum in ♀ ovate-lanceolate, with a strong and sharp median longitudinal keel reaching almost to the subacute apex.

Uropods lost.

Length: 5 mm.; *breadth:* 1·75 mm.

Colour: In spirit pinkish-white.

Locality: Cape Point N. 89° E., distant 36 miles. 700 fathoms. 4 nonovigerous ♀ ♀. s.s. "Pieter Faure." 20/8/03. (S.A.M. No. A4065.)

Very close to *longicornis* from the N. Atlantic, but distinguished by having the *outer* angle of the 1st joint of 1st antenna produced instead of the *inner*, and by the 5th peraeon segment being very distinctly narrower than 4th (thereby distinguished also from *plunketti* Tattersall, l.c. p. 28, pl. 7 *), with straight or very slightly emarginate, instead of convex, sides. The denticulation on the anterior margins of the first 3 segments is a variable feature (cf. Ohlin's remarks on *hirticeps* and *denticulata* in l.c. supra, p. 36).

Ilyarachna crassiceps n. sp.

Body smooth, glabrous. Head broader than long, the lateral portions not very pendulous, no transverse ridges on anterior or posterior margins. Peraeon segment 1 narrower than head, very short; segment 2 longer and wider, both 1 and 2 laterally obtuse; segment 3 with acute antero-lateral angles; segment 4 longer than 3,

* But see Hansen, l.c. 1916, p. 122.

lateral angles rounded-quadrate; segment 5 at base distinctly narrower than 4, widening distally, postero-lateral angles rounded, posterior margin concave: segment 6 of the same length laterally as dorsally, the posterior margin therefore concave, slightly narrower than 5; segment 7 slightly narrower than 6, posterior margin straight or very slightly trilobed, segment therefore longer dorsally than laterally. No transverse ridges on any of the segments. Side-plates on anterior segments not very distinct.

Pleon as broad basally as 7th peraeon segment, about as broad as long, lateral margins straight, apex obtuse.

Antenna 1, 1st joint stout, neither outer nor inner apex produced, the other joints lost.

Only the 3 basal joints of antenna 2 remaining.

All the peraeopods, except the 2nd joints, lost.

Pleopod 1 in ♂ narrow, apex of peduncle acute, ramus distinct, very narrow, projecting slightly beyond apex of peduncle, tipped with setules.

Operculum in ♀ with a sharp keel extending nearly to apex, denticulate in profile and setose like the rest of the surface.

Pleopod 2 in ♂, peduncle ovate, inner margin straight, apex acute, stylet reaching to apex of peduncle, the distal quarter of its length very fine.

Length: 2·75 mm.; *breadth:* 1·25 mm.

Colour: In spirit pinkish-white.

Locality: Cape Point N. 89° E., distant 36 miles. 700 fathoms. 1 ♂, 1 nonovigerous ♀. s.s. "Pieter Faure." 20/8/03. (S.A.M. No. A4133.)

Gen. EURYCOPE Sars.

1864. *Eurycope* G. O. Sars, Chr. Vid. Selsk. Forhl. 1863, p. 208.
1886. ,, Beddard, Challeng. Rep. vol. 17, p. 58.
1896. ,, Bonnier, Ann. Univ. Lyons, vol. 26, p. 596.
1897. ,, Hansen, Bull. Mus. Comp. Zool. Harv. vol. 31, no. 5, p. 96.
1897–8. ,, Sars, Crust. Norw. vol. 2, p. 144.
1901. ,, Ohlin, Bih. Sv. Vet. Akad. vol. 26, pt. 4, no. 12, p. 34.
1905. ,, Tattersall, Fish. Irel. Sci. Inv. 1904, II, p. 30.
1905. ,, Richardson, Bull. U.S. Nat. Mus. no. 54, p. 490.
1908. ,, id. Proc. U.S. Nat. Mus. vol. 34, p. 67.
1908. ,, id. ibid. vol. 35 [1909], p. 84.
1910. ,, id. ibid. vol. 37, p. 120.

1911. *Eurycope* Richardson, Bull. Mus. d'Hist. Nat. Paris, 1911, no. 7, p. 532.
1914. „ Vanhöffen, Deutsche Südpol. Exp. vol. 15, pt. 4, p. 586.
1916. „ Hansen, Dan. Ingolf Exp. iii, 5, p. 137.

Eurycope sulcifrons n. sp.

(Plate XVII. Figs. 22, 23.)

Body smooth, glabrous. Head short laterally but strongly produced forwards in a moderately broad process, which is apically rounded and dorsally shallowly grooved, a low rounded tubercle in the middle of the head. Peraeon segments 1–4 increasing gradually in width and length, laterally rounded, with rounded side-plates; segments 5–7 decreasing in width posteriorly, 5 longest at the sides, 6 longest dorsally, the anterior margin rather strongly convex, 7 of equal width throughout and about equal to the greatest length of 5, antero- and postero-lateral angles rounded. Pleon as broad as long, antero-lateral angles quadrate, apex rounded.

Antenna 1, 1st joint apically rounded, scarcely produced, 3rd nearly equal to 2nd, flagellum incomplete but at least 14-jointed.

Only the basal joints of antenna 2 remaining.

Maxilliped, 4th joint broader than long, outer apex shortly and acutely produced, 5th broader than long, greatest length on inner margin, which is distally cut into small shallow notches each with a setule, outer margin very short, outer apex acute, 6th strongly lobed internally, epipod reaching to middle of 5th joint, lanceolate, a little more than twice as long as broad, apex acute, outer margin scarcely angular, concentric sculpturing faint.

Peraeopods 1–4 lost. Peraeopods 5–7, 5th joint very strongly expanded, 6th also broadly ovate, not twice as long as broad, 7th $\frac{1}{2}$ width of 6th, straight, narrow-ovate.

Pleopod 1 in ♂, peduncle widest basally, tapering with slightly sinuous margins lateral to a blunt apex bearing a few setules, rami not distinct. Operculum in ♀ nearly circular.

Pleopod 2 in ♂, peduncle semicircular, inner margin slightly concave, stylet inserted about the middle, basal part of 2nd joint rather stout, distal part abruptly narrower, outer ramus between stylet and apex of peduncle.

Uropods lost.

Length: 4 mm.; *breadth:* 1·5 mm.

Colour: In spirit dirty pinkish.

Locality: Cape Point N. 89° E., distant 36 miles. 700 fathoms. Bottom green mud. 1 ♂, 9 ♀♀, some ovigerous. s.s. "Pieter Faure." 20/8/03. (S.A.M. No. A4063.)

In the shape of the head and the body this species is close to *E. parva* Bonnier (l.c. p. 600, pl. 33, fig. 4). The 5th and 6th peraeon segments, however, are not fused dorsally, segments 1–4 are not produced anteriorly and the 1st and 2nd pleopods differ in shape.

Eurycope quadrata n. sp.

(Plate XVII. Figs. 20, 21.)

Body smooth, glabrous. Head moderately long, shortly produced in front in a quadrangular process broader than long. Peraeon segments 1–4 subequal, increasing in width, side-plates directed forwards, acute; segments 5–7 decreasing in width, 5 and 6 subequal in length and of equal length throughout, 7 nearly as long as 5 and 6 together, antero-lateral angles of all three acutely, but shortly, produced forwards, postero-lateral angles rounded. Pleon as broad as long, antero-lateral angles acute, apex rounded.

Antenna 1, 1st joint apically rounded, not produced, the other joints lost.

Antenna 2, all except the basal joints lost.

Maxilliped, 4th and following joints in all the specimens broken off, epipod similar to that of *E. cornuta* (figured by Sars, l.c. pl. 64), apically acute, outer margin strongly produced in a blunt process, with the margin on either side concave, concentric sculpturing on epipod and 2nd joint strongly marked.

Peraeopods 1–7 all lost.

Pleopod 1 in ♂, peduncles of nearly the same width throughout, lateral margins sinuous, apices narrow acute, rami distinct, apically subacute with a few setules.

Pleopod 2 in ♂, peduncle subtriangular, inner margins straight, outer strongly angular near base, apex truncate, stylet inserted about middle of inner margin, tapering gradually, outer ramus broad, inserted on the truncate apex of peduncle.

Uropods lost.

Length: 4 mm.; *breadth:* 1·75 mm.

Colour: In spirit dirty pinkish.

Locality: Cape Point N. 89° E., distant 36 miles. 700 fathoms. Bottom green mud. 9 specimens, some mutilated. s.s. "Pieter Faure." 20/8/03. (S.A.M. No. A4062.)

This species is close to *E. complanata* Bonnier (1896, l.c. p. 601,

pl. 34, fig. 1), but has a more elongate pleon and a less produced and blunter median process on the head. The epipod of the maxilliped and the 2nd pleopod are very much alike in the two species.

Eurycope fusiformis n. sp.

(Plate XVII. Fig. 19.)

Female.—Body widest in the middle, tapering towards both ends, smooth, glabrous. Head strongly emarginate in front, lateral portions not developed. Peraeon segment 1 wider than head, segments 1–4 increasing gradually in width, antero-lateral angles of 1 and 2 quadrate, of 3 and 4 shortly acute; segment 5 widest of all, longer laterally than dorsally, antero-lateral angles rounded-quadrate, posterior margin concave; segment 6 of same length laterally as dorsally, posterior margin concave; segment 7 longer dorsally than laterally, posterior margin straight; segments 5–7 closely united, with nearly straight and even lateral margins, narrowing gradually posteriorly. Transverse ridges not developed. Side-plates distinct only on segments 3 and 4. Pleon at base as broad as peraeon segment 7, almost an equilateral triangle in shape, lateral margins slightly convex, apex subacute.

Antenna 1, 1st joint stout, 2nd short and much narrower, 3rd very slender, flagellum at least 5-jointed, 1st very short.

Antenna 2, except the basal joints, lost.

Mandibular palp with 3rd joint falciform.

Epipod of maxilliped broad, the inner margin and the proximal portion of outer margin subparallel, the distal portion of outer margin bevelled off straight or very slightly concave to the subacute apex.

All the peraeopods lost.

Operculum with a broad strong keel extending to apex.

Length: 3·5 mm.; *breadth:* 1·5 mm.

Colour: In spirit pinkish-white.

Locality: Cape Point N. 89° E., distant 36 miles. 700 fathoms. 3 nonovigerous ♀ ♀. s.s. "Pieter Faure." 20/8/03. (S.A.M. No. A4134.)

This species is in general appearance like *Ilyarachna plunketti* Tattersall (l.c. p. 28, pl. 7), but differs in having the anterior margin of 7th peraeon segment strongly convex and the pleon shorter relatively to its length—two features which bring it very close to *I. abyssorum* Rich. (Bull. Mus. d'Hist. Nat. Paris, 1911, no. 7, p. 533). Both species are without lateral developments of the head, but the latter species has no palp to the mandible and a distinctly biramous uropod.

The only features by which the generic position of the present specimens can be determined are the mandibular palp and the epipod of the maxilliped. Both of these are of the type found in *Eurycope*.

EPICARIDEA.

This tribe has hitherto been poorly represented in the fauna list of South African Crustacea. Stebbing in the General Catalogue, 1910, records only two species. In 1914 were added:

Liriopsis sp., from Durban, by Brady (Ann. Durban Mus. vol. 1, pt. 1, p. 7, pl. 3, figs. 9–15).

Hemiarthrus nematocarcini by Stebbing (Ann. S.A. Mus. vol. 15, pt. 1, p. 47, fig.).

Zonophryxus quinquedens by Barnard (ibid. vol. 10, pt. 7, p. 228, pl. 22).

Together with the species recorded below the number of the South African *Epicaridea* now totals 11.

With regard to the explanation of Brady's figures of *Liriopsis*, it may be remarked that, presumably by misprint, fig. 12 is labelled "first foot," whereas its structure shows it to be either the 6th or 7th; fig. 14 labelled as "second foot?" may be either the 1st or 2nd.

Family BOPYRIDAE.

1905. *Bopyridae* Richardson, Bull. U.S. Nat. Mus. no. 54, p. 498.
1908. ,, Stebbing, S.A. Crust. pt. 4, p. 56.
1910. ,, id. Tr. Linn. Soc. Lond. Zool. vol. 14, pt. 1, p. 111.

The separation of the two genera *Pseudione* and *Palaegyge* according to the presence or absence of warts on the pleopods of the female proposed by Giard and Bonnier and accepted by Stebbing (Hist. Crust. 1893, p. 410), is not recognised by Sars (Crust. Norw. vol. 2, p. 202). It would seem, however, to be a useful division though somewhat arbitrary, and moreover it can be correlated with the habitat: the species of *Palaegyge* occur on the *Caridea*, the species of *Pseudione* on the *Anomala* and *Thalassinida*.

Gen. PALAEGYGE Giard & Bonn.

1888. *Palaegyge* Giard & Bonnier, Bull. Sci. Fr. Belg. vol. 19, p. 68 (sep. copy, pp. 3, 7, 11).
1890. ,, id. ibid. vol. 22, p. 384.
1892. ,, Weber, Zool. Ergebn. vol. 2, p. 557.

1893. *Palaegyge*, Stebbing, Hist. Crust. p. 410.
1900. ,, Bonnier, Trav. Stat. Zool. Wimereux, vol. 8, p. 332.
1910. ,, Horst, Notes from Leyden Mus. vol. 32, No. 1, p. 67.
1912. ,, Richardson, Proc. U.S. Nat. Mus. vol. 42, p. 521.

Palaegyge plesionikae n. sp.

(Plate XVII. Figs. 24, 25.)

Female.—Head a little wider than long, anterior margin straight or slightly concave, "limbe posterieur" entire, each of its exterior angles produced into a rather stout, curved process. Ovarian bosses on first 4 peraeon segments; epimera not conspicuous, not developed as lamellae on the last 3 segments. Pleon of 6 distinct segments, the last entire; pleurae entire, not greatly developed, not concealing the outer rami of pleopods.

Antenna 1 3-jointed, basal joint stout, completely separated from its fellow by the triangular frontal plate, with apical tuft of setae.

Antenna 2 7-jointed, basal joint stout, distal 2 joints minute, with apical tuft of setae.

Maxilliped divided into two portions by an oblique suture, anterior portion quadrangular, postero-exterior angle produced backwards into a long curved process; palp rather large, strongly setose, posterior portion subtriangular, antero-interior angle produced.

The five pairs of marsupial plates overlap in the centre. First pair with the distal lobe produced backwards in a blunt process. The margin of the overlapping ridge has three small indentations. The hind margins of all the pairs, except the first, fringed with setae, those on the 5th being strong and conspicuous.

Pleopods increasing successively in length and diminishing in thickness posteriorly, the outer rami larger than the inner, both smooth.

Uropods slightly curved, tapering, with blunt apices.

Male.—Lanceolate in outline, head broader than long, anterior margin evenly rounded, eyes small but distinct. Peraeon segments all distinct, laterally rounded. Pleon segments also distinct, the lateral portions directed backwards, the 6th segment triangular, with a few short spines on postero-external angles.

Antenna 1 3-jointed, basal joint large, not contiguous with its fellow, with apical tuft of setae.

Antenna 2 7-jointed, basal joint not very enlarged, 6th and 7th minute, with apical tuft of setae.

Pleopods rudimentary, lobe-like projections on 1st–5th pleon segments.

Length: ♀ 15 mm., ♂ 4 mm.; *breadth:* ♀ 9 mm.; ♂ 1·5 mm.

Colour: In spirit pale yellowish.

Locality: Table Mountain N. 79° E., distant 40 miles. 250 fathoms. 3 ♀ ♀, 1 ♂; Cape Point NE. ¾ E., distant 29 miles. 470 fathoms. 1 ♀, 1 ♂. s.s. "Pieter Faure." 18/4/00 and 11/6/03. (S.A.M. Nos. A2274 and A2275.)

Host: Plesionika martia (M. Edw.). In the branchial cavities, both right and left, chiefly the former, the males are attached sometimes to the pleopods of the female, head hindermost, sometimes transversely across the middle of the brood-pouch.

In this species the uropods in the ♀ are more developed than appears usual in this genus according to definition. Moreover, the species hitherto described have all been taken from members of the family *Palaemonidae*, whereas the host of the present species belongs to the *Pandalidae*.

Gen. PSEUDIONE Kossm.

1881. *Pseudione* Kossmann, Zeitsch. Wiss. Zool. vol. 35, p. 663.
1890. ,, Giard and Bonnier, l.c. p. 377.
1893. ,, Stebbing, l.c. pp. 410, 411.
1897. ,, Hansen, Bull. Mus. Comp. Zool. Harv. vol. 31, No. 5, p. 118.
1898. ,, Sars, Crust. Norw. vol. 2, p. 200.
1898. ,, Calman, Ann. N.Y. Ac. Sci. vol. 11, No. 13, p. 274.
1900. ,, Bonnier, l.c. p. 292.
1904. ,, Richardson, Proc. U.S. Nat. Mus. vol. 27, pp. 78, 83.
1905. ,, id. Bull. U.S. Nat. Mus. No. 54, p. 522.
1910. ,, id. Wash. Bur. Fish. Doc. 736, p. 37.

Pseudione munidae n. sp.

(Plate XVII. Figs. 26, 27.)

Female.—Head a little wider than long, anterior margin slightly convex, crenulate, "limbe posterieur" with hind margin and lateral processes crenulate. Ovarian bosses on first 4 segments. Epimera inconspicuous, antero-lateral angle acutely produced on anterior segments, lateral margin irregularly indented on the posterior segments. Pleon of 6 distinct segments, 6th minute and embraced by 5th, ventral surfaces crossed by longitudinal rugae, pleura developed as lamellae, but not concealing the pleopods, entire, covered with rounded warts.

Antenna 1 3-jointed, basal joint not greatly expanded, not contiguous with its fellow.

Antenna 2 4-jointed, basal joint not greatly expanded.

A pair of large tubes as described by Calman in *P. giardi*.

Maxilliped, anterior portion produced both backwards and forwards on the outside, posterior portion triangular, its antero-interior angle not produced, no palp.

Peraeopods with 3rd joint bulbous, exterior angle of palm produced into a rounded setose lobe on which the curved finger closes.

The 5 pairs of marsupial plates overlap in the centre. The first pair with a blunt posterior process on the distal lobe, no overlapping ridge. Hind margin of the 4th pair minutely setulose, of the 5th strongly setose.

Pleopods lanceolate, becoming slightly shorter posteriorly, outer and inner rami subequal, with small warts, chiefly on the anterior pairs.

Uropods lanceolate with acute apices.

Male.—Lanceolate in outline, head broader than long, anterior margin rounded. Peraeon segments distinct, laterally narrowed, subangular. Pleon abruptly narrower than peraeon, all 6 segments distinct, 6th segment broader than long, hind margin emarginate, postero-lateral angles without setae.

Antenna 1 3-jointed; antenna 2 4-jointed; the basal joints not expanded.

Peraeopods with 3rd joint not bulbous, palm oblique.

Pleopods—there are obscure indications of lobe-like processes on the first 3 segments and possibly on the 4th also.

Length: ♀ 9 mm., ♂ 4 mm.; *breadth:* ♀ 6 mm., ♂ 1·5 mm.

Colour: In spirit yellowish-white.

Locality: Off Buffalo River, East London. 300 fathoms. ♂♂ and ♀♀. s.s. "Pieter Faure." 16/4/01 and 24/4/01. (S.A.M. Nos. A269 and A2273.)

Host: Munida sancti-pauli Henderson. In the branchial cavity.

Distinguished from *P. crenulata* Sars 1898 by the acute epimera and the rounded pleura in the ♀. The ♂ bears most resemblance to that of *P. giardi* Calman 1898.

Pseudione crenulata Sars.

1898. *Pseudione crenulata* Sars, Crust. Norw. vol. 2, p. 203, pl. 86, fig. 1.

1900. ,, ,, Bonnier, Trav. Stat. Wimereux, vol. 8, p. 303.

Female.—Head only very faintly crenulate, "limbe posterieur" with margin entire, the lateral processes not crenulate. Eyes not distinguishable. Ovarian bosses on segments 1–4. Maxilliped with inner distal angle of anterior part not so much produced as in Sars' figure, without any indication of a palp. First marsupial plate without posterior process on distal lobe, overlapping ridge well developed; posterior margin of plates 2 and 3 setulose, of 4 and 5 strongly setose.

In other respects corresponding with Sars' description.

Length: ♀ 5 mm., ♂ 2 mm.; *breadth:* ♀ 3·5 mm., ♂ 1·5 mm.

Colour: In spirit dull pinkish.

Locality: Off Port Shepstone, Natal. 24 fathoms. s.s. "Pieter Faure." (S.A.M. No. A4860.)

Host: Galathea dispersa Bate. In the branchial cavity.

Geogr. Distribution: Coast of Norway. On *Munida rugosa* and *tenuimana*. (Sars.)

PARAGIGANTIONE n. g.

Female.—Body oval, asymmetrical. Epimera well defined, extending the whole length of the segment, not expanded. Pleon segments distinct. Pleura hiding the pleopods but not expanded, entire. Maxilliped similar to that of *Gigantione*, without palp. All 7 pairs of peraeopods developed. Pleopods biramous, entire, inner ramus larger than outer. Uropods biramous, rami subequal, ovate, not pedunculate.

Male.—Peraeon and pleon segments distinct. A median ventral papilla on peraeon segments 1–6. Pleopods present on segments 1–5, lobe-like. Uropods lamellate, uniramous, ovate.

Parasitic in the branchial cavity.

This genus differs from *Gigantione* in having in the ♀ non-pedunculate uropods, the segments not expanded and the pleopods not fimbriate or fringed. No mention is made of the ventral papillae of the ♂ in any species of *Gigantione*, so that their absence may be reckoned as a characteristic of the genus.

The only other genus in which the ♀ has biramous uropods and the pleon segments of the ♂ are distinct is *Aporobopyroides* Nobili 1906, but in this genus the 5th and 6th pleon segments of the ♂ are fused dorsally and ventrally and there are no pleopods or uropods. The ♂ of *Urobopyrus* Richardson 1904 is unknown.

PARAGIGANTIONE PAPILLOSA n. sp.

(Plate XVII. Figs. 28, 29.)

Female.—Head broader than long, anterior margin slightly convex,

" limbe posterieur " entire, the curved process at exterior angle strong. Ovarian bosses absent or not yet developed. Epimera conspicuous, extending whole length of segments. Pleon of 6 distinct segments, pleura entire, only the 4th and 5th strongly produced as lamellae, 5th segment embracing 6th, which is broader than long.

Antenna 1 3-jointed, 1st and 2nd joints stout, 3rd minute, tipped with setae.

Antenna 2 5-jointed, 1st and 2nd joints stout, 3rd and 4th elongate, 5th minute, tipped with setae.

Maxilliped, anterior portion quadrangular, exterior angle rounded, margins setose, posterior portion more semicircular than triangular, inner apical angle acute, ending in a small spine, inner margin setose, palp absent.

Only the first pair of marsupial plates meet in the centre; the others apparently are not fully developed. First pair with the 2 lobes subtriangular and about equal in size, overlapping ridge entire and smooth. Inner and hind margins of 2nd–5th pairs and inner margin of the distal lobe of 1st pair setose.

Pleopods probably not fully developed, inner ramus broadly lanceolate with acute apex, larger than outer ramus, which is quadrate, with the postero-exterior angle a little produced.

Uropods biramous, attached to the lateral angles of 6th pleon segment, rami subequal, ovate, apical margins finely setulose.

Male.—Nearly parallel-sided, anterior margin of head convex. Peraeon segments all distinct, laterally somewhat pointed, 1st with the median ventral papilla pointed, segments 2–6 with the papilla rounded, with a small pit in the middle. Pleon segments all distinct, pleura developed as blunt lamellae, the 5th segment embracing 6th, which is as broad as long, ovate and cleft nearly to the base.

Pleopods on segments 1–5 lobe-like.

Uropods lamellate, uniramous, obovate, extending a little beyond apex of 6th segment, apical margins finely setose.

Length: ♀ 7·5 mm., ♂ 3 mm.; *breadth:* ♀ 4 mm., ♂ 1 mm.

Colour: In spirit yellowish-white.

Locality: Off Buffalo River, East London. 300 fathoms. 1 ♂ and ♀. s.s. " Pieter Faure." 24/4/01. (S.A.M. No. A2277.)

Host: *Munida sancti-pauli* Henderson. In the branchial cavity.

Gen. HEMIARTHRUS Giard & Bonn.

1843. *Phryxus* Rathke, Nova Acta Ac. Leop.-Carol. Naturae Curios. p. 40.

1887. *Hemiarthrus* Giard & Bonnier (date quoted from Stebbing).
1893. ,, Stebbing, Hist. Crust. p. 417.
1898. *Phryxus* Sars, Crust. Norw. vol. 2, p. 214.

Hemiarthrus nematocarcini Stebb.

1914. *Hemiarthrus nematocarcini* Stebbing, Ann. S.A. Mus. vol. 15, pt. 1, p. 47, fig.

The only further remarks necessary concerning this species is that the pleon of the ♀ is subacute and entire. This character distinguishes the species easily from *H. abdominalis* (Kröyer).

Family CYPRONISCIDAE.

1889. *Cyproniscidae* Giard & Bonnier, Trav. Stat. Wimereux, Bopyriens, p. 221.

Gen. CYPRONISCUS, Kossm.

1884. *Cyproniscus* Kossmann, SB. K. Ak. Wiss. Berlin, Hft. 22, p. 460.
1902. ,, Stebbing, S.A. Crust. pt. 2, p. 75.

Cyproniscus crossophori Stebb.

1901. *Cyproniscus crossophori* Stebbing, Knowledge, vol. 24, p. 100.
1902. ,, ,, id. l.c. p. 76, pl. 15B.

Three specimens of the host *Crossophorus africanus* Stebb., from the "Pieter Faure" collection, have been examined for this parasite. In one 2 immature ♀ ♀ and 3 larvae were found, in another 3 larvae, and in the third 1 adult ♀.

The adult ♀ is symmetrical, flat on the side apposed to the host, convex on the outer side, anterior end narrower than the posterior, shaped therefore like half a pear. About 10 segments are indicated by shallow grooves. No attachment cord was found, the parasite appearing to be quite free in the incubatory pouch of the host. Length: 6·25 mm.; breadth and depth: both 3 mm.

The immature ♀ ♀ measure ca. 2 × 1·5 mm. and show indications of 7–9 segments. Head with a rudimentary oral cone, and on each side of this a short antenna-like process, which is constricted near the end so as to appear 2-jointed, but there is no suture.

The larvae range from 1–2·25 mm. in length and agree with Stebbing's description. The largest are probably functional ♂ ♂.

All three hosts were females.

Locality: Lion's Head SE. ¼ E., distant 50 miles. 230 fathoms. 1 adult ♀; South Head E. by S. ½ S., distant 25 miles. 190 fathoms. 2 immature ♀ ♀ and 6 larvae. (Both localities off the Cape Peninsula.) s.s. "Pieter Faure." 2/4/02 and 3/4/02. (S.A.M. Nos. A4165 and A4166.)

Family CABIROPSIDAE.

1895. *Cabiropsidae* Giard & Bonnier, Bull. Sci. Fr. vol. 25, pp. 421, 441, 443.

As Stebbing has done in the case of the *Cyproniscidae*, I keep this family separate for the sake of convenience, although Sars regards it as a part of the *Cryptoniscidae*.

Gen. CLYPEONISCUS Giard & Bonn.

1895. *Clypeoniscus* Giard & Bonnier, l.c. p. 444.
1899. ,, Sars, Crust. Norw. vol. 2, p. 239.
1905. ,, Richardson, Bull. U.S. Nat. Mus. No. 54, p. 577.

Only two species of this genus are known: *hanseni* Giard & Bonn. and *meinerti* Giard & Bonn., both from the North Atlantic and infesting members of the family *Idoteidae*. Their specific distinctness is doubtful.

Two larval specimens which may belong to this genus were found on a specimen of *Lanocira capensis* (see supra, p. 354).

Clypeoniscus stenetrii n. sp.

Body of ♀ irregularly oval, incised anteriorly and posteriorly, lateral margins with irregular shallow indentations. Dorsal surface moderately convex, the opaque area ovoid but indistinctly defined. Ventral surface with a longitudinal slit extending from the anterior to the posterior incisions, its margins with (so far as it was possible to count them) 10 pairs of marginal folds. These do not appear to be double or to interlock as is the case in *meinerti*.

A single ♂ was found attached to the same host, but is not in a good enough state of preservation to allow of the characters of antenna 1, side-plates and peraeopods being observed. The outer ramus of uropod is much shorter than inner.

The structure of the embryos also could not be made out, and in particular it was quite impossible to determine the presence or absence of the ventral plate.

Nevertheless, there is no doubt that this is a species of *Clypeoniscus* in view of the close agreement of the ♀ with *hanseni*. As to specific distinctness, scarcely any character can be found except the (apparently) singleness of the marginal folds on the brood-lamellae. Sars doubts the specific distinctness of the two northern species. These two forms were considered as belonging to two species by Giard & Bonnier in conformity with their assumption that each species of host is infested by its own particular species of parasite. This assumption has been proved to have no foundation in fact, or at least to have many exceptions.

I have instituted a new species for the South African specimens, not in support of the above hypothesis, but in order to indicate the occurrence of the genus on a member of a family different from that on which the northern species are found.

Length: ♂ ·75 mm., ♀ 2 mm.; *breadth:* ♀ 1·5 mm.

Locality: Vasco da Gama Peak N. 71° E., distant 18 miles (off Cape Peninsula). 230 fathoms. ♂ and ♀ attached separately to the ventral surface of the same specimen of *Stenetrium dagama* (see supra, p. 399). s.s. "Pieter Faure." 4/5/00. (S.A.M. No. A4167.)

Gen. et sp. incert.

(Text-figs. 1, 2.)

Attached to the ventral side of the peraeon of a ♂ specimen of *Ilychthonos capensis* (supra, p. 415) were two minute spherical bodies. They are both evidently ♀ ♀, but as no larvæ or ♂ ♂ were present their systematic position is uncertain.

They bear some resemblance to *Munnoniscus* Giard & Bonnier 1895, but this genus possesses no definite fixing apparatus. *Oosaccus* Richardson (Bull. U.S. Nat. Mus. no. 54, p. 582, fig. 644) has no attachment cord, but appears to have a kind of suction-disk composed of a raised rim with 3 or 4 valvular flaps within.

The two specimens in question have the following structure, so far as I have been able to elucidate it. Having only the two specimens, which, moreover, are not exactly alike, I have not resorted to sectioning, but contented myself with mounting them whole in glycerine jelly.

Both are spherical in shape, measuring ·5 mm. in diameter. In the one specimen (Fig. 1) there are two little contiguous conical processes,

each bearing a small spine. The spines do not project parallel but diverge outwards, so as to form an efficient fixing apparatus. The interior is completely filled by an opaque mass in which no definite elements can be distinguished. There appears to be no trace of any other structure.

On the other hand the second specimen (Fig. 2) shows no sign of the

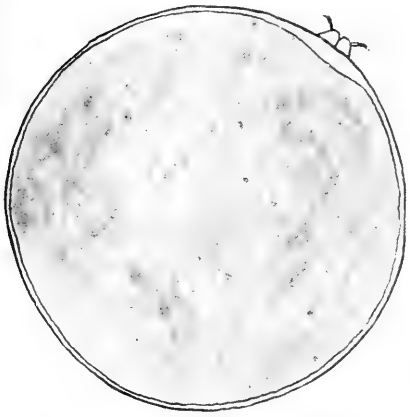


Fig. 1.

× 100.

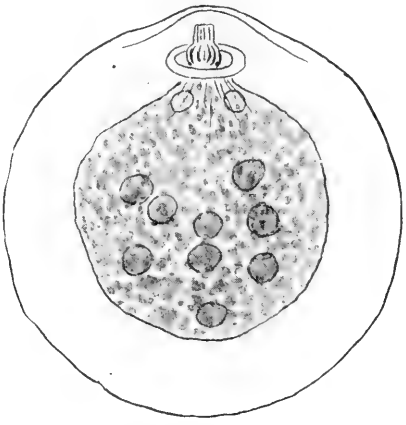


Fig. 2.

two little conical processes, but is attached by means of a kind of proboscis. This appears to be composed of 3 or 4 pieces, which are enlarged at the base, end bluntly and form a closed cylindrical tube. Around the base of this is a ring, the nature of which is difficult to interpret, and below this are seen several strands which may be muscles working the proboscis. The internal mass does not by any means fill up the outer sac. It appears granular, and contains several darker granular masses which are apparently ova. Just below the proboscis are two ovoid structures.

(S.A.M. No. A4131.)

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EXPLANATION OF PLATES.

Plate XV.

FIG.

1. *Apseudes agulhensis* n. sp. Animal enlarged 17 times, peraeopods and uropods omitted.
2. „ *australis* n. sp. Animal enlarged 10 times, peraeopods and uropods omitted.
3. *Trichapseudes tridens* n. g. et sp. Animal enlarged 7 times, peraeopods and uropods omitted.
4. „ „ „ Mandible.
5. „ „ „ Maxilliped.
6. „ „ „ Peraeopod 1.
7. „ „ „ Exopod of peraeopod 1.
8. „ „ „ Exopod of peraeopod 2.
9. *Gnathia spongicola* n. sp. Animal enlarged 7 times, antennae and peraeopods omitted.
10. „ *disjuncta* n. sp. Animal enlarged 11 times, antennae and peraeopods omitted.
11. *Apanthura serricauda* n. sp. Maxilliped with apical joint further enlarged.
12. „ „ „ Telson.
13. *Pseudanthura lateralis* Rich. Telson and right uropod from above.
14. „ „ „ Antenna 1.
15. „ „ „ Peraeopod 1.
16. „ „ „ Maxilliped.
17. *Cirolana littoralis* n. sp. Frontal lamina.
18. „ *meinerti* n. sp. Frontal lamina.
19. „ *fluviatilis* Stebb. Frontal lamina.
20. „ *palifrons* n. sp. Animal enlarged 5 times, peraeopods omitted.
21. „ „ „ Frontal lamina.
22. „ *cingulata* n. sp. Animal enlarged 5 times, peraeopods omitted.
23. „ „ „ Frontal lamina.
24. *Gnatholana mandibularis* n.g. et sp. Animal enlarged 6 times, peraeopods omitted.
25. „ „ „ Mandible.
26. *Zuzara furcifer* n. sp. Peraeon segment 7, pleon, telson and right uropod.
27. „ „ „ Epistome.
28. *Cymodoce tuberculosa* Stebb. var. *tripartita* Rich. Pleon and telson with uropods, ♂, setæ omitted.

Plate XVI.

FIG.

1. *Cymodoce japonica* Rich var. *natalensis* n. Pleon and telson with uropods, ♂, setæ omitted.
2. „ „ „ „ The same, ♀.
3. „ *tetrathele* n. sp. Pleon and telson with uropods, ♂, setae omitted.
4. „ *cavicola* n. sp. Pleon and telson with uropods, ♂.
5. „ „ „ The same, ♀.

FIG.

6. *Cymodoce cryptodoma* n. sp. Pleon and telson with uropods, ♂, setae omitted.
7. „ „ „ The same, ♀.
8. „ *excavans* n. sp. Pleon and telson with uropods, ♂, setae omitted.
9. „ „ „ The same, ♀.
10. *Cymodocella cancellata* n. sp. Animal enlarged 7 times, peraeopods omitted.
11. „ „ „ Lateral view of peraeon segments 5–7, pleon and telson.
12. „ „ „ Male stylet on pleopod 2.
13. „ „ „ Epistome.
14. „ „ „ Male appendages on peraeon segment 7.
15. *Cassidias africana* n. sp. Pleon and telson with uropods, ♂, dorsal view.
16. „ „ „ The same in lateral view.
17. „ „ „ The same, ♀, dorsal view.
18. *Holidotea unicornis* n. g. et sp. ♂ enlarged 6 times, antennae and peraeopods omitted.
19. „ „ „ ♀ enlarged 5 times.
20. „ „ „ Head process of ♂ further enlarged, in dorsal and lateral views.
21. „ „ „ Pleopod 1, ♀.
22. „ „ „ Pleopod 1, ♂, and male appendage.
23. „ „ „ Peraeopod 1.
24. *Arcturella pustulata* n. sp. ♀ enlarged 5 times, antennae and peraeopods omitted.
25. „ *longipes* n. sp. ♀ enlarged $4\frac{1}{2}$ times, only the left peraeopod 4 drawn in.
26. „ „ „ ♂ enlarged $4\frac{1}{2}$ times, antennae and peraeopods omitted.
27. „ *brevipes* n. sp. ♀ enlarged $4\frac{1}{2}$ times, only the right peraeopod 4 drawn in.
28. *Stenetrium dagama* n. sp. Peraeopod 1, ♂.
29. „ „ „ Pleopod 1, ♂.
30. „ *diazi* n. sp. Peraeopod 1, ♂.
31. „ „ „ Peraeopod 1, ♀.
32. „ „ „ Pleopod 1, ♂.
33. „ *saldanha* n. sp. Peraeopod 1, ♂.
34. „ „ „ Pleopod 1, ♂.

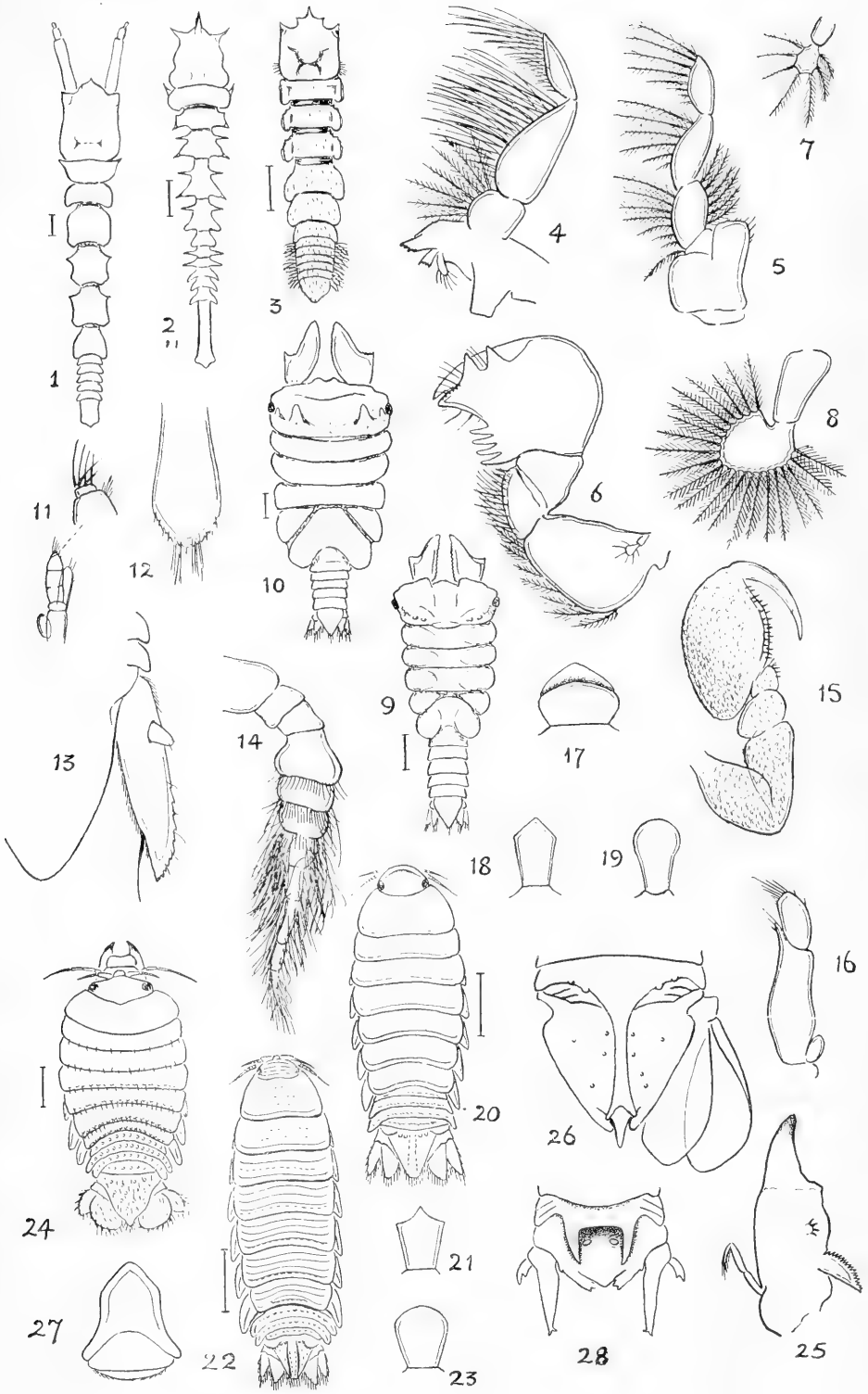
Plate XVII.

FIG.

1. *Janira angusta* n. sp. Animal enlarged 14 times, peraeopods omitted.
2. „ „ „ Peraeopod 1, ♂.
3. „ „ „ Pleopod 1, ♂.
4. *Haploniscus dimeroceras* n. sp. ♂ enlarged 15 times.
5. „ „ „ Pleopod 1, ♂.
6. „ „ „ Pleopod 2, ♂.
7. „ „ „ Antenna 2, ♂.
8. *Paramunna concavifrons* n. sp. Head, and left antenna 1.

FIG.

9. *Paramunna concavifrons* n. sp. Peraeopod 1.
10. *Macrostylis spiniceps* n. sp. Animal enlarged 13 times, with antenna 1, but without peraeopods.
11. „ „ „ Pleopod 1, ♂ with apex further enlarged.
12. „ „ „ Pleopod 2, ♂.
13. *Rhabdomesus bacillopsis* n. sp. Animal enlarged 10 times, with antenna 2 and peraeopods, as far as preserved, drawn in.
14. *Ilychthonos capensis* n. g. et sp. Animal enlarged 8 times, antenna 2 and peraeopods omitted.
15. „ „ „ Pleopod 2, ♂.
16. „ „ „ Pleopod 1, ♂.
17. *Pseudomunnopsis beddardi* (Tatt.). Pleopod 2, ♂.
18. „ „ „ Pleopod 1, ♂, with apex further enlarged.
19. *Eurycope fusiformis* n. sp. Animal enlarged 10 times, antenna 2 and peraeopods omitted.
20. „ *quadrata* n. sp. Pleopod 2, ♂.
21. „ „ „ Pleopod 1, ♂.
22. „ *sulcifrons* n. sp. Pleopod 1, ♂.
23. „ „ „ Pleopod 2, ♂.
24. *Palaegyge plesionikae* n. sp. ♀ enlarged 3 times, dorsal view.
25. „ „ „ ♂ enlarged 14 times, ventral view, peraeopods omitted.
26. *Pseudione munidae* n. sp. ♀ enlarged 3½ times, dorsal view.
27. „ „ „ ♂ enlarged 11½ times, ventral view, peraeopods omitted.
28. *Paragigantione papillosa* n. g. et sp. ♀ enlarged 5½ times, dorsal view, with terminal pleon segment and uropods further enlarged.
29. „ „ „ ♂ enlarged 14 times, ventral view, with terminal pleon segment and uropods further enlarged, peraeopods omitted.



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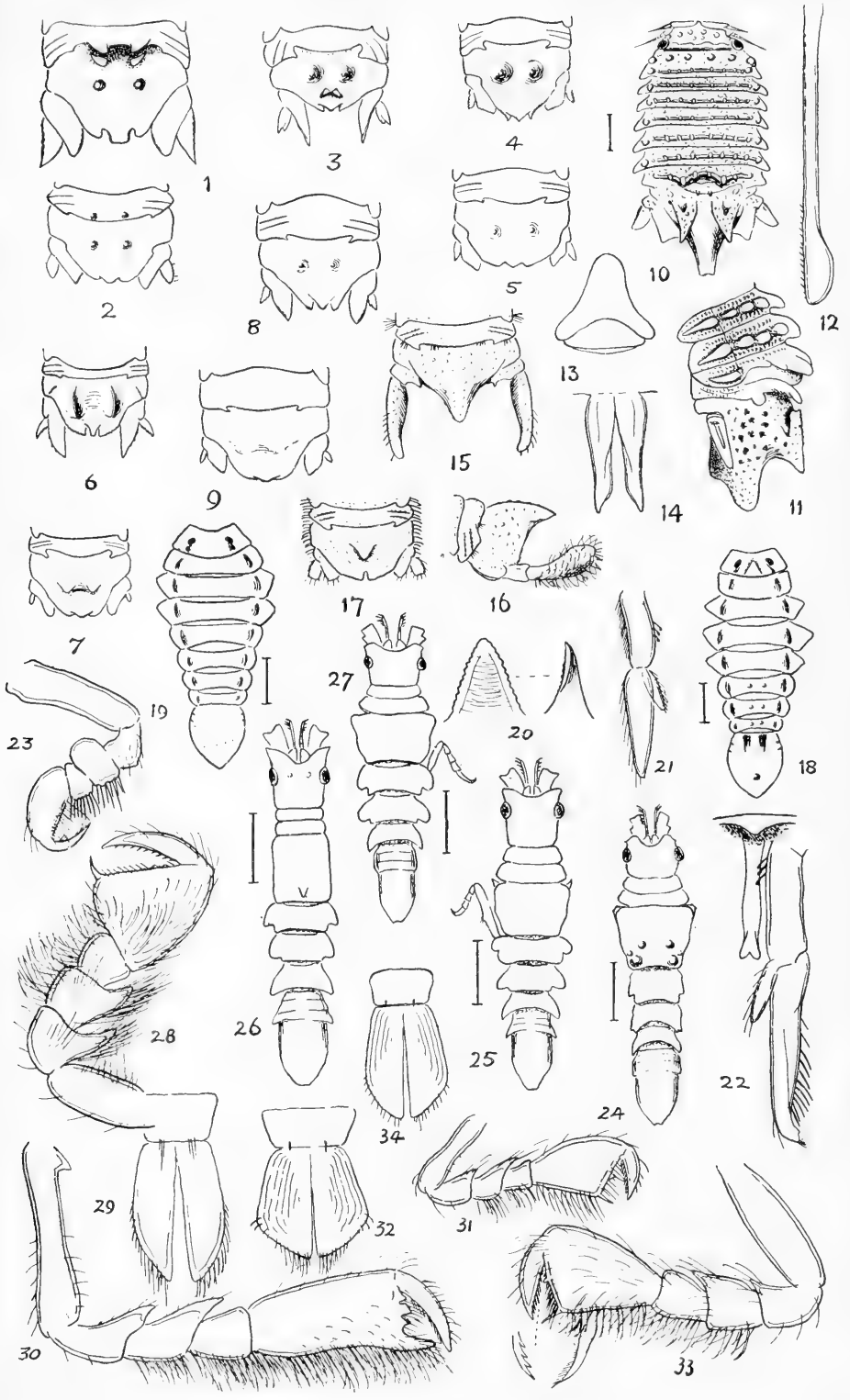
SOUTH AFRICAN ISOPODA.



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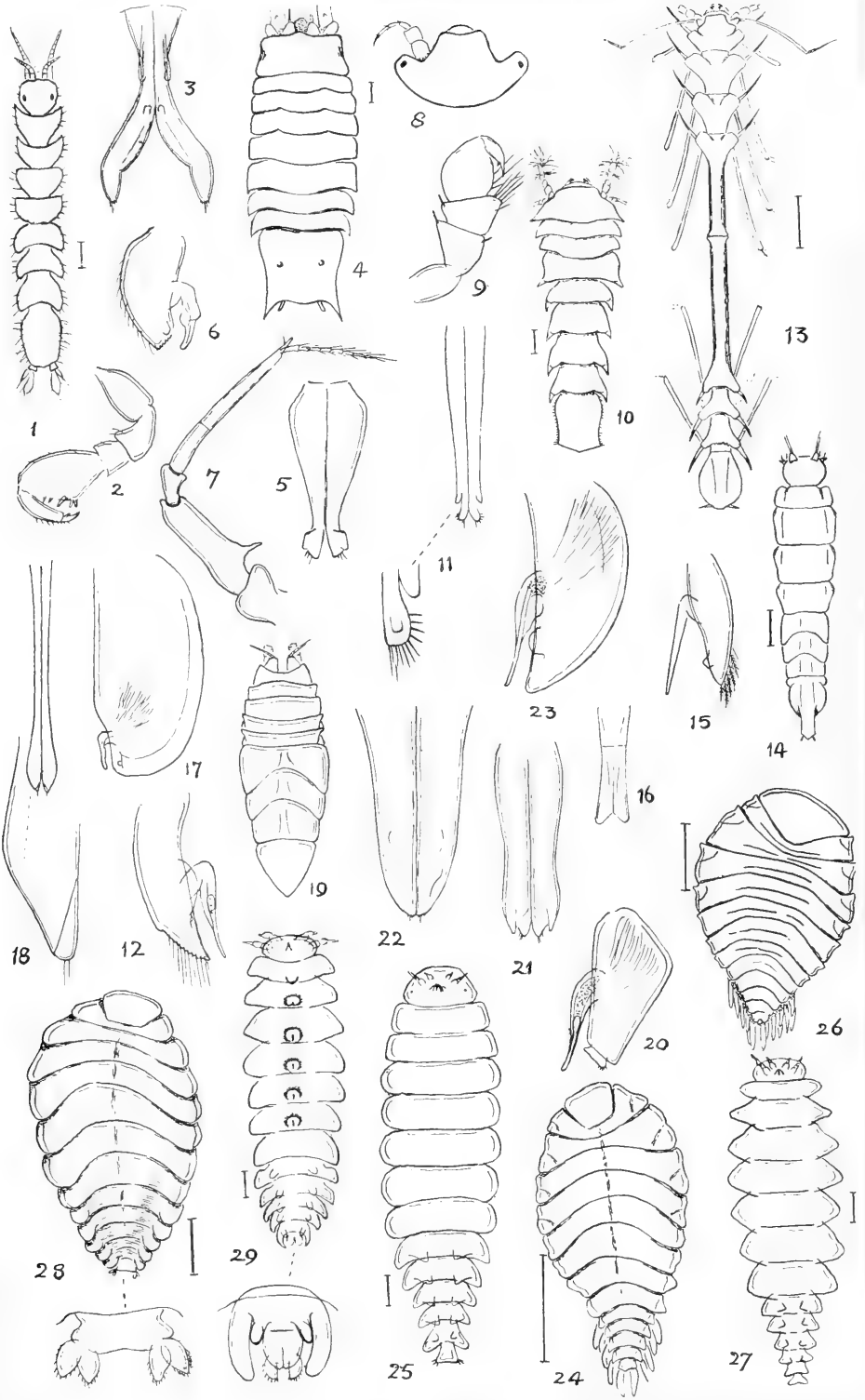

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12.—*Contributions to the South African Arachnid Fauna. II.—On Some New South African Spiders of the Families Barychelidae, Dipluridae, Eresidae, Zodariidae, Heracliidae, Urocteidae, Clubionidae.*—By R. W. E. Tucker, B.A., *Assistant.*

(With Plates XXVIII and XXIX.)

Family CTENIZIDAE.

Gen. IDIOPS, Perty.

Idiops pullus, Tucker.

I. pullus, Tucker in Ann. S. Afr. Mus. vol. 17, 1917, p. 88, text-figs. 2 A and B.

In the original description the following amendments should be made:

Carapace.—Equal to or slightly exceeding in length metatarsi I and IV.

Eyes.—Anterior medians large, circular, and less than a diameter from each other. Anterior laterals about $1\frac{1}{2}$–2 diameters from the anterior medians.

Tarsi.—Tarsus I with a few fine spinules down the centre.

An additional specimen of this species is now to hand from Kimberley. 1 ♂ (B. 4185) (Bro. J. H. Power).

This specimen is larger than the type, and presents the following variations; the palp, tibia I and the majority of other characters, however, are identical with the type.

Colour.—Carapace brownish-red; abdomen black dorsally, legs reddish distally.

Carapace.—Bearing more conspicuous setose hairs than in the type. Length equal to metatarsus IV, but subequal to metatarsus and to $\frac{1}{2}$ the tarsus of the 1st leg.

Chelicera.—With 5 teeth on each side of the groove.

Legs.—Metatarsus I with 2 spines down the inner side. Spinules on patella III scanty and scarcely distinguishable from the stouter hairs. Spinules on patella IV confined to 3 or 4 at the base of the anterior band of bristles.

Measurements.—Length of carapace 7 mm.; width 6·1 mm.; chelicera to end of abdomen, 17 mm.; 1st leg 27 mm., 4th leg 26 mm. long.

These differences again illustrate the amount of variation in size and spination, etc., according to the locality of the specimen.

Family BARYCHELIDAE.

Gen. DIPLOTHELE, Cambr.

Diplothele macequece, n. sp.

Specimens.—1 ♀ (No. B 2648, Type), from forest on Vengo Mts., Macequece, Portug. E. Africa (Major Conolly, 10/16).

Colour.—Darker than *D. arcturus*, Tucker (Ann. S. Afr. Mus., vol. 17, p. 118, 1917); carapace dark brown with radiate infuscations and sparse scattered hairs; abdomen dark above, no spots being apparent in its wrinkled condition; ventral surface slightly lighter. Sternum and coxæ medium golden brown; legs dark brown with olivaceous infuscations.

Carapace.—Equal in length to tibia, metatarsus and tarsus of 1st leg, and subequal to patella, tibia and metatarsus of 2nd leg (in *arcturus*, length equals patella, tibia, and $\frac{3}{5}$ metatarsus of 2nd leg); 4th legs missing. Fovea well marked, straight, and nearly as wide as the ocular tubercle. Ocular area much wider than long.

Eyes.—Anterior laterals situated on anterior edge of carapace and separated by more than their own long diameter; equal or subequal in area to the anterior medians; the latter less than a diameter apart, and about a diameter behind the anterior laterals. Posterior laterals long, oval and slightly smaller than the anterior laterals; posterior medians small and nearly touching both anterior medians and posterior laterals.

Sternum.—Longer than broad (breadth slightly exceeds $\frac{3}{4}$ length). Sigilla as in *arcturus*.

Labium.—Not quite twice as wide as long and bearing 1–2 teeth. Coxae of pedipalps with 8–12 teeth,

Chelicera.—Bearing no rastellum; bristles weaker than *arcturus*, dentition similar.

Legs.—Anterior tarsi with no clavate hairs on upper surface. Setal band on tarsi very faint. Metatarsus II with 1 strong spine on under surface basally. Other legs missing.

Pedipalps.—Scopula of tarsus divided by a weak line of setae; tibia with 2 weak apical spines on under surface.

Vulval plate with a pair of round dark marks showing near posterior lip centrally.

Measurements.—Chelicera to end of abdomen 13·5 mm. Carapace 6 mm. long, 5 mm. wide.

A small subadult ♀ from the same locality appears to be a different species from the above.

Family DIPLURIDAE.

The specimens identified by Dr. Purcell in Ann. S. Afr. Mus., vol. 3, p. 106, 1903, should not have been referred to *Thelechoris* as defined in Hist. Nat. des Araign., p. 187, since on examination the type specimen of *T. australis*, Purc., does not agree with the description of that genus. Hence my conclusion (Ann. S. Afr. Mus., vol. 17, p. 119, 1917), based on the type ♀ of *australis*, that the ♂ of this species of *Thelechoris* proved that *Thelechoris* was not synonymous with *Ischnothele*, is no longer valid. *Thelechoris* and *Ischnothele* are synonymous, as stated by Simon. Neither are the specimens in question referable to *Evagrus*, from which genus they appreciably differ. Hewitt points out (Ann. Durb. Mus., vol. 1, pp. 132–3) that *Evagrus caffer*, Poc., and *T. australis*, Purc., undoubtedly belong to the same genus, which is not *Evagrus* and cannot be *Ischnothele* (*Thelechoris*); hence, as he suggests, it is advisable to create a new genus, for which I propose the name *Allothele*.

The principal differences between *Evagrus* and *Allothele* are that in *Evagrus* (following Ausserer's description) the spinners are shorter than the abdomen; the 1st and 2nd pairs of legs are stouter in build than the remainder; tibia I is swollen and armed below and partly also on the inside with numerous very strong long spines; tibia II is short and very thick with a projecting tubercle on the inside, on the end of which are 3 very long spines; also numerous shorter spines on saddle-shaped depression, on the outside; metatarsus II has two projecting tubercles below, the larger on the inside, in the upper quarter, the smaller outside in the upper third; from both there runs a sharp keel down the length of the metatarsus.

These and other characters distinguish *Evagrus* from the following:

Gen. ALLOTHELE, n. gen.

Cephalothorax moderately convex, one-fifth longer than broad; fovea slightly recurved. Ocular tubercle at least twice as broad as

long in ♀; anterior lateral eyes a short diameter from the anterior border of the carapace. Anterior row of eyes strongly procurved, medians round and smaller than the oval laterals. Posterior row practically straight; medians smaller than the anterior medians, long oval, and touching the laterals, which are considerably larger, but themselves a little smaller than, and narrowly separated from, the anterior laterals. Sternum slightly longer than broad; labium less than twice as broad as long, rounded apically and muticous. Chelicera with teeth on inner border only. Legs moderately long and robust; tibiae of 1st two pairs not thickened in ♀ and only slightly in 2nd legs of ♂; order of legs in ♂ 4, 3, 2, 1, in ♀ 4, 3, 1, 2. Tarsi not scopulate, claws with a single row of 5–7 teeth in ♂ and 8–10 in the ♀. Abdomen dark, without stripes or lighter marking as in *Ischnothele*. Superior spinners keeled on the under surface; longer than the abdomen, considerably longer than the carapace, and resembling those of *Ischnothele*. Tarsus of ♂ palp short; palpal organ piriform, elongate, curved, and reaching beyond the tibia. First leg normal; 2nd leg bearing on the under surface of the tibia a median projection curving upwards and armed with 2–3 teeth; tibia considerably longer than broad; metatarsus bearing a small sub-basal tubercle, armed on the side or base with a stout spine.

On examination of the types of *E. caffer*, Poc., and *T. australis*, Purc., they appear to be identical and to belong to the genus Allothele. Thus the specimens referred by me in Ann. S. Afr. Mus., vol. 17, p. 120, to *T. australis*, now become *Allothele caffer*.

The ♀♀ unfortunately appear to lack clearly defined specific characters, and in the absence of the ♂♂ cannot with certainty be separated into species; size and markings vary to a certain extent, but the relative proportions do not vary sufficiently or with the necessary constancy to be specific. The eyes also vary, but only the ♀♀ from Cookhouse (B 2402) seem at all distinct; in these specimens the median eyes are very small, also the abdomen is flecked (in alcohol) with numerous lighter spots; provisionally they are classed as *A. australis*, though with the advent of the ♂ they will most probably prove to be a distinct species.

The following species could only be separated from *A. australis* on the ♂ characters.

Allothele teretis, n. sp. (Plate XXVIII, figs. 1 a–c).

Specimens.—1 ♂, 2 ♀♀, and 2 juv. (4021, Types), M'fongosi, Zululand (W. E. Jones, 2/18).

♀. *Colour.*—Carapace medium to dark brown, with darker border and mottling; legs similar in colour; abdomen unrelieved purple-black on the dorsal surface; spinners lighter, each segment dark rimmed apically; under surface slightly lighter.

Carapace.—Equal to tibia, metatarsus and $\frac{1}{2}$–$\frac{2}{3}$ tarsus I, and to metatarsus and tarsus IV. Radiating stria from transverse fovea moderately deep.

Eyes.—Anterior row procurved so that a line tangential to the bases of the medians would barely cut the upper borders of the laterals. Medians small, round, about $\frac{2}{3}$ of a diameter apart, slightly nearer to the laterals, which are large, and broadly oval. Posterior medians small, long oval and touching the laterals, which are smaller than the anterior laterals and close to them. Anterior eyes about $\frac{1}{2}$ a short diameter from the anterior border of the carapace.

Chelicera.—Bearing 9–11 large and small teeth on the inner border of the groove; base of the groove furnished with about 20 denticles irregularly placed.

Sternum.—Bearing 3 faint sigilla, opposite coxa I, and approximately opposite the junctions of coxae 2 and 3 and 3 and 4 respectively.

Legs.—Tarsi and metatarsi without scopulae. Tarsal claws long and bearing a single row of about 10 teeth which become smaller and denser basally; the small lower tarsal claw is also toothed. Anterior tarsi with 1 or 2, and posterior tarsi with 3 or 4 spines; legs otherwise bearing long spines and long stout hairs. Order of legs 4, 3, 1, 2, the difference in length between 1 and 2 being slight.

Spinners.—Longer than the abdomen and considerably longer than the carapace; keeled on the under surface; the under surface is also flecked with white spots, in the centre of each of which is a spigot.

Measurements.—Carapace 4·9 mm. long, 3·9 mm. wide. Abdomen 5·7 mm. in length, spinners 6·5 mm.

♂. *Colour.*—Slightly lighter than the ♀.

Carapace.—As long as metatarsus IV, and equal to metatarsus and tarsus I. *Cf. australis.*

Eyes.—As in ♀ save that the anterior medians are a little nearer to each other than to the laterals; the latter are also nearly their short diameter from the anterior margin of the carapace.

Chelicera.—Inner border with 11 large and small teeth; base of groove with a line of 5 denticles and a number of minute spinules.

Sternum.—With 3 sigilla.

Legs.—In order 4, 3, 2, 1; the difference between 2 and 3 is slight. Tarsi not scopulate, but bearing spines; metatarsi and tibiae heavily spined. First leg normal; metatarsus and tibia of 2nd leg as in

Plate XXVIII, fig. 1 c; tibial projection lower down than in *australis* and bearing 2 teeth only.

Pedipalps.—Tibia, tarsus and palpal organ as in figs. 1 A and B. Palpal organ longer and more slender than in *australis*.

Spinners.—Mutilated.

Measurements.—Length of carapace 3·7 mm.; total length 8·5 mm. Length of 4th leg 12·9 mm., 3rd leg 11 mm., 1st leg 10 mm.

Gen. ISCHNOTHELE, Auss.

Ischnothele cassetti, n. sp.

Specimens.—One ♀ (B 4666, Type), Pemba, N. Rhodesia (Fr. Cassett, 8/19).

Colour.—Carapace dull brown, lighter laterally and posteriorly; legs lighter brown than the carapace; abdomen dull black, dorsal surface with about 4 inconspicuous patches of white hair; sternum, coxae, etc., medium brown.

Carapace.—As broad as long; length equal to tibia, metatarsus and $\frac{1}{3}$ tarsus I, and to metatarsus and $\frac{1}{2}$ tarsus IV; fovea slightly procurved at the bottom.

Eyes.—Anterior medians round, a radius apart and more from the laterals; laterals close to the anterior border of the carapace, long, oval and equal or subequal in area to the medians. Posterior row straight to procurved; medians small and flat, almost touching the laterals, which are smaller than the anterior laterals.

Labium.—At least twice as broad as long; apex with a very few minute pale denticles.

Maxillae.—With an area of sharp denticles stretching along the anterior portion from the base to $\frac{2}{3}$ of the length.

Sternum.—As long as broad, and with 3 distinct sigilla on each side.

Chelicera.—Outer margin with 8 teeth and 4 smaller ones basally on the inside of the row of 8; also 1 small tooth more towards the centre of the groove; inner row with 6 large teeth.

Spinners.—Equal in length to tibia, metatarsus and $\frac{2}{3}$ tarsus IV.

Legs.—In order 4, 3, 2, 1; clothed with long hairs, bristles, and moderately well spined; tarsi not scopulate, but bearing bristles and fine spines, which are stouter on the posterior legs.

Measurements.—Length and breadth of carapace 6 mm.; total length (carapace and abdomen) 15 mm.; spinners 10 mm.; legs 18, 15·7, 14, 13·3 mm.

Family ERESIDAE.

Gen. ERESUS, Walck.

Eresus purcelli, n. sp. (Plate XXIX, fig. 1).

Specimens.—One ♀ (No. B 2435, Type), E. London (Dr. W. F. Purcell, 9/05).

Colour.—Cephalothorax almost black, becoming redder posteriorly, and with a light border above the pedicel; chelicera black, legs reddish-brown in colour, posterior ones slightly lighter, anterior ones darker distally. Abdomen dull testaceous in colour, and with short scanty hairs only; no white rings round dorsal stigmata; under surface infuscated around spinners. Sternum dark red brown, coxae and under surface of legs slightly lighter.

Cephalothorax.—Surface clothed with appressed dark hairs; punctate, but not spined. Length equal to patella, tibia and metatarsus of 1st leg, and very slightly exceeding tibia, metatarsus and tarsus; width equal to patella and tibia, and slightly exceeding metatarsus and tarsus of 1st leg; also reaches from fovea to hind margin of posterior median eyes. Cephalic portion raised, but not abruptly, above thoracic portion, both being approximately equal in width.

Eyes.—Posterior medians large; about $1\frac{1}{4}$ diameters apart, and about 2 diameters from the anterior laterals; otherwise as in *E. namaquensis* (Purc.).

Sternum and chelicera spineless.

Legs.—Without spines on coxae or femora, or on patellae of anterior legs, but clothed with long hairs as in *E. namaquensis.*

Pedipalps.—With some long bristle-like spines on inner and under surfaces of tarsus; otherwise spineless.

Vulva.—As in Plate XXIX, fig. 1.

Measurements.—Total length 17·5 mm. long. Carapace 6 mm. long and 4 mm. wide. Though only one specimen is available for description, the species has been founded since the lack of spines on the under surface of femora, coxae, etc., of 1st two pairs of legs, and from the sternum and carapace is apparently unusual in the S. African species of this genus.

Eresus depressus, n. sp. (Plate XXIX, fig. 2 a–b).

Specimens.—Numerous ♀ ♀ from Hanover and neighbouring localities (Types, No. 12852). Collected by Mr. S. C. Cronwright

Schreiner (♀ ♀ Sept. to Jan., Cocoon in Dec.) Also 2 ♂ ♂ from the same locality.

The ♀ of this species was named but no description published by Purcell.

Colour.—Carapace red-black, clothed with dark hairs with a somewhat rufous sheen; chelicera reddish-black, legs slightly browner than carapace, and similarly clothed; posterior legs slightly lighter; anterior legs darken and become redder distally. Abdomen dull to infuscated testaceous sometimes, slightly mottled with lighter spots; dorsal stigmata white-ringed. Upper surface clothed with blackish and white hairs; the latter, as in *E. fumosus*, forming a number of white spots on dorsal surface and short lines on lateral surfaces. Sternum, coxae, etc., dark to medium brown.

Cephalothorax.—Comparatively flat (fig. 2 B) and slopes gradually to posterior border, with no abrupt grade between cephalic and thoracic portions as in *E. fumosus*. Thoracic portion only very slightly wider than cephalic portion, latter not spined, even at anterior sides, but furnished with stout bristles, often short or broken, and having a spinose appearance. Length of carapace subequal to patella, tibia and metatarsus, and equal to or barely exceeding tibia, metatarsus and tarsus of 1st leg. Width slightly less than from fovea to hind margins of posterior median eyes, and equal to tibia and $\frac{2}{3}$ metatarsus and to patella and tibia of 1st leg.

Eyes.—Posterior medians of medium size, and $1\frac{1}{2}$–2 diameters apart (sometimes only 1 diameter apart or more than 2), and much less than 3 diameters from anterior laterals; anterior medians with their centres about on a line joining the anterior borders of the posterior median eyes.

Sternum and coxae without spinules and clothed with moderately long hairs.

Legs.—Femora of 1st and 2nd legs with numerous fairly long spinules on under surface as well as long hairs; 3rd and 4th femora with a clothing of long hairs but no spinules below. Patellae of anterior legs without spinules.

Pedipalps.—With long fine spines distally on inner and under surface of tarsus and on inner side of tibia; femur with some long and short bristles on the under surface, but with no spinules.

Vulva as in Plate XXIX, fig. 2 A. Dark inner portion of lateral depression larger than in specimen depicted.

Measurements.—Total length 15 mm.; carapace 5·5 mm. long and 3·4 mm. wide (ratio of length to width usually about 1·6 : 1; in *fumosus* it is generally 1·4 : 1).

Specimens.—1 ♂ (No. 14479), Poortjesfontein, Hanover (Master Neser, 1905). 1 ♂ (No. 9463), Hanover (S. C. Schreiner, 10/01).

♂. *Colour.*—Carapace orange-red; legs and palp yellowish-brown, anterior legs very slightly darker distally. Abdomen infuscated dull testaceous, darker on under surface. Sternum dark brown, coxae and under sides of legs pale brown. Legs and abdomen clothed with yellowish hairs, with whitish ones intermingled.

Carapace.—Cephalic portion very slightly raised, but not more so than thoracic portion (in specimen from Poortjesfontein the cephalic portion appears lower, and is separated from the thoracic by a faint line across the fovea); both clothed with scanty whitish hairs, those immediately anterior to fovea being yellowish in colour. Proportion of carapace to legs as in *E. fumosus*.

Eyes.—Posterior medians 2 diameters from each other and from anterior laterals; centres of anterior medians slightly below the line joining anterior borders of posterior median eyes; otherwise as in *fumosus*.

Sternum, legs, etc., without spinules.

Legs.—Metatarsus I without spines at apex on under surface; metatarsus II with 1–2, and metatarsi III and IV with about 2 spines apically on under surface.

Pedipalps.—As in *E. fumosus* (Plate XXIX, fig. 3), save that in the Poortjesfontein specimen, seen from below, the internal outer side of the palpal organ appears swollen and crowded into the inner side; in the Hanover specimen the portion "a," which in the former is crowded into the top right-hand corner, is scarcely visible at all, but, as in the former also, the portion "b" appears enlarged over the lower surface.

Measurements.—Total length 5·5 mm.; carapace 2·8 mm. long and 1·7 mm. wide. No. 14479 was slightly larger, being 6·5 mm. long and 2·9 and 1·8 mm. in carapace.

Eresus echinatus, Purc.

1908. *Eresus echinatus*, Purcell in Schultzes Reise, Zool. Bd. 1, Denksch. med.-natur. Gesell. vol. 13, ♀, p. 223, Jena.

Specimens.—1 ♀ (No. 14426), from Namaqualand (G. Alston, 1905).

This example, though much larger than that described by Dr. Purcell, agrees with the type-specimen and description, with the following slight differences: Width of cephalothorax equal to tibia and metatarsus, and to patella, tibia and metatarsus of 1st leg; also reaches from fovea to a point half an eye's diameter from the posterior median eyes. The latter are nearly 2 diameters apart, and at least or over 3 diameters from the anterior laterals.

Measurements.—Total length 21 mm.; length of cephalothorax 10 mm., width 7 mm. A ♀ specimen (No. 14666) from Pokwani, though sub-adult, seems referable to this species. The species is also recorded from Kimberley.

ERESUS FUMOSUS, Koch (Plate XXIX, figs. 3 and 2c).

1837–9. *E. fumosus*, C. Koch, Arach. vol. 4, p. 100, f. 314. Type ♀.
1864. *Eresus* (*Eresa*) *fumosa*, Simon, Hist. Nat. Araign. p. 300. ♀.
1865. *E. bubo*, L. Koch, Verh. Zool. bot. Ges. Wien, Bd. 15, p. 878. ♀.
1907. *E. fumosus*, Strand, Zool. Jahrb. Jena. Abt. F. Syst. vol. 5, 25, p. 564. ♀.
1908. *E. fumosus*, Purcell in Schultzes Reise, Zool. Bd. 1, ♀. Jena. Denkschr. Med. Ges. v, 13, p. 222.

Specimens.—♂ (No. B 1600) from Naauwpoort, near Hanover (Dr. W. F. Purcell, 10/05).

Colour.—Carapace dark, black-red; legs and palp slightly lighter and browner. Abdomen infuscated testaceous, slightly darker on under surface and sparsely covered with short whitish hairs and longer darker ones; dorsal sigilla white ringed, and posterior to sigilla are 4–5 light oblique markings sloping down from central line. Sternum, coxae, etc., dark brown; legs covered with pale hairs having a whitish sheen.

Carapace.—Well but not abruptly arched anterior to fovea (*cf.* Plate XXIX, fig. 2c, ♀); also slightly arched posterior to fovea, thus leaving a more level, fan-shaped area on each side from fovea to border. Surface finely granular and covered in centre with dull olivaceous hairs, which become lighter and whiter anteriorly on ocular area, and posteriorly to fovea; apparently with no spines but with some short stout bristles. Carapace equal in length to patella, tibia and $\frac{1}{5}$ of metatarsus, and subequal to tibia and metatarsus of 1st leg; also equal to tibia, metatarsus and $\frac{1}{2}$ tarsus of 4th leg. Width equal to distance from fovea to hind margins of posterior median eyes, and equal to metatarsus and $\frac{1}{4}$ of the tarsus, and to patella and $\frac{1}{2}$, or slightly more, of tibia of first leg. Thoracic portion broader than cephalic.

Eyes.—Posterior medians about $1\frac{1}{2}$ diameters apart, and about 2 diameters from anterior laterals. Centres of anterior medians on or slightly below a line joining lower margins of posterior median eyes; posterior laterals slightly nearer together than anterior laterals. Ocular area not quite 3 times as wide as long.

Sternum and coxae of legs spineless, but former with stiff bristles anteriorly.

Legs.—Femora and patellae of anterior legs spineless but clothed with moderately long stiffish hairs (often the criss-crossing of hairs at their bases produces the appearance of short spinules mixed with them). Metatarsi with a few apical spines on under surface; 1st leg with 1–3, 2nd and 4th with 4–6, and 3rd with 7–8. Dorsal claws on 4th leg with 7–8 teeth in a single row, basally; distal ones long, basal ones short and fine.

Pedipalps.—Palpal organ as in fig. 3; resembling a coiled spring in appearance, the terminal hair-like process of which is apparently inserted round the hollow interior of the crescent-shaped projection shown in the diagram of palp, and is often found subsequently coiled round in the interior vaginal convolution of the ♀ vulva, and with the broken end projecting exteriorly.

Abdomen.—With two small oval plates above genital aperture.

Measurements.—Length 10·6 mm.; carapace 5 mm. long, and 3·1 mm. wide.

It may be noticed that at Hanover two species of Eresidae are found, namely *E. fumosus* and *E. depressus*; the latter is distinct in size, disposition of spinules, and to a slight extent is lighter in colour, and has the cephalic region of the carapace much less prominently raised than in *fumosus*.

Several ♂♂ also from Hanover show rather less distinctive features than the ♀♀; there are no spinules, and, as in the ♀♀, the proportion of the carapace to the legs and the appearance of the sexual organs are much the same. As however the two forms, namely, large and dark and with arched cephalic region on carapace, and small, light, and with flattened carapace, are present in the ♂♂ as in the ♀♀, the first-mentioned forms have been assumed to be *fumosus* and the latter *depressus*; in the latter case there is also a very slight difference in the palpal organ.

Although the two species are distinct around Hanover, what are apparently intermediate forms occur elsewhere, as at Graaff Reinet (No. 12571, ♂, ♀ and juv.).

Around the Cape districts specimens resembling *E. echinatus* occur, but differ in colour in that the upper surfaces of the legs, especially patellae and tibiae, are paler than the under surfaces, and in some cases are even light yellow in colour; these may be newly moulted and insufficiently hardened specimens, although adult. The same may be the case with a ♂ from the Cape Province (no exact locality) which has soft pale legs—anterior tarsi and metatarsi hardened and

darkened—and which may belong to these ♀ ♀ but has no differences from *E. fumosus*, apart from colour.

It may be that the Cape specimens form a species of their own, but the differences from *E. fumosus* and *E. echinatus* are comparatively slight, and the variations which occur in the specimens make it advisable to leave their identity an open question.

A ♂ (No. 1207) from Bergvliet, Cape Flats, has the palpal organ exactly as in *fumosus*, but the cephalic portion of the carapace not so much raised (thus resembling *depressus*), and is as indecisive as the Graaff Reinet specimen.

Key to Species.

The South African *Eresidae* adequately described can be identified as follows:

I. Spinules on sternum, coxae, and femora of anterior legs, and on sides of carapace.

(*a.*) Sternum thickly covered with minute, sharp spinules; coxae and femora I and II densely spinulose; coxae and femur III slightly less so. Patellae I and II densely but shortly spinulose on anterior side.

(*a'.*) Large, dark in colour, and with cephalic portion of carapace well raised above thoracic . . . *E. fumosus.*

(*b.*) Sternum with a few scattered spinules anteriorly, and hairs thickening at base anteriorly. Coxae I and II with a few appressed spinules on anterior and posterior surfaces; femora I and II thickly covered below with spinules, III less so. Patellae without spinules.

(*b'.*) Medium size, dark in colour, and with cephalic portion of carapace well raised above thoracic . . *E. echinatus.*

(*c.*) Sternum with no spinules, but with hairs thickening slightly at base anteriorly; no spinules on coxae, patellae, or carapace; spinules and long hairs on femora I and II, long hairs only on III.

(*c'.*) Medium size, moderately light in colour, and with cephalic portion of carapace only slightly and gradually raised above thoracic . . . . . *E. depressus.*

II. No spinules on sternum, legs, or carapace.

(*a.*) Carapace less than tibia, metatarsus and tarsus of 1st leg; cephalic portion depressed, flattened, scarcely raised above thoracic portion, and narrower than latter *E. namaquensis.*

(*b.*) Carapace slightly exceeding tibia, metatarsus and tarsus of 1st leg; cephalic portion raised, but not abruptly, above thoracic portion, and both approximately equal in width *E. purcelli.*

Gen. ADONEA, Sim.

Adonea variegata, Purc.

1904. *Adonea variegata*, Purc. Tr. S. Afr. Phil. Soc. 15, p. 137, ♀.
1908. „ „ „ in L. Schultzes Reise, Zool. Bd. 1, Jena. Denkschr. med.-natur. Gesell. vol. 13, p. 219, ♀.

Specimens.—♀ (No. B 2075) from Voigtsgrund, and 2 sub-adult ♀ ♀ (No. B 2058) from Ababis, S.W. Africa (R. W. Tucker, 19/12/15 and 30/12/15. Percy Sladen Memorial Expedition).

The specimen from Voigtsgrund (S.E. Maltahohe) and one from Ababis appear at first to be distinct from *A. variegata*; not only are they much darker and redder in colour, but their legs are relatively longer and the vulva appears slightly different in that the central subquadrate pan figured in Purcell's description (*loc. cit.*) is incomplete, being in fact shaped like a low broad **M**; it is probable, however, that the central point has yet to grow down over the softer tissue below, and so complete the "pan."

The differences noted do not seem sufficient on the material to hand to separate them as a distinct species, but have been ascribed to the varietal range of the one species.

The measurements noted for the specimens are as follows:

Carapace equal in length to the tibia, metatarsus and tarsus of 1st leg, and equal or subequal to patella, tibia and metatarsus of 1st leg; breadth equal to metatarsus and $\frac{1}{2}$ tarsus of 1st leg, and slightly exceeds metatarsus and tarsus of 4th leg; total length 13 mm.; carapace 6·5 mm. long and 3·5 mm. wide; 1st leg (to coxa) 12 mm., 4th leg 13·6 mm. In Purcell's type-specimens the carapace usually equals patella, tibia, metatarsus and $\frac{1}{3}$ tarsus of 1st leg, and the breadth equals metatarsus and $\frac{5}{6}$ of tarsus, and was much greater than metatarsus and tarsus of 4th leg; and in addition the legs were shorter than the above; some of the specimens varied still more. The remaining specimen from Ababis, however, differed but very slightly from the above measurements of type-specimens, hence the species has been taken as occurring in the localities mentioned above.

Adonea parva n. sp. (Plate XXVIII, fig. 2).

Specimens.—One ♂ (No. B 3701, Type), Junction of Marico and Crocodile Rivers, N.W. Transvaal (R. W. Tucker, 1–2/18).

Colour.—Carapace red, shading to brown posteriorly; clothed with appressed white hairs. Chelicera red, becoming browner apically;

clothed basally with white hairs and apically with dark hairs. Abdomen testaceous with a slightly darker median band; hairs fine and light in colour; under surface dark, genital fold with a pale border. Sternum reddish-black, coxae infuscated brown, legs brown, tarsi slightly redder; femora infuscated, especially on the under surface. When dry the specimen appears dirty white in colour.

Carapace.—Surface coarsely punctate; length slightly exceeding the patella, tibia and metatarsus, and equal to the tibia, metatarsus and tarsus of the 1st leg; width equal to or slightly exceeding the tibia and metatarsus, and the patella, tibia and metatarsus of the 1st leg; also extending from the fovea to the posterior median eyes. Cephalic portion slopes slightly upwards from the anterior border to the posterior lateral eyes, thence level to the fovea, and then sloping, but not abruptly, to the posterior border.

Eyes.—Posterior median $1\frac{1}{2}$ diameters apart, and 5 or 6 times as large as the anterior medians. Ocular area $1\frac{1}{3}$ times as broad as long.

Sternum.—Surface punctate; length $1\frac{3}{5}$ times the greatest breadth.

Legs.—Metatarsus I bearing 2 apical spines on the under surface; metatarsus with 3 apical spines on the under surface; metatarsus III with 5 and metatarsus IV with 5–6 apical and 2 other spines down the centre of the under surface. Metatarsus IV slightly shorter than tibia IV. Calamistrum apparently absent. Tarsi IV, III and II with spines and bristles on the under surface, decreasing to a few bristles on tarsus I. Claw on IVth tarsus with 7–8 strong teeth.

Cribellum.—Two small plates at the base of the inferior spinners, with an anterior strip of clear tissue furnished on either side with distinct muscle sigilla, having the appearance of extra cribellal plates.

Pedipalps.—As in figure.

Measurements.—Total length 6 mm. Carapace 2·9 mm. long, 2·2 mm. broad.

Gen. STEGODYPHUS, Sim.

Stegodyphus desertícola, Purc.

1908. *Stegodyphus desertícola*, Purc. in L. Schultzes Reise, Zool. Bd. 1, p. 217, pl. 11, f. 5, ♂ and ♀.

Specimens.—2 ♂♂ and 33 ♀♀, 1 juv. (Nos. B 2152 and 2157), from Gurumanas, S.W. Africa (R. W. Tucker, 7–8/1/16. Percy Sladen Memorial Expedition).

The specimens coincide with Purcell's description, with the slight exception that the cephalothorax is more orange than red in colour, the anterior legs do not redden appreciably distally, and the "yellow"

hairs are in general a bright orange colour. The ♂ ♂ (apparently newly moulted) were still less red in colour, and the orange hairs on ocular tubercle were very scanty.

The species is gregarious and lives in nests constructed on thorny bushes or small acacias; the central, inhabited portion of the nest is composed of dense matted silk, often combined either intentionally or most probably by wind agency with very fine sand, and interwoven with wings and bodies, etc., of various insects captured by the colony. The latter live in the tunnels of the central mass, and their prey is caught by the large outer network spread over the bush surrounding the central mass. The spiders themselves were fairly sluggish when disturbed; in one nest egg capsules of the circular tabloid shape common to the *Eresidae* were fairly plentiful; in others the young spiders had already hatched out, and in some cases were forming their own communities.

Specimens (No. B 2111) from Haris, S. of Windhuk, S.W. Africa (R. W. Tucker, 9/1/16), were sub-adult ♀ ♀ (7 mm. long), paler, with less white hairs and scarcely any orange ones; carapace was also longer relative to the legs, being equal to tibia, metatarsus, and $\frac{1}{2}$ or more of tarsus of 1st leg. These specimens, however, and others coincide with the young specimens of *deserticola*, and the above and following localities in S.W. Africa can be no doubt added to those in which *S. deserticola* is to be found—Namsem, Kabiras, Nauchas, Areb, Choaberib and S.W. Windhuk—at all of which specimens were taken.

Gen. DRESSERUS, Sim.

Dresserus colsoni, n. sp. (Plate XXIX, fig. 4).

Specimens.—2 ♀ ♀ and juvs. (No. 13172, Types) and 2 ♀ ♀ (No. 13556) from Lydenburg, Transvaal (R. Colson, 11–12/03 and /04).

Colour.—In spirits carapace is dark red; chelicera very slightly darker; legs reddish-brown, anterior ones darker; abdomen dull testaceous brown, covered with short dark hairs. Sternum and coxae medium brown; mouth-parts slightly redder.

Carapace.—Equal in length to tibia, metatarsus and tarsus, and to patella, tibia and $\frac{4}{5}$ metarsus of the 1st leg; and to the patella, tibia and $\frac{3}{4}$ metatarsus of the 4th leg. Width subequal to the tibia and metatarsus of the 1st leg, and reaching from the bottom of the fovea to the anterior median eyes. Cephalic portion of carapace fairly well raised above the thoracic.

Eyes.—Posterior medians $1\frac{1}{2}$ diameters apart; in area 4–5 times the size of the anterior medians, the centres of which lie on or above the

line joining the lower borders of the anterior medians. Anterior laterals slightly more than 3 times the posterior medians' diameter from the latter. Ocular area barely 3 times as wide as long.

Sternum.—Less than twice as long as wide.

Legs.—Metatarsus IV with 4–5 moderately long fine spines apically on the under surface; legs otherwise spineless.

Vulva.—As in figure.

Measurements.—Length of carapace 4·5 mm.; breadth 4 mm. (ratio of length to width 1·2 : 1). Total length 16 mm.

Dresserus kannemeyeri, n. sp. (Plate XXIX, figs. 5 a–c and 7 c).

Specimens.—1 ♂ (No. B 27) and 3 ♀ ♀ (No. B 242), Types; and 4 ♀ ♀ (No. 14612) from Smithfield, O.F.S. (Dr. D. R. Kannemeyer, 12/09).

♂. *Colour.*—Carapace very dark, black-red; clothed with short, appressed, dull white hairs over entire surface (save for posterior border), and with long olivaceous black hairs at sides and posterior border of cephalic portion, and to a less extent anteriorly. Chelicera reddish-black, darker anteriorly, and clothed with long olive-black hairs. Abdomen dull testaceous, clothed with moderately long olive-black hairs and short sparse white ones, thus giving a slightly mottled appearance, and with 4–5 broad arrow-head markings dorsally posterior to sigilla; under surface infuscated around and above spinners and cribellum. Legs reddish-brown and slightly infuscated; metatarsi lighter and redder, especially metatarsus I; tarsi darker. Hairs on legs dark olivaceous in colour. Sternum, labium and coxae of pedipalps reddish-brown in colour; coxae of legs olivaceous brown.

Carapace.—Surface finely reticulate. Equal in length to patella, tibia and $\frac{2}{3}$ metatarsus, and slightly less than tibia, metatarsus and tarsus of 1st leg. Width equal to or slightly exceeding tibia and metatarsus, and equal to patella, tibia and $\frac{1}{6}$ metatarsus of 1st leg; it also exceeds the distance from fovea to front of ocular tubercle by $\frac{3}{4}$ or more of the length of the tubercle. Seen from above, the carapace does not appreciably narrow anteriorly, although the widest portion is, as in *D. rostratus* (Purc.), behind the posterior lateral eyes. Cephalic portion is also very flat and slopes slightly from posterior border to anterior, *i. e.* highest portion posteriorly (see fig. 7 c). Ocular projections as in *rostratus*, *armatus* and *subarmatus*; base of each anterior lateral tubercle stretches as a faint blunt ridge to posterior lateral eyes.

Eyes.—Posterior medians about 2 diameters apart and 4–5 times as large as the anterior medians. Posterior laterals wider apart than

anterior laterals, as in *subarmatus*, but forming with anterior laterals an area $2\frac{1}{2}$ times as wide as long.

Abdomen.—Genital orifice surmounted by 2 small oval plates fringed over with hairs, and with 2 vertical rows above composed each of 3 muscle attachment stigmata.

Cribellum.—As in fig. 5 B. Basal portion in diagram is anterior border in specimen.

Chelicera.—Moderately long, with fairly stiff hairs on anterior border of fang groove, and with a few small blunt denticles on posterior border of groove at base of the inner cheliceral projection.

Sternum.—Twice as long as wide.

Labium and coxae of pedipalps with slight lateral depressions across them.

Legs.—Metatarsus I straight, red and spineless; metatarsus II straight, duller in colour, and with 2–3 spines apically on under surface; metatarsus III with numerous, and metatarsus IV with 7–8 long slender spines apically on under surface. Calamistrum weak. Tarsus IV without spines, but with dense stout black bristles on under surface; other tarsi also with bristles on under surfaces, but becoming finer and sparser anteriorly. Tarsal claws of 4th leg with a single row of 8–9 teeth; the distal ones long and stout, the basal ones shorter, finer and closer together.

Pedipalps.—As in fig. 5 A; very similar to *D. subarmatus* (Tullgr.).

Measurements.—Total length 11·5 mm.; length of carapace 5·6 mm., width 4·3 mm.

♀. *Colour.*—Seen in spirits, carapace appears blackish-red, covered with dark hairs; abdomen infuscated testaceous, and densely covered with dark hairs; under surface of abdomen slightly lighter; and as is characteristic of *Dresserus*, ornamented with numerous muscle attachment stigmata, of which those directly above the vulval plate and those below are arranged in fairly regular lines. Sternum, coxae, etc., dark reddish-brown; legs slightly browner than carapace, and posterior one slightly lighter. When dry, the specimens were seen to be covered with silky olive-black hairs having a pale sheen.

Carapace.—Equal in length to patella, tibia, and metatarsus, and greater than tibia, metatarsus and tarsus of 1st leg; and equal to patella, tibia and metatarsus of 4th leg. Width equal to tibia, metatarsus and $\frac{1}{3}$ tarsus of 1st leg, and stretches from bottom of fovea to anterior border of carapace. Surface faintly reticulate; highest portion just behind posterior lateral eyes, *i. e.* cephalic portion is slightly arched.

Eyes.—Posterior medians about $1\frac{1}{2}$ diameters apart, and at least 4 times the area of the anterior medians; latter with their centres about in a line with anterior margins of the posterior medians; anterior laterals slightly larger than anterior medians and than posterior laterals. Ocular area 3 times as wide as long.

Chelicera.—Much as in ♂, but blunter and coarser; bristles shorter and stouter.

Sternum.—Length less than twice the greatest width.

Legs.—Metatarsi III and IV armed with 3–5 spines each, on under surface, apically.

Vulva.—As in fig. 5 c.

Measurements.—Length 18 mm. Carapace 7·5 mm. long, and 5·7 mm. wide; *i. e.* ratio of length of carapace to width slightly over 1·3 : 1.

Dresserus nigellus, n. sp. (Plate XXIX, fig. 6).

Specimens.—One ♀ and juv. (No. B 2977, Type), Matroosberg; altitude 3500–3700 ft. (1/17, R. W. Tucker).

Colour.—In spirits the carapace is black tinged with red; chelicera black, legs blackish-brown, the anterior ones being darker. Abdomen infuscated testaceous, clothed with black hairs; sternum reddish-brown; labium and coxae of pedipalps darker; coxae and under surface of legs tinged olivaceous. When dry the general colour is darker.

Carapace.—Equal in length to the patella, tibia and metatarsus of the 1st leg, and greater than the tibia, metatarsus and tarsus of the same; also equal in length to the patella, tibia and $\frac{1}{2}$–$\frac{2}{3}$ metatarsus of the 4th leg. Width equal to the tibia and metatarsus of the 1st leg, and to the distance from bottom of the fovea to just behind the posterior median eyes. Upper surface of the carapace flat and not much raised above the fovea.

Eyes.—Posterior medians slightly over one diameter apart, and from 6–7 times the area of the anterior medians; latter very small and with their centres above the line joining the lower borders of the posterior medians. Anterior laterals just over twice the posterior medians' diameter from the latter, and larger than the posterior laterals. Ocular area 3 times as wide as long.

Chelicera.—With stiff short hairs around fang and groove.

Sternum.—Twice as long as wide.

Legs.—Metatarsus IV with 5–6 spines apically on under surface.

Vulva.—As in fig. 6.

Measurements.—Carapace 5·5 mm. long and 3·75 mm. wide (*i. e.* ratio 1·47 : 1) ; sternum 3 mm. long.

Total length 14 mm.

The juv. specimen is lighter and redder save for the abdomen, which is slightly darker.

Dresserus schreineri, n. sp. (Plate XXIX, fig. 7 A–B).

Specimens.—Two ♂ ♂ and 4 ♀ ♀ (No. 9464, Types) from Hanover. (S. C. Cronwright Schreiner, 10/01).

♂. *Colour.*—Seen in spirits, carapace is very dark red ; abdomen pale testaceous with slight infuscate mottling, and with 4–5 light arrow-head markings posterior to sigilla. Legs brown, unicolorous, and clothed with dark hairs ; tarsi slightly darker. Sternum and coxae the same colour as the legs anteriorly, but slightly lighter posteriorly. Labium and coxae of pedipalps darker brown and white tipped. When dry, thoracic portion is seen to be covered with white appressed hairs ; a stiff brush of olive-black hairs rises from posterior slope above fovea, and foveal region is clothed with dull white hairs. Abdomen is clothed with short, and a few long, olivaceous brown hairs, and tufts of white ones ; dorsal sigilla are ringed with white hairs. Legs are clothed with olive-brown hairs having a whitish sheen. Chelicera are clothed with appressed dark hairs.

Carapace.—Surface reticulated. Length equal to tibia, metatarsus and tarsus, and to patella, tibia, and $\frac{4}{5}$ metatarsus of 1st leg ; width equal to patella, tibia and $\frac{3}{4}$–$\frac{1}{3}$ metatarsus, and equal to tibia and metatarsus of 1st leg ; also stretches from fovea to nearly the length of the ocular tubercle in front of anterior margin of carapace. Cephalic portion broader than long, slightly narrower anteriorly, flat on upper surface and raised abruptly above thoracic portion ; latter slightly arched posterior to fovea (fig. 7 B), and foveal region considerably depressed. Ocular projections not so prominent as in *D. kannemeyeri*, etc.

Eyes.—Posterior medians 2 diameters apart, and about $2\frac{1}{2}$ diameters from the anterior laterals. Anterior medians with their centres considerably above a line joining lower margins of posterior medians, the latter being about 3 times the size of the anterior medians. Lateral ocular area narrower anteriorly and 3 times as wide as long posteriorly.

Abdomen.—With large, harder and darker area above genital area ; plates and sigilla inconspicuous (*cf. D. kannemeyeri*).

Chelicera.—Much as in *D. kannemeyeri.*

Sternum.—Twice as long as wide.

Legs.—Metatarsus I straight and spineless ; metatarsi II and III

with 2 spines apically on under surface; IV with 4 apically and 1 lower down on under surface; calamistrum very faint, the bristles being only just distinguishable from the hairy clothing of the leg. Tarsi clothed as in *D. kannemeyeri*.

Tarsal claws of 4th leg with 5–6 subequal teeth.

Pedipalps.—Palpal organ as in fig. 7 A.

Measurements.—Total length 9·5 mm. Carapace 4 mm. long, 3 mm. wide.

♀. *Colour.*—In spirits carapace is dark red, chelicera reddish-black; the legs are brown, the anterior ones being redder and darker distally. Abdomen dull testaceous, and clothed with moderately long dark hairs. Sternum, coxae, etc., syncolorous with the legs; labium and coxae of pedipalps darker and redder. When dry the carapace is seen to be covered with long upstanding and shorter more appressed dark olivaceous hairs, which have brownish tinge; hairs on abdomen are brown to reddish-brown; similarly with hairs on legs.

Carapace.—Equal in length to patella, tibia, metatarsus, and $\frac{1}{3}$–$\frac{1}{2}$ tarsus of the 1st leg, and to patella, tibia and $\frac{1}{2}$ metatarsus of IVth leg. Width equal to patella, tibia and $\frac{1}{3}$–$\frac{1}{2}$ metatarsus, and to tibia, metatarsus and $\frac{1}{2}$ tarsus of 1st leg; also reaches from fovea to about the centre of posterior median eyes. Surface faintly punctate. Cephalic portion well raised above thoracic, and very slightly arched.

Eyes.—Posterior medians $1\frac{1}{2}$–2 diameters apart and 3 diameters from anterior laterals; seen from in front anterior medians have their centres above a line joining the lower margins of posterior medians; latter at least 4 times the area of the former. Lateral ocular area 3 times as wide as long.

Sternum.—Twice as long as wide, and slightly depressed anteriorly.

Chelicera.—With no bristles, but with fine hairs around fang and groove.

Legs.—Both metatarsi III and IV without spines apically on under surface.

Vulva.—Similar to *D. colsoni* (Plate XXIX, fig. 4). Central tongue broader, lateral pits less anterior in position.

Measurements.—Total length 16 mm.; carapace 5·5 mm. long, and 4 mm. wide, *i. e.* ratio 1·4 : 1.

In the largest specimen (length 17·5 mm., carapace 6·1 and 4 mm.) hairs on carapace and abdomen are much redder, and legs are longer relatively to carapace; in other specimens from Hanover (B 1498) hairs on abdomen and carapace have no reddish tinge but are dark olivaceous; otherwise proportions and vulva are much the same.

Dresserus sericatus, n. sp. (Plate XXIX, fig. 8).

Specimens.— ♀ (No. B 2197, Type), from Nauchas, S.W. Africa (R. W. Tucker, 3/1/16), and ♀ (No. B 2115), from between Nauchas and Areb (do., 1/16. Percy Sladen Memorial Expedition.)

Colour.—Cephalic portion of carapace dark reddish-brown, and clothed with dense, almost scopula-like dark hairs; from fovea to posterior border pale brown. Abdomen testaceous, covered with long, silky, dark hairs, having a dull yellow sheen; hairs on under side of abdomen sparser and shorter. Under surface of legs, coxae, sternum, etc., pale brown, slightly darker anteriorly and covered with long fine hairs. Labium and coxæ of pedipalps dark brown, and with anterior white borders very distinct. Chelicera almost black; legs light brown, darker distally, especially anterior legs, which become reddish, and clothed with fairly dense black hairs from patella onwards; rest of legs and sternum also covered with long dark silky hairs.

Cephalothorax.—As long as patella, tibia, metatarsus and $\frac{1}{3}$–$\frac{2}{5}$ of 1st leg, and slightly exceeding tibia, metatarsus and tarsus of 4th leg. Width equal to patella, tibia and $\frac{1}{3}$ metatarsus of 1st leg, and extends from fovea to anterior surface of ocular tubercle. Cephalic portion about the same width as the thoracic, and raised fairly abruptly above it.

Eyes.—Posterior medians 1½–2 diameters apart and 3 diameters from anterior laterals. Seen from the front the centres of anterior median eyes lie on or above a line joining the lower edges of posterior median eyes; latter less than 4 times the area of the former.

Legs.—Metatarsus III with several short spines apically on under surface, metatarsus IV with 5–6 moderately long fine spines apically, mixed with setae, and 2 spines centrally lower down.

Sternum.—Nearly twice as long as wide.

Vulva.—Orange-red in colour, raised, and with surface lightly punctate; convoluted vesicula seminalis show through in spirits as the dark markings indicated in fig. 8.

Measurements.—Total length 11 mm.; carapace 4·8 mm. long and 3·1 mm. wide, *i. e.* ratio of length to breadth, about 1·55 : 1.

In the 2nd specimen (No. B 2115), which is subadult, the vulva has not yet appeared although the specimen is 10·5 mm. long.

Family ZODARIIDAE.

Gen. DIORES, Sim.

Diores auricula, n. sp. (Plate XXVIII, fig. 3).

Specimens.—One ♀ (B 3905, Type), Insiza, Rhodesia (G. French).

Colour.—Carapace dark yellow, cephalic portion a little darker;

legs pale yellow; dorsal surface of abdomen violet-black with a long 3-lobed testaceous patch centrally and 2 broad testaceous spots posteriorly; under surface light.

Carapace.—Surface without hairs or infuscation; median ocular area dark; clypeus only very faintly infuscated down to the centre, and at least $2\frac{1}{3}$ times the diameter of an anterior median eye.

Eyes.—Anterior medians large, considerably less than a radius apart and nearly touching the laterals, which are about $\frac{1}{4}$ their size. Posterior row strongly procurved; medians slightly smaller than the laterals, and nearer to them than to each other. Posterior laterals subequal to the anterior laterals. Median ocular area considerably broader than long.

Chelicera.—Bearing stout spiniform bristles apically on the inner portion of the anterior surface.

Pedipalps.—Dorsal scopular patch small and bristle-like.

Legs.—Bearing short spiniform hairs, which are denser on the tarsi and longer on the posterior legs. Tibia I with 3 pairs of slender spines on the under surface; patella with 1–2 spines distally on the dorsal surface. Metatarsus and tibia II with numerous spines; patella with 3 spinules on the anterior surface, 2 dorsally, and 1 distal spine on the posterior surface. Patella III with 3 pairs of strong spinules dorsally. Patella IV similar with a small additional basal spine. Metatarsus I at least $1\frac{3}{4}$ times the length of the tarsus; metatarsus IV $2\frac{1}{3}$ times the length of the tarsus.

Vulva.—As in fig. 3.

Measurements.—Carapace 2·3 mm. long; total length, 5·4 mm.

Diores bifurcata, n. sp. (Plate XXIX, fig. 13 a–e).

Specimens.—2 ♂♂, 1 ♀ (No. B 2792, Types) and 1 ♀ (No. B 2803), from Gt. Winterhoek Mts.; altitude 3900–4100 ft. (R. W. Tucker, November, 1916).

♀. *Colour.*—Carapace pale brown, considerably infuscated, especially on thoracic portion, on which there are fairly distinct radial infuscations. Abdomen purple-black above, with or without faint lighter median marks posteriorly, sides and lower portion pallid; surface smooth and shiny. Legs the same colour as carapace.

Cephalothorax.—Rectangular anteriorly, cephalic portion slightly raised. Clypeus very broad and vertical and with central infuscation from anterior median eyes widening out to entire extent of anterior border of carapace (fig. 13 e).

Eyes.—Anterior row seen from in front strongly procurved; medians

round, only slightly larger than laterals; about $\frac{1}{2}$ a diameter from each other and slightly less from the laterals; posterior row seen from above more procurved and slightly wider than the anterior row. Medians subequal to laterals, about $1\frac{1}{2}$ diameters apart and slightly less from the laterals, and a little less than a diameter behind the anterior medians. Posterior laterals round, nearly touching the anterior laterals, and equal to them in size; fig. 13 A.

Chelicera as in fig. 13 E. Inner border of apex with one spinule; outer border bearing stout bristles.

Pedipalps with anterior scopular patch on inner surface of tarsus; bristles on under surface very fine. Tarsal claw strongly toothed, as in *Zodarion* (Sim).

Legs.—Tarsi with no scopulae; tarsus of 1st leg with no fascicle, claws short and toothed; metatarsus only slightly longer and slightly stouter; femur with 3 spines down centre of dorsal surface; rest of leg with no spines. Tarsus of 2nd leg with 8 pairs of short spines on the under surface and with one or two short fascicular hairs distally; metatarsus about $\frac{1}{3}$ as long again as the tarsus and bearing 2 apical and 3 pairs of other spines on the under surface, together with a few bristles; patella bearing two spinules and 1 spine on the inner upper surface; femur with 3–4 spines dorsally down the centre. Tarsus of 3rd leg short and also with paired spines on under surface; metatarsus about $1\frac{3}{4}$ times its length, and with 2 apical and 6–7 other spines on the under surface; patella with 3 spinules on the anterior upper surface and 1 distally on posterior upper side; femora of 3rd and 4th legs also spined dorsally. Tarsus of 4th leg with very numerous short spines on the under surface; metatarsus long, slender, over twice the length of the tarsus and sparsely spined save at the apex, which bears numerous spines; patella with 3 spinules on the anterior surface and 1–2 on the posterior surface.

Vulva.—As in fig. 13 B, the lower lip-like portion projects at right angles to the rest of the surface.

Abdomen.—With small chitinous tracheal opening on ventral surface immediately anterior to the spinners and with traces of anterior openings level with the lung pockets (*cf. D. salisburyensis*, n. sp.).

♂. *Colour.*—Carapace pale golden-brown, with small granule-like spots, giving a mottled appearance; legs pale golden-brown; tarsi lighter than the metatarsi; dorsal scutum of abdomen darker brown, with considerable mottled infuscation; sides and inner portion of abdomen slightly ridged, and densely mottled to just above the spinners with purple-black infuscations; under surface of abdomen pale; sternum, coxae, etc., pale testaceous.

Cephalothorax.—More evenly and slightly less convex than in the ♀; cephalic portion scarcely raised; clypeus very broad and infuscated as in the ♀.

Eyes.—Much as in ♀. Median ocular area very slightly wider than long; seen from in front the lateral eyes appear nearly circular, subequal to the medians and nearly touching them.

Legs.—Tarsus I long, slender and cylindrical; bearing no spines or scopula, but with fine bristles on lower surface; metatarsus longer than the tarsus and with 0–1 spines; no scopula, but with numerous stout bristles on the under surface; tibia with 4 spines on the lower surface; patella with no spines, femur with a few bristles. Tarsus II similar to I but shorter; metatarsus II about $1\frac{2}{5}$ times as long as the tarsus, bearing fine spines apically and a few other scattered ones in addition to bristles; patella and femur similar to I. Tarsus III with long stout bristles and fine spines on the under surface; metatarsus at least twice the length of the tarsus and with fairly numerous scattered spines in addition to bristles; tibia with paired spines below, and with other scattered ones; patella with 3 spines anteriorly and 0–1 posteriorly.

Tarsus IV similar to III; metatarsus $2\frac{1}{2}$ times as long as the tarsus and with numerous scattered spines and bristles; tibia irregularly spined; patella with 3 spines on anterior upper surface, and 0–1 posteriorly; femur with 3 spines above but with no long bristles below.

All tarsal claws long and well toothed; tarsi projecting slightly below the claws and receding slightly above them. Femora moderately robust. Coxa I subequal to coxa IV; coxa III subequal to coxa II, and slightly over $\frac{1}{2}$ the length of coxa IV.

Pedipalps.—Short; femur nearly straight, sub-cylindrical, and with 2 spines on anterior upper surface; patella short and swollen; tibia in fig. 13 c; the posterior spine is somewhat laminated and much broader than the anterior one (*cf. D. simoni*); tarsus longer than the femur, broad, and bearing 2 stout spines distally. Palpal organ as in fig. 13 d.

Chelicera.—Inner apex with stout spinule and one or more smaller ones. Anterior border of groove with 4 small spinules or stout bristles.

Abdomen.—With short transverse chitinous line on ventral surface at base of spines, and only visible when latter are protruded; a chitinous mark on each side level with the lung apertures is also present (see *D. salisburyensis*).

Spinners.—Slightly more cylindrical than in the ♀.

Measurements.—♀ Carapace 2 mm. long; total length 4·7 mm. ♂ Carapace 2·1 mm. long; total length 4 mm.

These specimens were taken in the vicinity of a colony of large yellowish-brown ants (*Camponotus* sp.), which they resemble when rapidly running; one ♂ was taken running in company with them when they were disturbed, and exhibited a marked resemblance at the time.

A ♂ specimen (B 2984) from the Matroosberg Mts., 4000–4500 ft. (R. W. Tucker, 20/1/17), is slightly more golden in colour, especially the scutum of the abdomen, which is even paler than the carapace and in strong contrast to the black surface surrounding it; the infuscation of the clypeus is also very faint.

Diores capensis, n. sp. (Plate XXVIII, fig. 5).

Specimens.—1 ♂ (B 1219, Type), Bergvleit, Cape Flats (R. W. Tucker, 6/15).

Colour.—Carapace pale yellowish-brown with infuscated mottling, increasing in density anteriorly. Legs testaceous in colour, femora slightly darker. Abdomen with a brown mottled scutum extending $\frac{3}{4}$ the dorsal length; remainder of dorsal surface blue-grey in colour, under surface pale testaceous.

Eyes.—Anterior medians at least $\frac{1}{2}$ a diameter apart, laterals about $\frac{1}{3}$ their size. Posterior row strongly procurved, medians 1–1$\frac{1}{2}$ diameters apart and slightly nearer to the laterals, which are subequal to them and smaller than the anterior laterals. Clypeus twice the diameter of an anterior median eye, and slightly infuscated down the centre; region of anterior row of eyes deeply infuscated.

Abdomen.—Epigastric scutum absent; tracheal slit anterior to spinners moderately distinct; markings level with lung pockets not apparent.

Legs.—Tarsus I with a double line of fine bristles down the centre; metatarsus a little longer than the tarsus, with a similar double line and some spines apically; tibia with 4 pairs of fine spines on the under surface. Second leg similar; bristles stouter, metatarsus also bearing spines; tibia with only 3 pairs of fine spines; 3rd leg similar, spination stronger, metatarsus about 1$\frac{1}{4}$ times the length of the tarsus; 4th leg longer and slenderer, metatarsus 1$\frac{1}{2}$ times the length of the tarsus. Patellae I and II without spinules; patella III with 5, and patella IV with 3, spinules on the dorsal surface. Femora each bearing 2 short spines on the dorsal surface.

Pedipalps.—Tibia with a large apical projection on the outer dorsal

surface which, viewed from the ventral surface, is seen to be bifurcate from the base. Palpal organ as in figure.

Measurements.—Length of carapace 1·8 mm.; total length 3·5 mm.

Diores druryi, n. sp. (Plate XXVIII, fig. 4).

Specimens.—1 ♀ (B 4634, Type), Grootfontein, S.W. African Prot. (J. Drury and R. M. Lightfoot, 1/19).

Colour.—Carapace golden yellow anteriorly, pale yellow posteriorly; legs pale yellow, darker distally; abdomen blue-grey down the centre of the dorsal surface, and with a light mark anterior to the spinners; ventral surface pale.

Eyes.—Medians about $\frac{1}{2}$ a diameter apart; otherwise as in *D. auricula*. Clypeus about $1\frac{1}{2}$ times the diameter of an anterior lateral eye, and not infuscated. Region of anterior row of eyes strongly infuscated.

Chelicera.—As in *D. auricula*.

Pedipalps.—Bearing usual apical scopular patch.

Legs.—Tarsus bearing sparse fine bristles on the under surface; metatarsus twice the length of the tarsus, and bearing a few spiniform hairs and spines down the under surface. Tarsus II bearing stout bristles and fine spines on the under surface; metatarsus $1\frac{3}{4}$ times as long and bearing 4–5 pairs of spines in addition to bristles on the under surface; patella bearing 3–4 spines on the anterior dorsal surface. Tarsus III clothed with stiff bristles; metatarsus about $2\frac{1}{4}$ times the length and bearing numerous spines in addition to bristles; patella III with 10 spines on the dorsal surface; tibia with 5 stout spinules on the dorsal surface in addition to bristles. Fourth leg similar, patella with 8 spinules on the dorsal surface, tibia with 3–4 spinules.

Abdomen.—Ventral tracheal slit wide and conspicuous; sigilla at sides of lung pockets visible.

Vulva.—As in figure.

Measurements.—Length of carapace 2 mm.; total length 4·5 mm.

Diores jonesi, n. sp. (Plate XXVIII, fig. 6 a–b).

Specimens.—4 ♂♂, 1 ♀ and juv. (B 3633, Types), Mfongosi, Zululand (W. E. Jones, 1/2/18).

♂. *Colour.*—Carapace dark brown, strongly infuscated. Abdomen purple-black with a black dorsal scutum extending over $\frac{2}{3}$ of its length; ventral surface light purple in colour, epigastric scutum pale brown. Mouth parts and coxae pale brown, sternum slightly darker.

Femora of legs approximately the same colour as the carapace patellae onwards light brown, becoming paler distally.

Cephalothorax.—Surface smooth, slightly depressed anterior to the stria; infuscated mark anterior to the stria; cephalic portion slightly dome-shaped.

Clypeus.—At least 3 times as deep as the anterior median eyes, and approximately $\frac{1}{3}$ as deep as the chelicera; a light patch on clypeus on either side below and interior to the anterior lateral eyes.

Eyes.—Seen from above, both rows are procurved. Anterior medians moderately large, about $\frac{1}{2}$ a diameter apart, and touching the laterals, which are about $\frac{3}{4}$ their size. Posterior row slightly procurved; eyes equidistant; laterals touching the anterior laterals and subequal to them in size; posterior medians subequal to the laterals. Median ocular area wider than long, and slightly narrower posteriorly.

Abdomen.—Ventral tracheal slit at base of spinners, and sigilla at sides of lung pockets visible.

Pedipalps.—Tarsus and palpal organ as in fig. 6 B; tibia with a stout, outer, apical projection, and a more slender, curved projection on the dorsal apical surface. Patella with a very strong, broad apical projection on the outer ventral surface, and a smaller one on the inner apical surface, as in figure.

Legs.—Tarsus I bearing spiniform bristles on the lower surface; metatarsus spineless, and about $1\frac{1}{4}$ times the length of the tarsus. Tarsus II similar; metatarsus with 2–3 short spines apically, and with stout bristles anteriorly on the lower surface; length about $1\frac{1}{2}$ times that of the tarsus. Tarsus and metatarsus III with spiniform bristles on the under surface, denser apically; metatarsus with 4–5 spines apically on the under surface; length slightly over twice that of the tarsus. Tarsus IV densely clothed on the under surface with spines and spiniform bristles; metatarsus $2\frac{3}{4}$ times the length of the tarsus. Patellae without spines. Claws stout and strongly toothed.

♀. *Colour.*—As in ♂; abdomen dark purple-black dorsally, with no light spots posteriorly; ventral surface pale.

Cephalothorax and eyes as in ♂.

Clypeus.—Slightly deeper than in ♂; equal in depth to the chelicera; light markings as in ♂.

Pedipalps.—Anterior dorsal scopular patch present as in other species.

Legs.—Tarsus I bearing sparse bristles on the under surface; metatarsus $1\frac{1}{2}$ times as long as the tarsus. Tarsus with a sparse line of small spines down each side of the under surface, and bearing scattered bristles; metatarsus with spines and bristles, especially

anteriorly, on the lower surface; length $1\frac{3}{4}$–2 times that of the tarsus. Tarsus and metatarsus III with numerous spines and stout bristles, metatarsus $2\frac{1}{4}$ times the length of the tarsus. Tarsus IV similar to III; metatarsus with spines and bristles anteriorly on the lower surface; length about $2\frac{2}{3}$ times that of the tarsus. Patella III with 2 spinules on the anterior surface; remaining patellae apparently spineless.

Abdomen.—As in ♂.

Vulva.—See fig. 6 A.

Measurements.—Carapace ♂ 1·8, ♂ 2·1 mm.; total length ♂ 3·8, ♀ 5·5 mm.

DIORES POWERI, n. sp. (Plate XXIX, fig. 14 A–D).

Specimens.—2 ♀♀ (No. B 3040, Types), Kimberley (Bro. J. H. Power, 2/17).

Colour.—Carapace and legs golden-brown; abdomen violet-black above, with central line of whitish spots faint and separate anteriorly, plainer and coalescing posteriorly; surface bearing sparse short hairs, especially along the central line; under surface almost white, entrance to lung-pockets brown and chitinous. Sternum and coxae lighter than carapace.

Cephalothorax.—Broad posteriorly, narrower and parallel-sided anteriorly; cephalic portion fairly well raised above the thoracic; median stria long, surface smooth with slight radiate infuscations.

Eyes.—Seen from above the anterior row is slightly procurved; the posterior row is approximately as wide as the anterior row and strongly procurved (fig. 14 C). Anterior medians very large, circular and prominent; less than $\frac{1}{2}$ a diameter apart and almost touching the laterals, the latter being slightly oval and much smaller than the medians. Posterior medians circular, 2–$2\frac{1}{2}$ diameters apart and 1 diameter behind the anterior medians; nearer to laterals than to each other. Laterals oval, subequal to and nearly touching the anterior laterals.

Clypeus.—Very deep, slightly sloping forward, and bearing bristles below the ocular tubercle. The latter is dark around the anterior median and lateral eyes, with a slight infuscation extending down the centre of the clypeus, and then broadening out along the anterior border of the carapace.

Chelicera.—Very stout, tapering to a blunt point, and flat on the inner, contiguous surfaces. Fang very short and broad basally; fang groove nearly as wide as long and muticous; posterior border with a slight keel (fig. 14 A–B).

Labium.—Longer than broad, with dark marks at base, and a soft pale anterior border, and extending over $\frac{1}{2}$ the length of the pedipalp coxae ; the latter are long, inclined inwards over the apex of the labium, narrow centrally and broader basally.

Pedipalps.—The tarsus bears a single claw densely toothed along one side of its entire length ; the inner upper side of the tarsus has an oval scopular patch anteriorly ; the under inner surface bears blunt spinose hairs. Tarsus about equal in length to the patella and tibia.

Legs.—Tarsus I long and slender, bearing two toothed claws but no fascicle ; metatarsus longer and slightly stouter posteriorly ; no spines or bristles on the upper surface of the leg. Tarsus II shorter, and bristles on the under surface stouter ; metatarsus II bearing stout bristles above ; tibia with bristles and 1 short stout spine anteriorly on the inner upper surface ; patella with spinose hairs and a line of 6 short stout dark spines on the inner upper surface (8 on the larger specimen) ; femur with 1 small spine anteriorly on the inner surface, and a row of 4 small stout bristles posterior to it. Tarsus III shorter still, furnished with bristles all over, and with long regular spines on the under surface ; metatarsus with a fringe of stout spinose bristles anteriorly on upper and lateral surfaces ; upper surface with bristles and pairs of weak spines laterally ; tibia armed with bristles and 4–5 short dark spines on the upper surface ; patella with 13–15 (larger specimen with 26) spinules on the anterior upper surface and 2 (3 in larger specimen) posteriorly towards the centre ; femur with 1 spine anteriorly on the upper surface. Fourth leg similar ; patella with 12–14 (20 in larger specimen) spinules and 2–3 posteriorly towards the centre ; metatarsus IV about $2\frac{1}{2}$ times as long as the tarsus. On the under surfaces the tarsi have no scopulae, but bear stout bristles which are long, stout and spinose on tarsi III and IV ; the metatarsi bear bristles and scattered spines which become stronger and more numerous on the posterior legs.

Sternum.—Anterior border straight, not produced beyond or as far as the anterior borders of coxae I ; parallel sides as far as coxae III, and then tapering to a blunt shield shape. Coxa IV longer and larger than the rest ; coxa II very slightly smaller than I.

Abdomen.—Posterior tracheal mark visible immediately anterior to the base of the spinners ; lateral marks level with the lung opercula visible, and also 2 others just below the lung-pockets.

Spinners.—Short ; inferior spinners when protruded subconical and soft ; the short apical joint bearing a cluster of fusules. Median and superior spinners very short, placed alongside the anal tubercle,

and only discernible when protruded; when retracted only the short inferior spinners are visible.

Vulva.—As in fig. 14 D.

Measurements.—Larger specimen, carapace 3 mm. in length; total length 6·2 mm.

Diores salisburyensis, n. sp. (Plate XXIX, fig. 15 A and B and fig. 16).

Specimens.—1 ♂ (B 3281, Type) and ♀ and juv. (B 3249), Salisbury, S. Rhodesia (R. W. Tucker, 4/17).

♂. *Colour.*—Carapace golden-yellow, slightly darker anteriorly; dark line down the centre with a broad infuscated mark on each side anterior to the thoracic stria, and a short parallel infuscated line behind each post-median eye. Clypeus infuscated down the central portion; chelicera light yellowish-brown with dark hairs at the apices. Abdomen black on the dorsal surface with a white mark above the spinners; scutum extending over $\frac{1}{2}$ the length of the upper surface, and nearly black in colour, the central portion only being mottled brown. Under surface entirely pale testaceous and sparsely clothed with dark hairs; legs light yellowish-brown.

Cephalothorax.—Surface smooth; slightly depressed between the stria and the ocular area; highest at anterior point of stria and sloping thence to posterior border.

Clypeus.—About twice as deep as the anterior median eyes; anterior border black.

Eyes.—Seen from above, the front border of the anterior row forms a straight to slightly recurved line; the posterior border forms a strongly procurved line. Posterior row very strongly procurved (*cf. D. poweri*). Anterior medians very large; much less than $\frac{1}{2}$ a diameter apart and nearly touching the laterals, which are about $\frac{1}{5}$ their size. Posterior laterals subequal to and touching the anterior laterals; posterior medians equal to the laterals and nearer to them than to each other. Median ocular area wider than long. Infuscation around anterior medians and lateral eyes very strong; seen from in front the anterior row is procurved.

Legs.—Tarsus I long and slender, and clothed with stout hairs; no spines or spinules, but with rows of short bristles on the under surface; claws strongly toothed; metatarsus over $1\frac{1}{2}$ times the length of the tarsus; femur with 2 spines on the dorsal surface; rest of leg muticous. Tarsus II shorter and bearing numerous setose spines on the under surface; metatarsus $1\frac{1}{2}$ times as long as the tarsus, armed

with a few scattered spines, and on the lower surface with bristly hairs, which are denser towards the apex; patella with 4 spines on the anterior surface. Femora II, III and IV each with 2 spines as in femur I. Tarsus III short, the under surface more densely clothed than in II; metatarsus over twice the length of the tarsus, and also more heavily armed than metatarsus II. Patella with 9 spines dorsally on the anterior border and 3 on the posterior side. Tarsus IV missing; metatarsus very long, $1\frac{1}{4}$ times the length of metatarsus III; armed with sparse scattered spines; patella with 6 spines dorsally on the anterior border, 2 on the posterior border, and 1 centrally on the apical border.

Abdomen.—Dorsal scutum extending over the anterior half; epigastric scutum absent. Tracheal slit on ventral surface, anterior to the spinners, very distinct; markings level with the lung pockets not apparent.

Chelicera.—With 2 or 3 spinules and stout bristles on the inner anterior border.

Pedipalps.—Palpal organs as in fig. 15 A; the tarsus has a posterial dorsal prolongation as in fig. 15 B. Patella and tibia without spurs or prominent spines; tarsus with 6 apical spines on the under surface.

♀. *Colour.*—Legs and carapace slightly darker than in the ♂; dorsal surface of the abdomen with 5 distinct light marks down the central line posteriorly, the hindermost being contiguous; abdomen clothed with sparse, short, appressed hairs.

Carapace.—Similar to the ♂, cephalic portion slightly more convex; no central dark line, and only a slight infuscated mark anterior to the stria. Clypeus 3 times the diameter of an anterior median eye in depth; slightly infuscated, anterior border dark.

Eyes.—As in ♂; anterior medians smaller; posterior eyes nearly equidistant, medians lacking the posterior infuscated line and slightly smaller than the laterals.

Chelicera.—Well keeled on the inner border, and with 2 weak spines on the inner apex of the groove.

Pedipalps.—With the usual anterior scopular patch; bristles fine and sparse; tarsal claw dentate.

Legs.—Tarsus I slender; with stout hairs on the under surface, and a line of short spinules down the centre; no scopula or fascicle; metatarsus $1\frac{1}{3}$ times as long as the tarsus and with numerous irregularly paired spinules down the centre of the under surface; rest of leg spineless save for 2 spines dorsally on the femur. Tarsus II shorter and with a row of spinules down each side of the under surface; metatarsus 1–$1\frac{1}{2}$ times as long as the tarsus; patella with

1–2 spines on the anterior edge of the upper surface and with 2 on the posterior surface. Femora II, III and IV each with 2 fine spines dorsally. Tarsus III armed with coarse bristles on the under surface; metatarsus about $1\frac{1}{4}$ times as long as the tarsus, with fewer bristles, but with some scattered fine spines on the under surface, which are more numerous distally; patella with 4–5 spinules on the anterior edge of the upper surface. Tarsus IV slender, with sparse coarse bristles and numerous short fine spines on the under surface; metatarsus just over twice the length of the tarsus; patella IV with 5 spinules on the anterior surface.

Claws long and slender; slightly curved and dentate.

Abdomen.—Conspicuous ventral tracheal slit anterior to the spinners and separated from them by an infuscated band continuous with the dark dorsal surface; also a longitudinal chitinous mark on each side of the abdomen, slightly distant from the lung opercula; these may also be connected with a tracheal system.

Vulva.—As in fig. 16.

Spinners.—Inferior spinners moderately stout, sub-conical, and with a short apical joint; placed anteriorly to and separate from a group of 2 small median and 2 small superior spinners.

Measurements.—Carapace, ♂ 2 mm., ♀ 2 mm. long; total length ♂ 3·5 mm., ♀ 4·6 mm. 1 ♀ (B 3664) from Mochudi, Bechuanaland Protectorate (R. W. Tucker, 21/2/18), agrees with ♀ species of *salisburyensis*.

Diores setosus, n. sp. (Plate XXIX, fig. 17).

Specimens.— ♀ (No. B 2823, Type), Gt. Winterhoek Mts., 4000–4800 ft. (R. W. Tucker, November, 1917).

Colour.—Cephalothorax golden-brown, cephalic portion darker than thoracic; abdomen purple-black, grained with lighter flecks, and with four pale central marks posteriorly; ventral surface pale, but with the dorsal infuscations extending around the spinners; sternum and coxae pale testaceous; legs golden-brown, tarsi darkening distally; labium and coxae of pedipalps darker brown, the latter having whitish tips.

Cephalothorax.—Surface smooth and bearing sparse short, scattered hairs; median stria very short, radial infuscations faint. Cephalic portion raised and well defined; clypeus not infuscated, but bearing one or two hairs below the ocular tubercle.

Abdomen.—Upper and under surfaces sparsely clothed with short stiff dark hairs. Under surface has only faint traces of tracheal markings (see *D. bifurcata* and *D. salisburyensis*).

Eyes.—Seen from above the anterior row is procurved; medians round, larger than the laterals and less than $\frac{1}{2}$ a diameter from each other and from the laterals. Posterior row very slightly wider than the anterior row, and only moderately procurved; eyes practically equidistant; medians about $1\frac{1}{2}$ diameters apart, and a diameter or less behind the anterior medians; laterals only very slightly larger than medians and almost touching the anterior laterals. Median area parallel-sided and slightly wider than long. All eyes surrounded by a circle of black pigment, which in the anterior row and laterals merges into an infuscated band prominent below the anterior medians.

Pedipalps.—Tarsus subconical; scopular patch small but distinct; no spines on palps, but numerous stout hairs and bristles; tarsal claw strongly and densely toothed down outer side.

Legs.—Much shorter than in the preceding species. Tarsus I short, and slightly tapering distally; under surface clothed with stout bristles; metatarsus stouter, about $1\frac{1}{3}$ times as long as the tarsus, and bearing 2 apical and one other spines on the lower surface, besides stout setae or bristles. Tibia I with 2 spines apically on the lower surface and scattered bristles; patella I muticous; femur I with 2 spines on the upper surface. Tarsus II short, slightly tapering distally, and bearing short fine spines on the under surface; metatarsus II similar to I, about $1\frac{1}{3}$ times as long as the tarsus; tibia II with 1 spine in centre dorsally, and 3 small ones anteriorly on the side; patella II with 3 spinules on anterior upper surface; femur II with 2 spines dorsally. Tarsus III with very stout dense bristles on the under surface; metatarsus III scarcely $1\frac{1}{2}$ times the length of the tarsus; spined apically, and with scattered spines and numerous bristles on the under surface; tibia with 4 spines on the anterior surface, and with bristles and fine spines on the under surface; patella with 3 spines on the anterior surface, and 2 spines on the upper surface at the anterior edge, and 1 at the posterior edge; femur with 2 spines on the upper surface. Tarsus IV with numerous short spines and bristles on the under surface; metatarsus about twice as long as the tarsus, and with fine spines and bristles and numerous spines apically on the under surface; tibia with 4 spines on the anterior surface and 2 on the upper surface; patella with 3 spines on the upper surface anteriorly and 1 posteriorly.

Femora I, II and III bearing distally on outer surface a small distinct patch of short spiniform bristles.

Sternum, coxae, etc. Sparsely covered with long stiff dark hairs.

Vulva.—See figure.

Measurements.—Total length 4 mm.; carapace 1·75 mm. long.

Other specimens.—1 ♀ (B 3084), Matroosberg Mts., 5000 ft. (R. W. Tucker, 1/17). Also 1 ♀ (B 3073), Matroosberg Mts., 7000 ft. (R. W. Tucker, 1/17).

In this specimen the distal patches of bristles on outer surface of femora I–III show very clearly; the spinules, etc., on the legs are slightly less numerous. On examining the other species of this genus described in the paper it appears that the femoral character noted above is universal in both ♂♂ and ♀♀; in many cases a paler ring surrounds the group of short bristles giving the appearance of a sense organ. In *D. auricula*, however, the character is indistinct.

Family HERSILIIDAE.

Gen. HERSILIOLA, Thor.

Hersiliola australis, Sim. (Plate XXIX, fig. 9)

1893. *H. australis*, Simon, Hist. Nat. des Araign, 2nd ed., vol. 1, pp. 442 and 445. ♀.

1910. *H. australis*, Simon, in L. Schultzes Forsch. r. Zool., vol. 4, Jena, p. 188. ♀.

Specimens.—One ♂ and 2 ♀♀ (No. 14481) from Poortjesfontein, Hanover (Neeser jr. 1905).

The specimens of *Hersiliola* in the Museum collection all seem referable to *H. australis*; variations occur in coloration, especially of the abdomen, but no specific distinctions are apparent. The dorsal abdominal pattern in general resembles the diagram of *Hersiliola* (*Hersilidia lucasii*, Cambr. O. P. P.Z.S. 1876, Pl. lviii, fig. 5). When dry, the abdomen, unless rubbed, has this pattern more or less obliterated by a clothing of white and orange hairs; the lateral bundles of white setae also stand out more clearly when dry.

The cephalothorax is often entirely clothed in white and orange hairs, though in most specimens they are partially lost or rubbed off.

Specimens have been obtained from Usib R. near Nomptsas, S.W. Afric. Prot. (♀ No. B. 2064, R. W. Tucker, Percy Sladen Memorial Expedition); Tsais, Bull's Mouth Pass, S.W. Afric. Prot. (♀ No. B. 2137, R. W. Tucker, Percy Sladen Memorial Expedition); Montagu Baths, Caledon (2 ♀♀ No. 12655, Dr. W. F. Purcell, 11/03); Stompneus, Malmesbury Div. (1 ♀ No. 11678, J. C. Gould, 3/02); Ashton, Robertson Div. (1 ♀ No. 3361, Dr. W. F. Purcell, 11/97); Beaufort West (1 ♀ No. 3937, Dr. W. F. Purcell, 9/96); Ceres (3 ♀ ♀

and juv. ♂ Nos. 3269 and 3270, Dr. W. F. Purcell and R. M. Lightfoot, 10/97). (These specimens are somewhat small in size and 1 ♀ appears melanic. The pattern on the back, seen in spirits, is almost obliterated by the presence of black pigment; similarly with the cephalothorax; femora and tibiae of legs are darkened and have a slight olivaceous tinge; under abdomen, sternum, coxae and femora are almost black; spinners are dark, but with the usual dark mark on the apical segment of superior spinners.) Robertson (1 ♀ No. 3350, Dr. W. F. Purcell, 11/97), slightly melanic; Colesberg (1 ♀ No. 8763, C. L. Leipoldt, 12/00); Mossel Bay (1 ♀ No. 908, Dr. W. F. Purcell, 4/96), also melanic.

Description of Male.—The ♀ ♀ which accompany the ♂ specimen from Hanover do not appear separable from *H. australis;* they tend towards being melanic, the under abdomen being dark or mottled and with light stripes at the side, whilst the sternum and coxae are dark or mottled.

General colouring of ♂ as in ♀ ♀; usual pattern on dorsal surface of abdomen bright and distinct, the light portion being invaded by darker markings; under abdomen mottled and banded at sides; carapace and sternum mottled; legs ochreous-brown, darker towards extremities, and posterior legs lightly banded.

Legs.—Longer than in ♀; 1st leg 12·5 mm.; in ♀ length is about 10 mm.; 4th leg 16 mm.; in ♀ 11 mm. Metatarsi of 3 legs distinctly curved downwards in the centre, and upwards distally; tarsi shorter and stouter than in the other legs, of which the tarsi are long and slender.

Pedipalps.—As in fig. 9.

In all cases it was noticed that the superior spinners of *Hersiliola* were subequal to the sternum in length, and that the apical lighter portion tended to be conical and straight; also the tarsus of the 1st leg exceeded $\frac{1}{2}$ the length of the metatarsus in all cases. These additional characters serve to separate *Hersiliola* from *Tama*, since in the latter the tarsus is less than $\frac{1}{2}$ the length of the metatarsus of the 1st leg; and the apical joint of the superior spinners in addition to being curved and longer than the basal joint is also longer than the sternum, generally equalling or exceeding the sternum and labium in length.

Gen. HERSILIA, Aud.

Hersilia bicornis, n. sp. (Plate XXIX, fig. 10 A–B).

Specimens.—♂ and ♀ (B 864, Types), Krantz Kloof, Durban, Natal (H. W. Bell-Marley, 12/14).

♂ and 2 ♀♀ (B 4255), Kaapmuiden, E. Transv., Low Veld (R. W. Tucker, 11/18).

One ♀ (B 4334), Komatipoort, E. Transv., Low Veld (R. W. Tucker, 11/18).

♀. *Colour.*—Carapace brown; lateral borders strongly infuscated, and with an irregular infuscated band from each side of the ocular tubercle to the posterior border of the carapace. Clypeus whitish, with an opaque band down the centre, and ornamented with 2 dark vertical marks underneath the anterior median eyes, and 2 conspicuous oblique marks stretching out and down from the sides of the median eyes. Ocular tubercle with an orange line down centre posteriorly. Transverse median band on chelicera very faint. Abdomen black, with testaceous mottling and with anterior lateral bars and outline of anterior black band, testaceous; also with 8 distinct muscle sigilla dorsally.

Legs and spinners as in *H. sericea*, Poc. When dry the clypeus is seen to be densely clothed with white hairs; lateral and central light portions of carapace also bearing short white hairs.

Carapace.—Longer than wide; width greater than the length of the distal segment of the metatarsus of either the 1st or 2nd legs, and subequal to the patella, tibia, and ½ the metatarsus of the 3rd leg. Ocular tubercle very much raised above the carapace; ocular quadrangle scarcely longer than wide. Clypeus sloping forward, and at least 1½ times the length of the ocular quadrangle in depth.

Eyes.—Anterior laterals smaller than the rest, which are subequal.

Legs.—Bearing white spines on the light and black spines on the dark portions.

Spinners.—Total length equal to the tibia of 1st leg; terminal joint much shorter than the tibia of the 1st or 4th leg.

Vulva.—As in fig. 10 A; distinct from *H. sericea*, Poc.

Measurements.—Length 7 mm.; width of carapace 3 mm.; apical segment of spinners, 4·5 mm.; 1st leg 22·5 mm.; 4th leg 19·5 mm. in length.

♂. *Colour.*—Much as in ♀; carapace and abdomen darker. Chelicera almost entirely dark.

Legs.—Spines numerous and black.

Carapace.—Breadth subequal to length.

Eyes.—Anterior medians much larger than the posterior medians; otherwise about equidistant and in square formation; anterior laterals very small.

Pedipalps.—Palpal organ as in fig. 10 B; femur with 2–3 slender spines on the dorsal surface, and 1 about the centre of the inner

surface; patella with one slender basal spine, and 1 long apical spine on the upper surface; tibia with 1 long basal spine on the upper surface, and 2 short stout spines on the inner surface about the centre; also bearing long white hairs on the outer apical surface; tarsus as in figure; clothed with white hairs, and armed apically with 2 pairs of stout claw-like spines.

Spinners.—Length of superior spinners about $\frac{2}{3}$ the tibia of the 1st leg.

Measurements.—Length just over 6 mm.; spinners (apical segment), 3·5 mm. in length; 1st leg 25 mm., 2nd leg 24·5 mm. in length.

Hersilia pungwensis, n. sp. (Plate XXIX, fig. 11).

Specimens.—1 ♂ (No. 13639, Type), Pungwe River, 5 miles S.E. of Umtali, Mashonaland (D. L. Patrick, 1901).

Colour.—Browner, and legs more strongly banded than in *H. bicornis*. Chelicera brown with black markings on the basal portion. Clypeus entirely dark with lighter markings around the anterior median eyes and two white spots in the centre of the border above the mandibles. Other characters as in *H. bicornis*.

Spines.—Less numerous than in *H. bicornis*.

Pedipalps.—Palpal organ as in fig. 11; the large process is stouter and shorter, and the smaller process oppositely curved to those in *H. bicornis*. Tibia with the 2 spines on the inner surface only moderately stout and with the apices bent over.

Measurements.—Length about 6 mm.; 2nd leg 24 mm. long. Apical segment of spinners 3 mm. in length.

A ♀ specimen (No. 12509) from Umtali (D. L. Patrick, 1903), may be the ♀ of *H. pungwensis*.

It differs from *H. bicornis* in appearance, in its smaller size and lighter brown colour.

The width of the carapace is subequal to the length, and is also much greater than the length of the distal segment of the metatarsi of the 1st or 2nd leg, being equal to the distal segment and to $\frac{2}{3}$–$\frac{3}{4}$ of the tarsus of the 2nd leg.

The total length of the superior spinners slightly exceeds the tibia of the 1st leg. The vulva has the median portion relatively longer than *H. bicornis*, and the lateral, inwardly projecting portions smaller; the anterior dark markings are absent, but lateral markings on the side portions are present.

Both ♂ and ♀ specimens are damaged.

Gen. TAMA, Sim.

Tama incerta, n. sp.

Specimens.—Adult ♀ (No. 4298, Type) from Nieuwoudtville, Bokkeveld Mts., Calvinia (C. L. Leipoldt, 9/98), and others as below.

Colour.—Cephalothorax yellowish-brown, the centre and ocular tubercle being dark, and the border strongly mottled with black. Abdomen patterned much as in *Hersiliola*, though in many cases the lighter portions are darkened so as to leave crescents at the sides and centre, and spots, etc., posteriorly, gradations between both phases occurring. The legs and palpi are light brown and conspicuously banded with black, especially the 3rd legs. Under surface of body and coxae testaceous to faint brown; spinners dark brown. Abdomen, sternum, spinners and legs clothed with sparse, fairly long hairs, longer on upper surface of abdomen and denser on the legs; the upper surface of abdomen also has traces of bundles of white bristles as in *Hersiliola*. When dry, body, coxae and light bands of legs are covered with dull white and tawny hairs.

Chelicera.—Length equal to depth of clypeus.

Clypeus.—Over 1½ times as deep as length of median ocular quadrangle.

Legs.—Metatarsi uni-articulate; that of the 1st leg equals or slightly exceeds twice the tarsus and is slightly shorter than the tibia and metatarsus of the 3rd leg.

Spinners.—With a dark mark on the outer side of basal joint of superior spinners and a dark mark basally on the upper surface of apical joint; the latter tapers fairly rapidly to the apex, towards which it has a slightly annulated appearance; in length the apical joint exceeds that of the sternum and labium together. (Sometimes the spinners are almost as short as in *Hersiliola*, but the annulated appearance is always present, and also the tapering and curving of the apical segment.)

Vulva.—Consists of a somewhat concave dark brown plate sunk below a projecting rim, which is black and thick at the edges, and shades to dark brown beyond; the rim is not continued round the posterior border of the plate.

Measurements.—Largest specimen 9·5 mm. in length; 1st leg 17, 3rd leg 12, and 4th leg 23·5 mm. long. Apical segment of spinners 3 mm. long. Length and width of carapace each 4 mm.

Average size 9 mm. long; 1st leg 16 mm., 3rd 11, 4th 20, and apical joint of super-spinners 2·5 mm. in length.

Specimens have also been obtained from the following localities:

7 ♀ ♀ and juv. ♂ (No. B 1633), Beaufort West (Dr. W. F. Purcell, 10/05); 2 sub-adult ♀ ♀ (No. 3938), Beaufort West (Dr. W. F. Purcell, 9/96); 2 ♀ ♀ (No. 14250), Touws R. (J. Paynter, 12/04); 1 ♀ (No. 3965), Touws R. (Dr. W. F. Purcell, 9/96); 1 ♀ and sub-adult (No. B 2467), Matjesfontein (Dr. W. F. Purcell, 8/03); 1 ♀ and juv. (No. 8920), Moordenaars Karroo, Sutherland Div. (J. Meiring, 1900); 1 ♀ and juv. (No. 13698), Prince Albert (R. Broom, 1904); 1 ♀ and juv. (No. 3685), Steinkopf, Namaqualand Div. (W. H. Turle, 1/97); 2 sub-adult ♀ ♀ and 1 sub-adult (No. 12862), Laingsburg (Dr. W. F. Purcell and R. M. Lightfoot); 3 ♀ ♀ and 5 juv. (B 1633), Beaufort West (Dr. W. F. Purcell, 24/10/15). Four ♀ ♀ and 6 juv. specimens from Matroosberg at an altitude of 3500–4000 ft. (R. W. Tucker, 15/1/17), offer slight differences from the above description, in that the median plate of the vulva is smaller, more oval, and completely surrounded by the dark raised border; the breadth of the carapace is also slightly greater than the length. These differences, which are also shown in Nos. 13698 and B 2467, do not, however, seem to be markedly specific.

Family UROCTEIDAE.

Gen. UROCTEA, Dufour.

Uroctea septemnotata, n. sp. (Plate XXIX, fig. 12 a).

Specimens.—Numerous ♀ ♀ taken on the Percy Sladen Trust Expedition to South-West Africa (localities at end) in December, 1915, and January, 1916 (R. W. Tucker, coll.). Types, B 2703.

The specimens, of which 34 were taken, are all ♀ ♀, and range from juveniles to old adults, and all appear referable to one species. This has been described as new, though owing to the diagnoses of other species being based mainly on colour and markings, both *U. quinquenotata* (Sim.) and *U. schinzi* (Sim.) and possibly *U. semilimbata* (Sim.) might be represented by various stages and variations in the specimens to hand. From this material it appears that the testaceous spots are prominent in the young and tend to disappear in the adults; though the range of variation is such that they may be retained in adult forms, and even reinforced by testaceous flecks until the spots are linked in an irregular chain. Also almost melanic varieties occur, the upper abdomen lacking testaceous spots or flecks; the opposite

likewise obtains, the abdomen being lighter and more testaceous above, the spots joined together and the under side of the abdomen pale.

The stages represented and presumably explained by the variations and state of maturity of the specimens are as follows:

Juvenile specimens have the abdomen deep black above and ornamented with 7 testaceous spots; 5 are arranged just as in *U. quinquenotata*, with the addition of two extra ones between the median laterals and the terminal central spot. The additional spots may be large, small, occasionally merged or even absent. The next stages, which are most plentifully represented, are probably just adult, and the majority greatly resemble *U. schinzi*, being distinguished therefrom by the vulva and sternum. Some, however, retain the 7 spots, dull and more or less linked when adult; others show 5, 4 and 2 according to the amount of black pigment present; all, however, have the same characters in eyes and vulva, etc., and can hardly be separated specifically.

The large and old adult stages have often all black abdomens above, sometimes with a cinereous tinge; others show traces more or less distinct of the two anterior abdominal spots, which are the largest and clearest in all stages.

The above are possibly only variations of *U. schinzi*, but other specimens in the Museum collection, from Little Namaqualand, are lacking in the brown markings on the vulva, and otherwise agree more closely with the description of *U. schinzi*; hence *U. septemnotata* has been separated as above.

The variable markings of the abdomen are apparently usual in the genus, since *U. indica* (Poc.) recorded from India has occasionally 7 spots.

♀. *Colour.*—Carapace dark brown; sternum pale testaceous with brown border; coxae brown, being the same colour or lighter than the border of sternum.

Posterior border of labium and maxillae dark brown (in *U. schinzi* the brown border to the sternum is not so prominent, and the coxae are the same colour as the sternum itself). Abdomen as described above, and bearing stiff black hairs anteriorly, which curve over abdomen above cephalothorax.

Legs.—Well clothed with hairs and spines, especially the posterior pairs; colour as in *U. schinzi*, but tending often to be dark mahogany in shade.

Vulva.—Seen in spirits, its characteristic form is as in fig. 12 A; exceptions, however, occur in which the 2 lateral marks are closer together and coalesce, or are joined by a dark band. The specimens

were taken with other normal ones, and the variations seem due to the internal arrangement of the vesicula seminalis showing through the vulval plates in a slightly different fashion.

Measurements.—Length of adults 11–12 mm. Legs vary between 13 and 14 mm. in length.

Localities.—Goas (Nautseras Noab), 5 ♀ ♀; Usib R., 8 km. from Nomptsas, 7 ♀ ♀; Voigtsgrund, 6 ♀ ♀ and 2 juv.; Maltahohe, 2 ♀ ♀ and juv.; Kabiras, juv. ♀; entrance to Bull's Mouth Pass, 5 ♀ ♀; Tsais, Bull's Mouth Pass, 2 ♀ ♀; Ababis, 3 ♀ ♀. S.W. Afric. Prot.

Uroctea quinquenotata, Sim. (Plate XXIX, fig. 12 b).

1910. *U. quinquenotata*, Simon, in Schultzes Forsch-reise Zool. Jena, vol. 16, p. 189. ♀.

Specimens.—2 ♀ ♀ and 1 ♀ juv. (No. 3865); locality not stated, but probably Bushmanland.

These specimens agree in markings of abdomen, etc., with description of *U. quinquenotata*. The sternum is slightly dark edged, and is unicolorous with the coxae and femora, the latter being light brown below.

The vulva is distinct, as in fig. 12 b. Simon gives no figures of the vulva of *quinquenotata*, and although the above specimens are considered to agree with Simon's description, they may prove to be a distinct species.

Uroctea schinzi, Sim.

1887. *U. schinzi*, Sim., Ann. Soc. Ent. Fr. (6) vol. 7, p. 370. ♀.
1893. ,, ,, Sim., Araign. 2nd ed., vol. 1, p. 451. ♀.
1910. ,, ,, Sim., in Schultzes Forsch.-reise Zool. Jena, vol. 16, p. 188. ♀.

Specimens.—4 ♀ ♀, 1 juv. ♂ and 1 juv. ♀ (No. 3717) from Namies (Keuhardt Div.), Bushmanland (M. Schlechter, 3/1898).

Compared with *U. septemnotata* the ♀ ♀ have the vulval cleft narrower and the entire genital surface more wrinkled and lacking in the lateral brown markings; the juvenile specimens have black abdomens with 5 light conspicuous spots; terminal one angular, and with 2 spots anteriorly and 1 posteriorly to the latter; carapace, legs and sternum light yellow. They may possibly be the juveniles of a different species although they occur with the above, since the abdominal markings are very distinct.

1 ♀ (B 711, R. M. Lightfoot, 10/1911) from Jackals' Water, Little Namaqualand, shows traces of 7 spots on a cinereous abdomen but

has the vulva as in *U. schinzi*. 2 ♀ ♀ (Nos. 3700 and 3703) from Naroep, Bushmanland, agree with *U. schinzi*; also 1 ♀ (No. 3712) from Henkries, Bushmanland; and 1 ♀ (No. 3721) from Eitries, Bushmanland; all latter collected by M. Schlechter, 1–3/98.

Family CLUBIONIDAE.

Subfamily CORINNINAE.

Gen. CETO, Sim.

Ceto curvipes, n. sp (Plate XXIX, fig. 18 A–B).

Specimens.—One ♂ (No. B 2742, Type); Gt. Winterhoek Mts., Cape, altitude 4200–4700 ft. (R. W. Tucker, 19/11/16).

Colour.—Cephalothorax pale brown, redder anteriorly; legs and abdomen pale testaceous, latter infuscated posteriorly around and above the spinners; dorsal surface covered with a scutum of the same colour as the posterior carapace. Sternum very pale brown; coxae pallid; chelicera dark brown.

Carapace.—Oval, broadest opposite 2nd pair of legs, and gradually narrowing posteriorly to them, and forming an almost rectangular ocular portion anterior to the 1st pair of legs. Clypeus narrow, not as wide as the anterior laterals. Surface moderately convex, glabrous, but minutely punctate; cephalic portion only very slightly higher than the thoracic; latter portion sloping shortly but at a moderate angle posteriorly. Thoracic stria moderately long.

Eyes.—From above, the anterior row appears slightly recurved; medians larger than the laterals, and less than ½ a diameter apart; laterals nearer to medians. Posterior row strongly recurved, and wider than the anterior row; median eyes slightly more than a diameter apart, median area nearly as long as wide and slightly wider posteriorly; posterior lateral equidistant from the medians, and facing backwards and sideways. Seen from in front the anterior row appears slightly procurved, and the posterior row straight.

Abdomen.—About the same length as the carapace, and much narrower; slightly broader posteriorly; covered with a scutum over the entire length dorsally, and with an epigastric scutum ventrally.

Spinners.—Inferior spinners short, and subcylindrical; superior spinners about equal in size, and slightly more posterior in position.

Sternum.—Marked with a line parallel to the border; smooth, broad, and shield-shaped; not produced anteriorly, but extending to the posterior border of coxa IV; not truncated.

Labium.—Longer than broad and extending over $\frac{1}{2}$ way up the coxae of the pedipalps, which incline inwards slightly over its apex.

Coxae.—Coxa I longer than coxa IV; coxae of pedipalps with a tuft of stout hairs apically.

Chelicera.—Stout; fangs moderately long, grooves apparently muticous.

Palpi.—Femur straight, moderately long; tibia spined as in fig. 18 B; tarsus elongated, surpassing tarsal organ; latter with an external process as in fig. 18 A. Patella also spined.

Legs.—In order of length 1, 4, 2, 3. Tarsus I straight, cylindrical in shape, and slightly broader anteriorly; very sparse fine or scopular hairs, together with a row of numerous small spines down each side of the under surface; claws very short and hidden by short fascicles. Metatarsus about $\frac{1}{3}$ longer than the tarsus; no scopula, but with about 14–15 pairs of small spinules, and 1–2 spines on the under surface; tibia with 4 long spines on the under surface; patella and femur muticous. Tarsus and metatarsus II similar to I, but shorter and with less numerous spinules (10–11 pairs on the metatarsus); tibia with 4–5 strong spines on the anterior border of the under surface, and 3–4 distally on the posterior border. Tarsus III short and curved upwards in the centre and hinder portion; well clothed with fine to stout bristles on the under surface; claws about as long as the fascicles, and bearing 1–2 teeth; metatarsus long, about $2\frac{1}{3}$ times as long as the tarsus, slightly swollen distally and with an apical patch of coarse scopular hairs on the under surface; the metatarsus also appears slightly curved, and bears 1 spine on the anterior surface and 3 on the lower posterior surface; tibia and femur bear a few spines. Tarsus IV also curved similar to III; bristles on the lower surface longer; metatarsus very long, about 3 times as long as the tarsus; also narrowing anteriorly and then slightly swelling distally, and bearing a small patch of coarse scopula on the under surface, and 3–4 apical, and 3–4 other spines; tibia also with 3–4 spines; patella muticous; femur with 1–2 spines. Femur I is much shorter than femur IV.

Measurements.—Carapace 2·3 mm. in length. Total length 5 mm.

Subfamily LIOCRANEAE.

Gen. RHAEBOCTESIS, Sim.

The following species of this genus appear related also to the *Drassidae*, in that the carapace and mouth-parts resemble those of *Theuma*,

the claws those of *Anagraphis*, whilst the median spinners, as noted by Simon (Hist. Nat. des Araign. 2nd ed., 1897, p. 136), closely resemble those of *Rebilus*.

Rhaeboctesis trinotatus, n. sp. (Plate XXVIII, fig. 7).

Specimens.—1 ♀ (B 3253, Type), Salisbury, S. Rhodesia (R. W. Tucker, 4/17). 2 ♀ ♀ (B 4486), Florida, Transvaal High Veld (R. W. Tucker, 12/18).

Colour.—Carapace dark brown; legs slightly lighter; tarsus IV with median light band; dorsal surface of abdomen cinereous black, under surface lighter; sternum median brown, coxae lighter.

Carapace.—Width across the ocular area just over $\frac{1}{2}$ the greatest width; surface clothed with fine dark appressed hairs. Clypeus much narrower than the diameter of an anterior lateral eye.

Maxillae.—Resembling those of *Drassidae*, particularly *Theuma*.

Eyes.—Seen from above the anterior row is straight to slightly recurved; lateral eyes slightly larger than the medians; medians almost touching the laterals, but slightly more distant from each other. Posterior row straight and wider than the anterior row; laterals larger than the medians, and about the same size as the anterior laterals; medians oblique, pearly, and subangular, and nearer to each other than to the laterals.

Median ocular area wider posteriorly and slightly longer than wide.

Sternum.—Broad oval, slightly longer than broad.

Legs.—In order of length 4, 1, 2, 3. Tarsus and metatarus of 1st leg scopulate to base; also scopular hairs anteriorly on inner side of the tibia. Tarsus II scopulate; metatarsus less densely so; metatarsus I with 1 basal spine, II with 2 basal spines; tarsus III with scopula of bristly hairs, metatarsus with only a few scopular hairs. Tarsus IV with a coarser scopula, metatarsus with bristly hairs, especially anteriorly on the under surface. Tarsi not spined. Posterior legs more heavily spined than the anterior.

Pedipalps.—Tibia longer than patella; tarsus slender and bearing apical toothed claw.

Chelicera.—Bearing "tache basale"; inferior border of groove with 2 strong teeth, superior border with 3.

Abdomen.—Lung opercula distinct and well marked; also a trace of a ventral tracheal stigma anterior to the spinners.

Spinners.—As in Text-fig. 142, p. 137, Hist. Nat. des Araign., 2nd ed.

Vulva.—As in figure; 2 distinct lateral cavities and 3 small hooded pockets.

Measurements.—Carapace 2·75 mm. in length; total length 7 mm.

RHAEBOCTESIS SECUNDUS, n. sp. (Plate XXVIII, fig. 11 A–B).

Specimens.—2 ♂ ♂ and 2 ♀ ♀ (9482, Types), Hanover (S. C. Cronwright Schreiner, 9–10/01); also 4 ♀ ♀ and 1 ♂ from the same and neighbouring localities (*id.*, 10/01–3/02).

♀. *Colour.*—Carapace medium brown, with darker radiations from a prominent median stria; cephalic portion slightly darker and redder; chelicera reddish-brown; legs, coxae and sternum golden-brown; abdomen testaceous.

Carapace.—Width across the posterior row of eyes $\frac{1}{2}$ the greatest width; surface clothed with appressed golden hairs. Clypeus narrower than the diameter of an anterior lateral eye.

Eyes.—Anterior row straight when seen from in front; slightly recurved from above; medians subequal to the laterals and slightly nearer to them than to each other. Posterior row much wider than the anterior and slightly recurved; medians flat, subangular and nearer to each other than to the laterals. Median ocular area longer than wide, and scarcely wider posteriorly.

Chelicera.—As in *R. trinotatus.*

Sternum.—$1\frac{1}{3}$ times as long as broad.

Legs.—Tarsi and metatarsi I and II densely scopulated; metatarsus I with 1 median and 2 basal spines on the under surface; metatarsus with the median spine sometimes absent. Metatarsus III with a scopula of bristly hairs. Metatarsus IV clothed with bristles on the lower surface, and bearing sparse white plumose hairs on the sides, especially on a lighter median band.

Pedipalps.—As in *R. trinotatus.*

Abdomen.—Ventral tracheal stigmata indistinct; spinners as in *R. trinotatus.*

Vulva.—As in fig. 11 A.

♂. *Colour.*—Slightly lighter than the ♀.

Carapace.—Width across the posterior row of eyes $\frac{1}{2}$ the greatest width; clypeus less than $\frac{1}{2}$ the diameter of an anterior lateral eye.

Eyes.—Seen from in front the anterior row is straight; the laterals are larger than the medians and touching them; medians less than $\frac{1}{2}$ a diameter apart. Posterior row straight, otherwise as in ♀. Median ocular area only very slightly longer than wide and narrower anteriorly.

Chelicera.—As in ♀, but longer and therefore having the teeth more widely separated.

Sternum.—As in ♀.

Legs.—Tarsus I scopulated, metatarsus scopulate anteriorly and

bearing a median and 2 basal long stout spines; similarly with the tarsus and metatarsus of the 2nd leg, but the metatarsus bears 2 median as well as 2 basal spines. Tarsi III and IV with bristles on the under surface and each with an anterior to median whitish band; all the tarsi are slender, especially IV and I; metatarsus IV $2\frac{1}{4}$ times the length of the tarsus.

Pedipalp.—Tibia slightly longer than the patella, bearing on its outer surface a median cluster of spiniform bristles and a short curved apical projection, and on the inner surface 4 long spines and numerous long stout bristles. Tarsus and palpal organ as in fig. 11 B.

Spinners.—Superior spinners more cylindrical than in the ♀; median spinners shorter and more slender and not compressed as in the ♀; superior spinners cylindrical but not so stout as the inferiors.

Measurements.—Length of carapace, ♀ 4·9 mm; ♂ 3·5 mm. Total length, ♀ 12·3 mm., ♂ 7·6 mm.

RHABDOCTESIS TRANSVAALENSIS, n. sp. (Plate XXVIII, fig. 10 A–B).

Specimens.—4 ♀ ♀ and 2 ♂ ♂ (B 4487, Types.) Florida, Transvaal, High Veld (R. W. Tucker, 12/18).

♀. *Colour.*—Carapace medium brown, redder and darker anteriorly, and with slight radiate infuscation; legs similar in colour, becoming darker distally, tarsus with the trace of a pale median band. Abdomen infuscated dorsally, pale ventrally.

Carapace.—As in *R. trinotatus*; clypeus less than the radius of an anterior lateral eye.

Eyes.—As in *R. trinotatus.*

Chelicera, pedipalps, etc., also as in *R. trinotatus.*

Legs.—Tarsus I scopulate and spineless; metatarsus scopulate to the base and bearing 2 basal spines; tibia with a few scopular hairs anteriorly; 2nd leg similar, tibia with fewer scopular hairs. Tarsus III clothed with bristles on the under surface; metatarsus bearing a few bristles and numerous long spines.

Abdomen, spinners, etc., as in *R. trinotatus.*

Vulva, etc., as in fig. 10 A.

♂. *Colour.*—Slightly lighter than the ♀.

Other characters as in the description of the ♂ of *R. secundus.*

Legs.—Metatarsus I with 2 median and 2 basal spines; 2nd leg similar; scopular hairs more bristle-like than in the ♀; otherwise as in *R. secundus.*

Pedipalps.—Tarsus and palpal organ as in fig. 10 B.

Measurements.—Length of carapace ♀ 3·9, ♂ 3 mm.; total length ♀ 9·4 mm., ♂ 6·1 mm. These specimens and the 2 examples of

R. trinotatus taken at the same time and locality strongly resemble the genus *Xerophaeus* Fam. *Drassidae* in their appearance and movements when alive; also they were taken from the same habitat as specimens of *Xerophaeus*, from which, at the time, they were indistinguishable.

Rhaeboctesis exilis, n. sp. (Plate XXVIII, fig. 9).

Specimens.—1 ♂ (B 4476, Type), Messina, N. Transvaal (R. W. Tucker, 12/18).

Colour.—Carapace medium brown with fairly strong infuscated mottling, especially laterally; legs lighter in colour, strongly infuscated proximally, and becoming slightly redder distally. Abdomen greyish-black on the dorsal surface; ventral surface pale with bright brown epiginal plate.

Carapace, eyes, etc., as in *R. secundus*; eyes differ slightly in that anterior row is somewhat procurved, and median ocular area is noticeably longer than wide.

Maxillae.—Strongly resembling those of *Drassidae*; oblique impression, however, does not reach to the outer border.

Legs.—Tarsus I lightly scopulate; metatarsus I with scopular hairs anteriorly, and with 1–2 median and 2 basal spines; 2nd leg similar, with 0–2 median and 2 basal spines. Tarsus III bearing bristles on the under surface; no median white band present. Fourth legs missing.

Pedipalps.—Tibial spine short, stout, and curved upwards and inwards. Palpal organ as in fig. 9.

Measurements.—Carapace 2·8 mm. in length; total length 5·5 mm.

Rhaeboctesis matroosbergensis, n. sp. (Plate XXVIII, fig. 8).

Specimens.—1 ♀ (B 3456, Type), Matroosberg Mts., C.P., 5000–6000 ft. (R. W. Tucker, 11/17).

Colour.—Carapace light brown, darker anteriorly; chelicera reddish-brown; legs light brown. Abdomen dull grey dorsally and ventrally sternum light brown, dark edged.

Eyes.—Front row straight to recurved; medians about a diameter apart, but less so from the larger laterals. Posterior row very slightly recurved, medians angular and subequal to the laterals; laterals subequal to the anterior laterals. Clypeus not exceeding the diameter of an anterior median eye.

Chelicera.—As in *R. trinotatus*.

Legs.—Metatarsus I scopulate laterally almost to the base, and with 2 median and 2 basal spines on the under surface; tibia with no

scopular hairs, 2 median and 1 basal spines. Metatarsus IV bearing bristles in place of scopular hairs, and with the usual pale band centrally.

Vulva.—As in figure.

Measurements.—Length of carapace 4 mm.; total length 10 mm.

Corrections.

In the paper on South African Arachnida (I), Ann. S. African Museum, vol. 17, pt. 2, the following alterations in specific names should be made:

Moggridgea latus, n. sp., p. 81, to *M. lata*.

Hermacha fulvus, n. sp., p. 109, to *H. fulva*.

Hermacha nigrispinosis, n. sp., p. 112, to *H. nigrispinosa*.

The type of *Hermacha purcelli*, n. sp., p. 114, should be No. B 2610 instead of B 2670, and that of *H. nigrispinosa*, p. 112, B 2983 instead of B 2593.

The specimens identified as *Thelechoris australis* (p. 120) are now *Allothele caffer* (p. 442); also in the description of the same (p. 120, line 25) read "procurved" for "recurved."

Also on p. 126, line 3, read form (*c*) for form (*e*).

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EXPLANATION OF PLATES XXVIII AND XXIX.

PLATE XXVIII.

FIG.

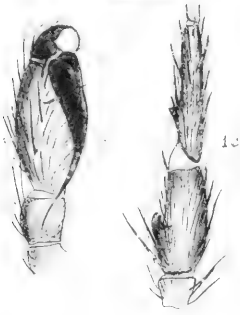
1.—*Allothele teretis*, n. sp. A and B. Pedipalp and papal organ of ♂. C. Tibia and metatarsus of 2nd leg of ♂.
2.—*Adonea parva*, n. sp. Palp of ♂, ventral surface.
3.—*Diores auricula*, n. sp. Vulva of ♀.
4.—*Diores druryi*, n. sp. Vulva of ♀.
5.—*Diores capensis*, n. sp. Palp of ♂, ventral surface.
6.—*Diores jonesi*, n. sp. A. Vulva of ♀. B. Palp of ♂, ventral surface.
7.—*Rhaeboctesis trinotatus*, n. sp. Vulva of ♀.
8.—*Rhaeboctesis matroosbergensis*, n. sp. Vulva of ♀.
9.—*Rhaeboctesis exilis*, n. sp. Palp of ♂ from ventral surface.
10.—*Rhaeboctesis transvaalensis*, n. sp. A. Vulva ♀. B. Palp ♂.
11.—*Rhaeboctesis secundus*, n. sp. A. Vulva ♀. B. Palp ♂.

PLATE XXIX.

FIG.

1.—*Eresus purcelli*, n. sp. Vulva of ♀.
2.—*Eresus depressus*, n. sp. A. Vulva of ♀. B. Profile of ♀ carapace. C. Ditto, *E. fumosus*.
3.—*Eresus fumosus*. Palp of ♂, ventral surface.
4.—*Dresserus colsoni*, n. sp. Vulva of ♀.
5.—*Dresserus kannemeyeri*, n. sp. A. Palp of ♂, ventral surface. B. Cribellum ♂. C. Vulva of ♀.
6.—*Dresserus nigellus*, n. sp. Vulva of ♀.
7.—*Dresserus schreineri*, n. sp. A. Palp of ♂, ventral surface. B. Profile of ♂ carapace. C. Ditto of *D. kannemeyeri*.
8.—*Dresserus sericatus*, n. sp. Vulva of ♀.
9.—*Hersiliola australis*. Palp of ♂, lateral view of under surface.
10.—*Hersilia bicornis*, n. sp. A. Vulva of ♀. B. Palp of ♂, lateral view.
11.—*Hersilia pungwensis*, n. sp. Palp of ♂, lateral view.
12A.—*Uroctea septemnotata*, n. sp. Vulva of ♀.
12B.—*Uroctea quinquenotata*, n. sp. Vulva of ♀.
13.—*Diores bifurcata*, n. sp. A. Eyes. B. Vulva of ♀. C. Tibia of ♂ palp. D. Palp of ♂, lateral ventral view. E. Chelicera and anterior carapace.
14.—*Diores poweri*, n. sp. A. Mouth parts. B. Fang of chelicera. C. Eyes. D. Vulva of ♀.
15.—*Diores salisburyensis*, n. sp. A. Palp of ♂, ventral view. B. Ditto, dorsal view.
16.—*Diores salisburyensis*, n. sp. Vulva of ♀.
17.—*Diores setosus*, n. sp. Vulva of ♀.
18.—*Ceto curvipes*, n. sp. A. Palp of ♂, ventral view. B. Patella and tibia of ♂ palp.


1A.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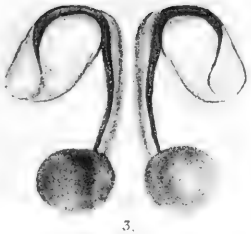
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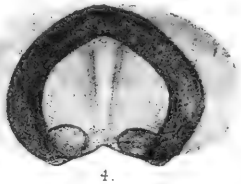
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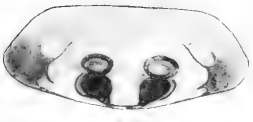
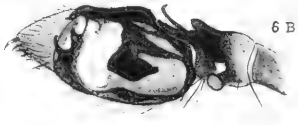

6 A.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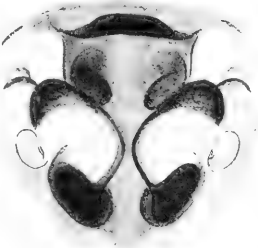
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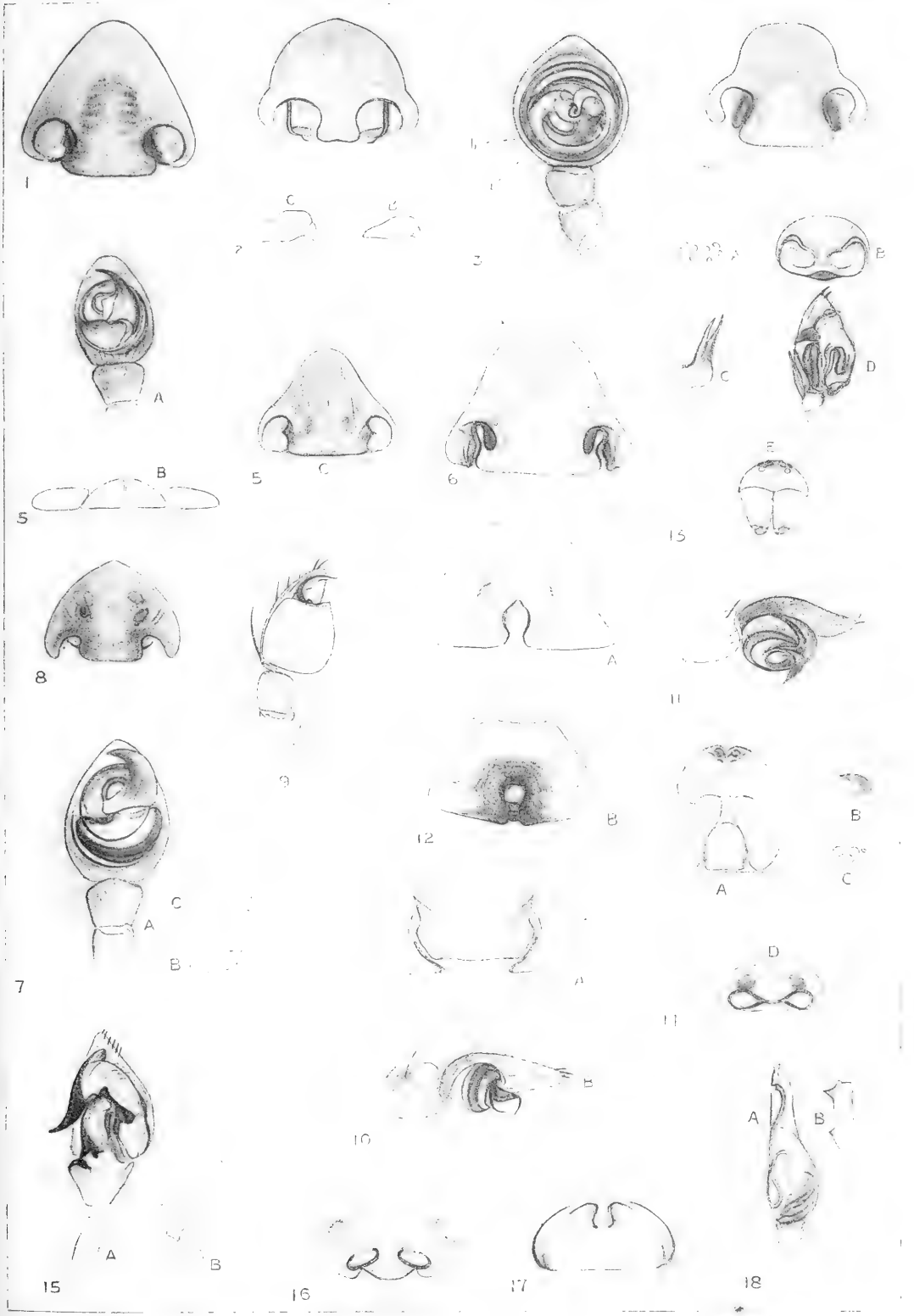
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13.—*On Some New Species and others of Fossorial Hymenoptera in the South African Museum.**—By Rowland E. Turner, F.Z.S., F.E.S.

Family SCOLIIDAE.

Subfamily ELIDINAE.

Braunsomeria peringueyi, sp. n.

♂. Niger, mandibulis, clypeo basi nigro, tuberculis antennalibus, macula frontali sub ocello antico, macula parva inter ocellos posticos, vertice linea transversa mediana, orbitis internis externisque oculorum fasciis ad verticem continuatis, pronoto macula utrinque antice, fasciaque continua postice, mesonoto macula mediana, scutello fascia interrupta, mesopleuris antice linea verticali, postscutello, tergitis 2–6, sternitisque 2–6 fascia lata apicali macula nigro utrinque includente, segmento primo dorsali fascia lata apicali, segmento ventrali septimo, femoribus subtus et apice, tibiis anticis intermediisque, tibiis posticis basi tarsisque basi flavis; flagello articulis 8 apicalibus brunneo-ferrugineis; alis hyalinis, stigmate venisque ferrugineis.

Long. 10 mm.

♂. Antennae nearly as long as the thorax and abdomen combined; first joint of the flagellum almost hidden in the apex of the scape; the third about half as long again as the second; the antennal tubercles prominent. Head subquadrate; deeply punctured; eyes oval, separated from the hind margin of the head by a distance equal to their own breadth, not emarginate. Posterior ocelli much further from the hind margin of the head than from each other. Clypeus short, subconcave, the anterior margin broadly truncate. Thorax rather strongly punctured; pronotum as long as the mesonotum, a little narrowed anteriorly, the anterior margin straight. Median segment closely punctured, the sides of the segment clothed sparsely with white hairs. Abdomen smooth and shining; first segment with a very short petiole, obliquely truncate anteriorly above the petiole, the dorsal surface behind the truncation shorter than the second segment and slightly constricted at the apex; the abdomen slightly narrowed from the middle to the extremities. Aculeus of the hypopygium recurved and fairly long, the emargination of the seventh tergite narrow and fairly deep. Radial

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

cell very short, the costal margin beyond the stigma no longer than the first abscissa of the radius. Only two cubital cells; the second long on the cubitus but very short on the radius, the second abscissa of the radius equal to the first. Second cubital cell receiving the first recurrent nervure just before one-third from the base, the second at the extreme apex.

Hab. O'okiep, Namaqualand, November, 1885 (*L. Péringuey*).

This is a much larger species than *B. quadraticeps* Turn., the only other known male of the genus. It differs also in only having two cubital cells, the second transverse cubital nervure having become obsolete. It is possible that this may be the male of *B. mutilloides* Turn.

Braunsomeria cognata, sp. n.

♂. Closely resembles *B. peringueyi* described above, but differs in the shorter antennae, which are scarcely longer than the abdomen, the third joint of the flagellum being distinctly less than half as long again as the second; the radial cell is shorter, its length on the costa being much less than the length of the first abscissa of the radius, extending on the costa very little beyond the stigma; the second abscissa of the radius is also very short—much shorter than the first; the yellow colour on the head and pronotum is more extensive and the legs are almost entirely yellow. The stigma is very pale yellow.

Long. 8 mm.

Hab. Junction of Marico and Crocodile Rivers, Transvaal. (*R. W. E. Tucker.*)

Subfamily ANTHOBOSCINAE.

Genus ANTHOBOSCA Grier.

Anthobosca flagellaria, sp. n.

♂. Niger; clypeo, mandibulis macula basali, orbitis internis anguste dimidio inferiore, vertice macula parva supra oculos, pronoto fascia interrupta postice, tegulis basi, femoribus apice extremo, tibiis supra tarsisque pallidissime flavis; tegulis apice testaceis; alis hyalinis, venis nigris.

Long. 9 mm.

♂. Clypeus small, very sparsely punctured, the apical margin with a sparse fringe of long whitish hairs; head finely and very closely punctured; antennae short and very stout, shorter than the thorax and median segment combined, the two basal joints of the flagellum very short, much broader than long, joints 3–8 nearly as broad as long, the

four apical joints tapering, distinctly longer than broad. Thorax and median segment finely and closely punctured; abdomen finely shagreened; first tergite scarcely longer than its apical breadth; second tergite almost as long as the first, as broad at the apex as long; seventh tergite small, coarsely punctured; hypopygium rounded at the apex. Second abscissa of the radius shorter than the first, less than one-third the length of the third; first transverse cubital nervure strongly oblique, sharply elbowed near the cubitus; second and third transverse cubital nervures straight, almost at right angles with the cubitus. First recurrent nervure received just before two-thirds from the base of the second cubital cell, second a little beyond one-third from the base of the third cubital cell. Hind tibiae distinctly serrate.

Hab. M'fongosi, Zululand (*W. E. Jones*), May, 1917.

Very near *A. rufocaudata* Turn., but differs in the much stouter antennae, in the greater proportionate length of the basal tergites compared with their breadth, and in the much greater extent of the yellow colour on the legs.

Family PSAMMOCHARIDAE.

Genus BATOZONUS Ashm.

Batozonus mutatus, sp. n.

♀. Nigra; flagello aurantiaco, articulis tribus apicalibus infuscatis; scapo, tarsis articulo basali, femoribus apice extremo, tibiisque ferrugineis, mandibulis basi, fronte clypeoque fusco-ferrugineis; alis fusco-violaceis, venis nigris.

Long. 15 mm.

♀. Clypeus almost transverse at the apex, the angles broadly rounded. Antennae tapering to the apex, the second joint of the flagellum much longer than the third; eyes separated on the vertex by a distance distinctly less than the length of the second joint of the flagellum; the posterior pair rather nearer to the eyes than to each other. Scutellum rather strongly convex; median segment opaque, with a very distinct, but shallow, longitudinal groove in the middle. Comb of the fore tarsi well developed, with three spines on the basal joint; inner spine of hind calcaria more than half as long as the hind metatarsus; ungues of the fore tarsi bifid, of the others unidentate. Third abscissa of the radius a little more than half as long as the second, a little shorter than the second transverse cubital nervure; second recurrent nervure received beyond two-thirds from the base of

the third cubital cell. Cubitus of the hind wing originating very shortly before the transverse median nervure.

Hab. Durban, Natal (*W. Heygarth*), April, 1913.

This is very near *B. gowdeyi* Turn., from Uganda, but differs in the colour of the legs and antennae and in the presence of a distinct sulcus on the median segment. The second cubital cell is very much longer than in *capensis* Dahlb. (*vindex* Sm.), and the position of the second recurrent nervure is different.

Genus ANOPLIUS Lepell.

Anoplius insidiosus, Sm.

Pompilus insidiosus Sm., Descr. new spec. Hymen. p. 143, 1879, ♀.
Anoplius rhodesianus Bisch., Arch. f. Naturges. A 3, p. 60, 1913, ♀ ♂.

Genus HEMIPEPSIS Dahlb.

Hemipepsis tamisieri, Guér.

Pompilus tamisieri Guérin, Lefebure: Voy. Abyssinie, vi, p. 356, 1848.
Mygnimia distanti Saussure, Distant: Natural. Transvaal, p. 220, 1892, ♀.

I have no doubt that *distanti* is a synonym, though I have not seen the species from as far south as Pretoria. It occurs in South Rhodesia and throughout East Africa.

Superfamily SPHECOIDEA.

Subfamily STIZINAE.

Genus STIZUS, Latr.

Stizus franzi, Turn.

Stizus neavei Kohl, Rev. Zool. African. iii, p. 208, 1913 (*nec* Turner, 1912).
Stizus franzi Turn., Ann. & Mag. Nat. Hist. (8) xvii, p. 443, 1916.
Stizus congoensis Mant., Ann. Mus. Civ. Stor. Nat. Genova, 3ª, vii, p. 376, 1917.

A specimen in the South African Museum has the fore wings flavo-hyaline from the base to the basal nervure, thence fusco-hyaline to the apex of the third cubital cell, the extreme apical margin almost hyaline. The front is entirely black except the inner orbits and the base of the clypeus is also black. There do not seem to be any structural differences in the single female specimen in the collection, so I treat it as merely a colour variety.

Hab. Stellenbosch (*L. Péringuey*), January, 1888.

Subfamily ARPACTINAE.

Genus AMMATOMUS Cost.

Ammatomus elongatulus, sp. n.

♂. Niger; clypeo, scapo subtus, fronte sub antennis, pronoto margine postico angustissime, postscutello linea transversa, segmento dorsali primo macula apicali utrinque, segmentis dorsalibus 2–4 fascia angusta apicali in medio angustissime interrupta, tarsisque posticis, articulis apice extremo nigris, pallide flavis; tegulis, callis humeralibus, trochanteribus, femoribus subtus, tibiis tarsisque posticis et intermediis brunneo-testaceis; alis hyalinis, venis nigris.

Long. 8 mm.

♂. Eyes strongly convergent towards the clypeus, at the base of which they are separated by a distance not quite equal to the length of the scape. Antennae strongly clavate, the five apical joints at least as broad as long; second joint of the flagellum a little longer than the third and fourth combined. Posterior ocelli fully three times as far from each other as from the eyes. Front and vertex subopaque, sparsely, but rather strongly punctured; thorax coarsely, but not very closely punctured; the punctures on the dorsal surface and sides of the median segment smaller and more scattered; the triangular dorsal area of the median segment bounded by rather indistinct furrows. Abdomen more sparsely and finely punctured than the thorax, more finely and much more sparsely on the two basal tergites than elsewhere; first tergite very narrow, forming a petiole, not broadened to the apex, the sides almost parallel, longer than the second tergite, which is about six times as broad at the apex as the first; tergites 3–5 with a very sparse apical fringe of very short stiff hairs. Seventh tergite opaque, almost smooth. Hind tarsi very long and slender. Second abscissa of the radius nearly twice as long as the first, more than half as long as the third, and distinctly longer than the distance between the recurrent nervures on the cubitus.

Hab. M'fongosi, Zululand (*W. E. Jones*), February, 1917. Another specimen from Insiza, S. Rhodesia. Easily distinguished from *spiniferus* Buyss. and *africanus* Turn. by the very slender petiole, and by the coarser sculpture of the thorax. *A. spiniferus* and *africanus* are very close to each other, and in 1915 (Ann. and Mag. Nat. Hist. 8, xvi, p. 287) I sank *africanus* as a synonyn. But Du Buysson states that the second tergite is only half as broad again at the apex as the first, whereas in *africanus* it is three times as broad, so that the two can scarcely be identical.

Genus ARPACTUS Turn.

Arpactus (Euspongus) jonesi, sp. n.

♂. Ferrugineus; capite, mesonoto in medio, scutello, postscutello, segmentoque mediano area basali nigris; mandibulis basi, clypeo, fronte sub antennis, orbitis internis dimidio inferiore, scapo subtus, pronoto margine postico, callis humeralibus, scutello linea transversa apicali, postscutello linea transversa, segmentis dorsalibus duobus basalibus fascia angusta apicali, quarto apice, quinto sextoque, femoribus anticis intermediisque subtus, tarsisque anticis intermediisque supra flavis; capite, pleuris, segmentisque dorsalibus 3–5 flavo-brunneo pubescentibus; alis hyalinis, venis nigris, stigmate testaceo.

Long. 9 mm.

♂. Eyes rather strongly convergent towards the clypeus, separated at the base of the clypeus by a distance equal to rather less than twice the length of the scape. Antennae short and rather stout, shorter than the thorax and median segment combined, not clavate; the second joint of the flagellum equal to the third. Posterior ocelli further from each other than from the eyes. Mesonotum microscopically punctured, with four short delicate impressed lines from the anterior margin not reaching the middle; a deep, transverse, strongly crenulated groove at the base of the scutellum. Median segment rugulose; the triangular basal area large, well defined, very coarsely longitudinally striated. Abdomen almost smooth; the first tergite very slender, twice as broad at the apex as at the base, longer than the second tergite, the latter fully three times as broad at the apex as the first; seventh tergite almost smooth. Second abscissa of the radius equal to the first or a little shorter, the third nearly four times as long as the second. Cubitus of the hind wing originating a little before the transverse median nervure. Fore tarsi without spines, hind tibiae unarmed.

Hab. M'fongosi, Zululand (*W. E. Jones*), February, 1917.

This is nearly allied in structure to the European *A. dissectus* Panz., but has a longer and narrower petiole. I consider that the name *Arpactus* Jurine should be used instead of *Gorytes*. No other species of the subgenus *Euspongus* has been recorded from South Africa.

Type in South African Museum. Co-type in B.M.

Arpactus (Lestiphorus) kraepelini, Brauns.

Gorytes kraepelini Brauns, Ann. Naturh. Hofmus. Wien. xiii, p. 421, 1898, ♂ ♀.

One female in the South African Museum.

Hab. Dunbrody, March, 1912.

Subfamily NYSSONINAE.

Genus NYSSON Latr.

Nysson ludovici, sp. n.

♂. Niger; mandibulis basi, clypeo dimidio apicali obscure, antennis, pronoto margine postico, callis humeralibus, tegulis, pedibusque, coxis exceptis, ferrugineis; vertice puncto utrinque, segmenti mediani spinis apicalibus, tergito primo macula magna utrinque; tergitisque 2–5 fascia apicali flavis; segmentis sexto septimoque ferrugineis; alis fusco-hyalinis, venis nigris.

♀. Mari simillima, tergitis tertio quartoque fere omnino flavis, secundo margine extremo, quinto lateribus flavis, fascia apicali obsoleta; antennis dimidio apicali infuscatis.

Long. ♂ ♀, 10 mm.

♂. Eyes convergent towards the clypeus, but not quite as strongly so as in *capensis* Handl., separated at the base of the clypeus by a distance slightly exceeding twice the length of the scape; the anterior margin of the clypeus straight. Front and clypeus covered with silvery pubescence, the head rugosely punctured, more coarsely on the front than on the vertex, a median longitudinal carina reaching from the base of the antennae half-way to the anterior ocellus; posterior ocelli nearly twice as far from the eyes as from each other. Hind margin of the pronotum level with the mesonotum, almost transverse. Mesonotum, scutellum, postscutellum and mesopleurae rugose; the basal area of the median segment shining, with eight longitudinal carinae, the sides of the segment reticulate, the spines at the apical angles long and acute. The two basal tergites rather sparsely, but not very finely punctured; tergites 3–6 opaque, microscopically and closely punctured, the sixth tergite with marginal lateral carinae on the apical half; seventh tergite granulate, the lateral margins raised forming carinae, which are prolonged into a short blunt spine at each of the apical angles; the apical margin between the spines transverse, thus differing from *capensis*, in which there is a rounded process between the spines. Sternites 2–5 with a fringe of long pale hairs in the middle of the apical margin.

♀. The second sternite is rounded at the base, not forming an angle. In both sexes the cubitus of the hind wing originates far beyond the transverse median nervure.

Hab. M'fongosi, Zululand (*W. E. Jones*), April, 1916.

Very near *capensis* Handl., but differs in the seventh tergite of the male, and in the somewhat broader face, which is due to the lesser convergence of the eyes. The yellow colour on the tergites is also

somewhat differently distributed, and the frontal carina is more strongly elevated.

Subfamily LARRINAE.

Genus NOTOGONIA Cost.

Notogonia denticulata, sp. n.

♀. Nigra; palpis brunneis; mandibulis fusco-ferrugineis, apice nigris; femoribus tibiisque ferrugineis; tarsis calcaribusque fuscis tergitis tribus basalibus fascia obscura apicali albido-sericea; alis subhyalinis, apice late fusco-hyalinis, venis fuscis; unguiculis in medio denticulatis.

Long. 11 mm.

♀. Clypeus and face clothed with short silver pubescence; clypeus short, the anterior margin almost transverse and narrowly depressed. Second joint of flagellum a little longer than the third; eyes separated on the vertex by a distance equal to the length of the second joint of the flagellum. Pronotum not reaching the level of the mesonotum; median segment slightly convex on the dorsal surface, opaque, finely and indistinctly transversely striated, much longer than broad, the posterior truncation almost vertical, with a median longitudinal sulcus, the sides transversely striated, the striae obsolete in the middle and at the apex, the sides of the segment opaque and smooth, with delicate oblique striae in front. Sixth tergite subtriangular, the sides distinctly longer than the base, very narrowly rounded at the apex and clothed with sparse pale fulvous setae; the surface beneath the setae rather deeply punctured. Comb of the anterior tarsi not very long, the metatarsus with four spines. Inner spine of the hind calcaria equal to three-quarters of the length of the hind metatarsus. Tarsal ungues with a small tooth close to the middle. Second abscissa of the radius very short, not half as long as the third; radial cell rather narrowly truncate at the apex.

Hab. Stella Bush, Durban, Natal (*Marley*), November, 1914–January, 1915.

This can be easily distinguished from the numerous Ethiopian species with similar coloration by the tooth on the tarsal ungues. This is doubtless a sexual character in this species as in *N. croesus* Sm. The distance between the recurrent nervures on the cubitus differs individually.

Notogonia ciliata, Sm.

Larrada ciliata Sm., Cat. Hym. B.M. iv, p. 283, 1856, ♀.

The eyes are far apart on the vertex, separated by a distance exceed-

ing the length of the two basal joints of the flagellum; the spines of the fore tarsi are long and spathulate, the metatarsus with four long spines and a short acute basal one; inner spine of the hind calcaria almost as long as the hind metatarsus. Median segment slightly convex, the transverse striation of the dorsal surface delicate, subobsolete in the middle; sixth tergite broadly rounded at the apex. Second abscissa of the radius very short, the first almost as long as the third. Radial cell short, broadly obliquely truncate at the apex; third cubital cell less than half as long again on the cubitus as on the radius.

Hab. Cape Town (*L. Péringuey*), March, 1915; Spectakel, Namaqualand, November.

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14.—*New Species of Neuropterous Insects from South Africa* (Ephemerida, Megaloptera and Embiidina).—By T. Esben-Petersen.

EPHEMERIDA.

Gen. ATALOPHLEBIA, Eat.

Atalophlebia pellucidula n. sp. (Figs. 1 and 2.)

♂. Imago. Head and eyes blackish. Thorax castaneous with a longitudinal median streak behind and with yellowish streaks on the

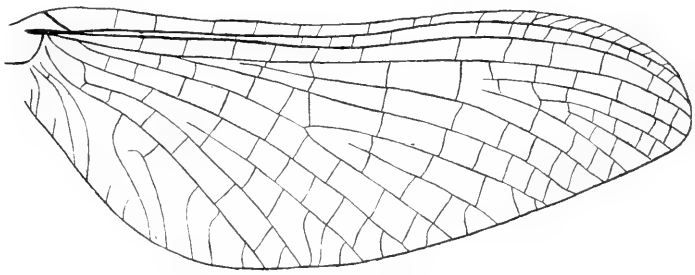


Fig. 1.—*Atalophlebia pellucidula*, ♂. Forewing.

sides. Abdomen whitish, pellucid; the segments with narrow blackish hind borders; sixth segment also with some small dark brown spots near the front margin; seventh segment with two larger brown spots near the front margin, each enclosing a whitish spot; in the eighth segment the front half is dark brown with two very small whitish spots close to the front margin; ninth segment almost complete dark brown above. Venter whitish; the terminal segment somewhat brownish and reddish yellow at apex. Forceps greyish white. Setae pale yellowish brown and brownish annulated. Legs pale yellowish brown. Femora with a narrow and indistinct brownish band at base, a broad blackish one in the middle and at the tip. Length of tarsal joint of intermediate and hind tibiae as in *At. tabularis* (Eaton, Monogr. Rec. Eph., pl. x, fig. 16 *h*).

Wings hyaline with a faint yellowish tinge, especially in the pterostigmatical area. Nervature blackish brown. In the forewing 6–8 cross-veins from base to the bulla; between the bulla and the pterostigma 4–5 cross-veins. The penis of the male is not cleft at the tip (as far as I can see).

♀. Subimago. Body almost coloured as in the imaginal stage, but of a more dull appearance. Femora also dark-banded. Wings with blackish-brown nervures.

♂. Length of forewing 13 mm., that of setae 29 mm.; ♀ Length of forewing 14 mm.

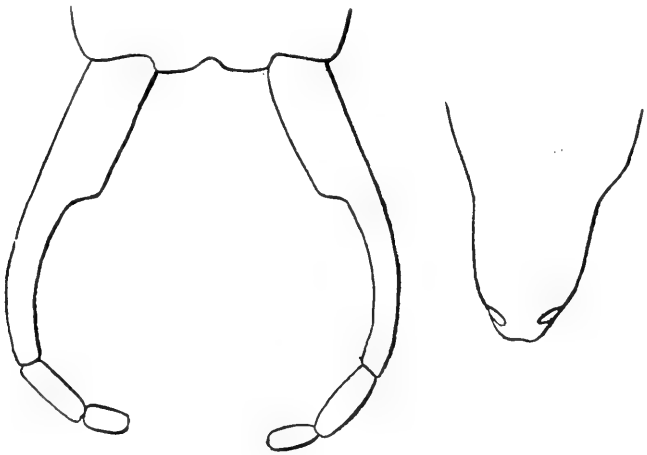


Fig. 2.—*Atalophlebia pellucidula*, ♂. Forceps and penis, seen from below.

Three male specimens (imagines) and one female specimen (subimago) at Gt. Winterhoek (Tulbagh leg.), 4300 ft., 1916. Six well-defined cross-veins and in the pterostigmatic area about thirteen strongly curved and anastomosed.

Length of body and forceps 13 mm.; forewing 12 mm.; setae 17 mm.

Three male specimens, Ceres, Cape, April, 1913 (Lightfoot leg.).

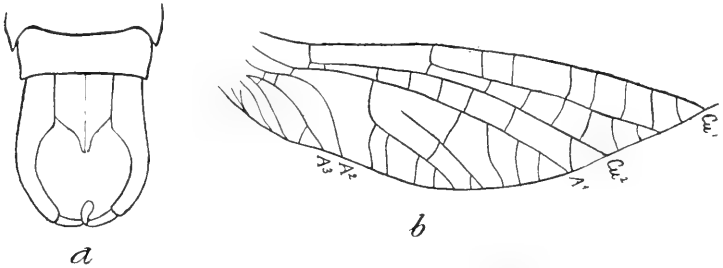
Atalophlebia tabularis, Eat. (Figs. 3 and 4.)

Atalophlebia tabularis, Eaton, Trans. Linn. Soc. Lond., p. 91, pl. x, 16 *h*, 1888.

With some hesitation I refer three specimens to this species, the description of which was made from a single specimen (♂), kept in alcohol. The specimens before me are much darker, probably due to

the fact that they are in a dried condition. I give below a description of the specimens.

Head and upper part of eyes black, lower part of eyes black brown. Thorax above shining, jet black, below and on the sides black. Abdomen dorsally dark pitchy brown with paler irregular spots; the three terminal segments above darker and without pale spots. The venter pale brown, darker at the apex. Forceps pitchy brown. Setae pale brown. Legs dark brown; femora black at the knees. Wings hyaline with a faint yellowish tinge, which is very strong in the pterostigmatic area and at the base of costa, subcosta and radius in the forewing. The nervature dark brown. In the costal area of forewing are present ten weak cross-veins before the bulla, between the bulla and the pterostigma.



Figs. 3 and 4.—*Atalophlebia tabularis*, ♂. *a*, Anal appendages of male, seen from below; *b*, anal part of forewing.

Gen. TRICHORYTHUS, Eat.

Trichorythus, sp.

One female—specimen (subimago) collected at Smithfield, Orange Free State, 1909 (Kannemeyer leg.).

The specimen cannot be referred to *discolor*, Burm., and hardly to *varicauda*, Koll., from Upper Egypt.

I give a short description of the specimen.

Head and eyes black; head pale behind the eyes. Thorax greyish brown with black spot along the front and the lateral margins. Abdomen above blackish grey with pale annulations. Thorax and abdomen below yellowish white. Setae white. Middle and hind-legs yellowish white (fore legs lost). Wings lacteus. Costa and especially subcosta and radius dark grey.

Length of body 5·5 mm.; of wing 10 mm.

Egg mass yellowish brown.

Gen. CLOËON, Leach.

Cloëon africanum, Esb.-Peters.

Esben-Petersen, Ann. South Afr. Mus., vol. x, p. 184, 1913.

One male, Kimberley, 1912 (Power leg.), and one female, Ceres, April, 1913 (Lightfoot leg.).

I refer the female to this species. It is smaller than the male; the thorax is brown with a paler longitudinal median streak. The dark annulations at the setal joints are broader than in the male.

MEGALOPTERA.

SIULIDAE.

LEPTOSIALIS, n. gen.

No ocelli (three very small tubercles are visible in front of the head). Antennae rather pilose. Labrum four times broader than long, with rounded lateral margins and with slightly emarginated front margin. Prothorax twice as broad as long. Wings long and rather narrow. The neuration is not so distinct as in *Sialis*. The costal area of forewing is slightly broadened and only in the basal third part. The cross-veins in the costal area are obliquely directed towards the subcosta. The subcostal area without cross-veins. The radial area with four cross-veins in the forewing, three in the hindwing. The first branch from *Rs* not forked. In the forewing *M* fuses with Cu^1 for a short distance, and it forks one third out from base of wing; in the hindwing it forks two thirds out from base. *Cu* and 2 *A* fork in both pair of wings near base. Fourth tarsal joint bilobed.

Genotype: *Leptosialis africana*, n. sp. (Fig. 5.)

This interesting genus, only known from South Africa, is nearer allied to the American genus *Protosialis* than to the palaearctic-nearctic genus *Sialis*, but its broad labrum and its elongated wings offer good and distinct generic characters. It is the first genus of the *Sialinae* found in Africa.

Leptosialis africana, n. sp.

Head, thorax and abdomen black. Lateral margins of labrum greyish yellow. Head with small tubercles and several longitudinal striae, but without smooth spots or markings as in the species of *Sialis*. Legs yellowish brown; hind femora a little darker in their middle. Third, fourth and fifth tarsal joint almost dark brown. Membrane of wings sooty brown; the proximal half part darker than

the distal part. Nervature darker than the membrane. The basal cross-vein in the costal area vertical, directed towards the subcosta; all the other cross-veins more or less obliquely directed. The four cross-veins in the radial very dark and conspicuous; the other cross-veins mostly darker than the longitudinal nervures.

Length of body 8 mm., of forewing 12 mm., of hindwing 10·5 mm.

One male specimen, Gt. Winterhoek Mountain at an altitude of 4300 ft., November, 1916, Tulbagh, Cape.

Fig. 5.—Fore- and hindwing of *Leptosialis africana*.

EMBIIDINA.

Gen. HAPLOEMBIA.

Haploembia capensis n. sp. (Figs. 6 and 7.)

♂. Wingless. Head brownish black, somewhat narrowed behind, with almost straight lateral margins and rounded hind angles; it is about 1¼ times as long as broad. Eyes rather small and inconspicuous. Clypeus and labrum yellowish brown in some specimens, dark brown with pale margins in others. Mandibles, except their tip, palpi and antennae, yellowish brown. Antennae 12–19-jointed; the basal joint brownish black, robust, about twice as long as broad; the second joint much smaller than the first and as long as broad; the third joint as broad as the second, but as long as the first; the following joints longer than broad and increasing in length towards the apex of the antennae. The antennae with yellowish pilosity. Prothorax about half as broad as the head, brownish black, almost quadrangular,

with slightly rounded front angles and emarginate lateral margins. A somewhat curved transverse furrow one fourth from the front margin. An inconspicuous longitudinal median furrow from the

FIG. 6.—*Haploembia capensis*, ♂. Anal appendages, dorsal view.

transverse furrow to the hind margin. Meso- and metathorax and abdomen blackish brown; abdomen in some specimens a little paler. Cerci yellowish brown. Legs brown; intermediate and hind tarsi

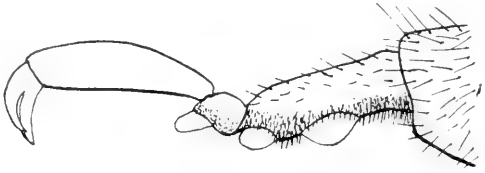


FIG. 7.—*Haploembia capensis*, ♂. Hind tarsus.

yellowish. Basal joint of hind tarsi with two cupules on the underside. Body and legs with short yellowish pilosity.

♀. Wingless, robust. Head only a little longer than broad, with strongly rounded lateral margins and hind angles. Eyes inconspicuous. Clypeus dark brown with narrow blackish front margin.

Labrum pale. Antennae pale yellowish brown, 28 (?)-jointed. The first antennal joint robust, twice as long as broad; second joint much smaller, and as long as broad; third joint about twice as long as broad; fourth as long as broad; the following joints longer than broad, increasing in length towards the tip of the antennae. Prothorax about as long as broad, narrowed in front; one third from the front margin a transverse furrow and on the disc a fine impressed longitudinal median line. Head, thorax and abdomen dark brown; prothorax a little paler. Cerci yellowish brown. Legs brown; joints and tarsi paler. Hind tarsi with two cupules on the underside. Body and legs with short yellowish pilosity.

Length of body: ♂ 10–11 mm.; ♀ 17 mm.

6♂♂, 1 ♀, Dunbrody, Cape (Rev. J. O'Neil leg.).; 1 ♂, Dunbrody (Rev. J. Vogt leg.). All the material kept in alcohol.

INDEX.

15.—*South African Neuroptera.* I.—By P. Esben-Petersen, Silkeborg, Denmark.

The following descriptions and notes are based on material belonging to the South African Museum, Cape Town, and I take herewith the liberty to express to the Director, Dr. L. Péringuey, my best thanks for his kind permission to work out the material belonging to that institution.

Unfortunately descriptions and notes concerning the Neuropterous fauna of South Africa are scattered in a large number of periodicals and treatises, but I hope to succeed in giving complete lists of the fauna.

Many of the species described from South Africa are certainly synonymous with species described previously. Unfortunately I have also made mistakes, but when such mistakes too often take place I think it is mostly due to the fact that many species are described on one specimen only differing from the typical form.

In the *Chrysopidae* it is quite inadmissible to describe a new species on a single specimen, unless the specimen possesses characters so distinct as to enable one to separate the species from already known ones. Brownish, reddish or greyish markings on head, thorax and abdomen of the *Chrysopidae* are not at all characters to rely upon. Such markings are often produced by the drying of the insect. Likewise the colour of the nervures in the wings is very often dependent on the more or less complete maturity of the insect. The number of cross-veins in the graduated series is also, as a rule, a very poor and unreliable character.

OSMYLIDAE.

Gen. RHIPIDOSMYLUS.

Rhipidosmylus interlineatus.

Osmylus interlineatus, MacLachlan, Ent. Monthly Mag. vol. vi, p. 199, 1869 (Natal ?).

Rhipidosmylus interlineatus, Krüger, Stett. entom. Zeit. p. 25, 1913; ibid. p. 74, 1914.

One fine specimen (♀) of this interesting species from M'fongosi, Zululand, May, 1891 (W. E. Jones leg.). The specimen agrees very

well with the description given by MacLachlan except with regard to the five pairs of dark streaks on the *Sc* and *R* in the hindwing; these streaks are very inconspicuous. The fuscous, rounded and raised spot on the hind margin of the forewing very distinct. It seems to be a very scarce insect. Another ♀ example from Durban, Natal (G. Leigh).

HEMEROBIIDAE.

Gen. HEMEROBIUS, Lin.

Hemerobius errans.

Navas, Voyage Alluaud et Jeannel en Afrique Orientale, Insectes Névroptères, p. 31, 1914 (Brit. East Afr.).

One specimen, Cape Town; two specimens, Smithfield, Orange Free State (Kannemeyer leg.); one specimen (without label).

The specimens agree very well with the description given by Navas.

Gen. MICROMUS, Ramb.

Micromus timidus.

Hagen, Peters Reise nach Mossambique, Insecten, p. 91, taf. v, fig. 1, 1862 (Mozambique).

One specimen, Cape Town; one specimen, Stellenbosch, 1887 (Dr. L. Péringuey leg.).

Micromus capensis, n. sp. (Fig. 1.)

Head yellowish to brownish yellow. Vertex with four large irregular brown spots. Palpi brownish yellow. Antennae brownish yellow. Thorax brownish yellow with large irregular brownish spots laterally. Abdomen brownish yellow with irregular dark markings. Legs yellowish; front and intermediate tibiae with a brownish spot a little above the middle externally and another brown spot near tip externally; tip of tarsi pale brown. Wings with obtuse apex. Pterostigma brownish yellow in the forewing, somewhat darker in the hindwing. Longitudinal veins yellowish with short inconspicuous dark streaks. Costal area in the forewing rather narrow; the first 6–8 cross-veins simple and unforked; the rest forked. A row of small brown spots along *C*. Four radial sectors; their origin blackish. Four cross-veins in inner gradate series and eight in outer series; one or two in the inner series sometimes blackish, and three or four in the outer series nearest tip of the wing, also blackish and narrowly

shaded with brownish; these shaded cross-veins form together with a dark spot at the apical end of the pterostigma a short, dark, irregular, abrupt streak. On the hind margin of the forewing small dark streaks. The membrane hyaline with inconspicuous greyish-brown shadows, but at the hind angle there is sometimes present a quite blackish-brown oblong spot, with all the veins enclosed in it blackish. This conspicuous spot is often broken up in smaller spots or is sometimes quite absent. The second cross-vein between *M* and *Cu* blackish and dark-shaded. From this dark spot a faintly brownish oblique streak is sometimes produced, following the three basal cross-veins in the inner gradate series and ending at the basal end of the pterostigma. Hindwing hyaline; all the veins yellowish except three

Fig. 1.—Fore- and hindwing of *Micromus capensis*.

or four of the cross-veins in the outer gradate series; these cross-veins together with a streak at their junction with the longitudinal veins blackish brown.

Length of forewing 7·5–8·5 mm.; of hindwing 6–7 mm.

Two specimens, M'fongosi, Zululand, April, 1911 (W. E. Jones leg.); one specimen, Cape Col., S.W. Distr.; one specimen, Cape Town, March, 1891; one specimen, Cape Town, April, 1885 (Dr. L. Péringuey leg.); one specimen, Cape Town; one specimen, 1887 (Dr. L. Péringuey leg.).

CHRYSOPIDAE.

With regard to the terms here used concerning the nervation in the wings of the *Chrysopidae* I refer to my work, "Results of Dr. E.

Mjöberg's Swedish Scientific Expeditions to Australia, 1910–1913: Neuroptera and Mecoptera," Arkiv för Zoologi, Bd. xi, 1918, Stockholm.

Gen. NOTHOCHRYSA, MacLachl.

Nothochrysa neurodes.

Rambur, Hist. natur. Ins. Névroptères, p. 428, 1842 (Cape).

Nothochrysa finoti, Navas, Memorias Real Academia, Barcelona, p. 405, 1908 (Natal).

Four specimens, Kentani, Transkei, Cape, 1899 (Rev. Kolbe leg.); one specimen, Umzinkulu, Natal (Miss Stracham leg.); one specimen, Hex River, Cape (L. Péringuey leg.); one specimen, Transvaal; one specimen, Ceres, Cape, December, 1912 (Lightfoot leg.).

This species is easily recognised. Prothorax twice as broad as long, front angles truncate, a broad black streak at each side; this blackish streak encloses often one or two pale small spots. Meso- and metathorax also yellowish with blackish lateral margins. Abdomen in matured specimens orange-coloured with blackish pleurae. Wings rather broad and unmarked.

Besides the specimens here mentioned I have seen two specimens from Cape Good Hope, December, 1817, in the Copenhagen Museum (ex Coll. Westermann), and one specimen in the Stockholm Museum (ex Coll. Paykull).

Nothochrysa variegata.

Chrysopa variegata Burmeister, Handbuch, p. 981, 1839 (Comoro Islands); Schneider, Symbolae, etc. p. 147, tab. 54, 1851.

Chrysopa mozambica, Walker, Trans. Ent. Soc. Lond. p. 199, 1860 (Mozambique).

Chrysopa rufostigma, MacLachlan, Journ. Linn. Soc. Lond. p. 253, 1868 (Natal).

Nothochrysa sordidata, Navas, Memorias Real Academia, Barcelona, p. 404, 1908 (Madagascar).

Nothochrysa impar, Navas, Broteria, Serie Zoologia, p. 99, 1912 (Afr. merid.).

Nothochrysa maculata, Esben-Petersen, Entom. Mitteil., Berlin, p. 270, 1912 (Bonnefoi, Transvaal).

Nothochrysa zonata, Navas, Ann. Soc. scient. Brux. p. 324, 1914 (Abyssinia).

One specimen, Salisbury, S. Rhodesia (G. A. K. Marshall); one specimen, Burghersdorp, Cape, 1881 (Dr. Kannemeyer leg.).

Schneider has seen Burmeister's type-specimen and has redescribed

and figured it in his Symbolae, etc. In Ent. Monthly Mag. p. 26, vol. vi, 1869, MacLachlan states that *mozambica* and *rufostigma* stand in synonymy with *variegata*.

In my own collection I possess two specimens from Eritrea (Gunnar Kristensen leg.), one specimen from Transvaal (cotype of *maculata*), and one specimen from Lorenzo Marques. My two specimens from Eritrea agree in every respect with the description of *zonata*. I have also seen one specimen in the Stockholm Museum from Caffraria (J. Wahlberg leg.).

The species is liable to vary. Frons and vertex shining, smooth and sparsely punctate. The broad, yellowish prothorax has as a rule an irregular, purple-coloured spot towards each angle. The forewings have sometimes small brownish black spots in the basal and hind part. Pterostigma long and reddish, but very often much paler (I think this is due to the lesser degree of maturity). The wings are long and slender and with rather acute tip. In the forewing 21–25 costal cross-veins; 12–15 cross-veins between *R* and *Rs*; 6–7 cross-veins between *Rs* and *Psm*; 6–7 cross-veins between *Psm* and *Pscu*, and 12–14 branches from *Pscu* to the hind margin, the 1–3 apical ones forked.

The species is closely allied to *N. aequalis*, Walker, from India.

Nothochrysa péringueyi, n. sp. (Fig. 2.)

Face yellowish red. Vertex and thorax red. Palpi reddish. Frons and vertex rugose and coarsely punctate. Antennae brownish black; the two basal joints yellowish red. Prothorax more than twice as broad as long, with rounded front angles, and with a deep curved transverse furrow one-third from base. The border of the hind margin narrowly yellow, and on the front part of the disc two triangular more or less distinct yellowish spots. Mesothorax red, with two yellowish spots near the front margin and sometimes with a yellowish transversely placed spot above the base of each wing. Metathorax red. Abdomen reddish above with yellowish spots apically, paler ventrally. Legs yellowish; femora with a broad dark band in the middle; claws brown, rather broad basally. Wings with somewhat acute tip. Longitudinal veins yellowish. Base of *Sc*, of *Cu*, of *Rs* and of 1*A* in the forewing often darker. In the forewing all the cross-veins except a few ones in the apical part of the costal area blackish. The longitudinal veins with a black spot at the junction with the cross-veins. The following cross-veins are strongly blackish and narrowly shaded: cross-vein between the stem of *M* and the furcation of *Cu*, cross-vein between M_2

and Cu_1, apical cross-vein between Cu_1 and Cu_2, cross-vein between $2A$ and $3A$. The apical part of $2A$ and $3A$ is also blackish. At the hind margin of the wing between the apex of $1A$ and the tip of first branch from *Pscu* a blackish spot. In the hindwing all the cross-veins except a few ones in the basal part of the costal area and sometimes also a few ones in the outer gradate series yellowish. At the junction of the cross-veins with the longitudinal veins often a minute blackish spot. Pterostigma long, greyish yellow. In the forewing 19–24 costal cross-veins; 12–18 cross-veins between *R* and *Rs;* 5–6 cross-veins between *Rs* and *Psm ;* 5–6 cross-veins between *Psm* and *Pscu ;* 10–12 branches from *Pscu* to the hind margin, 1 or 2 of the apical ones forked. In the hindwing 19–20 cross-veins in the costal area ; 12–15 cross-veins between *R* and *Rs ;* 4–5 cross-veins between *Rs* and *Psm ;* 7–8 cross-

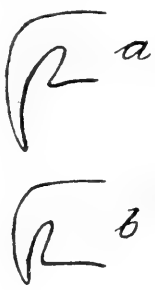


Fig. 2.—Claw of foretarsus. *a. Nothochrysa variegata. b. Nothochrysa péringueyi.*

veins between *Psm* and *Pscu ;* 11–12 branches from *Pscu* to the hind margin, the 2–3 apical ones forked. Series of gradate cross-veins in the forewing $\frac{6-10}{9-13}$, in the hindwing $\frac{5-8}{7-10}$.

Length of forewing 19–21 mm., of hindwing 17–19 mm.

One specimen, Dunbrody (J. O'Neil) ; one specimen, Springbokfontein, 1873 ; one specimen, Calvinia Dist., 1892—all three localities in the Cape Province.

The species has much likeness to *variegata*, but the rugose frons and vertex, the markings of the prothorax, the difference in the nervature of the wings and the shape of claws separate it easily from that species.

I name the species after Dr. L. Péringuey, who has done so much in investigating the insect fauna of South Africa.

One species is still known from South Africa, viz. *Nothochrysa gigantea*, MacLachlan, Journ. Linn. Soc. Lond., p. 252, 1867 (Natal). I do not know the species ; but its prothorax is scarcely as long as

broad, pale olivaceous grey, the anterior angles slightly reddish, and it has two short black lines on each side.

I suppose that *gigantea* is more closely allied to *neurodes* than to the two other species.

Gen. ANKYLOPTERYX.

Ankylopteryx venusta.

Chrysopa venusta, Hagen, Peters Reise nach Mossambique, Insecta, p. 90, 1862 (Mozambique).

One specimen, Durban, Natal (T. Innes), and one specimen, Durban, April, 1915 (Bell Marley leg.). The last-mentioned specimen is somewhat immature.

Ankylopteryx polysticta.

Navas, Broteria, Serie Zoologica, p. 48, fig. 6, 1910 (Zambèze).

One specimen, Barberton, Transvaal (Miss Edwards leg.).

Gen. CHRYSOPA, Leach.

Chrysopa vulgaris.

Schneider, Symbolae, etc., p. 68, pl. vi, 1851.

Of this species a somewhat large number was sent me.

Seven specimens, Kimberley, Cape, 1912 (Bro. Power leg.); five specimens, Smithfield, Orange Free State (Kannemeyer leg.), three specimens, Clanwilliam, Cape; two specimens, Salisbury, S. Rhodesia; one specimen, Dunbrody, Cape; one specimen, Maseru, Basutoland; nine specimens, George, Cape; one specimen, Durban, Natal; one specimen, Bushmanland, Cape (Lightfoot leg.); one specimen, Prieska, Cape (Purcell leg.); ten specimens without locality.

The South African specimens differ in some points from the European ones. The reddish or brownish-red streak on each cheek and on each side of the clypeus are often wanting, and when they are present they are not so distinct. The veins and the body are not so closely haired. The European specimens form a rather homogeneous unity, and they vary only in a small degree. Some specimens are more or less reddish suffused on the face, some others possess faintly brown lateral margins on the prothorax, or possess a dark indication on the costal cross-veins at their junction with *Sc*; but in the African specimens we meet with two rather different forms—the usual broad-winged European form with the rounded apex of the wings, and the narrow-winged form with the rather acute tip of the wings and as a rule with more lanceolate basal median cell in the forewing. Navas has described

this narrow-winged African form under the names *bequaerti* (Revue Zoologique Africaine, p. 409, 1912) from Belgian Congo, and *pudica* (Ann. Soc. scient. Brux., p. 82, 1914) from Transvaal. In my collection are twenty-four specimens (♂) of the narrow-winged form from Abyssinia and one ♂ from Madagascar, and amongst the materials here dealt with several specimens (♂) are also present. At present I am not able to arrive at any definite conclusion, whether we have to do with a distinct species or only a geographical form.

I have prepared for the microscope preparations of the appendages of the male of both forms, but it seems to me that the differences, if any, are very small. Probably a close examination of the female (which is not present amongst the narrow-winged specimens before me) may decide the question.

There is another African species, *Chrysopa congrua*, Walker (Cat. Neur. Ins. Brit. Mus., p. 238, 1853—West Africa, Congo, Central Sahara), belonging to the group in which the first cross-vein from *Rs* in the forewing joins *M* outside the basal median cell; but this species is easily distinguished by its dark brown antennae.

Chrysopa jeanneli.

Navas, Voyage de Ch. Alluaud et R. Jeannel en Afrique Orientale, Insectes Névroptères, p. 36, 1914 (Brit. East Africa).

Chrysopa andresi, Navas, Memorias Real Academia, Barcelona, p. 394, 1915 (Egypt).

Two specimens, Cape Town (L. Péringuey leg.); one specimen, Smithfield, Orange Free State (Kannemeyer leg.); one specimen, Klerksdorp, Transvaal (E. G. Alston leg.).

The four specimens differ in some degree, but it is easy to see that they all belong to the same species. Face more or less suffused with reddish or pale reddish brown. A black spot on each gena. Palpi dark brown to blackish. No spot between the antennae. Vertex raised, reddish brown; along the front border of the elevation a blackish ∧-formed streak in the two specimens. Antennae pale brown and dark banded; second joint almost totally black. Prothorax reddish brown (with irregular blackish markings), broader than long, and with truncate front angles. Meso- and metathorax with broad pale greyish longitudinal median band and a broad blackish lateral streak. Abdomen reddish brown with pale pleurae. The body dark brown haired. Legs greyish yellow; intermediate and hind femora with a broad brown band before the apex; tip of tibiae brown. Longitudinal veins mostly pale in the basal half part of the wings; but the basal

fourth part of *Sc* in the forewing strongly blackish, and all the other longitudinal veins with a long dark brown streak at the junction with the cross-veins. All the cross-veins and the most of the longitudinal veins in the apical half part dark brown. Pterostigma pale greyish brown, somewhat darker at its basal end. The hexagonal cell in the forewing, touching the hind margin and lying just at the tip of Cu_2, often totally brownish suffused; sometimes there are present only a brownish spot at the tip of Cu_2 and a smaller one, where the second cross-vein between Cu_1 and Cu_2 touches C_1. In one specimen there are also traces of small spots where the first branch from Cu_2, tip of $1A$, $2A$ and $3A$ join the hind border. In the forewing 17–18 cross-veins in the costal area; 9 cross-veins in the radial area; 4 cross-veins between *Rs* and *Psm*; 6 cross-veins between *Psm* and *Pscu*. The basal median cell lanceolate, and the first cross-vein from *Rs* joins M_1 within the cell. In the hindwing 14–16 cross-veins in the costal area; 8–9 cross-veins in the radial area; 3 cross-veins between *Rs* and *Psm*. Gradate veins in the forewing $\frac{2-4}{4-6}$, in the hindwing $\frac{2-3}{3-5}$. Veins scarcely blackish haired.

Length of forewing 10·5 mm; of hindwing 8–9 mm.

The species is easily separated from all other African species known to me by the blackish basal part of *Sc* and by the brownish spot or spots at the hind margin of the forewing.

Chrysopa chloris.

Schneider, Symbolae, etc., p. 95, pl. 26, 1851.

One specimen, Stellenbosh, 1888, Cape (L. Péringuey leg.); two specimens, M'fongosi, Zululand, October, 1911 (W. E. Jones leg.); one specimen, Carnarvon, Cape, 1896 (E. G. Alston); one specimen, Potchefstroom, Transvaal (T. Ayres leg.); one specimen, Smithfield, Orange Free State (Kannemeyer leg.).

I refer these six specimens to the species of Schneider, although only one specimen exactly agrees with the description. The four specimens have a bloody streak on each gena, on each side of the clypeus, on the vertex close to the margin of the eyes and along the exterior side of the basal antennal joint. These four specimens seem to be somewhat immature. The sixth species is a rather old one, and the head seems to be immaculate. With regard to the shape and to the nervature of the wings they agree in every respect with the species of Schneider.

Chrysopa sansibarica, Kolbe, Neuropteren Deutsch Ost Afrika, p. 35,

1897 (Sansibar), *Chrysopa inopina*, Navas, Ann. Soc. scient. Brux., p. 83, 1914 (Natal), *Chrysopa marchionissa*, Navas, Memorie Pontif. Accad. Romana, p. 29, 1915 (Lorenzo Marquesa) are closely allied to *C. chloris* and probably the same, but I do not know them.

Chrysopa kannemeyeri, n. sp.

Head, thorax and abdomen yellowish green. A distinct black spot on each gena just below the antennae; another oblong black spot between the antennae. Palpi blackish brown with paler annulations at the joints. Antennae hardly as long as the forewing, pale brown, darker towards the tip; basal joint stout and yellowish green. Prothorax somewhat broader than long, with rounded front angles and with short blackish brown hairs towards and along the lateral margins. Legs yellowish green; tarsi faintly brownish; claws brown, only slightly widened basally and with a weak tooth internally. Wings with rounded tip. Pterostigma green, rather conspicuous. All the nervures greenish and blackish-haired. The cross-veins in the middle part of the costal area in the forewing seem to be faintly brownish in the three specimens present. In the forewing 20 costal cross-veins; 10–12 cross-veins between *R* and *Rs*; 5 cross-veins between *Rs* and *Psm*; the first of those join M_1 within the basal median cell; 6 cross-veins between *Psm* and *Pscu*. From *Pscu* 9 or 10 branches to the hind margin, the 2 or 3 apical ones forked. In the hindwing 16–18 cross-veins in the costal area; 9 cross-veins between *R* and *Rs*; 4 cross-veins between *Rs* and *Psm*; 6 cross-veins between *Psm* and *Pscu*; 9 branches from *Pscu* to the hind margin, the 2 or 3 apical ones forked. Series of gradate veins in the forewing $\frac{5-7}{6-8}$, in the hindwing $\frac{5-6}{6-8}$.

Length of forewing 12 mm.; that of hindwing 10 mm.

Four specimens from Smithfield, Orange Free State (Kannemeyer leg.).

I take the liberty to name the species after the collector.

Chrysopa venosella, n. sp. (Fig. 3.)

Head yellowish. A broad transverse brownish red ∧-shaped band below the antennae; a blackish streak on each gena and at each side of the clypeus. Vertex with a cordiform brownish red elevation, the front border of which is deeply blood-coloured; the disc of the elevation in front with a yellowish median longitudinal streak. Vertex at each side with a bloody narrow streak between the elevation and the eyes. Palpi brownish. Antennae as long as the forewing, dark brown

with pale annulations at the joints. Basal joint brownish red above, yellowish below. Prothorax broader than long, front angles rounded, disc yellowish with irregular brownish red markings and dark hairs. Meso- and metathorax with blackish brown spots. Abdomen reddish brown dorsally, yellowish ventrally. Legs yellowish; femora with a reddish brown streak near their apex dorsally; tibiae with a reddish brown band near base and another close to their apex; tarsi pale brownish; claws brown and slightly widened basally. Wings broad and with rounded apex. A brown spot close to the base of *C* in both pairs of the wings. Nervature yellowish. Pterostigma yellowish green and rather conspicuous. The longitudinal veins with brownish black streaks at the junction with the cross-veins. *Rs* blackish at its origin.

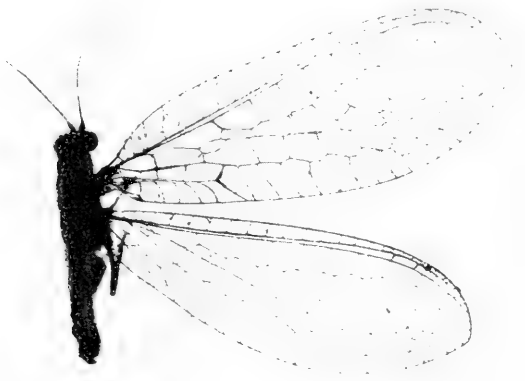


Fig. 3.—Fore- and hindwing of *Chrysopa venosella*.

All the cross-veins and all the veins along the hind and apical margin brownish black at their ends. In the forewing the cross-veins and the marginal veins are mostly blackish brown, and only a narrow band in their middle part is yellowish. The following cross-veins in the forewing are totally blackish: the three basal cross-veins between *Rs* and *Psm*; the cross-vein from the furcation of *M* to *Cu*; the two cross-veins between Cu_1 and Cu_2 (the apical one is also strongly brownish shaded at its lower end), and all the cross-veins in the gradate series; in the inner series they are also narrowly brownish shaded. In the forewing 18–21 costal cross-veins; 9 cross-veins between *R* and *Rs*; 3 cross-veins between *Rs* and *Psm*; the basal cross-vein joins *M* within the basal median cell; 6 cross-veins between *Psm* and *Pscu*; 10 branches from *Pscu* to the hind margin (the two apical ones are forked). In the

hindwing 17–18 costal cross-veins ; 8–9 cross-veins between *R* and *Rs ;* 3 cross-veins between *Rs* and *Psm ;* 6 cross-veins between *Psm* and *Pscu ;* 9 branches from *Pscu* to the hind margin of the wings ; the two apical ones forked. Series of gradate veins in the forewing $\frac{4–5}{5}$, in the hindwing $\frac{2–4}{5}$.

Length of forewing 12–13 mm., that of hindwing 10–11 mm.

Two specimens from Johannesburg, Transvaal, January, 1912 (H. Feltham leg.).

It is a very interesting species, which is nearly allied to the European species *venosa*, Rbr.

GLENOCHRYSA, n. g.

Most of discal cells and several cells along the hind margin of the forewing with hyaline metallic shining pustules, which are easily observed when the wings are held in a certain direction against the light. Pterostigmatical area, especially in the forewing, as a rule with rather conspicuous cross-veins. Wings marked with spots. Several veins and cross-veins strongly shaded. The basal median cell in the forewing triangular.

Genotype : *Glenochrysa typica.*

This genus is a very interesting one with regard to the metallic shining eye-shaped pustules in the cells of the forewing ; in this respect its position is rather exceptional. The nervature of the wings is the same as in the genus *Chrysopa*, with the exception that the new genus possesses cross-veins in the pterostigmatical area. In this respect it is allied to the genus *Cintamera* Navas (Revue Russe d'Entom., p. 214, 1914). The strongly-marked wings also give a peculiar appearance to the genus.

Glenochrysa typica, n. sp. (Fig. 4.)

Face dark brown or blackish with a transverse pale band. Vertex greenish with a semilunar elevation, the disc of which bears traces of a longitudinal median dark streak posteriorly. Palpi blackish. Antennae as long as the forewing, yellowish, becoming a little darker towards apex ; basal joint with a broad black longitudinal streak exteriorly and interiorly ; second joint blackish. Prothorax broader than long and with truncate front angles. Pro- and mesothorax greenish with irregular blackish markings. Metathorax blackish. Abdomen greenish with blackish markings above, paler ventrally (colours of abdomen probably changed in drying). Legs yellowish white ; front and intermediate tibiae with a blackish spot near base exteriorly and a blackish band

about in the middle. Wings rather broad, somewhat pointed at apex (especially in the hindwings). Pterostigma yellowish brown in the forewing, somewhat darker and more conspicuous in the hindwing. The nervures greenish. The basal costal cross-vein in the forewing blackish and narrowly brownish shaded; 2nd to 4th or 5th costal cross-vein blackish at both ends; 5th to 8th or 6th to 10th totally blackish and broadly brownish shaded (the shadows form a longitudinal band); the rest of costal cross-veins in the forewing mostly totally blackish brown. Three branches at the tip of the wing strongly blackish and with a narrow brownish shade; the branches of the next eight forks alternately pale brown and shaded with pale brown. Origin of *Rs* blackish and surrounded by a large brownish black spot just

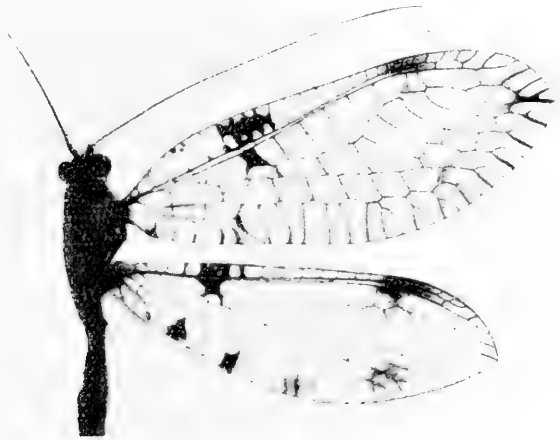


Fig. 4.—Fore- and hindwing of *Glenochrysa typica*.

below the brownish streak in the costal area. First and second cross-veins from *Rs* to *M* blackish. The two cross-veins between Cu_1 and Cu_2 blackish, and the second also broadly shaded with brownish. The tip of Cu_2, 1*A*, 2*A* and 3*A* blackish and brownish-shaded. All the other cross-veins in the forewing greenish, and in the apical half part of the wing they are also broadly shaded with yellowish brown. In the hindwing the basal costal cross-vein is green; the other cross-veins coloured like those in the forewing. At the tip of the wing three or four branches blackish. All the cross-veins except two or three near the base of the wing are greenish. Below *R* two spots; the first touches the spot in the costal area and is very distinct and conspicuous; the second touches the pterostigma and is more suffused. Along the hind margin four spots, the first at the apex of Cu_1 and Cu_2; the second spot

between the second and the third branch from *Pscu*; the third between sixth to eighth branch from *Pscu*; and the fourth spot, which does not touch the hind margin, is laying opposite to the pterostigma. In the forewing 23–25 costal cross-veins; 8 cross-veins between *R* and *Rs*; 4 cross-veins between *Rs* and *Psm*, the first of which joins M_1 within the basal median cell; 6 cross-veins between *Psm* and *Pscu*; 10 branches from *Pscu* to the hind margin, the two or three apical ones forked. In the hindwing 14–17 costal cross-veins from base of the wing to the pterostigma; 8 cross-veins between *R* and *Rs*; 4 cross-veins between *Rs* and *Psm*; 6 cross-veins between *Psm* and *Pscu*; 8 or 9 branches from *Pscu* to the hind margin, the apical ones forked. Series of gradate cross-veins in the forewing $\frac{3}{5}$, in the hindwing $\frac{1\text{–}2}{4\text{–}5}$.

Length of forewing 10–11 mm., of hindwing 9–9·5 mm.

One specimen, Olekemeji, Ibadan, Nigeria (South African Museum), and one specimen, Dubangui-Chara-Tead, Bangui (my collection, *ex* Coll. le Moult, Paris).

Glenochrysa principissa.

Cintameva principissa, Navas, Memorie Pontif. Accad. Romana, p. 27, fig. 22, 1915 (Lorenzo Marquesa).

One specimen, Durban, January, 1915 (Marleiy leg.).

Of this beautiful species Navas has given a good description and very good figures of the head and wings. The species is not so strongly marked on the wings as *G. typica*.

Besides these two species, I know one more, *Chrysopa splendida*, Weele, Notes Leyden Museum, vol. xxxi, p. 72, 1909 (Insulinde), which shall be placed in the new genus. The last-named species is also described by Navas (Broteria, Serie Zoologica, p. 103, fig. 4, 1912) under the name *Chrysopa faceta*. His specimen is from Nicobar.

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16.—*A New Genus of* Chironomid (*Diptera*) *from the Cape.*—By J. J. Kieffer, D.Sc.

The two insects from the Cape which I described under the names of *Paraclunio fuscipennis* and *P. minor*, n. spp.,* must form a new genus—*Trissoclunio*. It will be placed among those in which the 5th tarsal joint is trilobate and without pulvilli, and the palpi bi-jointed as in the following table.

1. Wing rudimentary, without nervure; empodium filiform and bearing on the external side simple or bifurcate hairs; no hair on the medial side; claws simple in the ♀, bifid in the ♂, the two rami equal; antennae 6-articulate, scape obconical, not thickened; joints 3-5 transverse (♂ ♀) . *Psamathyomya*, Deby.

   Wings normally developed, glabrous, with the neuration of *Chironomus*; empodium filiform, much ramified, *i. e.* emitting on both sides branches that are themselves divided into rami several times bifurcate, 2.

2. Abdomen very strongly compressed, equal in height everywhere; anal segment vertically truncate as far as the middle, thence obliquely as far as the base, where there are two cerci. Head with two carinae extending from the hind border to near the antennae, hardly convergent in front and nearing almost the edge of the eyes; 1st palpal joint obliquely truncate at the distal end and nearly at right angle with the 2nd; antennal joints 2–5 transverse. 6th long, conical, bearing at the base a verticillate bunch of 5 or 6 hairs shorter than the thickness of the bunch, which is also the case for 2–5; tarsal joints 2–4 obconical, cordiform at the distal end which bears short and simple hairs inter-

* 'Ann. S. Afr. Mus.,' x, 1914, p. 259.

mixed with longer filaments, the third distal part of which is widened and ramose; femora, except the anterior tibiae and metatarsi, with three longitudinal rows of spatulate, striate and almost depressed scales. Tarsal and hooks of the ♀ simple; ♂ unknown . . . . *Paraclunio*, Kieff., 1911.

1. Abdomen depressed, head without longitudinal carinae; palpal joint not obliquely truncate, not at angle with 2; antennae (♂ ♀) 7-jointed, joint 2 long, 3–5 transverse; tarsal joints without filaments, ramose, 2 cylindrical, 3–4 sometimes weakly cordiform at end; legs without scales, 3.

3. Tarsal claws of ♂ bifid, the two rami equal in length, the medial pointed, the lateral obtuse with the apex widened and finely pectinate. Claws of the ♀ simple; in ♂ and ♀ is visible at the base of the claws a hyaline, glabrous lamina longer and wider than the claw, narrowed at base and then widened, triangular and sharp. Cape . . . . . *Trissoclunio*, n. g.

Tarsal claws simple, ♂ ♀, or simple in the ♀ and bifid and unequal in the ♂; in the first case the medial ramus is very short, and in both the lateral ramus is widened and pectinate at apex, without hyaline triangular lamina. Hawai . . . *Charadromya*, Terry, 1913.

In the genus *Telmatogeton*, Schin., founded on *T. sancti-Pauli*, Schin., the antennæ are 7-jointed (♂ ♀), joint 2 obconical, 3–5 transverse, but there is no mention of the 5th tarsal joint being trilobate; besides, the palpi are 4-jointed, the forehead grooved, the alar neuration differs from that of *Chironomus*, the tarsal claws are simple, the pulvilli small but very distinct, the empodium large, filling the whole interval between the claws, and is ciliate in front.

The insect described by Coquillet under the name of *Telmatogeton alaskensis* differs from all those mentioned above by the antennal joints 2–6 sub-cylindrical, the 7th only a little longer than the others. It is not said that the 5th joint is trilobate; the pulvilli and the empodium must be as in *Telmatogeton*. Claws of ♂ bifid, of the ♀ unknown.

The type of the genus *Trissoclunio* is *T. fuscipennis*. The tarsal claws are yellow in the proximal and black in the distal part; each bears, in addition to the proximal half, three thick ramose setae disposed lengthways. The three tarsal lobes are finely and very briefly pubescent; dorsally they bear also thick brown setae. Wing lobate, almost at right angle, and having also a small rounded lobe at the end of the base; cubital nervure at least twice as long as the radial; transverse nervure large and oblique. Mesonotum sometimes black with the scapular spot reddish, sometimes pruinose grey, with a trace of three nearly confluent black bands.

INDEX.

17.—*New Species of S. African Tabanidae (Diptera).*—By Gertrude Ricardo.

METOPONAPLOS, gen. nov.

? Supplementa Entomologica, 1914.

This genus and a species were included by me in a paper on species of Tabanidae sent me by Herr Schlenkling from the German Entomological Museum in Berlin. The proofs were sent to me for correction and returned, but the outbreak of war put an end to further communications. The remarks on this genus are copied and inserted as follows:

Formed for a species named by Walker *Pangonia parva*, with which *Pangonia directa* appears to be identical. It differs from the species of *Pangonia* in the antennae, which have only five divisions on the third joint; it therefore belongs to the second division of *Pangoninae*, comprising *Silvius*, *Chrysops*, etc. Ocelli and spines on hind tibiae are present. Antennae with the first two joints short, the third broad at base, the last four divisions very small. Face convex, furrowed in the middle. Palpi broad at base, ending in a long point. Proboscis about a third the length of the whole insect. Forehead shining with no calli. Wings clear, with the usual neuration; all posterior cells widely open, the anal cell closed at border.

Metoponaplos parva (Pangonia), Walker.

Metoponaplos parva (*Pangonia*), Walker, List Dipt., pt. i, p. 145, 1848. (*Pangonia directa*, Walker, Dipt. Saund., p. 21, 1850.)

Both the Walker types are from the Cape of Good Hope, in the Brit. Mus. Coll., and are females. There is also a female in the same collection from Saldanha Bay, Cape Colony, October, 1892 (Pele la Garde), 96, 2, two females from Namaqualand, 1917, and one female in the South African Museum.

Forehead broad, shining. *Antennae*, *palpi* and *legs* blackish. *Wings* grey, length 9–10 mm. *Face* black, convex, but furrowed in the middle, clothed sparsely with long yellowish hairs, cheeks

covered with grey tomentum and with yellow pubescence. *Palpi* black, broad at base, ending in a long tapering point, more than a third of the length of proboscis, which is about as long as the head and thorax combined. *Antennae* black, situated on a slight tubercle covered with ashy-grey tomentum; the first two joints with some long black hairs, the first joint cylindrical, the second small and round, half the length of the first joint; the third joint with five divisions, the first one broad and large, no tooth, but with rounded borders, the last divisions very small. *Forehead* almost parallel, wide, barely one and a half times longer than it is wide, black and shining, with grey tomentose borders and a few scattered white hairs; ocelligerous tubercle distinct. *Eyes* bare. *Thorax* black and shining, clothed with greyish-white pubescence and with longer hairs at sides. *Scutellum* black and shining, with yellowish hairs on its posterior border. *Abdomen* shining black, reddish yellow on sides of the first and second segments, the posterior borders from the second segment onwards clothed with fringes of white hairs on their posterior borders; sides with white hairs. *Legs* blackish, tibiae reddish yellow on basal two-thirds, pubescence pale yellowish on femora, elsewhere blackish. *Wings* grey, tinged yellow at base, veins reddish yellow.

A male in the Brit. Mus. Coll., from Saldanha Bay, 5 : ix : 1912 (K. H. Barnard), 1913, is presumably the male of this species, but the *abdomen* is largely reddish yellow, the black colour appearing as a broad black stripe on the first three segments, the apex black, with short yellowish hairs on posterior borders of the segments, sides with long, black and yellow hairs; underside reddish yellow, black on the last three segments. *Legs* blackish with long black hairs on the femora and tibiae. *Wings* and veins darker in colouring. *Forehead* is less wide but slightly narrower at vertex, shining black. *Antennae* with longer and more numerous black hairs on the first two segments. *Palpi* with the first joint short, the second conical, clothed with long hairs. Length 9 mm.

Metoponaplos nigricans, n. sp.

Type (female) from Hott-Holl Mts., 6000 ft., Caledon, Cape Colony (Barnard), 1916. From Cape Mus. Coll.

A small black species, with no markings on the abdomen. *Forehead* shining, broad. *Legs* blackish brown. *Wings* clear. Length 7 mm. *Face* blackish, with grey tomentum and white hairs. *Palpi* brownish with black hairs. *Antennae* reddish brown. *Forehead* black, shining, with no lighter borders, not quite parallel, and about one and a half times longer than its anterior width. *Thorax* and *scutellum* black.

Abdomen black with very narrow lighter posterior borders. *Wings* with brown veins.

Gen. SILVIUS, Meig.

The two new species of *Silvius* described below were sent me for identification by Dr. L. Péringuey, Director of the South African Museum, Cape Town.

Silvius callosus, ♂, ♀, n. sp.

Type (male) from Durban, Natal (Bell Marley).

Type (female) from Kar-Kloof (Bell Marley), and another female from Durban, in Cape Museum Coll.

A robust species of dull brown colour with some obscure yellow markings, distinguished by the lineal frontal callus. Length 12 mm. male, 12–15 mm. female.

Male.—Face dull brown with some grey tomentum. Palpi brown with black hairs. *Antennae* light reddish-yellow, the first two joints brown with black hairs. *Eyes* bare, the upper facets larger than the lower ones. *Thorax* brownish, with no distinct stripes; pubescence on dorsum scanty, light in colour. *Scutellum* same colour. *Abdomen* with rather a mottled appearance, the yellowish colour predominating on the basal half, of an isabella colour; on the underside this colour extends over the whole abdomen; the segmentations above and below are very narrowly white-haired. *Legs* dull reddish brown. *Wings* clear, with yellow veins. This male is not in good condition.

Female has dusky brown rather large *palpi* as long as the proboscis with dark pubescence. *Antennae* as in male. *Forehead* about one-fourth in width of the length, not narrowed at either end; the callus is almost lineal, dark brown extending to the ocelli. *Thorax* mahogany brown with short white pubescence. *Scutellum* rather paler in colour. *Abdomen* raw umber, with paler markings, the segmentations with narrow fringes of short white hairs; underside much the same colour; the first segment on dorsum with a pale band on its posterior border.

Silvius hirsutus, ♂, ♀, n. sp.

Type (male) from Matroosberg, Ceres Division, Cape, 3500 ft.

Type (female) and another male in Cape Museum Coll.

A dark blackish brown species with hairy eyes and thorax, and abdomen with hairs, rather near *Silvius decipiens*, Loew, but at once

distinguished in the female by the frontal callus, which does not reach the eyes. Length 13 mm. males, 12 mm. female.

Male.—*Face* with grey tomentum and thick yellow hairs. *Beard* same colour. *Palpi* dark brown with brown hairs. Proboscis long, nearly a third of the length of insect. *Antennae* dark brown, the first two joints with dark hairs. *Eyes* hairy, the upper facets only a little larger than the lower ones. *Thorax* black, rather shining, with two distinct narrow grey stripes, one on each side; dorsum with some scattered white hairs, sides with thick yellow hairs, a few brown ones intermixed. *Scutellum* black, with some white hairs. *Abdomen* blackish with three very distinct grey tomentose spots on each segment, except the first and the last one; pubescence on dorsum slight, consisting of some white and dark hairs; sides with thick yellow and brown hairs. The extreme side borders of segments are fulvous; underside black with grey tomentum; in the other male the grey spots are almost effaced. *Legs* dull reddish, the femora darker, the legs with rather thick black pubescence. *Wings* clear, with dark brown stigma and veins, the transverse veins clouded.

Female.—*Palpi* small, yellowish, with long black hairs, the hairs on face not so thick and brown in colour. *Forehead* very wide, narrower at vertex; the width in front is nearly equal to the length. Frontal callus is very large, blackish brown, shining, but it does not reach the eyes and does not extend much beyond the middle of forehead. The hairs at sides of *thorax* are largely brown. *Abdomen* with the spots not so distinct, appearing more yellow in colour with some yellow hairs, pubescence elsewhere blackish. *Legs* paler in colour, the femora the same as the tibiae in colour. The proboscis in female appears to be broken off; in the other male it does not appear long, being apparently retracted.

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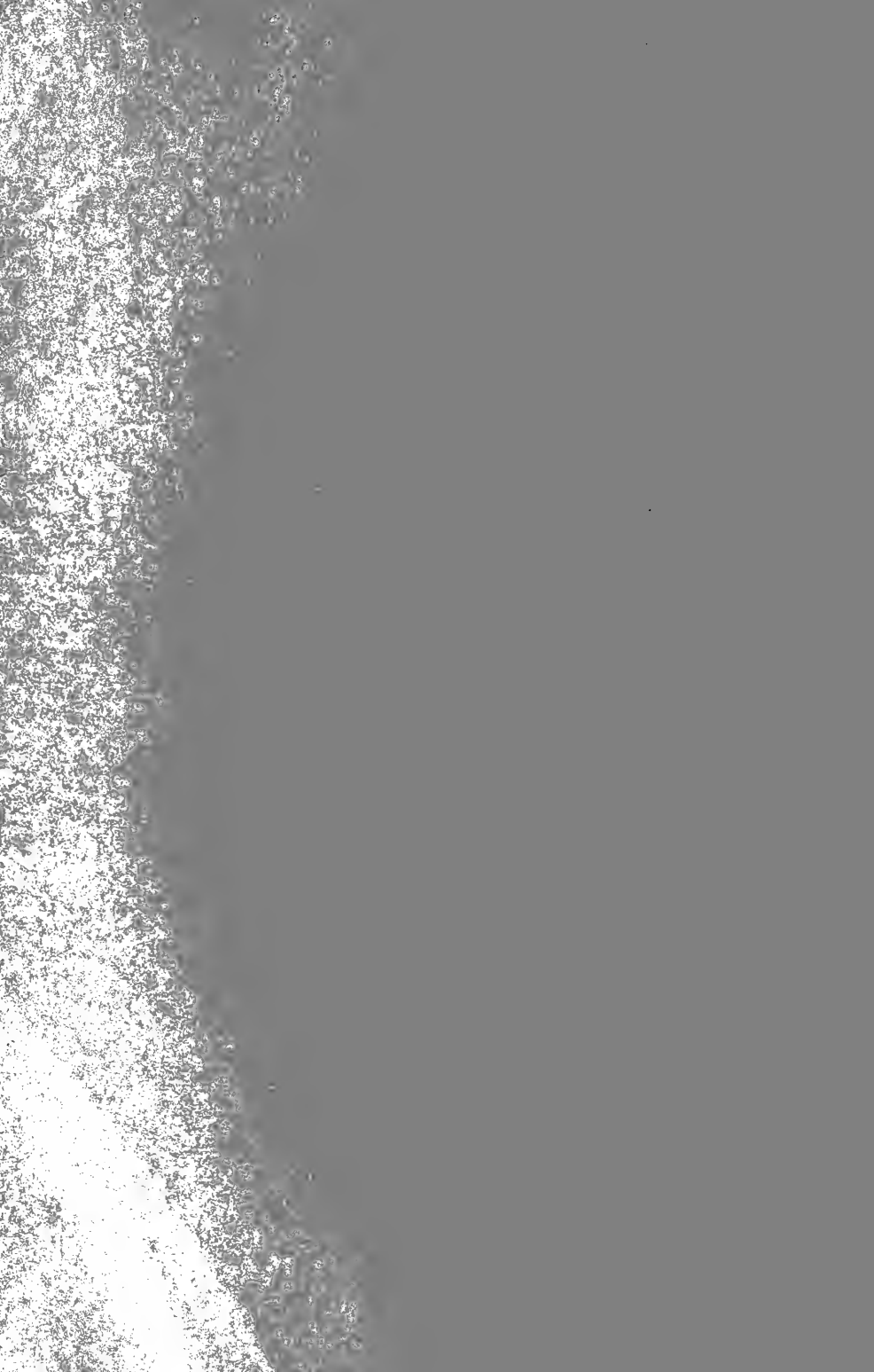

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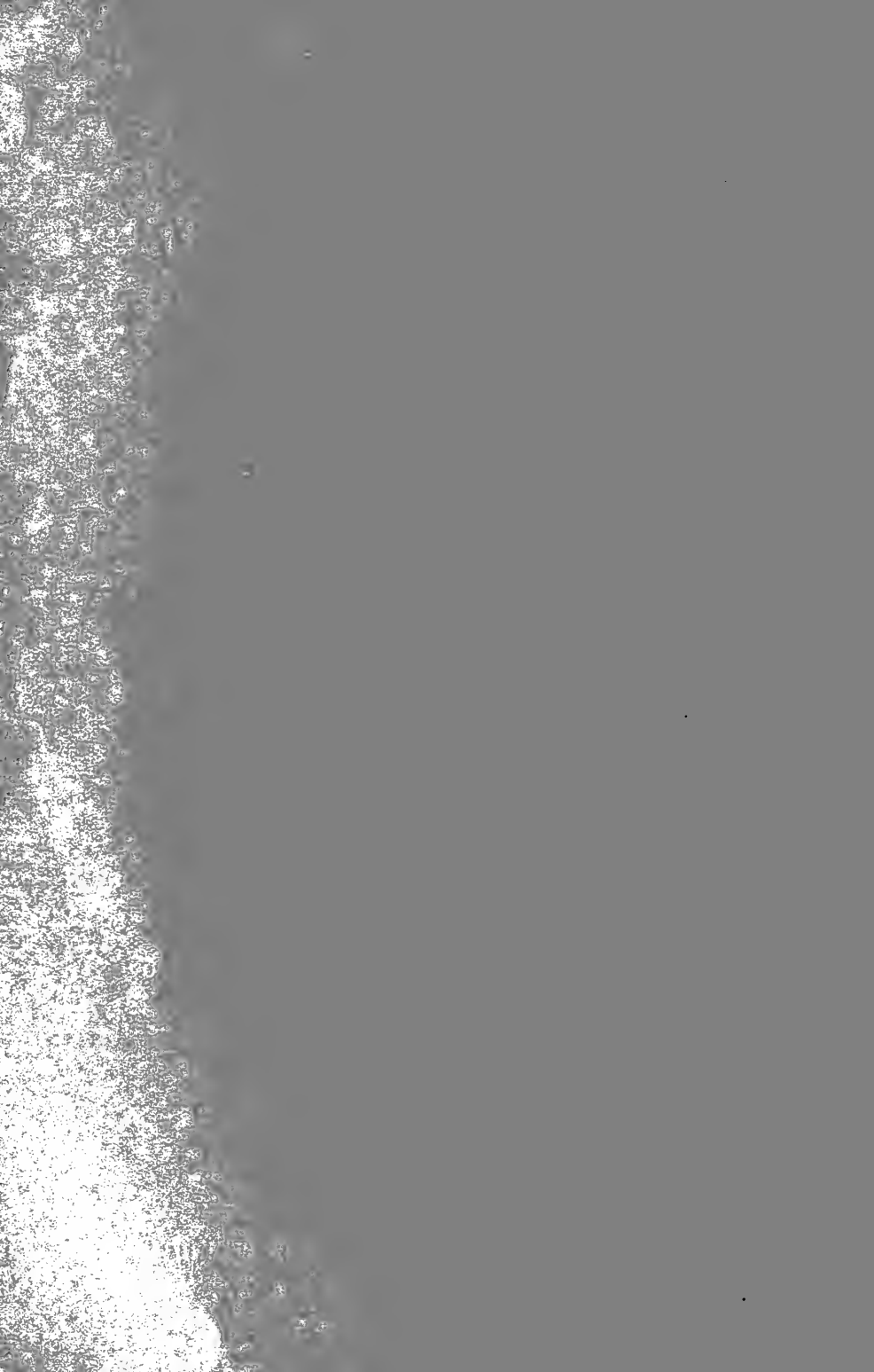

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