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OF THE

ROYAL SOCIETY of SOUTH AUSTRALIA.

V O L . X V .

For 1891-92.

EDITED BY PROFESSOR RALPH TATE.



Adelaide :

W. C. RIGBY, 74, KING WILLIAM STREET.

DECEMBER, 1892.

Parcels for transmission to the Royal Society of South Australia, from Europe and America, should be addressed "per W. C. Rigby, care Messrs. Thos. Meadows & Co., 35, Milk Street, Cheapside, London."

24. 11. 1891

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INTRODUCED PLANTS IN THE NORTHERN TERRITORY.

By MAURICE HOLTZE, F.L.S.

[Read November 3, 1891.]

The object of my paper is only to record those plants which in the Northern Territory have, up to date, escaped from cultivation, or which have been introduced unintentionally. Some of them have already identified themselves so thoroughly with their new home that a collector, not conversant with their history, will unhesitatingly consider them as part of the indigenous flora. In a few instances plants, naturally wild in North Australia, have been introduced in a cultivated form, and these cultivated plants, escaped from cultivation, may mislead the collector considerably.

In most cases the plants enumerated have been introduced during my residence in the Territory; others I have seen, so to say, in their infancy, and a few may be said to be, for me, prehistoric. Of these latter, two, *Tamarindus Indicus*, Lin., and *Hyptis suaveolens*, Poit., have been included in the Flora Australiensis, but I fear I must, nevertheless, deny them the right to be called truly indigenous. *Tamarindus Indicus* is only to be found on the North Coast, at places which have been visited by Malay-prows for many years past, and as the fruit of the tamarind forms part of the daily food of the Malays, there can be no doubt that this plant has been introduced by them. *Hyptis suaveolens* was found by Leichhardt at Port Essington, and is found there only within a limited radius of the old settlement, while at Port Darwin, where it was introduced about 20 years ago by a Mr. Schmidt, from Timor, I have been able to watch its spread in the wake of settlement.

I come now to the other plants, introduced by the old settlers at Port Essington. They are:—

Capsicum frutescens, Lin.

Moringa pterygosperma, Gaertn.

Mangifera Indica, Lin.

Guazuma tomentosa, H. & B.

I may say that other plants introduced here may have escaped my observation.

Next we come to those plants introduced within the last 20 years. These are comparatively numerous, and some of them have already overrun the country to such an extent as to become troublesome pests. Some of them, it is true, are useful fodder

plants, others are, in their cultivated state, of great commercial value, such as cotton, indigo, and indiarubber, but others again, as, for instance, *Hyptis suaveolens* and *Passiflora foetida*, are exterminating the native vegetation wherever they have taken root, by their almost incredible luxuriance. *Passiflora foetida*, although introduced hardly ten years ago, is suffocating already, to a great extent, the undergrowth of the forest near Fannie Bay, and as the fruit is relished by birds and natives, this plant promises to become a great nuisance.

I will now enumerate the plants introduced during the last 20 years :—

Papaveraceae.

Argemone Mexicana, *Lin.*

Capparideae.

Cleome uniglandulosa, *Cavan.*

Malvaceae.

Hibiscus Sabdariffa, *Lin.*

Gossypium herbaceum, *Lin.*

Gossypium Barbadense, *Lin.*

Oxalideae.

Oxalis corniculata, *Lin.*

Oxalis Valdiviana, *Bernard.*

Meliaceae.

Melia Azedarach, *Lin.*

Rhamnaceae.

Ziziphus Jujuba, *Lam.*

Leguminosae.

Indigofera Anil, *Lin.*

Indigofera tinctoria, *Lin.*

Clitorea ternatea, *Lin.*

Phaseolus atropurpureus, *Sesse.*

Cajanus Indicus, *Sprengl.*

Cassia alata, *Lin.*

Mimosa rubricaulis, *Lam.*

Mimosa pudica, *Lin.*

Acacia Arabica, *Willd.*

Acacia leucocephala, *Bertero.*

Desmodium gyrans, *DeC.*

Passifloreae.

Passiflora foetida, *Cavan.*, var. *pectinata*.

Compositae.

Ageratum Mexicanum, *Sweet.*

Zinnia elegans, *Hort.*

Zinnia verticillata, *Andr.*

Calliopsis bicolor, *Reihbch.*
 Calliopsis cardaminæfolia, *DeC.*
 Gaillardia picta, *Hort.*
 Tagetes patula, *Lin.*
 Cacalia sonchifolia, *Wall.*
 Sonchus oleraceus, *Lin.*

Apocynæae.

Vinca rosea, *Lin.*, var. alba.

Aselepiadeae.

Asclepias Curassavica, *Lin.*

Convolvulaceae.

Ipomœa sinuata, *Ortega.*
 Ipomœa Quamoclit, *Lin.*
 Ipomœa aquatica, *Forsk.*

Solanaceae.

Nicandra physaloides, *Gaertn.*
 Datura fastuosa, *Lin.*
 Datura Stramonium, *Lin.*
 Datura inermis, *Tayu.*

Scrophularineae.

Torenia Fournieri, *Lindl.*

Pedalineae.

Sesamum orientale, *Lin.*

Verbenaceae.

Verbena Bonariensis, *Lin.*
 Lantana hybrida, *Hort.*
 Stachytarpheta mutabilis, *Vahl.*
 Stachytarpheta Jamaicensis, *Vahl.*

Labiatae.

Salvia coccinea, *Lin.*
 Leonotis nepetæfolia, *R. Br.*

Phytolaccaceae.

Rivina humilis, *Lin.*

Amarantaceae.

Celosia cristata, *Lin.*
 Amarantus viridis, *Lin.*
 Amarantus oleraceus, *Lin.*
 Amarantus melancholicus, *Lin.*
 Gomphrena globosa, *Willd.*

Euphorbiaceae.

Ricinus communis, *Lin.*
 Manihot Glaziovii, *J. Mueller.*

Gramineae.

Andropogon Schimperi, Hochst.

Tricholana rosea, Nees.

Sorghum vulgare, Pers.

Panicum maximum, Tayu.

Eleusine caracana, Pers.

Eleusine oligostachya, Link.

Eragrostis elegans, Nees.

There is, of course, with many of these plants no fear that they may be taken as indigenous; but others—for instance, *Eleusine*, *Eragrostis*, *Panicum*, and *Andropogon*, which are represented in numerous species in North Australia—will easily be collected as truly indigenous.

I come now to a few plants which, although truly indigenous in North Australia, have been introduced in a cultivated state, and have escaped from cultivation. These plants are:—

Corchorus capsularis, Lin.

Crotolaria juncea, Lin.

Acacia Farnesiana, Willd.

Oryza sativa, Lin.

Sorghum Haleppense, Pers.

We all know that plants alter much by cultivation, and in these cases also there is no mistake possible if the presence of introduced plants is once recorded. In conclusion, I will draw your attention to the fact that *Oryza sativa* is found truly wild only in Arnheim Land. The same can be said of *Phaseolus vulgaris*, Lin., *Dolichos uniflorus*, Lam., and *Dioscorea sativa*, Lin. Is, then, Australia the home from where these plants have been introduced to India and other countries many centuries before our times? or has Australia been connected with Asia in prehistoric ages? Geologists tell us that we inhabit the remnant of the oldest continent; flora and fauna contain the nearest allies to antediluvian formations. Can it then be possible that the beastlike Autochthone Australian has been the ancestor of the human family? I must leave it for abler thinkers to solve this problem.

DESCRIPTIONS OF NEW SOUTH AUSTRALIAN LEPIDOPTERA.

By OSWALD B. LOWER.

[Read March 1 and June 7, 1892.]

HEPIALIDÆ.

HEPIALUS, *F.*

HEPIALUS (CHARAGIA) BLACKBURNII, sp. nov.

Female, 75 mm. Head and palpi yellowish-green. Antennæ dark red. Thorax yellowish-green. Abdomen salmon-pink, three posterior segments greenish-yellow; abdomen beneath ochreous-whitish. Legs yellowish-green, anterior and middle tibiæ and tarsi dark red, posterior tibiæ and tarsi salmon-pink. Forewings elongate triangular; costa straight, slightly arched at apex, apex round-pointed; hindmargin nearly straight, oblique; light yellowish-green, golden tinged; markings ferruginous; a small basal spot; five subquadrate spots on costa at almost equal distances, extending from one-fifth to two-thirds, posterior smallest; inner marginal edge ferruginous, with two irregular sub-triangular patches, first at one half, second at two-thirds; obliquely beyond first is a wedge-shaped spot; an irregular series of six spots proceed from second patch directly towards apex, but not near reaching it: cilia ferruginous, tips paler, with an undulating basal line. Hindwings salmon-pink; cilia paler, with a much darker parting-line. Underside of all wings salmon-pink, suffused with greenish, more especially towards hindmargin of forewings and costa of hindwings.

For my type of this rare and beautiful insect I am indebted to the Rev. Thos. Blackburn, of Woodville, to whom I have great pleasure in dedicating it.

The present species is nearest *Hep. Scottii*, but is much smaller. One specimen from Port Lincoln, South Australia.

HECTOMANES, *Meyr.*

HECT. PTEROMELA, sp. nov.

Male, 26-29 mm. Head, thorax, and legs blackish-fuscous. Antennæ ochreous-fuscous. Abdomen lighter fuscous. Forewings dark-fuscous, rather lighter towards hindmargin: costa blackish towards base; a moderate well-defined white longitudinal streak from base almost to hindmargin, suffusedly margined on both sides with blackish: from extremity of streak proceeds

to apex two or three blackish dots indistinctly ringed with whitish; a hindmarginal row of similar dots; a few blackish marks on middle of inner margin: cilia fuscous mixed with paler, with an indistinct basal line. Hindwings dark fuscous: cilia paler, with a darker basal line.

Two specimens, at light, Parkside, in April, 1892. A very distinct species, not approaching any other; the longitudinal streak distinguishes it immediately.

HECT. SIMULANS, *Walker*.

One fine female taken at Blackwood in April, not previously recorded from South Australia.

HECT. NOSERODES, *Meyr*.

One specimen, a female, taken at Blackwood Railway Station (at light) in April, 1892, not previously recorded from South Australia.

HECT. POLYSPILA, *Meyr*.

One male specimen taken at Parkside (at light) April, not previously recorded from South Australia.

HECT. COMPSENTA, *Meyr*.

Five specimens, at Blackwood, in April and May.

ARCTIADÆ.

TERMESSA, *Walker*.

TERM. XANTHOMELAS, sp. nov.

Male, 28-31 mm. Head ochreous-yellow. Palpi deeper ochreous-yellow. Thorax ochreous-yellow, with a rather broad blackish anterior transverse band; shoulders broadly black. Antennæ black, becoming ochreous towards tips. Abdomen deep ochreous-yellow, posterior segments delicately margined with fuscous. Anterior and middle legs blackish, coxæ yellow, posterior legs ochreous-yellow, slightly infuscated. Forewings elongate triangular, costa moderately arched, apex obtuse, hindmargin somewhat obliquely rounded; ochreous-yellow, with black markings; a short longitudinal streak on costa near base, posteriorly suffused and continued very narrowly on costa to first fascia; a rather broad irregularly-edged fascia from one-third of costa to one-third of inner margin, broadly dilated on inner margin; a similar fascia from two-thirds of costa to anal angle, broadly dilated on costa, almost touching apex; a dentate hindmarginal band, which is inclined to separate into six spots: cilia dark fuscous, tips lighter. Hindwings ochreous-yellow; a blackish spot near apex; a small (variable in size) black dot at anal angle: cilia ochreous-yellow, fuscous at apex, and beneath minute dot ochreous-yellow.

Allied to *Term. congrua*, Walker, but differs in cilia of the forewings, and is without the entire blackish hindmarginal band of hindwings; in other respects it is superficially similar. The present species and *congrua* are the only two with yellow palpi.

Two specimens at Waterfall Gully on October 27th, 1890.

TERM. NIVOSA, *Walker*.

I have taken three specimens of this insect at Littlehampton, in November, from *Acacia pycnantha*.

TERM. ZONOPHANES, *Meyrick*.

I have taken one specimen at Yorketown.

MONOCTENIADÆ.

MONOCTENIA, *Gn.*

MONOCTENIA EXIMIA, sp. nov.

Female, 65 mm. Head ochreous-whitish, face deep purplish-crimson. Palpi purplish-crimson, terminal joint ochreous-tinged. Thorax and abdomen pale pinkish, thorax beneath very woolly, pale pink, anteriorly dark purplish-crimson. Antennæ ochreous. Anterior legs dark crimson-purple with whitish apical joints, middle pair paler (posterior pair broken). Forewings elongated triangular, costa straight, apex acute, hindmargin strongly bowed, crenulate; rosy purplish-ochreous; a rather broad pale pinkish or flesh-coloured costal streak from base to near apex, posteriorly attenuated; cilia blackish, with a pinkish basal line. Hindwings rosy purplish-ochreous, base much paler; cilia blackish, with a pinkish basal line.

Intermediate between *smereintha*, Felder, and *calladelpa*, Lower; but is immediately known by the costal streak.

Port Lincoln; one specimen.

MON. CALLADELPHA, sp. nov.

Male, 60-65 mm. Head pale fleshy-ochreous, face deep purplish-ferruginous. Palpi above deep purple-ferruginous, beneath pale fleshy-ochreous, terminal joint deep purple-ferruginous. Thorax and abdomen pale fleshy-ochreous, abdomen with lateral tufts. Thorax beneath very woolly, dark crimson-purple anteriorly, lighter posteriorly. Antennæ ochreous. Legs pale fleshy-ochreous; tibiæ and tarsi much darker. Forewings elongated triangular; costa straight, hindmargin very strongly bowed, crenulate; rosy purplish-ochreous, without markings, all veins tending to become yellowish; cilia yellowish-ochreous with purplish fuscous spots on veins. Hindwings purplish, suffused with rosy, much paler towards base and inner margin; an indistinct curved pale

whitish band from costa at two-thirds to inner margin at three-fifths; cilia and spots as in forewings.

Intermediate between *falernaria*, Gn., and *smerintharia*, Felder, but differs from both through absence of markings of forewings.

One specimen from Port Lincoln and one specimen at light at Parkside on April 17, 1890.

MON. FALERNARIA, Gn.

I have one specimen (male) from Port Lincoln. Taken by Rev. Thos. Blackburn.

MON. VINARIA, Gn.

I have two specimens from Reedbeds and two from Blackwood, taken in March, 1890, and February 27, 1891, beaten from dry bush, also one from Belair, taken November 3, 1891.

DICHROMODES, Guenee.

DICH. PTILOMACRA, sp. nov.

Male and female, 26 mm. Head and thorax whitish, irrorated with dark-fuscous. Palpi 6 to 8, whitish, strongly irrorated with rough dark-fuscous scales, beneath darker, at base and towards apex whitish. Antennæ whitish, sharply annulated with dark-fuscous, pectinations nearly 12. Abdomen whitish-ochreous. Legs fuscous, posterior pair whitish, tarsi infuscated. Forewings triangular, costa arched towards base, hindmargin bowed; fuscous densely irrorated with whitish, and with scattered darker fuscous scales; four small slightly raised tufts of raised scales, black edged with white; first at one-fourth beneath costa, second in disc before middle; third in disc above middle; fourth on inner margin at about one-fourth; above the third tuft is a linear cheese-coloured streak, obscurely edged above with whitish; first line whitish from one-fourth of costa, angulated outwards so as to touch first and second tufts and ending on fourth; a straight white line from costa at three-fourths to near anal angle, sharply dentate throughout, edged anteriorly with blackish; a broad cheese-coloured streak from the dentate line to second tuft; another similar streak from the line parallel with inner margin nearly to base; these streaks are separated by streaks of ground-colour of about the same width; a broad cheese-coloured streak from apex to anal angle, suffusedly irrorated with whitish on costa; subterminal line white, straight, slightly dentate; veins between this and hindmargin streaked with cheese-colour; a waved blackish interrupted hindmarginal line: cilia whitish-fuscous, very distinctly barred with black and white, especially on underside. Hindwings fuscous-grey, darker posteriorly; a

darker hindmarginal line: cilia fuscous-grey, basal-half slightly darker.

Blackwood; four specimens, 8th December.

The most remarkable of the genus, nearest *D. steropias*, Meyr., but differs in length of palpi, and especially antennal pectinations of male; the antennæ are also sharply annulated, the streaks of cheese-colour are also conspicuous characters. In addition to the above I have taken the following species:—

Dich. ainaria, *Gn.* Blackwood and Highbury. Common.

Dich. anelictis, *Meyr.* Blackwood and Highbury. Common.

Dich. obtusata, *Walk.* Blackwood; common. Highbury; scarce.

Dich. explanata, *Walk.* Teatree Gully and Blackwood. Several specimens.

Dich. sigmata, *Walk.* Two specimens. Highbury.

Dich. orectis, *Meyr.* Highbury and Blackwood. Several specimens.

Dich. consignata, *Walk.* Two specimens—one at Clarendon, one at Highbury.

Dich. stilbiata, *Gn.* Two specimens. Clarendon.

BOARMIADÆ.

STIBAROMA, *Meyrick.*

STIB. TRIGRAMMA, sp. nov.

Male, 35 to 40 mm. Head, palpi, and thorax ashy grey-whitish; thorax with a black transverse line, interrupted in middle. Antennæ whitish, pectinations reddish-fuscous. Abdomen white, base of segments broadly black. Anterior and middle legs blackish, ringed with white; posterior pair whitish, slightly infuscated; tarsi with whitish apical rings. Forewings elongated triangular, costa gently arched, apex round-pointed, hindmargin waved, bowed, oblique; ashy grey-whitish, minutely irrorated with black; a black suffusion at base; a reddish-ochreous spot not touching inner margin or base immediately beneath this; three black transverse lines; first from one-fourth of costa to one-third of inner margin, acutely angulated inwards near inner margin; second somewhat suffused from near one-half of costa to beyond one-half of inner margin, angulated outwards in middle; a transverse black discal dot; third line from three-fourths of costa to three-fourths of inner margin, strongly angulated throughout, with a bidentate projection outwards in middle, sometimes obscurely edged with whitish; a reddish-ochreous suffusion near anal angle, and another resting on projection above middle; a white dentate subterminal line; sometimes the median vein and three branches are strongly outlined with black as far as

this line; hindmarginal line waved: black; cilia ashy grey-whitish; base whiter, with black spots at extremities of veins. Hindwings rounded; slightly sinuate beneath apex and at anal angle; whitish; a black linear discal dot; a blackish submarginal line; a broad black hindmarginal band, broader at apex: cilia white, with black dots at extremities of veins.

Female, 40 to 45 mm. Differs only from male in having first line edged anteriorly with whitish; the second one almost obsolete, and the third more distinctly edged with whitish. The reddish-ochreous suffusions are almost obliterated, and the hindmarginal bands of the hindwings are much paler.

Blackwood; twenty-five specimens early in May and June, beaten from the so-called stringybark. The insects frequent only the tallest trees, and are very sluggish, and generally fall straight to the ground when beaten out.

ECOPHORIDÆ.

PALPARIA, *Wing.*

PALPARIA LEUCOSTA, sp. nov.

Male, 15 mm.; female, 22 mm. Head light brownish-fuscous, face lighter. Antennæ light-fuscous, base whitish. Palpi with second joint dense, broadly triangular, whitish-ochreous, strongly carmine tinged beneath, terminal joint short. Thorax bright carmine-pink, finely sprinkled with slaty-fuscous; anteriorly rather broadly suffused with light brownish-ochreous. Abdomen dark fuscous, margins of segments pale whitish with silvery reflections, anal tuft of female pale ochreous. Anterior and middle legs dark fuscous, slightly sprinkled with whitish; posterior legs pale ochreous-whitish. Forewings moderate, costa evenly arched, apex acute, very slightly produced; hindmargin sinuate beneath apex, thence obliquely rounded; bright carmine-pink, minutely irrorated with slaty-fuscous, more especially on middle of disc and middle of inner margin, where it tends to form indistinct patches; costal edge narrowly ochreous-whitish from base to two-thirds, attenuated posteriorly; an ochreous-white straight streak running from fold at two-thirds to anal angle, attenuated anteriorly; inner margin edged with ochreous-whitish more strongly at base: cilia slaty-grey with silvery reflections, darker at apex, where the ground-colour has a tendency to go through it. Hindwings dark fuscous, darker towards apex; cilia lighter.

Nearest *Palp. eonephella*, Meyrick, and *Palp. theophila*, Meyrick; but differs from both by the fuscous hindwings. The fold of the forewings is very strongly produced in the species described.

One specimen (male) on trunk of *Casuarina quadrivalvis* at Baker's Gully, in November; three female specimens from *Leptospermum myrsinoides* at Blackwood, in October and November.

HYDRIOMENIDÆ.

HYDRIOMENA, *Hb.*

HYD. GYPSOMELA, sp. nov.

Male and female, 28-30 mm. Head, palpi, thorax, and abdomen dark fuscous; palpi, one. Legs white, sprinkled with fuscous; tarsi banded with black and white. Forewings triangular, hindmargin waved, bowed, oblique; white, with the veins pinkish-tinged, especially near hindmargin, a dark fuscous basal patch from costa at one-sixth to inner margin at one-sixth; outer edge straight; a dark fuscous median band, in male broken; margins black, anterior margin from one-third of costa to one-third inner margin, outwards curved and connected with the basal patch by a streak along costa; an indistinct black discal dot; posterior edge from three-fourths of costa to two-thirds inner margin, with a moderate bidentate projection in middle; a blackish mark on costa before apex, leaving costa whitish; an ill-defined hindmarginal suffusion, in some specimens continued along veins; a blackish hindmarginal line interrupted by veins with coppery fuscous; cilia dark fuscous, base darker. Hindwings light fuscous, in female with a purplish sheen, in male more whitish; an indistinct median band, more defined on inner margin; hindmarginal line and cilia as in forewings.

A very distinct species; the broken band of male may not be a constant character, allowance must be made for this, as I possess but one specimen of that sex taken at Blackwood, and three females taken at Parkside at light.

XANTHORHÆ, *Hubner.*

XANTH. PARADELPHA, sp. nov.

Male, 28-30 mm.; female, 30-32 mm. Head, palpi, thorax, and abdomen fuscous-grey, minutely sprinkled with black; thorax with two more or less distinct transverse black lines. Abdomen with a double series of black dorsal spots. Palpi with the base white, about two. Legs fuscous above, whitish beneath; tarsi ringed with white. Forewings triangular, hindmargin rather waved, slightly bowed, oblique; brownish-ochreous, with cloudy whitish transverse lines; outer edge of basal patch marked with a nearly straight white line; anterior margin of median band marked by a well-defined twice dentate double white line from before one-third of costa to two-fifths of inner margin; posterior

margin from three-quarters of costa to two-thirds of inner margin, edged by a broad well-defined white line, slightly curved near costa and strongly angulated outwards in middle, sometimes interrupted by a fuscous median line, and posteriorly usually edged by a well-defined black line; the median band usually contains an irregular subtriangular patch of lighter ground-colour, edged with darker, and containing a black discal dot; subterminal line dentate, white, slender, nearly straight; hind-marginal line black, slightly interrupted; cilia fuscous, sprinkled with whitish, forming faint bars, terminal-half lighter. Hindwings with hindmargin rounded, wavy, light-fuscous, slightly ochreous tinged; median band of four grey lines, posterior angulated in middle; subterminal line obscurely whitish; hind-marginal line and cilia as in forewings.

Nearest to *vacuaria*, Gn.; but besides differing in the ground colour it may be immediately known by the broad white posterior median line.

Common at Blackwood and at Parkside in February and March; also from Victoria.

XANTH. HYPERYTHRA, sp. nov.

Male, 25 mm.; female, 27-30 mm. Head, palpi, and thorax dark fuscous; head mixed with reddish, terminal joint of palpi whitish, palpi two. Antennæ whitish, pectinations six and eight. Abdomen grey-whitish, minutely sprinkled with fuscous, with a double row of suffused dark fuscous dorsal dots. Legs grey-whitish, slightly infuscated. Forewings triangular, hindmargin slightly wavy, bowed oblique; dark fuscous, irregularly irrorated with ochreous-whitish, in some specimens bright golden ochreous; costal edge irregularly strigulated with ochreous-whitish; basal patch indistinct, darker than ground colour; outer edge indicated by a light indistinct line from one-sixth of costa to one-sixth inner margin, curved near costa; median band darker, containing a linear black discal dot, and indications of two or three wavy darker transverse lines; anterior edge limited by a whitish interrupted line, distinctly double in some specimens on inner margin, from one-third of costa to one-third inner margin, slightly curved outwards; posterior edge limited by a much more distinct whitish-ochreous line, from two-thirds of costa to two-thirds of inner margin, angulated outwards below costa and at middle; a light suffusion on costa immediately beyond this line; a pale streak from apex nearly to first angulation of posterior line, edged beneath with a fuscous shade; subterminal line whitish, indistinct; all veins near hindmargin suffused with fuscous reddish; a blackish hindmarginal line interrupted by veins: cilia fuscous reddish, terminal half redder, with a paler red line. Hindwings

with hindmargin rounded, waved, greyish, with a reddish reflection, paler towards base; an indistinct median band angulated in middle; hindmarginal line and cilia as in forewings.

Underside—The whole of the underside suffused with dull reddish, more prominent on the veins, less strongly towards inner margin of forewings.

A very variable insect; in some specimens the markings are almost obliterated by the darker ground-colour; the reddish colouring of the underside is a noticeable character.

Blackwood, Highbury, and Parkside, mostly at light; November to March; also from Victoria.

XANTH. XANTHOSPILA, sp. nov.

Male, 25 mm. Head, abdomen, and thorax ochreous-whitish, sprinkled with fuscous. Abdominal segments paler, with an indistinct double series of fuscous dorsal spots. Antennæ ochreous-whitish, sharply annulated with black, pectinations about seven, continued to apex. Legs fuscous, tarsi and tibiæ banded with ochreous-whitish. Forewings triangular; hindmargin waved, slightly bowed, oblique; light ochreous-fuscous, with whitish-ochreous markings; a curved blackish line at about one-fifth; median band limited by two well-defined lines; anterior from costa at one-third to one-third inner margin, slightly angulated outwards beneath costa, thence strongly dentate inwards beneath middle, anteriorly margined by a curved series of blackish dots on veins somewhat edged with orange; a black discal dot; median band contains two or three darker lines, especially on costa; posterior from three-fourths of costa to three-fourths of inner margin curved outwardly near costa, and with a strong bidentate projection in middle, and strongly sinuate inwards beneath this so as to nearly touch anterior line; an irregular row of blackish dots anteriorly suffusedly-edged with orange; a subterminal line, well-defined, strongly dentate throughout; a waved slightly interrupted blackish hindmarginal line: cilia ochreous-whitish, basal-half fuscous, with darker spots at extremities of veins. Hindwings with hindmargin rounded, waved; pale whitish-ochreous, slightly fuscous-tinged; a minute blackish discal spot; indications of two or three waved transverse lines; a whitish subterminal line; a blackish waved hindmarginal line, hardly interrupted: cilia as in forewings.

Bears a somewhat superficial appearance to *Hydriomena interrupta*, Gn. Three males at Blackwood in February.

I have also taken:—

Xanth. subidaria, Gn. Parkside, Highbury, Blackwood, and Belair.

Xanth. vacuaria, Gn. Blackwood and Parkside.

- Xanth. extensata*, *Walker*. Blackwood.
Xanth. heliacaria, *Gn.* Blackwood. Mostly at light.
Xanth. vicissata, *Gn.* Blackwood.

GEOMETRIDÆ.

IODIS, *Hubner*.

IODIS IPOMOPSIS, sp. nov.

Female, 30-33-40 mm. Head and face green, fillet white. Crown green. Palpi short, carmine, whitish beneath. Antennæ white, terminal half crimson. Thorax green. Abdomen green, sides and apex whitish. Anterior legs light crimson, middle and posterior whitish, somewhat tinged with crimson-fuscous. Forewings with the costa straight, arched towards apex; hindmargin nearly straight, oblique; light bluish-green; costa narrowly pale ochreous-whitish, crimson at base and at apical fourth; lines slender, dentate, whitish; tolerably distinct; first from beneath one-third of costa to one-third of inner margin; a dark green discal dot, sometimes indistinct; second line from two-thirds of costa to two-thirds inner margin; cilia pale crimson, base paler. Hindwings with hindmargin bent on vein 4: first line absent; discal dot, second line, and cilia as in forewings.

Four specimens from Balhannah, and one at Belair, beaten from *Acacia pycnantha* in November. Between *dichloraria*, *Gn.*, and *vertumnaria*, *Gn.*; but differs from both by its green head and face and absence of dorsal line of thorax, &c.

HYPOCHROMA, *Gn.*

HYPOCH. EUGRAMMA, sp. nov.

Male, 36 and 38 mm. Head and palpi light grey, terminal joint of palpi black. Antennæ fuscous. Thorax light grey, sprinkled with black and white, with three distinct transverse black lines, one on collar, one anteriorly, and one posteriorly, latter interrupted in middle. Abdomen light grey, segments black, legs black, ringed with white. Forewings triangular. Costa sinuate, apex almost acute, hindmargin obliquely rounded, crenulate; grey, sprinkled with black, with whitescales predominating in discal area; lines black, well defined; a transverse streak at base, and another immediately beyond, both straight; first line from before one-third of costa to before one-half of inner margin almost straight, slightly bent in below middle, rather thicker on costa; ground-colour from base to slightly beyond this line smoky grey; a black linear discal streak; second line from about three-fourths of costa to anal angle, strongly curved inwards below middle, posteriorly edged by a fine white line; whole of area beyond this smoky brown, except a fine dentate white line from near apex to

anal angle; hindmarginal line black; cilia alternately grey and white. Hindwings as forewings; basal line indistinct; first line parallel to first line of forewings extending only half across the wing; second line closely beyond this from costa to anal angle, nearly straight; cilia and hindmarginal line as in forewings. Under-side—Pale whitish grey, with scattered black scales; a broad black costal streak from base to about one-fourth; a linear discal streak; an outwards curved blackish line from two-thirds of costa towards but not reaching anal angle, posteriorly bounded by a dark smoky shade, enclosing two white teeth before apex. Hindwings as forewings; a transverse discal streak; a broad blackish hindmarginal band, edged anteriorly by a fine black line; posteriorly lighter.

Two specimens taken at light, at Parkside, in February. Very distinct by the well-defined lines; intermediate between *paratorna*, Meyrick, and *diffundens*, Lucas.

XYLORYCTIDÆ.

CRYPTOPHAGA, *Lewin*.

CRYPTOPHAGA BLACKBURNII, sp. nov.

Female, 45 mm. Head, palpi, antennæ, and thorax ochreous-whitish; head more ochreous on crown. Abdomen yellowish-grey, second segment dull orange, base of other segments narrowly whitish, suffused above with dull orange (anterior legs broken, middle and posterior whitish-ochreous, tibiæ and tarsi pale crimson. Forewings oblong, posteriorly dilated, costa gently arched, apex obtuse, hindmargin obliquely rounded; 2 from three-quarters; yellowish-grey-whitish, scantily strewn with black scales from base to two-thirds, except along costa; extreme costal edge pale yellowish; a moderate roundish orange spot distinctly edged with minute black scales, in disc beyond one-third; a second more ovate, on fold below middle, and a third more suffused beyond middle, both tending to be suffusedly edged with minute black scales: cilia yellowish-grey-whitish, darker at base. Hindwings grey-whitish, more ochreous-tinged towards base; 6 and 7 from a point; cilia whitish, mixed with fuscous.

One specimen received from Rev. Thos. Blackburn, to whom I have dedicated it; taken at Port Lincoln.

CRYPT. OCHROLEUCA, sp. nov.

Male, 45 mm. Head, palpi, thorax, and abdomen whitish-ochreous; base of palpi internally blackish, second segment of abdomen distinct orange-red. Legs ochreous-whitish, anterior and middle distinctly pinkish-tinged above; tarsi black, with white rings at apex of joints. Forewings oblong, posteriorly

somewhat dilated; costa moderately arched, apex obtuse; hindmargin rather obliquely rounded; whitish-ochreous; a black dot in disc at one-third; a second, double, on fold beneath middle, and two others transversely placed, and connected by a fine black line in disc at three-fifths; a row of black spots along hindmargin and apical fourth of costa; 2 from five-sixths; cilia dark fuscous, base somewhat paler, especially towards anal angle. Hindwings and cilia shining white; cilia with black spots at termination of veins, except on anal angle; veins 6 and 7 from a point.

Between *lurida*, Meyr., and *sarcinota*, Meyr.; differs from the former chiefly by the absence of the spots on cilia of forewings, and from the latter by the different ground-colour and other minor points.

One fine specimen from *Eucalyptus* sp. at Blackwood in middle of February.

CRYPT. DELOCENTRA, *Meyrick*.

Male, 26-30 mm. Differs from female in having extreme costal edge blackish; the hindwings are distinctly black, with snow-white cilia. In some *female* specimens the hindwings are strongly suffused with blackish, and some specimens measure 54 mm. in expanse.

Thirty-two fine specimens, male and female, at a street lamp at Parkside in December. I have also seen specimens from Queensland and Sydney, so that it would appear to have a wide range.

CRYPT. IRRORATA, *Lewin*.

Two fine male specimens from Reedbeds, from *Casuarina quadrivalvis*. Hitherto not known from South Australia.

LICHENAUULA, *Meyrick*.

LICH. SELENOPHORA, sp. nov.

Male and female, 25-28 mm. Head and thorax ashy-grey-whitish. Face white. Palpi whitish, irrorated with fuscous, terminal joint fuscous. Antennæ fuscous, base whitish, sharply annulated with white, ciliation one. Abdomen grey-whitish, abdominal segments lighter, anteriorly edged with reddish-ochreous bands. Legs whitish, anterior and middle tinged with dark fuscous. Forewings oblong, posteriorly dilated, costa gently arched, apex rounded, hindmargin straight, oblique; 7 to hindmargin immediately below apex; ashy-grey whitish, irrorated with black, the coalescence of which tends to form obscure markings, leaving costal edge snow-white, from near base to near apex; an irregular suffusion in disc; a streak from base angulated downwards towards inner margin, but not touching it, at one-fifth thence obscurely continued along fold to beyond middle; a moderate irregular suffused circle, anterior edge more pro-

nounced immediately above anal angle, enclosed space almost white; a whitish apical patch obscurely continued along hindmargin to anal angle; a suffused blackish hindmarginal line; cilia ashy-grey, basal-half darker. Hindwings distinctly sinuate beneath apex; grey-whitish, slightly ochreous-tinged, much lighter towards base; cilia whitish, base yellowish-tinged, with a fuscous parting-line near base.

Rather variable in markings and intensity of colouring, the costal streak and curious mark above anal angle are distinct characters. Nearest to *laniata*, Meyr. Eighteen specimens beaten from *Banksia marginata*, at Blackwood, in November.

XYLORYCTA, *Meyrick*.

XYL. LEUCOPHANES, sp. nov.

Male and female, 24-30 mm. Head, thorax, and abdomen shining white. Abdominal segments obscurely reddish, anal tuft whiter. Palpi above white, second joint beneath fuscous, except towards base. Antennæ fuscous. Anterior and middle legs black, beneath white; posterior tibiæ and tarsi pale-greyish-ochreous, slightly infuscated. Forewings oblong, hardly dilated costa gently arched on basal-half, thence straight, apex obtuse, hindmargin obliquely rounded; shining snow-white; costal edge blackish from base to near apex, posteriorly attenuated; cilia shining snow-white. Hindwings pale grey-whitish, darker towards apex; cilia shining snow-white, with a faint grey median line. Underside of wings smoky fuscous. Hindwings paler; cilia white.

Five specimens bred from *Hakea rugosa*, the larvæ form conspicuous galleries of rough mud-coloured silk and refuse, and the imago emerge at intervals during December and January. Nearest to *orectis*, Meyrick. My specimens were obtained at Highbury; a remarkable coincidence is, that all the specimens emerged on consecutive Sundays, generally at about 7 p.m.

PHYLOMICTIS, *Meyrick*.

PHYL. MONOCHROMA, sp. nov.

Male, 25 mm. Head, antennæ, palpi, and thorax black, palpi internally whitish. Legs dark-fuscous, whitish beneath; posterior pair whitish. Abdomen reddish-fuscous, segments obscurely whitish. Forewings elongate, costa gently arched, apex round-pointed; hindmargin obliquely rounded; black, without markings; a large obscure blotch of whitish scales about middle of wings, nearer inner margin than costa; cilia dark fuscous sprinkled with darker. Hindwings grey; darker posteriorly; cilia grey, with an indistinct darker line.

One specimen at Parkside in March. Not to be confused with any other.

LIST OF SOUTH AUSTRALIAN SPECIES OF KANGAROOS AND WALLABIES.*

By A. ZIETZ, Assistant Mus. Director.

[Read March 1, 1892.]

Kangaroos.

MACROPUS GIGANTEUS, *var. typicus*.

Great Grey Kangaroo, Scrubber, &c.
All Australia, except the extreme north.

MACROPUS GIGANTEUS, *var. melanops*.

Black-faced Kangaroo. Apparently a dwarf *form* of the above.
The two live side by side in the same district.
Eastern and South-Eastern Australia (*Oldfield Thomas*);
Ninety-mile Desert, Humbug Scrub (Public Mus.).

MACROPUS FULIGINOSUS.

Tasmanian Great Kangaroo (*Oldfield Thomas*).
Kangaroo Island (Public Mus. S.A.).

MACROPUS ROBUSTUS.

Wallaroo; Euro (syn., *erubescens*). (*Oldfield Thomas*).
Port Augusta and 400 miles north of Adelaide (*Oldfield Thomas*); Winnininnie ((Public Mus.).

MACROPUS RUFUS.

Great Red Kangaroo.
Eastern, South-Eastern, and South Australia (*Oldfield Thomas*).

Large Wallabies.

MACROPUS RUFICOLLIS (*var. typicus*).

Mount Gambier district (Public Mus.).

MACROPUS GREYI.

Grey's Wallaby; Toolatsche; Brush-tailed Kangaroo, &c.
South-East of South Australia.

* The names adopted from the British Museum Catalogue of the Marsupialia by Oldfield Thomas; London, 1888.

Small Wallabies.

MACROPUS EUGENIL.

Dama or Kangaroo Island Wallaby.
Still numerous on Kangaroo Island.

PETROGALE XANTHOPUS.

Yellow-footed Rock Wallaby.
South Australia (rocky districts).



FURTHER NOTES ON AUSTRALIAN COLEOPTERA,
WITH DESCRIPTIONS OF NEW GENERA AND
SPECIES.

By the Rev. T. BLACKBURN, B.A.

[Read May 3, 1892.]

XI.

The species described in the following pages are a somewhat miscellaneous aggregate, some of them having been collected by myself, and others having come into my hands for description from various sources. Among the most interesting are a number of *Coccinellide*, collected by Mr. A. Koebele, agent of the United States Department of Agriculture, during a tour which that gentleman has been making with a view of investigating the depredations of that family on scales and other enemies of plant-life. Mr. Koebele has placed in my hands for determination the species that he has collected, among which are a considerable number of novelties, as will be seen on reference to the following pages.

CARABIDÆ.

TACHYS.

I hesitate a little in referring the following species to this genus on account of the sutural stria not being recurved, but it presents all the other distinctive features of *Tachys*, and is so extremely like some species (*e.g.*, *T. Flindersi*, Blackb.) that have the recurved stria that I hardly think it can rightly be regarded as a new generic form on that character alone.

T. Yarrensis, sp. nov. Modice elongatus; minus convexus; nitidus; ferrugineus, capite infuscato; antennis sat elongatis, submoniliformibus; prothorace transverso, canaliculato, postice minus angustato, lateribus antice sat fortiter rotundatis postice vix sinuatis, angulis posticis rectis; elytris substriatis, striis sat fortiter punctulatis, sculptura nec apicem nec latera versus obsoleta; stria recurva nulla. Long., 1 l. (vix); lat., $\frac{3}{10}$ l.

At once distinguishable from its allies by the elytral sculpture not becoming obsolete towards the sides and apex, and by the absence of a recurved stria.

Victoria; Upper Yarra; sent by C. French, Esq.

STAPHYLINIDÆ.

QUEDIUS.

Q. pictipennis, sp. nov. Sat robustus; sat nitidus; niger, sub-iridescens, elytris externe rufo-marginatis et utrinque vitta obliqua rufa ab humero ad angulum suturalem producta ornatis, antennis piceis basi rufis, pedibus piceis; capite transverso, punctura magna utrinque in oculi margine et 3 aliis postice instructo, oculis magnis; prothorace vix transverso, antrorsum a basi sat fortiter angustato, antice truncato, angulis posticis cum basi omnino rotundatis; elytris quam prothorax vix longioribus sat crebre minus fortiter punctulatis; abdomine in medio antice vix manifeste, postice et ad latera sparsim fortiter punctulato. Long., 3 l.

The punctures on the prothorax are on either side as follows:—two close to the front margin, one in the lateral margin behind the middle, several on the base, one on the front part of the disc near the middle, and three arranged in a triangle also on the disc, but nearer to the lateral margin and the base. The antennæ are moderately elongate, joint 1 the longest, 2 and 3 about equal in length (longer than the following joints), 7-10 gently transverse. In size and build resembles *Q. ruficollis*, Grav., but quite differently coloured, with the elytra much more closely punctulate, the prothorax and abdomen very differently punctured, &c.

Victoria; Dandenong Ranges; given to me by C. French, Esq.

HYPEROMMA.

The recent acquisition from Mr. French of an example (taken in the Dandenong Ranges, Victoria) referable to this genus has enabled me to ascertain somewhat certainly that the examples referred to by me in Tr. Roy. Soc., S.A., 1891, p. 70, as possibly *H. lacertinum*, Fvl. are not that species. The specimen recently acquired is very distinct from those mentioned in my former paper, and agrees with the characters of *H. lacertinum* much more satisfactorily than they do. Indeed I am not sure that the latter ought not to be regarded as forming a new generic type on account of their eyes very distinctly smaller and less entirely situated on the upper surface of the head (they are, however, much more so than in *Scimbalium*, *Lathrobium*, &c.), and the anterior tarsi of the male quite strongly dilated; the prothorax too is much less strongly narrowed hindward. As however the eyes are distinctly nearer in position to those of *Hyperomma* than of *Scimbalium*, the elytra very small and narrow, and the insect apterous, I do not see any objection to leaving this species in *Hyperomma* with the remark that it has much the facies (and tends towards the characters) of *Scimbalium*. I characterize it below.

II. abnorme, sp. nov. Apterum; angustum; nitidum; convexum; antice parce pilosum, abdomine densius pubescenti; piceum, capite rufescenti; capite quam latiori distincte longiori, postice sparsim subfortiter punctulato et antice posticeque foveis sat magnis nonnullis impresso; prothorace quam caput parum longiori haud latiori, quam latiori duabus partibus longiori, postice leviter angustato, sparsim subtilissime (latera versus magis fortiter) punctulato, puncturarum majorum seriebus 4 (medianis singulis puncturis circiter 13 compositis) paullo confusis impresso, punctura sat magna utrinque inter seriem medianam et lateralem posita; elytris quam prothorax multo brevioribus paullo angustioribus, fortiter rugulose punctulatis et puncturis majoribus indistincte 3-seriatim impressis, latera versus obscure concavis.

Maris capite confuse longitudinaliter striato; tarsis anticis fortiter dilatatis; segmento ventrali apicali profunde angulatum anguste inciso, penultimo in medio profunde subrotundatum foveato; supra abdominis segmentis 2-4 in medio longitudinaliter leviter canaliculatis.

Feminae capite angustiori haud striato; tarsis anticis vix dilatatis; segmento ventrali apicali postice sat angustato fere ut maris inciso, penultimo simplici; supra segmentis haud canaliculatis. Long., $5\frac{1}{2}$ l.; lat., $\frac{4}{5}$ l.

Victoria; Alpine district.

SCOPEÆUS.

S. femoralis, sp. nov. Minus nitidus; minus depressus; pube sat subtili vestitus; rufo-ferrugineus, capite antennarum articulis intermediis abdomineque leviter infuscatis; crebre subtiliter minus distincte punctulatus; capite subelongato, sat quadrato, prothorace vix latiori; hoc minus elongato, basi manifeste biimpresso, supra linea mediana obsoleta sat nitida instructo; elytris prothorace vix latioribus, distincte brevioribus, femoribus anticis ad apicem dente antrorsum directo, et subtus in medio dente magno, armatis; tibiis anticis basi summa subito angustatis. Long., $1\frac{3}{5}$ l.; lat., $\frac{3}{10}$ l. (vix).

The uniformly-coloured rufous prothorax and elytra with clear testaceous-red legs and darker head and abdomen will at once separate this species from its previously described Australian congeners. It is also distinct by its less quadrate head, and its prothorax less narrow in proportion to the head and elytra (which cause it to appear not quite so slender a species), also by the elytra distinctly shorter (in proportion to the prothorax, and also in proportion to their own width) than in any of the species I

have previously described. M. Fauvel's two species are very differently coloured, and no doubt differ in other respects, but the proportions of the segments, *inter se*, are not precisely stated.

The shape of the anterior femora is peculiar, and would probably justify generic separation; it is not sexual. The outline of the under surface is emarginate on the apical half and is angular at the inner limit of the emargination; the apex of the femur projects forward in a little spine or tooth.

N.S. Wales; Blue Mountains.

S. latebricola, Blackb.

S. dubius, Blackb.

S. obscuripennis, Blackb.

The front legs of the above three species are shaped as in *S. femoralis*. I regret that this character escaped my notice at the time I described them.

AMPHICROUM.

A. Adelaideæ, sp. nov. Rufo-testaceum, elytris dilutioribus (nonnullis exemplis plus minusve, præsertim juxta scutellum maculatim infuscatis), nonnullis exemplis abdomine plus minusve infuscato; antennis modice elongatis, articulo 4° quam 3^{us} breviori 5° æquali, 6-11 multo latioribus, 7-10 modice transversis, 11° quam 10^{us} longiori; capite utrinque vix manifeste impresso, crebre æqualiter sat fortiter punctulato; prothorace quam longiori fere duplo latiori, antice sat angustato, fere ut caput (sed minus crebre) punctulato, lateribus modice arcuatis, angulis posticis obtusis explanato-elevatis; elytris quam prothorax circiter duplo longioribus, vix aliter punctulatis, apice truncatis angulis externis rotundatis; abdomine crebre subtiliter punctulato; tibiis haud spinosis.

Maris (?) abdomine sat lato retrorsum gradatim angustato, segmento ventrali penultimo quam antepenultimus fere duplo longiori, apicali conico ad apicem anguste truncato.

Femina (?) abdomine magis parallelo, segmento ventrali penultimo quam antepenultimus sat longiori, apicali profunde inciso, parte interna protrusa subspiniformi subtus longitudinaliter canaliculata. Long., $1\frac{3}{8}$ —2 l.; lat., $\frac{3}{8}$ l.

Differs from *A. australe*, Fvl., *inter alia* by its evenly punctured head, from *A. spinipes* by its non-spinose tibiæ, from *A. cribriceps*, Fvl., by its longer antennæ, the ante-penultimate joints of which are less transverse.

S. Australia; near Adelaide, &c.; on flowers.

A. cribriceps, Fvl. I have a short series (all males) of a species taken on flowers in the Blue Mountains, N.S.W., which agrees very well with M. Fauvel's description of this insect except in

respect of size. My examples are very small (Long., $1-1\frac{3}{5}$ l.). The size of *A. cribriceps* is given as long. 4 mm. (=2 l., I suppose). On the other hand M. Fauvel says that *A. cribriceps* is much smaller than *A. australe* (the size of which is given as "Long. 4-5 mm.") which would hardly be a correct expression if an ordinary example of *cribriceps* were as large as a small one of *australe* (as is the case according to the published measurements).


ELEUSIS.

E. parva, sp. nov. Nitidissima; valde depressa; præter puncturas nonnullas setiferas fere lævis; pallide rufotestacea, antennarum (nonnullis exemplis) articulis intermediis et elytrorum disco (parte basali excepta) epipleuris que infuscatis; antennis sat gracilibus, articulo 3° quam ceteri angustiori, 4° 5° que piriformibus, 6-10 submoniliformibus ex ordine magis transversis, 11° quam præcedentes 2 vix breviori; capite plano fere æquali; prothorace antice fere capiti latitudine æquali, transverso, postice angustato, denticulo ante medium fere obsoleto seta nigra sat valida instructo; elytris quam prothorax paullo latioribus et manifeste longioribus. Long., 1 l.

New South Wales. Under bark of Eucalyptus on the Blue Mountains.

PAUSSIDÆ.

ARTHROPTERUS.

A. foveipennis, sp. nov. Piceo-rufus; sat nitidus; vix pubescens; capite sat crebre sat fortiter punctulato, inter oculos depresso; antennis latissimis, articulis 2°, 3°, 4° que ex ordine paullo latioribus, ceteris 4° latitudine æqualibus quam longioribus plus quam quater latioribus, ultimo quam præcedentes 3 conjuncti haud multo minori ad apicem late rotundato; prothorace quam longiori fere dimidio latiori, fortiter vix crebre punctulato (puncturis umbilicatis), disco depresso, latitudine majori longe ante medium posita, lateribus antice leviter rotundatis, angulis posticis rotundato-obtusis vix explanatis; elytris quam prothorax paullo minus crebre minus fortiter punctulatis, utrinque mox ante angulos suturales apicales fovea magna impressis, ad apicem in medio angulato utrinque sinuato (fere ut ); pygidio sat crebre sat fortiter punctulato; tibiis valde dilatatis, anticarum apice profunde triangulariter exciso (angulo apicali externo acuto), posterioribus 4 ad angulum apicalem externum oblique truncatis. Long., $5\frac{2}{5}$ l.; lat., $1\frac{9}{10}$ l.

The dilatation of the antennæ and legs in this species is re-

markably strong ; saving a fringe of rather close-set hairs running round the external margins, it is almost glabrous.

N. Territory of S. Australia ; near Palmerston.

A. occidentalis, sp. nov. Pallide piceo-rufus ; sat nitidus ; vix pubescens ; capite crebre sat fortiter punctulato inter oculos vix depresso ; antennis valde dilatatis, articulis 2°, 3°, 4° que ex ordine paullo latioribus, ceteris 4° latitudine æqualibus quam longioribus circiter quater latioribus, ultimo præcedentibus 2 conjunctis sat æquali ad apicem late rotundato ; prothorace quam longiori circiter quarta parte latiori, fortius sat crebre punctulato, late leviter canaliculato, latitudine majori longe ante medium posita, lateribus antice modice arcuatis postice vix sinuatis, angulis posticis rotundato-rectis vix explanatis ; elytris crebre subtilius punctulatis, utrinque ad angulos suturales apicales fovea magna obscura obsolete impressis, apice late membranaceo postice obsolete tridentato ; pygidio crebre subfortiter punctulato ; tibiis sat fortiter dilatatis, anticarum apice triangulariter inciso (incisuræ angulis utrisque valde acutis), posterioribus 4 ad angulum apicalem externum breviter oblique truncatis. Long., 5 l.; lat., 1½ l.

The pubescence is much like that of the preceding species, but the lateral fringes are less distinct. The membranaceous apex of the elytra is almost truncate, but when closely examined it is seen to be feebly prominent in an angular fashion at the middle and on either side.

Western Australia ; Yilgarn.

SILPHIDÆ.

COLON.

C. Melbournense, sp. nov. Ovale ; sat nitidum ; fulvo-pubescens ; piceum, elytris basin versus rufescentibus, antennis basi apiceque et pedibus testaceis ; prothorace transverso distincte punctulato, angulis posticis obtusis ; elytris ut prothorax punctulatis, stria suturali distincta ; femoribus posticis (maris) late distincte dentatis. Long., 1 l.

The antennæ are about as long as the prothorax, joints 7-10 infusate, the rest testaceous ; joints 1-3 about equal in length, 1 and 2 stouter than 3, 4 shorter than 3, not quite so wide as long obconic ; 5 slightly wider, not longer than wide ; 6 strongly transverse, 7 very strongly transverse (about three times as wide as long), scarcely so long as 6 ; 8-10 not differing much *inter se* (evidently wider than and about twice as long as 7), 11 conic, evidently longer than 10. The mesosternum is strongly carinate.

Compared with the European *C. brunneum*, Latr., this species is more oval and less closely punctulate.

Victoria ; near Melbourne.

HISTERIDÆ.

PAROMALUS.

P. Ludovici, sp. nov. Ovalis; modice convexus; sat nitidus; piceo-brunneus, antennis pedibusque testaceis; capite sat plano sat crebre minus fortiter punctulato, stria frontali haud antice continuata; prothorace transverso, fere ut caput punctulato, antrorsum a basi arcuatim angustato, angulis posticis rectis, stria marginali antica integra; elytris quam prothorax magis fortiter paullominus crebre punctulatis, striis nullis nisi 2 lateralibus subobsoletis; propygidio subtilissime punctulato; pygidio (feminae?) subgibbo sulcis obliquis 2 postice conjunctis instructo; prosterno bistriato; stria mesosternali biangulata; tibiis anticis fortiter dilatatis, denticulis valde minutis 6 extus armatis. Long., $\frac{3}{4}$ l.; lat., $\frac{2}{3}$ l.

The denticulations of the front tibiæ are so minute as to be scarcely distinct without the use of a compound microscope; four of them are larger than the other two. I do not think this species is very close to any previously described; it is probably nearest to *P. miliaris*, Mars., from Western Australia.

New South Wales; Blue Mountains.

PHALACRIDÆ.

LITOCRUS.

L. Sydneyensis, sp. nov. Obovatus; nitidus; piceo-niger, antennis palpis pedibusque testaceis; capite prothoraceque vix perspicue punctulatis; elytris vix striatis, striis antice vix manifeste postice gradatim magis perspicue punctulatis, interstitiis fere lævibus. Long., 1 l. (vix); lat., $\frac{3}{5}$ l.

Differs from *L. alternans*, Blackb., *inter alia* by the absence of conspicuous punctures in the alternate interstices of the elytra; from *L. frigidus*, Blackb., by its entirely testaceous antennæ; from *L. lateralis*, Blackb., and *suturellus*, Blackb., by the almost entire absence of sculpture on the front half of the elytra; from *brunneus*, Er. (judging by the description of that species), by its darker colour and smaller size; and from its other previously described congeners by the want of a pattern on the elytra. It is a typical *Litochrus*, and therefore differs structurally in the tarsi from the species which I have attributed doubtfully to this genus.

New South Wales; on flowers near Sydney.

NITIDULIDÆ.

NOTOBRACHYPTERUS (gen. nov.).

Brachyptero affinis sed prosterno in processu distincto pone coxas anticas producto.

I do not find any other difference from the genus *Brachypterus* in the species for which I propose this new name; they have (as in *Brachypterus*) two segments of the abdomen uncovered, bilobed maxillæ (I have been able to spare for dissection only one of the species described below, but it is reasonable to suppose the maxillæ of the others similar), head devoid of antennal sulci, basal joints of tarsi dilated. The species described below have altogether the facies of *Brachypterus*. I have not seen a true *Brachypterus* (with prosternum not produced behind the front coxæ) taken in Australia; but two species have been attributed to the genus:—*B. metallicus*, Reitter, from "Australia," and *testaceus*, Bohem., from "Sydney." The former of these I have certainly not seen; the latter is approached by an example in my collection from W. Australia, which, however, has the prosternum produced hindward, and therefore is not a true *Brachypterus*, but as it is quite possible that this character may have escaped the notice of M. Bohemann, and I am unable to specify any other well-defined distinction in the example before me, I regard it as possibly *N. testaceus*, and refrain from describing it, although I have little doubt that a comparison of types would show them to be two species.

N. australis, sp. nov. Ovalis [femina (?) latiori]; vix perspicue pubescens; supra brunneus, corpore subtus antennis pedibusque testaceis; capite antice transversim impresso prothoraceque parum subtiliter vix crebre punctulatis; hoc ad basin quam elytrorum basis paullo latiori, fortiter transverso, antice sat angustato angulis posticis rotundatis; elytris fere ut prothorax punctulatis. Long., $1\frac{1}{5}$ l.; lat., $\frac{7}{10}$ l.

Compared with *B. gravidus*, Ill., which it equals in size, this species is somewhat wider and more robust and less pubescent and differently colored; it also differs *inter alia* in the following characters; the punctures on the head and prothorax are distinctly larger and not so closely crowded together, those of the elytra are less deeply impressed as well as larger and less close, the propygidium is coarsely coriaceous rather than distinctly punctulate.

W. Australia; taken by E. Meyrick, Esq.

N. creber, sp. nov. Ovalis; subtiliter pubescens; piceo-niger, ore antennis pedibus elytrorum segmentorumque dorsalium apice et segmentis ventralibus apicalibus totis rufescentibus vel testaceis; capite prothoraceque crebre minus subtiliter punctulatis, hoc ad basin quam elytrorum basis paullo latiori, sat transverso, antice sat angustato, angulis posticis rotundatis; elytris crebre squamoso-punctulatis vel potius coriaceis; propygidio postice in medio angulato. Long., 1 l.; lat., $\frac{1}{2}$ l.

This species seems distinct from the others of the genus and from *B. testaceus* and *metallicus* by its nearly black colour (which seems constant, as I have seen 7 or 8 examples). It is also distinct by the sculpture of its elytra which are coriaceous rather than definedly punctulate, although from a certain point of view fine punctures can be seen mixed with a network of fine wrinkles; the sculpture is altogether finer and feebler than on the elytra of the European species of *Brachypterus* known to me (e.g., *gravidus*, *pubescens*, *urticæ*). The shape of the hind margin of the propygidium, strongly bisinuate with the middle produced in a sharp angle (in one sex at any rate), also seems characteristic.

S. Australia; Port Lincoln district.

N. bifoveatus, sp. nov. Ovals; vix perspicue pubescens; testaceus elytris indeterminate infuscatis; capite antice foveis 2 transversim positis impresso prothoraceque distincte subfortiter sat crebre punctulatis; hoc fortiter transverso, antice minus angustato, angulis posticis rotundatis; elytris subtilius subsquamose vix crebre punctulatis. Long., 1 l.; lat., $\frac{1}{2}$ l. (vix).

This little species is distinguishable by the two well-defined and distinct round foveæ placed transversely on the line dividing the clypeus from the hinder part of the head. From the species which I take to be possibly *Brachypterus testaceus*, Bohem., and from *N. creber* it also differs by the much more distinct and less crowded puncturation of its head and prothorax. It is very near *N. australis*, Blackb., but differs by its smaller and narrower form, its different colour, the foveæ on its head (which in *N. australis* are replaced by a short transverse sulcus), the considerably more sparse puncturation of its head, and the evidently more quadrate form of its prothorax.

S. Australia; near Adelaide.

N. nitidiusculus, sp. nov. Ovals; tenuiter pubescens; niger; antennis palpis pedibusque rufo-testaceis; capite sat æquali, sat crebre minus profunde nec subtiliter punctulato (certo adspectu subconcentrice rugato); prothorace fere ut caput punctulato et (certo adspectu) confuse rugato, fortiter transverso, antice sat angustato, angulis posticis rotundatis; elytris sat crebre minus profunde nec subtiliter subsquamose punctulatis. Long., 1 l.; lat., $\frac{1}{2}$ l. (vix).

Var. minor, supra brunnescens.

A very nitid little species resembling *N. creber* in colouring, but differing from that species *inter alia* in its much feebler but less fine puncturation. From the other species described above it differs by the even surface of its head. From the insect mentioned above as possibly *B. testaceus*, Boh., it differs *inter alia*

by the very much less close puncturation of its head, and from *B. metallicus*, Reitt., by the total absence of any metallic tone of colouring.

W. Australia; taken by E. Meyrick, Esq.

N. lilliputanus, sp. nov. Ovals; tenuiter pubescens; brunneus, antennis palpis pedibusque dilutioribus; capite æquali subtiliter minus crebre punctulato; prothorace sat transverso, antice minus angustato, subtilissime sat sparsim punctulato, angulis posticis rotundatis; elytris subtiliter magis crebre subaspere punctulatis. Long., $\frac{7}{10}$ l.; lat., $\frac{2}{5}$ l. (vix).

Its extremely small size will distinguish this species from its allies. The even surface of its head associates it with *nitidiusculus*, *creber*, and the species I have called *testaceus*?, all of which are very differently punctured.

S. Australia; I am doubtful of the exact habitat, but believe it to be near Adelaide.

IDÆTHINA.

I. cincta, Blackb. I have recently received from M. Grouvelle an example of *I. Deyrollei*, Reitt., which M. Grouvelle informs me has been compared with the type. In describing *I. cincta* (Tr. R. Soc. S.A., 1891, p. 107) I expressed some slight doubt as to its generic identity with the typical species, which, however, M. Grouvelle's favour has proved to have no foundation. In fact, *I. cincta* is nearer to *Deyrollei* (even specifically) than I had supposed. Compared with the example of the latter (from N.S. Wales) which, M. Grouvelle has sent, its elytra are distinctly striated throughout, whereas, at any rate near the suture, there are no striæ in the N.S. Wales specimen. In *I. cincta* moreover the underside is much more closely punctulate; this is especially noticeable on the middle part of the metasternum which, in the example from M. Grouvelle, is very nitid and bears only very sparse and fine puncturation.

COLYDIIDÆ.

TRISTARIA.

I do not think there can be any doubt that the species described below should be referred to this genus, which has very strongly marked characters; the tetramerous tarsi, 2-articulate antennal club, very widely separated coxæ, and elongate basal ventral segment of *Bothrioideres*, in combination with considerable elongation of the palpi and antennæ, partial exposure of the pygidium, slenderness of tibiæ, &c. The species described below agrees very well with the diagnosis of this genus in respect of all the above-named characters, but it has not "simple mandibles,"

those organs being truncate at the apex, and having a short sharp piece projecting from the external angle of the truncation; nor does the labrum quite agree with the diagnosis which merely characterises it as "broad, rounded externally," whereas in the species before me it is narrowed from base to apex, with the sides little or not rounded, the surface set with numerous long fulvous hairs, and the apex deeply impressed above so as to give an emarginate appearance. These discrepancies do not seem sufficient to justify the creation of a new genus.

T. labralis, sp. nov. Oblonga; sub parallela; sub depressa; corpore subtus (meso- et meta-sternis nigris exceptis) antennis pedibusque obscure rufis nitidis, corpore supra subopaco pilis brevissimis fulvis sat dense vestito, lateribus breviter confertim fimbriatis; capite prothoraceque nigris crebre subtilius profunde punctulatis; hoc transversim quadrato utrinque in disco vix manifeste impresso, linea media vix notata, lateribus fere rectis, angulis sat rectis; elytris rufobrunneis confertim subtiliter punctulatis, sculptura apicem versus vix obsolescenti; corpore subtus subtilissime sparsissime, sternis ad latera multo magis fortiter subrugulose, punctulatis. Long., $1\frac{4}{5}$ — $2\frac{1}{2}$ l.; lat., $\frac{1}{2}$ — $\frac{7}{10}$ l.

The elytra are (very noticeably) still more closely and finely punctured than the prothorax; on the latter the punctures in some lights seem to run into fine wavy wrinkles placed more or less longitudinally. Apart from the structural characters mentioned above, this species seems to differ from the two previously described by its elytral sculpture scarcely if at all growing feebler near the apex, also by its colour.

Victoria; near Cheltenham; sent by C. French, Esq.

CUCUJIDÆ.

LÆMOPHLCÆUS.

L. Australasiae, sp. nov. Sat elongatus, postice nonnihil angustatus; depressus; nitidus; glaber; testaceus, elytris ante apicem fascia lata infusata ornatis; fronte sat convexa, linea longitudinali mediana impressa; capite prothoraceque sparsim minus subtiliter punctulatis; hoc sat transverso, postice leviter angustato, utrinque unistriato, striis pone medium fovea profunda elongata impressis, lateribus vix arcuatis, angulis anticis dentiformibus, posticis obtusis; scutello transverso; elytris punctulato-striatis in disco utrinque longitudinaliter concavis, ad apicem conjunctim rotundatis.

Maris antennis quam corpus vix (feminae tertia parte) brevioribus. Long., 1 l.; lat., $\frac{3}{10}$ l.

The deep and elongate fovea into which the prothoracic striæ are dilated immediately behind the middle will distinguish this species, I think, from all its described Australian congeners. The wide blackish fascia occupying nearly all the apical half of the elytra furnishes another conspicuous character.

Victoria; taken by Mr French in the Dandenong Ranges.

CRYPTAMORPHA.

- C. Macleayi*, sp. nov. Minus elongata; sparsim longe pubescens; obscure brunneo-testacea, elyris circa scutellum et transversim pone medium plus minusve distincte infuscatis; capite sat opaco sparsim sat fortiter (nullo modo rugulose) punctulato, sulcis frontalibus subtilibus a lateribus longe remotis; prothorace leviter transverso crebre fere rugulose punctulato, lateribus subrotundatis vix crenulatis; elytris sat fortiter punctulato-striatis, interstitiis subtiliter seriatim punctulatis. Long., $1\frac{1}{5}$ l.; lat., $\frac{3}{5}$ l.

The most striking characters of this species appear to be the opacity of its head, the extreme fineness of the frontal sulci (especially the inner one), and the unusual width of the space that separates the inner sulci from the eye. I have named it after the late Hon. Sir W. Macleay.

N. S. Wales; Blue Mountains; not rare among dead leaves of *Eucalyptus*.

MYRABOLIA.

- M. Lindensis*, sp. nov. Testacea; subnitida; oblonga; subtiliter fulvo-pubescens; vix depressa; capite prothoraceque crebre subtilissime punctulatis; hoc subquadrato, leviter transverso, subtiliter reflexo-marginato, æqualiter leviter convexo, lateribus subparallelis, angulis posticis subacutis; elytris subtiliter punctulato-striatis, interstitiis subtilissime punctulatis et (præcipue marginem versus) subtiliter carinatis; corpore subtus confertim subtiliter punctulato. Long., $1\frac{1}{10}$ l.; lat., $\frac{2}{5}$ l. (vix).

The prothorax resembles in outline that of *M. Haroldiana*, Reitt., but is a little narrower, and has the hind angles quite sharply defined; it is considerably more finely punctured, and has no trace of an impression near the front. It differs also from *M. Grouvelliana*, Reitt. (of which *M. Grouvelle* has very kindly given me a type), by the much straighter sides of its prothorax, the much sharper hind angles and finer puncturation of the same and the closer puncturation of its metasternum.

The very fine slightly raised lines running down the elytra are not peculiar to this species, as I find them distinctly traceable its two described congeners.

S. Australia; under bark of *Eucalyptus* near Port Lincoln.

M. parva, sp. nov. Ferruginea; subnitida; oblonga; subtiliter fulvo-pubescentis; vix depressa; capite prothoraceque subtiliter vix crebre punctulatis; hoc subquadrato sat transverso, subtiliter reflexo-marginato æqualiter leviter convexo, lateribus subparallelis, angulis posticis subacutis; elytris subtiliter punctulato-striatis, interstitiis subtilissime punctulatis et (præcipue marginem versus) subtiliter carinatis; corpore subtus confertim subtiliter punctulato. Long., $1\frac{1}{10}$ l.; lat., $\frac{2}{3}$ l. (vix).

The prothorax, in outline, resembles that of *M. Haroldiana*, Reitt., but has the hind angles distinctly sharper; it is devoid of the discal depression, and its puncturation is evidently less close. The shape of the prothorax distinguishes this species from *M. Grouvelliana*. From *M. Lindensis* it differs by its prothorax, evidently more transverse and (together with the head) considerably more strongly punctulate.

N. S. Wales; near Sydney.

M. Haroldiana, Reitt. The habitat of this species is given as "Australia;" I have taken an insect which agrees well with the description in various localities in S. Australia; under bark of *Eucalyptus*.

CRYPTOPHAGIDÆ.

CRYPTOPHAGUS.

C. gibbipennis, sp. nov. Sat elongatus, postice angustatus; minus convexus; ferrugineus, elytris circa scutellum et in apice infuscatis; pube fulva minus crebre vestitus; prothorace vix transverso, subfortiter sat sparsim punctulato, ante scutellum gibbo, lateribus fere rectis leviter sinuatis, angulis omnibus acutis; elytris juxta scutellum utrinque gibbis, ut prothorax punctulatis; tarsorum articulo primo sat brevi; abdomine plus minusve infuscato. Long., 1 l. lat., $\frac{2}{3}$ l. (vix).

A ferruginous red species with the region of the scutellum and the apices of the elytra infuscate, or almost black. The gibbosity on the base of the prothorax seems to be outlined (except on the actual base, which it touches) by a feeble sulcus; the two gibbosities (placed one on either side of the scutellum) on the elytra are more conspicuous than that on the base of the prothorax. The antennæ laid back slightly surpass the base of the prothorax; their joints 3-8 are of about equal thickness and length (except that 3 is slightly longer than the others), 1 and 2 are much thicker but scarcely longer than 3, 9 and 10 strongly transverse and scarcely different *inter se*, 11 a little longer and scarcely transverse.

This species is certainly near *Cryptophagus*, with which it agrees in its males being heteromerous, while the females are pentamerous. Its comparatively parallel and depressed form, and the nearly straight sides of the prothorax, which are quite devoid of inequalities, give it a somewhat different facies, but I do not find any satisfactory character on which to found a new genus for it.

Victoria; Dandenong Ranges (Mr. French); also Tasmania.

ATOMARIA.

A. eucalypti, sp. nov. Sat late ovalis; sat nitida; sat convexa; sparsim pubescens; ferruginea, antennarum clava et elytris (basi apiceque exceptis) obscurioribus; capite prothoraceque sat crebre subrugulose, elytris sparsim subtiliter, punctulatis; prothorace sat æquali, fortiter transverso, antice in medio late sat fortiter producto, ad basin marginato, antice quam postice paullo augustiori, angulis posticis acutis retrorsum directis; capite antice subelongato; antennis basi distantibus. Long., $1\frac{1}{4}$ l.; lat., $\frac{3}{5}$ l.

Possessing only a female of this species, I am unable to say positively that the male has pentamerous tarsi, placing it in *Atomaria*, but its general characters and superficial appearance are so decidedly of that genus that I have no hesitation in placing it there provisionally. The head rather strongly produced in front of the antennæ may perhaps suggest the want of a new generic name, but as the description of the Australian *Cryptophagidæ* has hardly been touched, it would be a mistake to form new genera at present on any but very strong characters. In my opinion it is always wiser for the describer of species to attribute to an existing genus any species that is not so distinct from the typical form as to render it probable that other workers would fail to look for it there, leaving generic questions as much as possible to those who make them a speciality, and as the present insect is so like an *Atomaria* superficially and structurally that no careful worker, having it before him, could fail to regard the probability of its having been attributed to that genus, my principle leads me to place it there instead of forming a new genus on slight characters.

The darkest part of the infuscation of this insect is on the elytra, where it is quite of a pitchy tone, and is fairly distinctly limited, taking the form of a very wide fascia, leaving about the basal and apical quarters of the elytra of the rufous ground-colour. The antennæ are very widely separated, and their club is unusually strong and abrupt; they are, in fact, suggestive of *Cryptophagus*, but the general appearance and the simple margins of the prothorax are out of harmony with that genus.

N. S. Wales; Blue Mountains; under bark of *Eucalyptus*.

DERMESTIDÆ.

TROGODERMA.

T. Froggatti, sp. nov. Elongato-ovale; nigro- et rufo-hirtum; nigrum, antennarum stipite rufo, elytris ante medium fascia rufa (suturam haud attingenti) ornatis, lateribus apiceque rufis; subtilius sat sparsim punctulatum, sulcis antennariis latis minus profundis triangularibus, postice leviter clausis.

Feminae (?) antennarum clava ovali 5-articulata (quam articuli 1-6 conjuncti multo longiori), hujus articulis 1-3 ex ordine latioribus, 4° quam 3^{us} paullo angustiori, ultimo quam præcedentes 2 vix breviori. Long., $1\frac{3}{5}$ l.; lat., $\frac{4}{5}$ l.

A very distinct species on account of the markings on its elytra; its prosternal sulci, while very distinct from the narrow sharply cut furrows of *T. Lindense*, Blackb., and its allies, are deeper than in the species which I have tabulated (Tr. Roy. Soc. S. A., 1891, p. 129) as having feeble prosternal sulci. In the tabulation in question this species would fall beside *T. Meyricki*, from which it differs *inter alia* by the markings on the elytra, and perhaps in the number of joints composing the antennal club in the male. I do not feel sure of the sex of the two specimens before me. The markings on the elytra are very like those of *Cryptorhopalum Australicum*, Blackb.

N. S. Wales; taken by Mr. Froggatt, near Yass.

T. singulare, Blackb. In my description of this species (Trans. Roy. Soc. S. A., 1891, p. 129, line 31) for "quam articulati, 1-4," read "quam articuli 1-4."

LAMELLICORNES.

ONTHOPHAGUS.

O. Geelongensis, sp. nov. Brevis; subnitidus; setis erectis vestitus; piceus (elytris dilutioribus) læte viridi-micans, colore viridi in clypeo corpore subtus tibiis tarsisque carente, antennis rufescentibus; clypeo confluentem ruguloso, capite postice prothorace et pygidio sat crebre sat fortiter punctulatis; elytris ad latera confuse fortiter sat crebre punctulatis puncturarum series 14 geminatim positas gerentibus, interstitiis vix convexis sat lævibus; tibiis anticis extus 4-dentatis.

Maris (?) capite transversim 2-carinato, carina antica in medio tuberculiformi. Long., $2\frac{1}{5}$ l.; lat., $1\frac{2}{5}$ l.

The interstices of the striæ on the elytra would be lævigate were it not for the rows of punctures being a little irregular, so that here and there one of their punctures is impressed out of line, and on an interstice. The rows of punctures are arranged

in pairs, the two of each pair separated by a very fine stria, a rather wide interstice between each pair and the next pair. I have little doubt that the example before me is a male, but it is not certain owing to the want of an example of the other sex. I have not seen any other *Onthophagus* coloured as this, the general surface piceous inclining towards testaceous on the elytra, the whole upper surface with a rich green gloss, more noticeable in some than in other lights.

Victoria; near Geelong; in the S. A. Museum.

APHODIUS.

A. Frenchi, sp. nov. Obovalis; sat convexus; niger vel piceus nonnullis exemplis plus minusve rufescentibus; nitidus; clypeo antice late leviter emarginato; prothorace sat æqualiter punctulato; elytris profunde crenato-striatis, interstitiis parum convexis sparsim subtiliter punctulatis. Long., $1\frac{3}{5}$ —2 l.; lat., $\frac{7}{10}$ — $\frac{4}{5}$ l.

This little species is very like the European *A. pusillus*, Sturm, differing little from it except in the more evident emargination of the front of the clypeus, the much closer puncturation of the prothorax (the punctures of which are of uniform size, and about as large as the larger punctures on the prothorax of *pusillus*, though becoming a little finer close to the front margin), and the somewhat smaller teeth of the front tibiæ, the uppermost tooth being, moreover, a little more widely separated from the middle one. It agrees with *A. pusillus* in the following characters:—Scutellum small, setæ of the hind tibiæ elongate, prothorax margined behind and with blunt hind angles, mesosternum finely carinate.

This species is very distinct from all hitherto described as Australian, nor can I identify it as introduced from any other country, although in so enormous and widely distributed a genus as *Aphodius* it is difficult to be certain on this point.

S. Australia and Victoria; common.

A. Lindensis, sp. nov. Minus elongatus; subopacus, coriaceus; lividus, capite prothoracisque disco piceis, elytris obscure piceo-umbratis; capite prothoraceque sparsim fortiter punctulatis; illo æquali, clypeo antice sat reflexo late leviter rotundato; prothorace sat transverso postice haud marginato, lateribus antice fortiter rotundatis postice fortiter sinuatis; elytris fortiter striatis, interstitiis plus minusve convexis (1° , 3° , 5° que quam cetera magis convexis); tibiis anticis extus sat fortiter 3-dentatis; mesosterno haud carinato. Long., $2\frac{1}{2}$ l.; lat., $1\frac{1}{4}$ l.

Seems to be near *A. Candezei*, Har., but that species is

described as being larger, with three tubercles on the head, and the basal margin of the prothorax entire.

The scutellum is moderately small (about the same size as in *A. Howitti*, Hope), and is concave and punctured in the basal part; the hind tibiæ are fringed with both long and short bristles; the prothoracic border extends along the base, on either side, very little within the hind angles, which are roundly obtuse; the legs are comparatively long and slender, the hind tibiæ only very moderately dilated at the apex, with their two transverse keels well marked (the lower one the stronger of the two); the elytra are roundly obtuse at the shoulders (much as in *A. Howitti*); the prothorax is nearly lævigata on a wide space down the middle. The markings on the elytra consist of longitudinal piceous blotches, and are scarcely marked in the type; probably they vary.

S. Australia; a single example from the Port Lincoln district.

N.B.—A very small example of *Aphodius* (long., 2 l.) in the S. A. Museum,—locality unknown,—scarcely differs from this species; it has a scarcely traceable indication of a tubercle on either side of the forehead, and may be the male.

ATÆNIUS.

A. mendax, sp. nov. Sat angustus; parallelus; nitidus, niger; vel nigro-fuscus, pedibus dilutioribus, clypei marginibus antennisque testaceis; clypeo rotundato-emarginato; capite sat crebre sat fortiter punctulato, prothorace æquali dupliciter (subtiliter et sat crasse) nec rugulose punctulato; elytris sulcatis, sulcis catenulato-punctulatis, interstitiis carinatis sparsim subtilissime punctulatis, humeris dentatis. Long., $1\frac{4}{5}$ l.; lat., $\frac{7}{10}$ l.

Near *A. australis*, Har., but differing in the much less close puncturation of the head and prothorax, in the absence from the latter of any trace of a median channel, and in the narrower sulci of the elytra.

Victoria; taken in Fern Gully by Mr. French.

A. torridus, sp. nov. Angustus; parallelus; nitidus rufo-brunneus; clypeo rotundato-emarginato; capite in medio gibboso, antice vix perspicue postice et ad latera distincte sat crebre punctulato; prothorace æquali, dupliciter (subtiliter et subfortiter) nec rugulose punctulato; elytris sulcatis, sulcis catenulato-punctulatis; interstitiis vix perspicue punctulatis, humeris dente perparvo armatis. Long., $1\frac{1}{3}$ l.; lat., $\frac{1}{2}$ l. (vix).

A very small species not closely resembling any of its previously described Australian congeners. I have compared it

with the *Aphodiides*, from N. W. Australia, described by Sir W. Macleay, and find it quite distinct from them all.

N. Territory of S. Australia.

PROCTAMMODES (gen. nov.).

I propose this name as a substitute for *Proctophanes*, Har. (1861), the name *Proctophana* having been previously proposed by Lacordaire (1848) for a genus of *Clythrines*. I cannot find that this *double emploi* has been as yet corrected.

TROX.

T. Elderi, sp. nov. Latissimus; minus convexus; subnitidus; niger; capite crebre fortiter punctulato, haud tuberculato; prothorace quam longiori tribus partibus latiori, postice lobato, supra costis tuberculisque angustis inæquali (interstitiis planis in medio punctulatis latera versus granulatis), postice quam antice tribus partibus latiori, angulis posticis rectis, lateribus crenulatis; elytris confuse minus crebre granulatis et tuberculorum magnorum obtusorum seriebus 3 ornatis, lateribus leviter crenulatis; tibiis anticis extus 4-vel 5-dentatis, dente apicali plus minusve bifido. Long., 12 l.; lat., 8 l.

Differs from *T. Castelnavi*, Lansb., *inter alia* by the non-dentate lateral margins of its elytra; from *T. Dohrni*, Har., and *T. gigas*, Har., by its non-tuberculate head, &c.; from all three by its very wide and somewhat depressed form, and the numerous teeth on the margin of the front tibiæ; also differs from *T. Dohrni* and *Castelnavi* by the slenderness of the costæ and tubercles of its prothorax, which appear as linear elevations placed on a flat surface, and separated from each other by spaces at least two or three times as wide as each costa.

South Australia; taken by Professor Tate near Ooldea; also in the same region by Mr. Helms, of the Elder Exploration party.

T. gigas, Har. The commonest of the large species of *Trox*, which Dr. Sharp tells me is identical with the species labelled *T. gigas* in the British Museum, does not agree at all satisfactorily with the description of that species, from which it differs as follows:—The head is not bituberculate, but has a single transverse scarcely defined prominence at the base of the clypeus; the tubercles and costæ of the prothorax are not “angustuli,” but are as wide as they can well be, there being no flat space at all between one and another of them; on the elytra the external (not the middle) row of tubercles is the shortest. In other respects this insect agrees with the description. I propose to call this form *T. Tatei* (? = *gigas*, var.).

I have seen a large number of examples of the large species of *Trox* (*Megalotrox*, de Borre) all from South-Western Australia; but have not yet met with an example agreeing with the description of *T. gigas*.

T. eremita, sp. nov. Oblongo-ovalis; minus nitidus; niger antennis (articulo primo excepto) rufis, capite (infra clypeum) rufo-hirto, tibiis capillis elongatis rufis fimbriatis; capite crebre rugulose punctulato distincte bituberculato, antice triangulari; prothorace quam longiori fere duplo latiori, postice quam antice plus quam dimidio latiori, postice lobato (lobo ante scutellum rotundato), fere ut caput punctulato, supra costis minus gracilibus inæquali, lateribus modice explanatis vix manifeste trisinuatis, ante angulos posticos subrectos manifeste emarginatis; elytris seriatim granulatis et tuberculorum minus elevatorum seriebus circiter 8 ornatis (harum serierum 2^a, 4^a que tuberculis quam ceterarum majoribus instructis, 5^a, 7^a que tuberculis quam granuli adjacentes vix majoribus instructis); tibiis anticis externe tridentatis; processu prosternali modico, in medio acuminato. Long., 7—8 l.; lat., $4\frac{1}{3}$ — $4\frac{1}{2}$ l.

Considerably like *T. Augustæ* in size and build, but with the elytra bearing rows of very distinct tubercles, many of which are fairly large, although only feebly protuberant; the tubercles near the base are more or less run together into a costiform appearance in the second and fourth series. I do not find any of the nitid spots on the elytra (distinct from the tubercles of the series) which are present in so many of the genus. Very distinct from *T. Augustæ* by the shape of the prosternal process also. The middle costæ of the prothorax are very much abbreviated behind. This species is probably near *T. dilaticollis*, Macl., in which, however, the prothorax is stated to be not at all narrower in front than at the base, and also perhaps near *T. Brucki*, Har., which, however, seems to be a much smaller species (long., $10\frac{1}{2}$ mm.), with the clypeus not angulated anteriorly.

Central Australia; MacDonnell Ranges.

T. quadridens, sp. nov. Oblongo-ovalis; sat opacus; niger, antennarum stipite rufo; capite infra clypeum obscure rufo-hirto, tibiis capillis elongatis rufis fimbriatis; capite obscure inæqualiter rugulose punctulato fortiter bituberculato antice vix angulato; prothorace quam longiori circiter dimidio latiori, postice lobato (lobo ante scutellum rotundato), postice quam antice circiter dimidio latiori, inæqualiter (hic confertim subtilius illic sparsius minus subtiliter) punctulato, supra costis sat robustis inæquali, lateribus fortiter trilobis, angulis posticis sat acutis; elytris undulatim sat

fortiter longitudinaliter granuloso-punctulatis et tuberculorum nitidorum seriebus circiter 10 instructis (serierum 3^a, 5^a, 7^a, 9^a tuberculis quam ceterarum majoribus nec magnis, ceterarum quam granuli parum majoribus), latera versus plagulis nitidis planatis nonnullis ornatis; tibiis anticis externe quadridentatis, dente subapicali quam apicalis haud minore; processu prosternali fere truncato, in medio vix acuminato. Long., 6—6½ l.; lat., 4 l.

This species is remarkable for the very strong external teeth of its front tibiæ; the tooth next above the apex is quite as large as the apical one (which is bifid); the next above that is smaller but, nevertheless, quite a strong tooth (larger than that in most species of *Trox* which is next above the apical one); the uppermost is very small. The front tibiæ are thus very much as in the West Australian species, which I believe to be *T. stellatus*, Har., in which, however, *inter alia* the elytra are very differently sculptured.

South Australia; near Port Augusta.

T. Euclensis, sp. nov. Ovatus; opacus; niger, indumento griseo vestitus; capite fortiter minus crebre punctulato, tuberculis distinctis 2 instructo; prothorace quam longiori tertia parte latiori, antice quam postice tertia parte angustiori, postice trisinuatim lobato, ut caput punctulato, supra costis tuberculisque gracilibus inæquali (costa 2^a in medio interrupta, parte interrupta tuberculo nitido instructa), lateribus trisinuatim rotundatis, angulis posticis sat rectis; elytris subseriatim sat crebre granulatis et tuberculorum parvorum seriebus circiter 7 ornatis (tuberculis his hic illic plus minusve in costis brevibus conjunctis), plagulis nitidis hic illic sparsim dispersis; tibiis anticis externe trisinuatis vel obtuse tridentatis. Long., 5—7 l.; lat., 3½—4½ l.

This species is characterised by the following in combination; frontal tubercles very well defined, "second" prothoracic costa widely interrupted behind the middle, the centre of the gap being occupied by a small shining tubercle, "fifth" prothoracic costa represented by a small shining tubercle, all the prothoracic costæ very slender, sides of prothorax gently and somewhat trisinuately rounded, rows of tubercles on the elytra rather numerous, the alternate ones containing tubercles more or less larger than the intermediate ones (those of the second and fourth rows the largest); anterior tibiæ variable externally, in some examples somewhat obtusely tridentate, in others merely trisinuate. The prosternal process is sharply pointed behind.

S. Western Australia; Eucla, &c.

T. Augustæ, sp. nov. Oblongo-ovatus; minus nitidus; niger;

capillis rufis elongatis in capite pedibusque setis brevibus rufis in elytris vestitus; capite fortiter nec crebre punctulato, sat concavo, vix tuberculato, antice subtriangulari fortiter reflexo-marginato; prothorace quam longiori plus quam dimidio latiori, antice quam postice fere duplo angustiori, postice fortissime trisinuato-lobato (lobo ante scutellum angulato), leviter minus distincte punctulato, supra costis inaequali (mediis 4 bene determinatis, ceteris fere obsoletis), lateribus valde explanatis postice leviter arcuatis antice sinuatis, angulis posticis subrectis; elytris leviter costatis, vix tuberculatis, costis alternis paullo magis elevatis, interstitiis obscure transversim rugulosis et seriatim sat fortiter punctulatis (hic illic pustulis nitidis vix elevatis plus minus distincte ornatis); tibiis anticis externe bidentatis; processu prosternali sat fortiter spiniformi. Long., 7—8 l.; lat., 4—4 $\frac{3}{4}$ l.

An extremely distinct species, notable for its elytra devoid of tubercles (the costæ being little more than crenulated even in the hinder part), its very strongly-lobed prothorax (a line joining the hind angles would pass very little behind the centre point of the segment), and the strongly-produced spiniform process of its prosternum.

S. Australia; near Port Augusta.

T. scaber, Linn. I have examples taken near Adelaide which I cannot separate from this European species; doubtless they are imported.

T. velutinus, sp. nov. Sat late ovalis; opacus; brunneo-niger, antennis testaceis, capite infra fulvo-hirsuto, corporis partibus elevatis (e.g., prothoracis et elytrorum tuberculis) rufescentibus; capite obscure ruguloso bituberculato antice vix angulato; prothorace quam longiori fere duplo latiori, postice lobato (lobo ante scutellum rotundato) postice quam antice minus quam dimidio latiori, haud punctulato, granulis ferrugineis adperso (his latera versus confluentibus et costas fere tegentibus), supra in medio costas usitatas ferenti (costis intermediis integris), lateribus arcuatis vix sinuatis, angulis posticis obtusis; elytris seriatim punctulatis (puncturis sat magnis in fundo nitidis, in seriebus sat remote positis), interstitiis sat æqualiter tuberculis parvis elongatis opacis ornatis (his in seriebus sat crebre positis, in interstitiis 3°, 5° que ad basin costas formantibus); tibiis anticis in medio dente minuto extus armatis; processu prosternali perbrevis vix acuminato. Long., 5 l.; lat., 3 $\frac{1}{2}$ l.

A very peculiar-looking species, presenting a dark-brown velvety aspect with all the raised parts appearing as rusty red spots in a

certain light, and in a different light appearing almost of the colour of the derm. The front tibiæ too are peculiar, being scarcely dilated externally into a defined tooth even at the apex, and above the apex having only a very minute sharp tooth about the middle. The example before me has no trace of a removable indumentum.

N. Queensland ; sent to me by C. French, Esq.

BUPRESTID.E.

CYRIA.

C. tridens, sp. nov. Elongata; postice angustata; supra glabra, subtus pilis pallidis vix aliter quam *C. imperialis* vestita; nigra, labro prothoracis vitta utrinque laterali antice posticeque abbreviata et elytris flavis, his nigro-notatis, pictura antice tridentis postice cultro simili; capite subfortiter acervatim punctulato, longitudinaliter inter oculos antice carinato postice sulcato; prothorace quam longiori (et postice quam antice) circiter dimidio latiori, foveis sat numerosis impresso, canaliculato, sparsim subtiliter (angulos anticos versus, nec ad latera, magis crebre) punctulato, lateribus a basi ad apicem sinuatim convergentibus, angulis posticis acutis sat productis; elytris apice singulatim subspinoso-acuminatis, lævibus, puncturarum seriebus intra substantiam positis per superficiem conspicuis; prosterno antice et ad latera sat fortiter rugulose punctulato retrorsum gradatim fere lævi; metasterno ad latera sparsim sat fortiter punctulato, in medio fere lævi, abdomine ad latera sparsim subtiliter punctulato in medio lævi. Long., $11\frac{1}{2}$ l.; lat., $3\frac{1}{2}$ l.

The pattern on the elytra at once distinguishes this species; it consists of a single common black mark, which (in the example before me) touches base, apex, or lateral margin only at the base of the suture. This black mark, in the hindmost third part of the elytra, is shaped like a ploughshare, from the middle of which (on the suture), rises a mark resembling a handle; on this handle, and occupying more than the front half of the elytra, rests the anterior portion of the black mark, which resembles a trident, with the three prongs directed forward, the lateral prongs nearly (and the middle one quite) reaching the base of the elytra.

Compared with *C. imperialis*, Don., apart from colour and pattern, this species is, throughout, much more finely punctured. The prothorax is not more closely or coarsely punctured on the sides than on the disc; besides the round fovea at the base of the median line, there are two sharply defined foveæ on either side, placed longitudinally, about half-way between the median

line and the lateral margins, and two more on either side still nearer to the lateral margins; the elytra (except at the extreme base) are absolutely devoid of sculpture; the rows of what, on a casual glance, seem like punctures being on the underside, and only showing through. The elytra do not nearly meet at the sutural apex, but each elytron is separately narrowed behind into a subspiniform point.

NEOCURIS.

This genus seems to be very near *Anilara*, and both are near *Anthaxia*. They are both distinguished from the Australian genera allied to them by the total absence of longitudinal striae on the elytra. M. Thomson says that *Anilara* appears to have only four segments in the hind body, but I think this must be a mistake; at any rate, I have not seen any species in which I cannot trace a fine suture between the first and second segments, making the number five; and I think I certainly know *A. Adalaidæ*, Hope. *N. Mastersi*, Macl., is described as having the elytra punctulate-striate, but I should say there is a doubt whether this is a true *Neocuris*. Probably all the Australian species attributed to *Anthaxia* are either *Neocuris* or *Anilara*. *Anilara* seems to be best distinguished from *Neocuris* by its short stout tarsi; its prothorax also is more strongly rounded laterally (as M. Thomson points out), but this character does not seem equally reliable in all the species. M. Thomson says that the apical ventral segment in *Anilara* is excavated; I do not find this to be quite an exact description of the structure, but its free margin has a distinct raised border running completely round it, which seems to be invariable, and undoubtedly gives it a certain appearance of being excavated; this border being absent in *Neocuris*.

Neocuris as at present constituted may be characterised by its small scutellum and moderately slender and elongate tarsi in combination with absolutely non-striate elytra and apical ventral segment devoid of spines, and of a continuous raised border. I think the species presenting these characters will need further subdivision eventually, as some of them have the elytra much shorter than the hind body (a character not mentioned by M. Thomson), but it will perhaps be well for the present not to treat this character as generic. The following are new species:—

N. dilataticollis, sp. nov. Convexiuscula; sparsim pubescens; supra ænea, capite viridi, elytris antice latera versus viridimicantibus, utrinque postice vitta submarginali læte purpurea, corpore subtus femoribusque viridibus, antennis tibiisque obscuris; capite plano, crebre fortiter subrugulose punctulato; prothorace fortiter transverso, ut caput

punctulato (latera versus paullo crassius), lateribus ab angulis anticis ad medium leviter divergentibus pone medium sat fortiter dilatato-rotundatis, margine antico fere recto, basi media lobata, angulis posticis acutis retrorsum directis; scutello haud transverso postice acuto; elytris obscure rugulosis, antice manifeste convexis, lateribus postice subtiliter denticulatis; prosterno fere ut pronotum sed paullo magis rugulose, abdomine sat æqualiter (ad latera paullo magis crebre) punctulatis; segmento ventrali apicali leviter late emarginato. Long., $2\frac{1}{2}$ l.; lat., 1 l.

The elytra of this insect are not shorter than the hind body. The most striking character lies in the shape of the prothorax, that segment increasing in width only gently from the front to about the middle, but thence nearly to the base being much more strongly and more abruptly dilated; the sides, however, owing to the strong curve of their hinder part are convergent close to the base.

Compared with *N. Fortnumi*, Hope, the principal differences (apart from colour and markings) are as follows:—The head is not concave, and its sculpture is not at all longitudinal; the prothorax is differently shaped, and is very much more closely and strongly punctured; the elytra are distinctly less coarsely sculptured.

N. S. Wales; near Sydney.

N. nigricans, sp. nov. Convexiuscula; sparsim pubescens; tota nigro-ænea; capite plano vel potius subconvexo, crebre fortiter subrugulose punctulato; prothorace fortiter transverso, confertim rugulose punctulato, lateribus ab angulis anticis fere ad basin leviter arcuatim divergentibus, margine antico fere recto, basi media lobata, angulis posticis acutis retrorsum directis; scutello parvo rotundato; elytris sat fortiter rugulosis, antice sat fortiter convexis, lateribus postice subtiliter denticulatis; prosterno fere ut pronotum punctulato; abdomine coriaceo et ad latera sat fortiter squamose punctulato; segmento ventrali apicali toto sat fortiter squamose punctulato, postice sat anguste angulatim nec profunde emarginato. Long., $2\frac{2}{3}$ l.; lat., 1 l.

This species is very like the preceding, and I have felt some doubt as to whether its differences might be merely sexual, but I do not think this can be the case. It is a shorter and wider insect, with the apical ventral segment differently shaped, and all the ventral segments differently sculptured. These characters are very likely to be sexual, but in addition the colour is widely different, the whole sculpture of the upper surface is more rugulose, the outline of the prothorax is different, and the front

margin of the elytra is quite strongly produced, instead of being only gently convex.

N. S. Wales ; Blue Mountains.

MELOBASIS.

M. Derbyensis, sp. nov. Supra viridi-aurea, subtus viridis vix auratus; nitida; fere glabra; capite plano confertim fortiter punctulato et pilis brevibus albidis dense vestito; prothorace quam longiori duplo (postice quam antice fere tertia parte) latiori, nullo modo canaliculato, sat fortiter minus crebre latera versus magis crebre (fere ut *M. verne*, Hope, sed paullo minus fortiter) punctulato, lateribus vix arcuatis, margine antico leviter emarginato vix bisinuato, basi bisinuata, angulis posticis sub acutis leviter retrorsum directis: elytris punctulato-striatis, latera versus striis obsolete et puncturis confusis, interstitiis suturam versus subtilissime sparsissime punctulatis, lateribus postice denticulatis; prosterno antice declivi. Long., $5\frac{1}{2}$ l.; lat., 2 l.

The prothorax scarcely differs from that of *M. verna*, Hope, in any respect except that the front margin is scarcely at all bisinuate, and that the puncturation is a trifle finer. The elytra are very much more distinctly striated than in that species, the interstices of the striæ being almost lævigate. The puncturation of the underside is evidently finer than in *M. verna*. The following characters in combination will, I think, distinguish it from all its described congeners; colour of upper surface bright greenish-golden, head flat, pubescent and very closely punctured, prothorax without any trace of a dorsal line beyond a faint scratch at the base only discernible in certain lights, elytra quite devoid of costæ, but exceptionally distinctly striate.

N.W. Australia; King's Sound; in the collection of C. French, Esq.

STIGMODERA.

S. minuta, sp. nov. Sat angusta; capite viridi, prothorace aureo-cupreo viridique iridescenti, elytris cupreo-nigris singulis maculis 4 flavis ornatis, corpore subtus pedibusque cyaneis; capite planato crebre fortiter punctulato; prothorace quam longiori fere dimidio latiori, postice quam antice tertia parte latiori, fortiter convexo, perspicue canaliculato, crebre subtilius (quam caput minus fortiter) punctulato, lateribus leviter arcuatis, basi fortiter bisinuata in medio lobata, angulis posticis acutis; elytris sat fortiter striatis, basi antrorsum late sat fortiter arcuatim prominulis, apice oblique emarginatis et 2-spinosis, interstitiis convexis punctulatis alternis postice magis elevatis; corpore subtus fere glabro sat fortiter punctulato. Long., 3 l.; lat., 1 l.

The spots on each elytron are a nearly circular one between the scutellum and shoulder, an oblong one placed longitudinally on the lateral margin a little behind the base, a fascia-like one about the middle, touching the lateral margin but not the suture and roundly dilated at its inner extremity, and an arched fascia-like one a little before the apex touching the lateral margin but not the suture.

Of the section of *Stigmodera* having the underside and also the prothorax unicolorous, the elytra of two colours and the apex of the elytra spined, the following very small species have been described:—*sexguttata*, Macl. ; *bella*, Saund. ; *hilaris*, Hope ; *liliputana*, Thoms. ; *parva*, Saund. ; *triguttata*, Macl. ; *lena*, Thoms. Of these only the first and last bear any marked resemblance to the present species. *S. sexguttata*, Macl., seems to differ considerably in the markings, and also in having the head broadly impressed and “very finely” punctured, while *lena*, Thoms., from W. Australia, differs *inter alia* by the hindmost yellow mark on its elytra being straight.

Queensland ; sent to me by C. French, Esq.

S. septemmaculata, sp. nov. Minus lata ; minus depressa ; supra sat glabra, subtus sat dense albido-pubescentis ; obscure ænea, elytris testaceis, basi anguste æneis, maculis 7 nigro-purpureis ornatis (sc. communibus in sutura 3 utrinque marginem lateralem versus 2, posterioribus 2 in sutura conjunctis) ; capite prothoraceque confertim subfortiter (fere ut *S. amphichroce*, Boisd.) punctulatis ; illo longitudinaliter concavo ; hoc subgibboso, canaliculato, quam longiori plus quam dimidio (postice quam antice vix dimidio) latiori, lateribus sat fortiter arcuatis, basi leviter bisinuata, angulis posticis acutis ; elytris punctulato-striatis, basi late leviter arcuatis, apice oblique emarginatis et bispinosis (spinis nigris), interstitiis subtiliter sat crebre punctulatis ; corpore subtus crebre subtilius (prosterno medio postice magis sparsim magis fortiter) punctulatis. Long., $4\frac{4}{5}$ l. ; lat., $1\frac{3}{5}$ l.

The submarginal spots on the elytra are placed one a little behind the shoulder, the other scarcely behind the middle ; the sutural spots are placed one about a quarter of its length from the base, one (of a diamond shape) slightly behind the middle and one near the apex, the hinder two being narrowly connected on the suture.

This is a very distinct species, a little like *S. 6-guttata*, Macl., but much larger, and very differently coloured, with the elytra very much more deeply emarginate at the apex, the apical spines (especially the external ones) very much larger, &c.

S. Australia ; Lyndoch ; in the S. A. Museum.

S. Skusei, sp. nov. Tota læte cœrulea certo adspectu viridimicans, elytris antice ad latera et postice ante apicem transversim flavis exceptis; capite longitudinaliter concavo sat crebre sat fortiter punctulato; prothorace quam longiori (et postice quam antice) paullo plus quam dimidio latiori, basin versus in medio fortiter minus crebre punctulato (hinc antrorsum et latera versus gradatim magis crebre magis rugulose, antrorsum magis subtiliter punctulato; prothorace ut *S. S-pilotæ*, Saund., sculpturato), lateribus fere a basi ad apicem arcuatim convergentibus, basi fortiter bisinuata, angulis posticis acutis; elytris punctulato-striatis, basi antrorsum late sat fortiter arcuatim prominulis, apice oblique emarginatis, intus breviter extus fortiter spinosis, lateribus pone humeros late minus fortiter dilatatis postice denticulatis, interstitiis sparsim minus subtiliter punctulatis, antice suturam versus subplanis, latera apicemque versus sat convexis; corpore subtus sat crebre sat fortiter punctulato, breviter sparsim albido-pubescenti. Long., $6\frac{1}{2}$ l.; lat., $2\frac{3}{5}$ l.

A very pretty and distinct species, entirely (except the yellow parts of the elytra) of a rich blue colour with greenish reflections in certain lights. The elytra are more easily described if the yellow be regarded as the ground colour. The blue then appears as a very wide common sutural vitta (about as wide as each of the yellow lateral spaces) extending from the base to slightly beyond the middle of the length, where it merges in a straight fascia of the same colour (both margins of which, however, are sinuous), the front of which is a little behind the middle of the elytra; each elytron also bears a small blue spot occupying its inner apex.

N. S. Wales; taken in the Blue Mountains by Mr. Skuse.

S. hostilis, sp. nov. Nigro-ænea, elytris flavo-brunneis nigro-trifasciatis, externe rubro marginatis; fasciis in sutura conjunctis; prothorace quam elytra multo angustiori creberrime subtilius (basin mediam versus sparsius magis fortiter) punctulato; elytris punctulato-striatis, interstitiis crebre punctulatis antice suturam versus sat planis latera apicemque versus convexis, ad apicem singulatim trispinosis; corpore subtus dense sat longe piloso. Long., $5\frac{1}{2}$ l.; lat., $2\frac{1}{5}$ l.

The base of the elytra, which is narrowly black, is very distinctly wider than the base of the prothorax, and is distinctly and minutely dentiform at its humeral angles; it is widely arcuately and somewhat evenly arched forward. The front fascia is a little behind the base and is straight, its lateral apices a little produced forward, its middle with a small triangular projection nearly touching the scutellum; it does not reach the lateral

margins. The second fascia is immediately behind the middle of the length, and touches the lateral margins; it is straight and nearly twice as wide as the front fascia, its lateral apices considerably dilated. The hindmost fascia is somewhat of a half-moon shape,—viewed with the head of the insect next the observer, it resembles an open umbrella,—and is near the apex. The prothorax, at its widest, is scarcely more than three-quarters the length of the widest part of the elytra; it is half again as wide as long, and nearly twice as wide across the base as across the front. Its puncturation is about as close as that on the prothorax of *S. amphicroa*, Boisd., but is a trifle finer (except in front of the scutellum where it is stronger and less close), and less rugulose. Its form is strongly convex in all directions, so that it appears decidedly gibbous. The head is moderately elongate and moderately concave longitudinally; its puncturation is much like that of the prothorax. The underside is closely and finely punctured.

This species seems to be near *Burchelli*, L. & G., but differs from it and its described allies by the trispinose apex of each of its elytra; of the three apical spines the middle one is the largest and the least acute; the others are small and sharp.

W. Australia; near York; sent by C. French, Esq.

S. sternalis, sp. nov. Brevis; lata; depressa; fere glabra; cœrulea, capite prothoraceque supra æneis, antennis viridibus, elytris testaceis ad basin anguste obscuris, pone medium fascia angusta et in apice macula communi subquadrata nigris ornatis; capite longitudinaliter concavo, fortiter minus crebre (postice minus fortiter magis crebre) punctulato; prothorace quam longiori (et postice quam antice) duabus partibus latiori, sparsim subfortiter (latera versus paullo magis fortiter magis crebre) punctulato, lateribus a basi ad apicem arcuatim convergentibus, basi media late angulatim lobata, angulis posticis acutis; elytris striatis (striis sat fortiter punctulatis), basi antrorsum fortiter angulatim prominulis, apice emarginatis et bispinosis, lateribus pone humeros minus late sat fortiter dilatatis, interstitiis sparsim subfortiter punctulatis suturam versus in medio sat planis (basin apicem lateraque versus carinatis); corpore subtus subtiliter minus crebre punctulato; canali sternali elevato. Long., $5\frac{4}{5}$ l.; lat., $2\frac{4}{5}$ l. (vix).

Extremely like *S. Andersoni*, L. & G. It is a shorter and more depressed insect, with the elytra much more dilated behind the middle. The prothorax is much more strongly and sparsely punctulate, and is without any trace of a fovea in the hind angles; the scutellum is much less transverse; the punctures in

the elytral striæ and also on the interstices are much stronger, the interstices are very much more convex; the underside is of a bright blue colour, and the pectoral excavation (receiving the prosternal process) is strongly elevated; the pubescence of the underside and legs is very thin and inconspicuous. The external angle of the base of the elytra is strongly defined and directed outward. The apical spot on the elytra is not connected on the suture with the transverse fascia.

S. Australia; in the collection of C. French, Esq.

S. Macleayi, sp. nov. Sat lata; subtus modice albido-pubescens; obscure viridis; elytris testaceis, basi anguste viridi, sutura late viridi (colore viridi pone scutellum dilatato, mox pone medium fasciam externe violaceam ad latera emittenti, paullo ante apicem in macula magna transversa dilatato, circa apicem recurvato), macula sat parva violacea pone humeros oblique posita; capite prothoraceque creberrime subtilius punctulatis; illo inter oculos longitudinaliter concavo; hoc quam longiori vix dimidio (postice quam antice fere duplo) latiori, lateribus a basi ad apicem rotundatim convergentibus, basi media angulatim lobata, angulis posticis acutis; elytris striatis (striis subtiliter punctulatis), basi antrorsum late trisinuatim minus fortiter prominulis, apice oblique emarginatis et bidentatis, dentibus externis majoribus, lateribus pone humeros modice dilatatis, interstitiis fere ut *S. sternalis* set multo magis crebre punctulatis; corpore subtus confertim punctulato. Long., 6 l.; lat., $2\frac{1}{3}$ l.

The colour of the markings on the elytra is peculiar, the base and extreme suture being green, all the other markings deep violet. The markings on the elytra are almost exactly (save that the post-humeral spot and the post-scutellar dilatation are smaller) as depicted in the figure of *S. audax*, Saund. (Ins. Saund., III., 1, t. 1, fig. 7), which, however, is a very different insect in other respects. The base of the elytra is of the same width as the base of the prothorax, their humeral angle is acute, but scarcely dentiform. The puncturation of the head and prothorax is as in *S. ocelligera*, L. & G. Perhaps near *S. Masteri*, Macl., which, however, is described as a smaller species of a brassy or bluish-black colour, the anterior spots on the elytra as adjoining the scutellum, the apices of the elytra strongly bispinose and not marked with dark colour, &c. The description of puncturation, &c., is not definite enough for comparison. Also near *cyanicollis*, Boisd., differing *inter alia* by its prothorax at the widest across the base and more closely punctulate.

Queensland; in the collection of C. French, Esq.

S. equina, sp. nov. Minus elongata; sat depressa; supra glabra,

subtus sat dense argenteo-pubescentis; brunneo-cuprea, elytris flavis, ad basin anguste cyaneis vittis fasciisque brunneo cupreis ornatis (sc. pone humeros utrinque vitta arcuata—his fascia transversa conjunctis—fascia mox pone medium posita, macula magna apicali et a fascia antemediana ad apicem sutura); capite medio longitudinaliter canaliculato, fortiter sat crebre punctulato; prothorace quam longiori (et postice quam antice) plus quam dimidio latiori, subfortiter minus crebre punctulato, lateribus rotundatis postice sinuatis, basi leviter bisinuata, angulis posticis acutis; scutello viridi concavo; elytris punctulato-striatis, basi subrectis, apice emarginatis (haud oblique) et bispinosis, lateribus pone humeros sat fortiter subangulatim dilatatis postice subtiliter denticulatis, interstitiis sparsim subfortiter punctulatis sat convexis; corpore subtus leviter crebre punctulato. Long., $4\frac{2}{5}$ l.; lat., $1\frac{1}{5}$ l.

In the unique example before me there is a large round fovea on either side of the disc of the prothorax, which, however, may be accidental.

The markings on the elytra are much like those of *S. simulata*, L. & G. (as depicted in Tr. Ent. Soc., 1868, t. 3, fig. 5); the markings on the front half of the elytra differ only in the transverse fascia (connecting the lateral vittæ) having its front margin straight (*i.e.*, not produced forward on the suture); the postmedian fascia differs in not being dilated near the lateral margin, and having both its front and hind edge evenly arched on either side (not flexuous); the apical spot is quite different, being somewhat like that of *S. thoracica*, Saund. (as depicted Jour. Linn. Soc., vol. IX., t. 9, fig. 11),—from a certain point of view the portion of it on each elytron bears a rough resemblance to a horse's head, the apical spines being regarded as the animal's ears. The apical emargination of each elytron is *quite* apical (not at all oblique), and the spines on either side of the emargination are well defined and equal. I incline to place this species near *simulata*, although it differs much in its much smaller size, more depressed form, prothorax wider at the middle than at the base and much less closely punctured, &c I am doubtful of the sex of my example.

S. Australia; near Port Lincoln.

S. quadrinotata, sp. nov. Sat elongata; sat depressa; postice latior; supra glabra subtus breviter minus dense pubescens; capite prothoraceque subaureo-viridibus, scutello viridi, elytris testaceis externe rufescentibus (sutura viridi, basi apice et fasciis 3 cyanescentibus), corpore subtus viridi, pedibus plus minusve violaceis, capite longitudinaliter concavo; protho-

race quam longiori et postice quam antice dimidio latiori, lateribus ab angulis anticis fere ad basin rotundatim divergentibus, basi valde bisinuata, angulis posticis acutis; elytris punctulato-striatis, basi fortiter antrorsum rotundato-productis, apice oblique emarginatis et bispinosis, lateribus pone humeros modice dilatatis interstitiis sparsim punctulatis alternis convexis. Long., $4\frac{1}{5}$ l.; lat., $1\frac{3}{5}$ l.

Not unlike *S. quadrifasciata*, Saund., but much smaller and differently coloured; also the pattern on the elytra is different, the ante-median fascia being dilated (not contracted) on the suture, and reaching the lateral margins; it resembles the corresponding fascia in *S. carmineu*, Saund. (as depicted in Journ. Linn. Soc., vol. IX., tab. 10, fig. 32). The post-median fascia is very like that of *S. 4-fasciata* (as depicted loc. cit., fig. 39). The ante-apical fascia resembles the ante-median one reversed. All the fasciæ touch the external margins.

Victoria; in the collection of C. French, Esq.

N.B.—I have seen an example (from N. S. Wales) of this species in which the anterior two fasciæ of the elytra are both interrupted on either side on the disc, so that in place of those fasciæ there are two large marginal or submarginal spots on each elytron placed opposite (but not joining), corresponding dilatations of the suture. It is just possible that this variety may be *S. disjecta*, Kerremans, although it does not agree well with the description, especially in colour, the underside not being at all coppery, nor the apical part of the elytra red; but even if it should prove identical, the form I have called *S. 4-notata* is certainly deserving a name as a var.

S. dispar, sp. nov. Modice elongata; minus depressa; supra glabra, subtus sparsim breviter pubescens; læte viridis, elytris testaceis; capite prothoraceque confertim subtilius punctulatis; illo medio longitudinaliter canaliculato; hoc quam longiori (et postice quam antice) dimidio latiori, lateribus fortiter rotundatis, basi media fortiter lobata, angulis posticis minus acutis; elytris punctulato-striatis, basi valde subangulatim antrorsum productis, apice oblique minute emarginatis et bidenticulatis interstitiis sat crebre punctulatis (alternis antice, omnibus postice, sat convexis); corpore subtus crebre, prosterno medio sat sparsim, punctulato. Long., $3\frac{1}{5}$ l.; lat., $1\frac{2}{5}$ l.

The extremely brilliant green colour of every part, except the elytra—these being of a yellowish testaceous colour, without the slightest trace of any marking—will, I think, distinguish this from all the other *Stigmodera* of small size.

Queensland; in the collection of C. French, Esq.

S. canaliculata, sp. nov. Sat elongata; minus depressa; supra fere glabra, subtus sparsim breviter pubescens; nigra, elytris rufis, sutura postice nigra (colore nigra ante apicem abbreviata et hic rotundatim dilatato; capite crebre sat fortiter punctulato, longitudinaliter profunde concavo; prothorace quam longiori (et postice quam antice) plus quam dimidio latiori, profunde canaliculato, in medio crebre subtilius punctulato et transversim rugato latera versus sat crasse ruguloso, lateribus ab angulis anticis longe ultra medium divergentibus ante basin sat fortiter rotundatis, basi bisinuata, angulis posticis acutis; elytris striatis (striis puncturis magnis sparsis parum distinctis instructis), basi fortiter rotundatim antrorsum productis, apice oblique emarginatis et bispinosis, lateribus postice subtiliter denticulatis, interstitiis confertim punctulatis alternis modice convexis; corpore subtus subtilius sat crebre punctulato, prosterno medio crebre sat crasse ruguloso. Long., 3 l.; lat., $1\frac{1}{10}$ l.

Near *S. erythroptera*, Boisd., but *inter alia* very much smaller and narrower, with the prothorax less strongly punctured on the disc, the prosternum much more closely rugulose (this may not be the case in both sexes), the dark colour of the suture expanding into a rounded spot considerably before the apex, and not continued behind the spot. Also near *S. nanula*, Kerremans, which, however, has the apex of the elytra black and rounded.

Queensland; in the collection of C. French, Esq.

S. arborifera, sp. nov. Modice lata; minus convexa; supra fere glabra, subtus sat dense argenteo-pubescens; nigra, obscure hic illic purpureo-vel cyaneo-micans, elytris flavo-ornatis (sc. in elytris singulis vitta sat lata discoidali a medio fere ad basin attingenti, margine laterali angusto a basi ultra medium postice dilatato, et macula semilunulari apicali externe convexa); capite prothoraceque sat crebre sat fortiter (ut *S. Australasiæ*) punctulatis; illo in medio longitudinaliter sulcato; hoc quam longiori dimidio (postice quam antice paullo plus quam dimidio) latiori, lateribus sat arcuatis pone medium leviter sinuatis, basi leviter bisinuata, angulis posticis acutis; elytris sat fortiter punctulato-striatis, basi late vix arcutis, apice fortiter (vix oblique) emarginatis et bispinosis, lateribus postice subtilissime denticulatis, interstitiis sat convexis sat crebre punctulatis; corpore subtus crebre subtilius (in medio sparsim) punctulatis; prosterno medio sparsim minus fortiter punctulato. Long., $5\frac{1}{2}$ l.; lat., $2\frac{1}{10}$ l.

If yellow be regarded as the ground colour of the elytra, the

black markings (the insect being looked at with its head next the observer) appear as three parallel wide vittæ, connected (along the base, and also a little behind the middle) at their extremities by transverse fasciæ; while the apical quarter of the elytra is occupied by a spot bearing a rough resemblance to the figure of a tree standing on the hinder transverse fascia, and not reaching the apex, except very narrowly along the suture. This species is not unlike *S. Wilsoni*, Saund., but besides considerable difference in pattern, the prothorax is considerably wider across the base than across the middle, &c.

Australia; I am doubtful of the exact habitat; in S. A. Museum.

S. marcida, sp. nov. Sat angusta; viridis, elytris (sutura in medio basique anguste viridibus exceptis) rufis; capite inter oculos leviter concavo, sat crebre minus fortiter (fere ut *S. viridicinctæ*, Waterh.), punctulato; prothorace quam longiori fere duplo (postice quam antice circiter dimidio) latiori, vix manifeste canaliculato, pernitido, inæqualiter sat fortiter sat crebre (fere ut *S. flavomarginatæ*, G. & H., sed latera versus magis crebre magis rugulose) punctulato, lateribus modice sat æqualiter arcuatis, basi bisinuata (in medio vix distincte lobata), angulis anticis minus distinctis posticis sat acutis; elytris sat fortiter striatis (interstitiis transversim subtiliter rugatis sparsim subfortiter punctulatis) ad apicem leviter emarginato-truncatis, angulis suturalibus sat acutis vix prominulis, basi leviter æqualiter arcuata; corpore subtus pilis pallidis sat dense vestito, sat crebre sat fortiter punctulato.

Maris segmento ventrali apicali apice profunde arcuatim emarginato. Long., 12 l.; lat., 4 $\frac{2}{3}$ l.

The width of the prothorax is to its length down the middle as 19 to 11. The species in general appearance is suggestive of *S. flavomarginata*, G. & H., but differs from that species (apart from colour) *inter alia* by its narrower form, and especially by its longer head with the clypeus emarginate in front, and its prothorax evenly arched at the sides, whereas in *flavomarginata* the prothorax is at its widest a little in front of the base and thence narrows forward with sides but little curved.

The middle part of the prosternum is punctured rather strongly and closely, scarcely less so than the middle part of the ventral segments; this, however, is very likely not the case with the female. In my example of *flavomarginata*, which seems also to be a male, the apical ventral segment is only slightly emarginate (almost truncate) behind, and the middle part of the prosternum is very finely and sparsely punctulate.

W. Australia; in the collection of C. French, Esq.

- S. Andersoni*, L. & G., var. *terminalis*, Kerremans. This must be very close to, if not identical with, *S. brutella*, Thoms. I believe it to be a good species.
- S. Melbourneensis*, Thoms. This species must be very close to, if not identical with, *S. Australasie*, L. & G.
- S. Carpentariae*, sp. nov. Sat lata; minus convexa; postice sat angustata; fere glabra; prothorace rufo antice posticeque et in disco viridi-tincto; scutello viridi; elytris rufo-testaceis rubro-cinctis, margine antica angusta macula oblonga transversa pone medium posita sutura postice et apice viridibus; corpore subtus rufo-testaceo, prosterno medio cum maculis nonnullis in meso et meta-sternis et in abdomine segmentum ventralium marginibus transversis et pedibus (his nihilo minus rufo-maculatis) viridibus; capite fere plano crebre sat fortiter punctulato; prothorace quam longiori duabus partibus (postice quam antice fere duplo) latiori, subfortiter minus crebre sat æqualiter punctulato, lateribus postice fere parallelis antice ad angulos anticos sinuatim fortiter convergentibus, basi media late lobata; elytris punctulato-striatis, ad basin externam subquadratum productis (fere ut *S. viridicinctæ*, Waterh.), ad apicem fortiter emarginatis (spinis externis parvis, suturalibus magnis), interstitiis crebre punctulatis antice transversim rugulosis. Long., 13 l.; lat., $5\frac{1}{5}$ l.

A very distinct species somewhat resembling *S. vitticollis*, Macl., in general style of marking on the upper surface.

N. Queensland; Gulf of Carpentaria; in the collection of C. French, Esq.

- S. ornata*, sp. nov. Minus lata; minus convexa; fere glabra, subtus sparsim albido-pubescentis; capite prothorace scutelloque læte cupreo-viridi-cyaneoque versicoloribus, corpore subtus splendide aureo, pedibus viridi purpureoque micantibus, elytris testaceis, his macula magna communi basali (prothoraci magnitudine formaque simili) fascia mediana lata et macula communi elongata apicali nigris ornatis; capite prothoraceque confertim sat fortiter punctulatis; illo longitudinaliter concavo; hoc quam longiori (et postice quam antice) plus quam dimidio latiori, lateribus leviter arcuatis, basi leviter bisinuata; elytris punctulato-striatis, ad basin subrectis, ad apicem rotundatis, interstitiis convexis sparsim punctulatis; corpore subtus crebre nec fortiter punctulato. Maris segmento ventrali apicali postice late sinuato-truncato, prosterno medio fortiter sat crebre punctulato. Long., $6\frac{1}{2}$ l.; lat., $2\frac{1}{2}$ l.

This is a very beautiful and very distinct species. The mark

ings on the elytra bear considerable general resemblance to those of *S. grata*, Saund. These markings are all connected on the suture; the basal one is a spot nearly as large as the area of the prothorax, and not unlike it in shape, touching the base along about three-quarters of its width, but not touching the lateral margins; the space between the basal spot and the median fascia is narrowly black on the suture, and is very short; the median fascia touches the lateral margins very narrowly, its front edge is somewhat triangular, its hind edge sinuous; the median fascia is joined on the suture by a wide stem to the apical spot, which is somewhat elongate-quadrangle, and very similar in form and size to the apical spot of *S. thoracica*, Saund. (depicted Journ. Linn. Soc., vol. IX., tab. 9, fig. 11).

Victoria; in the collection of C. French, Esq.

S. longula, sp. nov. Sat elongata; subdepressa; subglabra; cœrulea, prothoracis lateribus elytrorum fasciis 2 latis suturam haud attingentibus altera mox ante medium externe antrorsum producta, altera subapicali externe retrorsum producta) prosterni lateribus abdominis lateribus (macula utrinque in segmentis 2-4 positis exceptis) macula in segmento ventrali penultimo medio posita et segmento ventrali apicali testaceo-rufis; capite longitudinaliter profunde sulcato, crebre minus fortiter punctulato; prothorace quam longiori plus quam dimidio (postice quam antice fere duplo) latiori, sparsim vix fortiter punctulato, lateribus incrassatis fortiter rotundatis, basi leviter bisinuata; elytris punctulato-striatis, ad basin late nec fortiter arcuatis ad apicem emarginatis et bispinosis, spinis externis valde elongatis, interstitiis sparsius punctulatis subplanis latera apicemque versus magis convexis.

Mas, latet.

Feminae prosternomedio sparsim parum fortiter punctulato.
Long., 9 l.; lat., $3\frac{2}{3}$ l.

The shape of the prothorax is very unusual in the genus, the sides being strongly rounded, so that the base is much narrower than the widest part, and the widest part being exceptionally far from the base—indeed, a line drawn across the prothorax at its widest would intersect the median longitudinal line in front of its middle; the sides of the prothorax are incrassated, and limited by a sulcus, as in *S. variabilis*, Don. The red lateral margins of the prothorax are so wide as together to equal the dark intermediate space.

I hardly know to what species to compare this; its elytra spinose at the apex in combination with red-margined prothorax, underside variegated with red, and elytra fasciated, place it in a

section of the genus (as I have roughly and artificially tabulated it) to which *cyanipes*, Saund., and numerous other species belong; *cyanipes* is very variable in markings, and one of its varieties (not that figured by Mr. Saunders) scarcely differs from the present insect in markings, except in the hinder red mark being less produced hindward on the margin, so that the hinder dark mark has a nearly straight edge in front reaching from margin to margin; whereas in *S. longula* this dark mark appears as a subquadrate spot, placed and shaped much as in *S. cruenta*, L. & G. (as figured by Saunders, Tr. Ent. Soc., 1868, t. 2, fig. 21). But this insect is very unlike *S. cyanipes* in other respects, and recalls to mind, I think, very differently-coloured species (e.g., *S. cruenta*) by its shape, while it stands almost, if not quite, alone in its prothorax being at the widest (to the eye considerably, and by measurement a little) in front of the middle of the median line, while at the same time the prothorax is much wider at this point than at the base; the prothorax of *S. sanguinea*, Saund., approaches somewhat to this form, but besides having its sides less converging hindward, it has not the thickened lateral margins separated from the disc by a sulcus.

Victoria; in the collection of C. French, Esq.

EUCNEMIDÆ.

DYSCOLOCERUS.

I have some hesitation in referring the following species to this genus. M. de Bonvouloir, in his monograph of the *Eucnemides*, attaches great importance to the relative length of the joints of the antennæ, and notes *Dyscolocerus* as very remarkable on account of joints 4-8 of the antennæ being very short and transverse, hardly longer together than the ninth. In the present insect joints 4-8 are strongly transverse (joint 4 a little longer and less transverse than the following) and are together distinctly shorter than joint 9; joint 10 is distinctly, though not much, shorter than 9, and 11 is the longest joint of the antennæ, being nearly half again as long as 10. In *Dyscolocerus* the apical joint is much smaller than the tenth. I think it not unlikely that M. de Bonvouloir would consider this sufficient difference to call for a new generic name, but as the general characters seem in other respects to agree with *Dyscolocerus*, and the *species* seems considerably to resemble the unique species ascribed to *Dyscolocerus*, there seems no great objection to place it provisionally in that genus. It agrees with *Dyscolocerus* in the form of its posterior coxæ (prolonged over the base of the femora and beginning to narrow outward much nearer to their inner than their external extremity), the absence of tarsal sulci on the

abdomen of prosternal sulci and of tarsal lamellæ, the prothorax not having more than one marginal carina, the mandibles of ordinary structure, the clypeus simply rounded in front, the prosternal sutures straight, and the epistoma much narrowed at its base, and much bent under the head.

D. heros, sp. nov. Oblongo-elongatus; modice convexus; postice leviter attenuatus; aterrimus, elytris et prothoracis angulis posticis rubris; capite prothoraceque crebre rugulose nec crasse punctulatis; illo in medio longitudinaliter leviter impresso; hoc fortiter transverso, canaliculato, antice manifeste angustato, ante basin utrinque oblique impresso; elytris pube densa nitida læte rubra vestitis, striatis, sat dense vix rugulose punctulatis, interstitiis leviter convexus. Long., 6 l.; lat., $2\frac{1}{5}$ l.

This is by far the finest Australian *Eucnemid* I have seen. N. S. W.; Blue Mountains.

CURCULIONIDÆ.

DYSCHENIUM.

Attention is called in the Zool. Record., 1890, to my having omitted to state categorically to what group of *Curculionide* this genus should be referred. Its place is among the *Erirhinides*, as the Recorder rightly conjectures from its place in my memoir, where it stands between two *Erirhinid* genera.

LONGICORNES.

TRYPHOCHARIA.

T. Mitchelli, Hope. The insect which I suppose must be this species, and which I have seen, I believe, from several localities in N. S. Wales and Queensland, does not agree very well with the figure [Tr. Zool. Soc., III. (2), t. 12, fig. 8] in respect of markings. It is very much like *T. Mastersi*, Pasc., but differs in having a small sharp spine (not a blunt tubercle) on either side of the prothorax, in the more coarsely rugulose puncturation of almost every part, and in the less elongation of the third joint of the antennæ as compared with the fourth; the infuscation of the apical part of the elytra moreover is much less extended forward (though it is likely that this is an unreliable character).

It is also a good deal like *T. Odewahni*, Pasc., differing from it *inter alia* by the bispinose apex of its elytra.

BETHELIUM.

B. tricolor, sp. nov. Setis erectis sparsim vestitum; ferrugineum, prothorace antice posticeque paullo infuscato, elytrorum

parte dimidia apicali lateribusque piceis vel nigris, disco utrinque flavo-bifasciato, (fascia antica angusta a margine retrorsum arcuata, postica lata a margine oblique antrorsum directa) fasciis suturam haud attingentibus; capite crebre punctulato, antice fortiter declivi; antennis maris elytrorum apicem vix superantibus (feminæ manifeste brevioribus), articulo 3° quam 1^{us} vix quam 4^{us} multo quam 5^{us} manifeste longiori, 6°-11° (10°, 11° que paullo brevioribus exceptis) 5° subæqualibus; prothorace vix transverso, crebre æqualiter granulato vel rugulose umbilicato-punctulato, lateribus sat fortiter sat æqualiter rotundatis postice vix sinuatis; elytris apice subrotundatis vix sinuato-truncatis, antice sat fortiter sat rugulose (retrorsum gradatim minus fortiter) punctulatis, abdomine infuscato; oculis grosse granulatis. Long., $3\frac{4}{5}$ — $4\frac{1}{2}$ l.; lat., $1\frac{1}{10}$ — $1\frac{3}{10}$ l.

Although this is by no means a rare insect, it appears to have escaped description hitherto. It is of somewhat broader and more robust form than *B. signiferum*, Newm. In the male the prothorax is by measurement just barely longer than wide, the length and breadth being equal in the female. The dark portions of the elytra are so ordered that the ferruginous part is simply a common patch on the anterior half of the suture occupying the whole base, contracting hindward and then expanding again.

S. Australia; Port Lincoln; also near Adelaide.

B. mundum, sp. nov. Setis erectis sparsim vestitum; rufum, prothorace antice posticeque paullo infuscato, elytris piceis circa scutellum vix rufescentibus fasciis binis angustis subburneis tortis albidis ornatis, femoribus (basi excepta) abdomineque piceis; cetera fere ut *B. tricoloris* sed prothorace paullo minus fortiter sculpturato. Long., 3 l.; lat., $\frac{4}{5}$ l.

I can hardly specify any difference between this and the preceding species except in the diminutive size of this, and the very different markings of its elytra, which consist of two slightly-raised transverse zigzag lines, one a little in front of the middle, almost hair-like in its narrowness, and scarcely reaching the suture; the other a little behind the middle, somewhat wider, less zigzag, and distinctly reaching the suture. This insect must be very like *Ectosticta eburatum*, Pasc., but its coarsely-granulated eyes place it far from *Ectosticta*, and moreover its prothorax could not possibly be described as having "coarse crowded punctures," the sculpture of its prothorax presenting the appearance rather of small almost-effaced granules.

N. S. Wales; Mulwala; sent to me by Mr. Sloane.

SISYRIUM.

The discrimination of generic characters in the numerous

species closely related to *Sisyrium* seems to be most difficult. M. Lacordaire says that complete identity exists between that genus and *Acyrusa*, except in the latter having a spine at the apex of the third joint of the antennæ, and a pubescent fovea on either side of the basal four ventral segments. I have not seen any species presenting these characters, but I have before me an insect from western S. Australia, and another from near Adelaide, having a pubescent fovea on either side of the third and fourth ventral segments, but no spine on the antennæ. I have also a species from western S. Australia having the antennal spine, but no ventral foveæ; and a fourth species from the same locality devoid of both characters, neither of which appears to be sexual. The last-mentioned of the above species is possibly, but not probably, a variety of *S. stigmatosum*, Pasc.; in any case its differences from *stigmatosum* are so strongly marked that a distinctive name seems desirable; the others appear to be new.

As it seems absurd to go on making a new genus for every new species among insects that might at a casual glance almost pass for being mere varieties of a single species, it seems to me desirable to call them all *Sisyrium*, as none of them possess both the characters on which *Acyrusa* has been distinguished. The last of the following species has the maxillary palpi much longer than the labial (a divergence which M. Lacordaire allows within the limits of the allied genus *Callidiopsis*), and also has the anterior coxæ more prominent than is usual in the subfamily; a little more prominent even than in *Diatomocephala*.

S. stigmatosum, Pasc., var. ? *vittatum*.

A. *S. stigmatosum* differt colore. Rubro-ferrugineo, elytris nigro-notatis, macula antica in vittam nigro-piceam (a basi ad fasciam antiapicalem integram) elongata; prothorace quam latiori circiter quarta parte longiori; pedibus unicoloribus. Long., $4\frac{1}{2}$ l.; lat., 1 l.

Apart from the characters mentioned above, the description of *S. (Igenia) stigmatosum* applies very well to the present insect. It will be noticed that the colouring and the pattern on the elytra are considerably different, and that the prothorax is very much less elongate than that of *S. stigmatosum* is said to be. Unless, however, Mr. Pascoe measured the proportions, his statements on the point are probably worthless, as the proportions of a prothorax are in few instances by measurement the same they appear to a casual glance.

S. Australia; near Port Lincoln.

S. fraternum, sp. nov. Setis erectis sat sparsim vestitum; ferrugineum, elytris macula communi (literam U simulanti) nigro-fusca ornatis; capite fortiter minus crebre punctulato

inter oculos subapproximatos longitudinaliter ruguloso, antennis (?maris) elytrorum apicem parum superantibus, articulo 3° (hoc ad apicem spina elongata armato) quam basalis breviori quam 4^{us} vix longiori, 5°-11° inter se sat æqualibus quam basalis fere longioribus; prothorace quam latiori parum longiori, ad latera nodoso, supra inæquali fortiter minus crebre punctulato, spatiis lævigatis subconvexis circiter 5 ornato, pone apicem constricto; elytris apice rotundatis seriatim sat regulariter (nisi parte apicali confuse leviter punctulata) puncturis sat magnis subquadratis instructis, his (et seriebus et in seriebus puncturis) sat crebre positis. Long., 4—4½ l.; lat., 1½ l. (vix).

Extremely like the preceding, but a slightly stouter form, and distinguishable (apart from the antennal spine) by the very different proportions *inter se* of the antennal joints, and the different pattern on the elytra, which consists of a common mark resembling the letter U, extending almost from the base to the apex; whereas in the preceding the pattern consists of a wide subapical fascia, from the front of which on each elytron (a little nearer to the suture than to the lateral margin) a narrow vitta runs forward nearly to the base of the elytra. The eyes are evidently more approximated above than in any of the allied forms in my collection, and the antennæ are slightly stouter. I cannot but acknowledge the *possibility* that this may be the male of the preceding insect, but if so the sexual differences are certainly very unusual in including a considerable elongation of the third joint of the antennæ in the female. Moreover, as I have two examples of *S. fraternum*, and the pattern on their elytra is absolutely identical, and markedly different from that of the "var. ? *vittatum*," the differences look still less likely to be sexual

S. Australia; west of Port Lincoln.

S. ventrale, sp. nov. Setis erectis sat sparsim vestitum; pallide testaceum, antennis prothorace et corpore subtus (abdomine infuscato excepto) rufescentibus, capite obscuro, elytris fascia lata subapicali (et antice utrinque macula vel vitta discoidali) fusca vel nigra ornatis; capite ut *S. fraterni* sed oculis minus approximatis; antennis elytrorum apicem vix superantibus, articulo 3° quam basalis vix quam 4^{us} multo longiori, ceteris (2° brevi excepto) 3° et inter se subæqualibus; prothorace quam latiori vix longiori, ad latera nodoso, supra inæquali, sparsim crassissime punctulato, spatiis lævigatis circiter 5 ornato, pone apicem constricto; elytris apice rotundatis ut *S. fraterni* sculpturatis; segmentis ventralibus 3°, 4° que utrinque fovea aureo-pilosa ornatis. Long., 3½ l.; lat., ⅔ l.

The hind body with tomentose foveæ on the sides of the third and fourth segments (only) will at once distinguish this species. I have seen about half a dozen examples, among which I do not observe differences likely to be sexual except that the antennæ of some are slightly, and of others not, longer than the body. The mark on the anterior part of the disc of each elytron varies from a small almost square black spot to a vitta of variable length, and is liable to be almost obsolete. It differs from *S. fraternum*, *inter alia*, by the extremely coarse sparse puncturation of its prothorax.

S. Australia ; Port Lincoln district ; under bark of Eucalyptus.

S. sparsum, sp. nov. Setis erectis sat sparsim vestitum ; colore ut *S. ventralis*, sed prothorace (exempli typici) piceo ; capite antennisque ut *S. ventralis* ; prothorace quam latiori circiter tertia parte longiori, ad latera nodoso, ut *S. ventralis* sculpturato ; elytris a *S. ventralis* differt puncturarum seriebus minus crebris et puncturis in seriebus minus crebre positis postice minus obsoletis ; segmentis ventralibus ut *S. ventralis* (exempli typici tomento abraso). Long., 3 l. ; lat., $\frac{2}{3}$ l. (vix).

Very distinct by its diminutive size and the comparatively sparse puncturation of its elytra, as well as by its comparatively longer prothorax, which is decidedly (and looks much) longer than wide. In the typical example the anterior spot on the elytra is large, square, and black, but probably it is variable.

S. Australia ; near Adelaide.

S. lævigatum, sp. nov. Ferrugineum, elytris intra marginem lateralem antice vitta fusca ornatis, mesosterno metasternoque paullo infuscatis ; subopacum ; supra fere lævigatum ; capite quam prothorax fere latiori, linea longitudinali impresso ; prothorace leviter transverso, lateribus subangulatim rotundatis ; elytris pustulis minutis setiferis 4-seriatim impressis ; antennarum articulo 3^o quam 1^{us} et quam 4^{us} paullo breviori. Long., $5\frac{1}{2}$ l. ; lat., $1\frac{1}{5}$ l.

Perhaps somewhat like *S. (Obrium) ibidionides*, Pasc., although such a conjecture is necessarily not much more than a guess, for the author of that species does not vouchsafe any information upon a point so important even as its puncturation.

W. Australia ; Champion Bay ; in the collection of C. French, Esq.

The following is a tabulation of the described species attributable to *Sisyrium* (regarding the characters of the genus among the *Callidiopsidæ* as follows:—femora moderately clavate, prothorax not furnished with well-defined callosities, such as those on the prothorax of *Callidiopsis*, head not abruptly declivous in front, elytra with well-defined colours and pattern, antennæ as

long as the body or nearly so, basal and second ventral segments not furnished with tomentose foveæ). I have been obliged to depend on Mr. Pascoe's descriptions for the characters of some of his species.

- A. Elongate species of small size (long., 3-5 l.)
 B. Antennæ devoid of spines.
 C. Ventral segments devoid of tomentose foveæ
 D. Sides of elytra of pale colour in their anterior half.
 E. Prothorax nearly half as long as elytra ibidionides, Pasc.
 EE. Prothorax much shorter... .. stigmatosum, Pasc.
 DD. Sides of elytra dark, except at base dorsale, Pasc.
 DDD. Elytra with a dark lateral stripe reaching the base, but not the apex lævigatum, Blackb.
 CC. Third and fourth ventral segments with tomentose foveæ
 D. Punctures in rows on elytra close and regular except near apex... .. ventrale, Blackb.
 DD. Punctures in rows on elytra much less close sparsum, Blackb.
 BB. Antennæ with a spine at the apex of the third joint... .. fraternum, Blackb.
 AA. Robust species of larger size (long., 6 l.) tripartitum, Pasc.

APOSITES.

A. lanaticollis, sp. nov. Rufo-piceus, elytris lividis, elytris pedibusque pilis fulvis (his basin versus albidis) dense vestitis, antennis pube minuta fulva confertim instructis, ceteris partibus pilis albidis vestitis (his in prothorace conspicue condensatis); prothorace rugulose sat crebre punctulato in medio longitudinaliter et lateraliter spatio nitido sublævi instructo, quam latiori fere longiori, subquadrato, antice quam postice manifeste angustiori, lateribus obscure bisinuatis, basi fere truncato, angulis posticis extrorsum sat prominulis; elytris externe fortiter emarginatis, apice angustatis, sat crebre sat squamose punctulatis (basin versus minus crebre minus squamose), singulis leviter 4-costatis, costis apicem fere attingentibus (1^a haud suturæ conjuncta); segmentis ventralibus maculis parvis denudatis ornatis; antennis quam corpus longioribus, articulis 3-11 compressis. Long., 9-10 l.; lat., 2 l.

Much smaller than *A. macilentus*, Pasc., with the prothorax clothed with white woolly pilosity all but entirely concealing the

derm, which, on the removal of the pilosity is seen to be very distinctly punctured, and to have two nitid levigata stripes placed in the form of a cross. The elytra are gradually narrowed to almost a *point* at the apex, and are very strongly incurved laterally; on each of them are four feeble costæ (besides the lateral margin and suture) of which that nearest to the suture is somewhat widely separated from the latter at the base, but gradually approaches it hindward to about the middle of the elytra, whence to the apex (or nearly so) it runs parallel to the suture.

S. Australia; basin of Lake Eyre.

A. niger, sp. nov. Niger; supra pube subtili fulva vix conspicua, subtus et anguste in elytrorum marginibus pilis griseis sat dense positis vestitus; prothorace transversim crassissime rugato, quam latiori fere longiori, antice quam postice sat angustiori, lateribus a margine antico retrorsum divergentibus (in medio subangulatis, hinc retrorsum convergentibus, juxta basin retrorsum divergentibus), angulis posticis extrorsum sat prominulis; elytris externe leviter emarginatis, apice angustatis, fere ut præcedentis sculpturatis sed costa 1^a paullo pone basin suturæ conjuncta; antennis fere ut præcedentis sed nigræ. Long., $8\frac{1}{2}$ —9 l.; lat., $1\frac{2}{3}$ l.

A very distinct species.

W. Australia; near Eucla.

LYGESIS.

It is impossible, I think, in many instances to feel any confidence in determinations arrived at from a study of Mr. Pascoe's work on the *Longicornis*. This genus furnishes a case in point. Mr. Pascoe originally confused it with *Didymocantha*, whose species, as M. Lacordaire remarks, are "very different insects," but subsequently formed a new genus for it and others under the name *Isalium*. Later still Mr. Pascoe discovered that some members at least of his *Isalium* were attributable to a genus long before characterised by the Rev. F. W. Hope under the name *Strongylurus*; so *Isalium* was dropped; and then finally, on further reconsideration still, the author arrived at the conclusion that one of the species originally published as a *Didymocantha* was neither a *Didymocantha* nor a *Strongylurus*; and so another new name (*Lygesis*) was proposed, with a very brief diagnosis, merely mentioning a few characters in which *Lygesis* differs from yet another new allied genus characterised at the same time. If one turns to the description of the typical *species* of *Lygesis* for more information, one finds a description of extreme brevity, in which there is actually no mention whatever of the *puncturation* of the insect.

I have before me an undescribed insect near *Strongylurus* which seems not unlikely to be a *Lygesis*; at the same time I cannot consider the determination at all reliable. I have also a species which is probably *Lygesis mendica*, Pasc. If the latter is right, my examples of it are females; and if so, the insect I am about to describe is probably the male of a *Lygesis* (Mr. Pascoe does not say whether he founded the genus on the male or female). If this species is not a *Lygesis*, it represents a new genus very near to it. The principal differences that I observe consist in the almost contiguous eyes, the much greater length of the antennæ (which are not much less than half again as long as the body), and the very elongate head, which is produced in front of the antennæ to a length slightly exceeding the length of the head behind the antennæ; the intermediate coxæ and adjacent parts are as in *Strongylurus*. The antennæ, moreover, are distinctly compressed, and not much different from those of a female *Opsidota*; but in *Opsidota* the head is not produced anteriorly at all.

L. (?) *ornata*, sp. nov. Sat parallela; setis subtilibus erectis sparsius vestita; nigro-fusca, elytris fere albidis antice et in medio fusco-notatis apicem versus rufo-ferrugineis, antennis pedibusque ferrugineis; capite antice fortiter producto, oculis grosse granulatis permagnis et supra et subtus fere contiguus; prothorace (hoc quam caput parum latiori) quam trans basin latiori fere longiori, subcylindrico, antrorsum nonnihil angustato, crassissime ruguloso, lateribus vix sinuatis; scutello testaceo-pubescenti; elytris (his quam prothorax sat latioribus) apice singulatim rotundatis, antice ut prothorax (retrorsum gradatim minus crebre minus fortiter) sculpturatis. Long., $6\frac{1}{2}$ l.; lat., $1\frac{1}{2}$ l.

The anterior fuscous-black mark on the elytra occupies the whole of the front quarter (and is continued hindward a little on the suture), except a large spot in the middle of the dark space so formed, which is of the prevailing yellowish-white colour; the hinder mark is extremely like the corresponding mark in *Strongylurus scutellatus*, Hope; the apical reddish-ferruginous space is sharply distinguished from the rest of the surface; its front margin is projected forward about at its middle. The narrow strip of the whitish ground colour which lies between the hinder blackish fascia-like mark and the reddish apical patch appears from a certain point of view (*i.e.*, looking across the suture) like the figure "3," owing to the irregularities of outline before and behind it.

Queensland; in the collection of C. French, Esq.

OPSIDOTA.

It is not entirely without hesitation that I refer this species to *Opsidota*, but I think the structural characters are sufficiently close to justify my doing so—at any rate provisionally. The style of marking is very suggestive of *Phoracantha*, the upper surface is nearly devoid of pubescence, the antennal joints while very distinctly compressed are less so than in *O. infecta*, Pasc., and the basal ventral segment is a little longer than in that insect. The following characters, however, bring it very near to *Opsidota*; eyes coarsely granulated, intermediate coxal cavities closed externally, anterior coxal cavities open behind, head short, antennæ (in the male) much longer than the body, their joints not spinose rather strongly compressed (but only slightly more produced at their inner than their outer apex), elytra rounded at the apex but having the sutural angle produced in a short spine, legs moderately elongate, the femora not clavate, antennæ not ciliated beneath but with a few long hairs at the apex of the joints, their third and fourth joints about equal in length.

O. guttata, sp. nov. Nigra, elytris singulis maculis 3 flavis ornatis; macula antica transversim subreniformi paullo pone basin posita, macula submediana transversa, macula subapicali parva fere circulari; prothorace crassissime ruguloso, ad latera inæquali nec spinoso, pone medium spatium lævi ornato; elytris antice crassissime rugulose, postice multo subtilius nec rugulose, punctulatis, apice rotundatis, sutura ad apicem spinosa; antennis quam corpus multo longioribus, articulis sat compressis, 3° 4° longitudine æquali; unguiculis divaricatis. Long., 8—10 l.; lat., $2\frac{1}{5}$ —3 l.

S. Australia (interior); also W. Australia (near Eucla).

BEBIUS.

B. variegatus sp. nov. Elongatus; cylindricus; pilis elongatis erectis sparsim vestitus; ferrugineus, femoribus anticis abdomineque obscuris, elytris fascia mediana angulata flava (hac antice posticeque nigro-marginata, spatium nigro postico maculam parvam flavam ferenti) ornatis; capite prothoraceque crebre fortiter rugulosis, in hoc rugulis transversim positis; elytris antice fortiter rugulose, postice paullo minus fortiter minus rugulose, punctulatis, ad apicem emarginatis. Long., $5\frac{1}{2}$ l.; lat., 1 l.

Very distinct from *B. filiformis*, Pasc., by the markings on its elytra and the emarginate apex of the same; also by its prothorax scarcely so elongate, not in the least narrowed in front, and with the rugulosity of its surface having a distinctly transverse arrangement.

Victoria; taken by C. French, Esq., from a wattle near Lillydale.

MAULIA (gen. nov.).

Caput sat breve, genis antice dentiformibus, fronte lata minus concava; oculi sat tenuiter granulati, lobo superiori sat parvo; tuberculi antennarii subobsoleti; antennæ robustæ, sat breves; prothorax supra sat inæqualis, ad latera tuberculatus; elytra sat parallela abdomen tegentia; pedes minus elongati, femoribus leviter clavatis, tarsis sat latis; coxæ anticæ globosæ minus approximatae, postice apertæ; coxæ intermediae ad latera clause; segmentum ventrale basale quam cetera modice longius; unguiculi divaricati.

The intermediate trochantins are very conspicuous, transversely placed, and transversely intersected by a strong sulcus.

I am at a loss to suggest any group of Longicornes in which this genus can be placed satisfactorily.

The structure of the intermediate coxæ and parts adjacent thereto is decidedly suggestive of *Phalota*, but the facies and many characters are quite inconsistent with such an alliance. The general appearance is much like that of *Pempsamacra dispersa*, Newm., in miniature, with which there is agreement in many characters including the tooth-like prominence of the apex of the cheeks, but in *Pempsamacra* the intermediate coxæ are widely open laterally. *Nenenia*, Pasc., is a genus which its author has been unable to place in any named "tribe," though considering it nearest to *Phalota*, and these particulars seem to suggest a probable relationship to the present insect; I think I know *Nenenia*, and in that case there does not seem to be much real affinity, but even if I am wrong in my identification the "fronte excavato" and "abdominis segmenta longitudine æqualia," of that species are quite conclusive as to its generic distinctness from that which I have characterised above. On the whole I think this genus cannot stand far away from *Pempsamacra*.

Compared with *Pempsamacra dispersa* (and apart from size) the head of this insect is less produced in front, but is very similar in respect of its slight concavity and width between the antennæ, and in the structure of its antennæ (except in the apical six joints being less abbreviated); its prothorax is considerably shorter, with much stronger and sharper lateral tubercles; and its elytra are scarcely so much narrowed hindward.

I believe I am right in considering that the intermediate coxæ are closed externally; it is very difficult, however, in the case of a small *Longicorn*, with the sternal sutures much obscured by rugulosity to be quite sure without the removal of the mesothoracic epimeron whether the angle of the metasternum absolutely touches that of the prothoracic episternum.

M. picticornis, sp. nov. Modice elongata; supra opaca, pilis erectis nonnullis sat sparsim vestita, obscure pupureo-brunnea, antennis flavo nigroque late variegatis, elytrorum lateribus antice anguste flavis; subtus nitida nigra cupreo-purpureoque iridescens, femorum tibiaramque basi et tarsorum articulis ultimis 2 flavis; corpore supra confertim sat fortiter ruguloso; elytris (ad apicem truncatis) præter hanc sculpturam foveis magnis nec profundis (his ab apice ad basin gradatim minoribuset magis crebris) confuse ornatis; sternis sat rugulose punctulatis; abdomine sublævigato. Long., $4\frac{1}{2}$ l.; lat., $1\frac{1}{5}$ l.

The first, second, sixth, seventh, eighth, and eleventh joints of the antennæ are entirely black (with a slight coppery tone); the ninth and tenth are entirely yellow, the rest yellow in the basal half and black in the apical half. The basal joint is stout and subcylindric, as long as 2 and 3 together, 2 very short, 3-5 slightly increasing in length successively (5 as long as the basal joint), 6, 7, and 11 each about equal to 3, 8-10 each shorter. The antennæ set back would scarcely reach the apex of the elytra.

Victoria; taken near Berwick by C. French, Esq.; unique in that gentleman's collection.

ECTOSTICTA.

E. ornata, sp. nov. Setis erectis sparsim vestita; rufa, capite prothorace abdomineque nigris, antennis obscuris (articulis 1° 2° que totis et ceteris basi plus minusve late rufescentibus) elytris piceis (spatio communi basali rufo, fasciisque binis albis); antennis quam corpus paullo brevioribus articulo 3° quam 1^{us} manifeste quam 4^{us} multo quam 5^{us} vix longiori, 6°-11° gradatim brevioribus; capite prothoraceque fortiter sat crasse ruguloso; hoc quam latiori parum longiori; lateribus modice rotundatis postice vix sinuatis; elytris apice rotundatis, juxta scutellum utrinque gibbosis, inæqualiter punctulatis; oculis sat tenuiter granulatis. Long., 3 l.; lat., $\frac{4}{5}$ l.

Compared with *E. cleroides*, White, this is a smaller much more rufus insect. The base of the elytra is bright red all across, and this red patch extends backward, irregularly narrowing to about the middle of the elytra. From the lateral margin, a little behind the shoulder, a moderately narrow white fascia runs obliquely inward and (slightly) forward, but stops abruptly at the edge of the red patch. The space immediately in front of this fascia, and that between it and the hinder fascia, are the darkest part of the elytra. The hinder fascia is placed slightly behind the middle, is of the same width as the other fascia, and

runs from the margin inward and scarcely forward to the suture. There is a well-defined gibbosity on each elytron (near the scutellum) on and around which the puncturation is very sparse; the front part of the lateral half of the elytra is very coarsely and not very sparsely punctured, the puncturation becoming closer and less coarse toward the suture and becoming obsolete in about the apical two-fifths of the elytra. The legs are entirely red.

Victoria; near Berwick; taken by Mr. French, and also sent to me by Mr. Sloane.

PHYTOPHAGA.

MEGAMERUS.

M. mandibularis, sp. nov. Mas. Sat elongatus; supra nitidus, subtus cum pedibus tenuè pubescens; brunneus, mandibulis atris valde compresso-dilatatis et contortis; capite crebè ruguloso; prothorace leviter sparsius nec subtiliter punctulato; elytris inæqualiter punctulato-rugulosis et fortiter transversim rugatis; segmento ventrali apicali fovea profunda impresso. Long., 9 l.; lat., 3½ l.

A considerably more elongate, less massive, species than *M. Kingi*, Macl., and of different colour, being of a full brown tone. The mandibles (perhaps of the male only) are very peculiar, being enormously compressed, dilated, and bent in their apical half; it is difficult to imagine how they can be serviceable. The antennæ scarcely differ from those of *M. Kingi* of the same sex. Compared with *M. Kingi* the head is rugulose and very much more closely sculptured; the prothorax is narrower, much more distinctly punctured, and with its hind angles not at all prominent laterally; the elytra are much more strongly and unevenly sculptured, and are transversely wrinkled; the impression on the apical ventral segment is very much deeper.

N. W. Australia; in the collection of C. French, Esq.

HISPIDÆ.

EURISPA.

E. nigripes, sp. nov. Sat angusta; æneo-nigra, prothorace rufotestaceo linea mediana rufa notato ad latera sat late niveo-marginato, elytris pallide luteis (horum apice summo nigro) margine externo anguste albido; antennis sat brevibus, articulis 2 et 3 sat elongatis, 4-6 brevioribus nec transversis cylindricis, 7-10 transversis, 11 acuminato; prothorace quam transbasin latiori parum longiori, antice angustato, minus crasse vix rugulose punctulato; elytris apicem versus acuminatis breviter spiniformibus, striatis, striis foveis sat

magnis seriatim impressis, interstitiis postice vix convexis ; abdomine (præsertim antice) sat crebre transversim rugato. Long., $2\frac{1}{2}$ —3 l. ; lat., $\frac{3}{5}$ — $\frac{7}{10}$ l.

Mare magis angusto sat parallelo, segmento ventrali apicali postice emarginato.

Femina pone medium manifeste dilatata ; abdomine opaco coriaceo ; segmento ventrali apicali carina transversa recta instructo.

Near *E. albipennis*, Germ. (which I have never been able to identify), and possibly a colour-var. of that species on the supposition of a slight mistake in Germar's description, according to which the sixth joint of the antennæ is transverse and wider than the fifth, whereas in the examples before me that joint is not transverse, and not at all wider than the fifth (the seventh being the first wider joint). *E. albipennis* is also said to have its front femora ferruginous at the base, and no mention is made of the snowy-white sides of the prothorax. Among the somewhat numerous examples I have seen of the species I am describing I have seen no ferruginous colouring on the femora, and very few specimens in which the lateral vittæ of the prothorax are not well defined. Compared with *E. Howitti*, Baly, this species apart from colour, *inter alia*, has the prothorax not nearly so coarsely and rugulose punctured, the apical five joints of the antennæ much shorter, and the elytra a little less strongly produced behind into a tail.

S. Australia ; Port Lincoln district.

E. simplex, sp. nov. Sat angusta ; fere ut præcedens colorata sed elytrorum apice summo haud nigro ; a præcedenti differt prothorace antice haud angustato multo magis crasse magis rugulose punctulato ; elytris ad apicem multo minus acuminatis. Long., $2\frac{1}{2}$ —3 l. ; lat., $\frac{3}{5}$ — $\frac{7}{10}$ l.

Near *E. Howitti*, Baly, but at once distinguishable by its elytra very much less drawn out at the apex and its antennæ much shorter, with joints 7-10 transverse and much shorter, and its legs entirely black.

Victoria ; Alpine district.

E. fraterna, sp. nov. Sat angusta ; nigra, pedibus antennarumque parte mediana rufescentibus, prothorace (hoc rufo-trilineato) elytris fulvo-testaceis ; antennis subelongatis, articulo 1° brevi fere transverso, ceteris quam latioribus plus minusve longioribus ; prothorace quam latiori paullo longiori, antice parum angustato, postice subtruncato, minus crasse vix rugulose punctulato ; elytris apicem versus acuminatis fortiter productis breviter spiniformibus, striatis, striis foveis sat magnis seriatim impressis, interstitiis angustis postice subcarinatis. Long., 3 l. ; lat., $\frac{3}{5}$ l.

Very close to *E. major*, Blackb.; differing from it by its smaller size, colouring, less coarse prothoracic puncturation, elytral interstices scarcely convex anteriorly, and especially by the almost truncate base of its prothorax; from *E. Howitti*, Baly, it differs by the narrower interstices of the elytral striae and the much more elongate prothorax which by measurement is considerably longer than its greatest width; from *E. normalis*, Baly, by the anteriorly non-costate interstices of its elytra and its prothorax considerably narrower across the front than across the base; the other described species have the subapical joints of the antennae much shorter.

N. Territory of S. Australia.

LONGICORNES.

MICROTRAGUS.

M. sticticus, Pasc. The author of this species was unable to state its habitat, and in Masters' Cat. nothing more precise than "Australia" is mentioned. It is worthy of note therefore that I have lately received a specimen taken by Mr. C. T. Musson, F.L.S., at Narrabri, N. S. W.

COCCINELLIDÆ.

SCYMNODES (*Blackb.*, Tr. Roy. Soc., 1888, p. 189).

S. Koebeli, sp. nov. Sat late ovalis; sat convexus; pilis albidis erectis sat dense vestitus; nitidus; sat crebre sat fortiter punctulatus; æneo-niger capite antennis pedibus anticis femoribus intermediis basi tarsis omnibus elytris ad apicem abdomineque rufis; prothorace quam longiori plus quam duplo latiori, elytris basi angustiori, antice leviter angustato, lateribus pone medium fere rectis, angulis anticis prominulis rotundatis, posticis distinctis fere rectis. Long., $1\frac{3}{8}$ l.; lat., $1\frac{1}{5}$ l.

N. S. W.; Gosford; taken by Mr. Koebele.

SCYMNUS.

S. tenebricosus, Bohem. I have lately received from Mr. Koebele an example taken near Sydney, which appears to be this insect, agreeing very well with the description. Mr. Koebele has also given me some examples taken at Mulgoa (N. S. W.), which I judge to be conspecific, although they are considerably larger, and seem a little more minutely punctured; in one of them, moreover, the intermediate (as well as the front) tibiæ are testaceous, and in all of them the prothorax is narrowly rufescent along its front margin. This latter character would perhaps suggest a doubt as to whether my identification is correct, but in

some specimens the rufescence "needs looking for," and would easily escape the notice of a describer who had not seen specimens having it more defined.

RHIZOBIUS.

R. fugax, sp. nov. Ovalis; sat elongatus; modice convexus; pilis pallidis suberectis sat dense vestitus; sat nitidus; subfortiter vix crebre (elytris mediis suturam versus sparsim minus fortiter) punctulatus, ferrugineus (elytris, prothoracis parte postica mediana, femoribusque apicem versus, piceis exceptis); prothorace quam longiori duplo latiori, antice minus angustato, elytris basi vix angustiori, lateribus parum arcuatis, angulis anticis rotundatis nullo modo productis, posticis fere rectis. Long., $1\frac{4}{5}$ l.; lat., $1\frac{1}{3}$ l.

The prosternal ridge is narrowed forward, but is not sharply pointed at the apex. This character in combination with the presence of erect hairs on the elytra, finer and longer than the general pubescence brings the present insect near *R. Lindi*, Blackb., from which it differs *inter alia* by its more elongate form and very much coarser puncturation. The puncturation is not unlike that of *R. Evansi*, Muls., but is distinctly less close, and near the suture of the elytra finer. Were it not for this latter character I should regard it as possibly a variety of *Evansi*.

N. S. Wales; taken by Mr. Koebele near Whitton.

R. dorsalis, sp. nov. Sat late ovalis; sat convexus; pilis albidis erectis sat dense (nonnullis multo longioribus intermixtis) vestitus; nitidus; supra piceus, prothoracis lateribus et elytrorum regione suturali indeterminate rufescentibus; subtus rufescens, antennis palpis pedibusque rufo-testaceis, femoribus (præsertim posticis) infuscatis; capite prothoraceque subcrebre minus fortiter, elytris magis fortiter nec profunde minus crebre, punctulatis; prothorace quam longiori plus quam duplo latiori, antice minus angustato, elytris basi vix angustiori, lateribus leviter arcuatis, angulis anticis obtusis (certo adspectu rotundatis) posticis rectis. Long., $1\frac{1}{5}$ l.; lat., $\frac{9}{10}$ l.

A small inconspicuous species, chiefly notable superficially for the distinct (but not sharply defined) reddening of the sutural region, which seems to be constant. The flattened surface of the prosternal ridge is triangular, and very sharp in front. The puncturation is strong on the elytra, but considerably less fine on the prothorax.

N. S. Wales; Gosford; taken by Mr. Koebele.

R. cæcus, sp. nov. Ovals; convexus; pilis argenteis suberectis sat dense vestitus; sat nitidus; subtilissime sat crebre punctulatus; totus ferrugineo-rufus; prothorace quam longiori vix duplo latiori, elytris basi angustiori, antice parum angustato, lateribus fere rectis, angulis anticis rotundatis haud prominulis, posticis fere rectis. Long., 1 l.; lat., $\frac{7}{10}$ l. (vix).

The silvery pubescence of the upper surface is mingled with fine hairs longer and more erect than the rest. The prosternal ridge is sharply pointed in front, but owing to the strong convexity of the prosternum (of which it forms the flattened median surface) it is less noticeable than in most of the *Rhizobii*, and requires to be looked at from a particular point of view (obliquely from the side) to be seen distinctly; the carinae limiting the ridge are excessively fine. The prothorax covers the eyes more completely than in most *Rhizobii*, but owing to the thin substance of the former the eyes can be seen through it. It may be distinguished from its Australian congeners, having mixed pubescence and a prosternal ridge sharp in front, by its uniform rufous colour.

N. S. W.; taken by Mr. Koebele at Gosford.

R. lanosus, sp. nov. Sat late ovalis; sat convexus; nitidus; supra pilis erectis ochraceis confertissime vestitus; piceo-niger, haud ænescens, tarsis rufescentibus, antennæ palpis abdomineque rufo-testaceis; capite prothoraceque sat crebre subfortiter, elytris fortiter paullo minus crebre, punctulatis; prothorace quam longiori plus quam duplo (postice quam antice haud multo) latiori, lateribus fere rectis, angulis anticis rotundatis vix prominulis, posticis fere rectis. Long., 2 l.; lat., $1\frac{1}{2}$ l.

This species is readily characterised by its non-metallic surface, together with its dense even clothing of erect ochraceous (not silvery or whitish) pile. The flattened surface of the prosternal ridge is very wide (not at all pointed) in front. In my tabulation of *Rhizobius* (Tr. Roy. Soc. S. A., XI., pp. 203-4) the present insect would require the formation of a distinct subsection (line 2, p. 204) as follows:—"B.B.B. Elytra very densely and evenly clothed with erect pubescence."

Queensland; Toowoomba; taken by Mr. Koebele.

R. pulcher, sp. nov. Ovals; convexus; pilis albido-argenteis brevibus sat dense vestitus; supra testaceus capite et maculis nonnullis in elytris positis infuscatis; subtus piceus abdominis lateribus et apice plus minusve testaceis; pedibus sordide testaceis, femoribus plus minusve infuscatis; capite prothoraceque obscure subtilissime, elytris distincte vix

crebre, punctulatis ; prothorace quam longiori circiter duplo latiori, antice parum angustato, elytris basi haud angustiori, lateribus vix arcuatis, angulis anticis sat rotundatis, posticis rectis ; prosterno æqualiter convexo, antice simplici. Long., $\frac{9}{10}$ l. ; lat., $\frac{3}{5}$ l.

A prettily-marked little species ; the general colour of the upper surface varies a little, the dark markings being less conspicuous on the examples having the ground colour less pallid. The markings are as follows:—A small spot on each side of the scutellum, the suture (where the infuscation is dilated into a large common spot about the middle), and an oblong vitta-like dash on either side near the lateral margins, which in some examples is dilated at its apex, and connected near its front with the median dilatation of the suture. Allied to *R. umbratus*, Blackb., but differently marked, with the front angles of the prothorax not at all prominent, &c. ; in *R. umbratus* these angles, though not sharp, are slightly prominent.

N. S. Wales ; taken by Mr. Koebele near Mulgoa.

BUCOLUS.

B. convexus, sp. nov. Sat late ovalis ; sat convexus ; sat nitidus ; supra pilis argenteis sat crebre vestitus ; nigro-piceus, prothorace abdomine tarsisque rufis ; capite planato, crebre subfortiter punctulato ; prothorace quam longiori circiter duplo latiori, crebre subtilius punctulato, antice angustato, ad latera valde deflexo ; elytris crebre fortius punctulatis. Long., $1\frac{3}{5}$ l. ; lat., $1\frac{1}{5}$ l. (vix).

Considerably less wide and depressed than *B. Fourneti*, Muls., but agreeing with that species in structure, the prosternum being prolonged to receive the head in repose, the tibiæ being very strongly dentate externally, and the epipleuræ having very well-defined foveæ.

N. S. W. ; taken by Mr. Koebele near Sydney.

LIPERNES.

Blackb., Tr. R. Soc., S.A., XI., p. 211.

L. subviridis, sp. nov. Late ovalis ; sat convexus ; nitidus ; piceo-niger, supra obscure subviridi-micans ; subtiliter sat crebre punctulatus. Long., $\frac{9}{10}$ l. ; lat., $\frac{7}{10}$ l. (vix).

Differs from *L. angulatus*, Blackb., in its smaller size, æneous tone of colour, base of prothorax not angular in front of the scutellum, and in the closer puncturation of its elytra, which is uniform with that of the prothorax.

N. S. W. ; taken by Mr. Koebele at Gosford.

SERANGIUM.

Blackb., Tr. R. Soc., S.A., XI., p. 209.

S. maculigerum, sp. nov. Late ovale; convexum; nitidum; capillis erectis sparsim vestitum; nigrum, antennis palpis corpore subtus pedibusque plus minus dilutioribus, elytris utrinque macula magna discoidali rufa ornatis; supra sublævigatum; subtus punctulatum. Long., $\frac{7}{10}$ l.; lat., $\frac{3}{5}$ l.

The red spot on each elytron is at about half the length, but is nearer to the suture than to the external margin. Notwithstanding its great difference in size, I cannot find any reason to separate this species generically from *S. mysticum*.

Queensland; taken near Toowoomba by Mr. Koebele.

S. hirtuosum, sp. nov. Sat late ovale; convexum; nitidum; capillis albidis sat elongatis erectis sat dense vestitum; obscure rufum hic illic plus minusve distincte infuscatum, elytrorum sutura anguste nigra; supra leviter vix perspicue, subtus sat manifeste, punctulatum. Long., 1 l. (vix); lat., $\frac{7}{10}$ l.

This species is much like *S. mysticum*, Blackb., in miniature, but of a brighter red color, the head and prothorax scarcely infuscate, the pilosity more conspicuous, and some puncturation traceable on the upper surface.

N. S. Wales; taken near Sydney by Mr. Koebele.

TRICHORCUS (gen. nov. Coccinellidarum).

Ab *Orco* differt corpore haud metallico, subopaco, dense pubescenti.

I can find no structural character to distinguish the genus from *Orcus*, but it seems scarcely possible to place in that genus a non-metallic subopaque species densely clothed with pubescence.

T. cinctus, sp. nov. Hemisphæricus; dense fulvo-pubescentis; subopacus; supra brunneus, prothorace nigricanti (basi excepta) albido-marginato, elytris externe testaceo-marginatis (margine a basi retrorsum gradatim dilatato); subtus nigricans, abdomine testaceo; confertim subfortiter punctulatus; clypeo antice late sat fortiter emarginato et ad latera ante oculos dilatato; prothorace antice profunde bisinuatim emarginato, ante basin linea transversa minus distincte impresso; antennis palpisque labialibus flavis, illis apicem versus infuscatis. Long., $1\frac{1}{5}$ l.; lat., 2 l.

This remarkable insect is actually a trifle wider than long. I have seen nothing at all near it.

N. S. Wales; taken near Sydney by Mr. Koebele.

THE ENERGY OF THE ELECTROMAGNETIC FIELD.

By PROFESSOR W. H. BRAGG, M.A.

[Read May 3, 1892.]

In an address given to Section A of the Australasian Association for the Advancement of Science, at the Hobart meeting, in January of this year, I showed that an exact analogue of the electromagnetic field due to currents and magnets existed in the case of membranes displaced by uniform pressures or to fixed amounts in an infinite elastic medium; a medium in which, if any element be displaced, there is a force of restitution proportional to the volume of the element and the amount of its displacement.

It is interesting to start with the supposition of the existence of such a medium, and hence develop the theorems which we know to be true of the energy of the field. They follow very simply from this hypothesis.

Suppose a thin membrane in such a medium as I have described above. A uniform pressure per unit area will cause displacement, supposed small. Let the uniform pressure be $4\pi C$, and the total displacement of the membrane, *i.e.*, the volume it moves through, be $\frac{LC}{4\pi}$. Then C corresponds to the current running round a circuit represented by the edge of the membrane, and causing a total induction through its contour equal to LC . The energy so stored up in the elastic medium is $\frac{1}{2} \times \text{force} \times \text{displacement}$, *i.e.*, $\frac{1}{2} LC^2$.

Now, in the medium so disturbed, let a second membrane be placed, and acted on by a uniform pressure, gradually increasing to $4\pi C'$. The medium, although already strained, will make *exactly the same opposition* to the new straining force as if it were unstrained, because from the nature of the medium the force resulting from a new displacement of any small volume already displaced is independent of the previous displacement. So the second membrane will be displaced just the same as if it were the only one, and the work done in displacing it will be $\frac{1}{2} L'C'^2$ (say).

But—and this is the point—whilst this second membrane has been undergoing displacement, so has the first; and the amount of displacement of the first is of course proportional to C' , say $\frac{MC'}{4\pi}$. So $\frac{M}{16\pi^2}$ is the amount of displacement through the first

circuit due to unit pressure on the second. Thus during the displacement of the second membrane the pressure, $4\pi C$, on the first does a fresh amount of work, $\frac{MC'}{4\pi} \cdot 4\pi C$, *i.e.*, MCC' . Thus the total energy of the field is

$\frac{1}{2} LC^2 + MCC' + \frac{1}{2} L'C^{12}$,
which is the well-known important theorem.

This can be extended to cases in which there are any number of circuits, by taking the corresponding membranes one by one.

It is evident from the symmetry of this equation that the displacement of any membrane B caused by unit pressure acting on a membrane A is equal to the displacement of A caused by unit pressure on B.

We may employ this last principle to find the displacement at any point due to a membrane under uniform pressure, corresponding to a closed circuit. Suppose we require the displacement at a point P in the direction x . Let A be a very small area placed at P perpendicular to x . Then the displacement of A due to unit pressure on the membrane is equal to the displacement of the membrane due to unit pressure on a small membrane coinciding with A.

Suppose a number of membranes placed at regular distances behind A, all perpendicular to x and equal to A; let there be n of them per unit length, and let the series reach to a point B very far from A. Let unit pressure act on each of these. Then the matter in which the membranes are imbedded will be displaced like a solid cylinder, and if d be the displacement of each, $\frac{4\pi}{\mu}$ the elasticity of the medium.

$$A n = \frac{4\pi}{\mu} d A$$

$$\therefore d = \frac{\mu n}{4\pi}$$

The effect of the displaced cylinder will be the same as if at A there were a total displacement, $\frac{A \mu n}{4\pi}$ spreading out uniformly in all directions, and at B a corresponding inwards displacement. The lines of displacement from A will therefore be practically straight lines; and the amount of displacement of the original membrane is $A \mu n \frac{\Omega}{16\pi^2}$ where Ω is the solid angle subtended by it at A.

The displacement of the original membrane due to the pressure on A is equal to the difference between $A \mu n \frac{\Omega}{16\pi^2}$ and $\frac{A \mu n}{16\pi^2}$

$\left(\Omega - \frac{d\Omega}{dx} \frac{1}{n}\right)$: for the latter quantity is the displacement of the membrane due to the cylinder with the small membrane A removed, or which is the same thing, the original cylinder pushed back a distance $\frac{1}{n}$

Thus the displacement through A due to unit pressure on the original membrane = $\frac{A\mu}{16\pi^2} \frac{d\Omega}{dx}$

Thus displacement at A = $\frac{\mu}{16\pi^2} \frac{d\Omega}{dx}$ due to unit pressure on membrane.

Hence displacement at A in the direction n due to pressure $4\pi C$ on membrane = $\frac{\mu C}{4\pi} \frac{d\Omega}{dx}$

Further, if P is the pressure at A this displacement = $\frac{\mu}{4\pi} \frac{dP}{dx}$

$$\therefore P = C\Omega + \text{constant.}$$

In this analogy P, of course, corresponds to magnetomotive force.



THE PHANEROPTERIDÆ OF AUSTRALIA AND POLYNESIA.

By J. G. O. TEPPER, F.L.S.

[Read May 3, 1892].

INTRODUCTION.

The PHANEROPTERIDÆ of the tribe LOCUSTODEA in the Order of the Orthoptera or Straight-winged insects are scattered over all continents in a limited number of genera and species, but seldom, if ever, occur in such numbers as to become destructive, although all are herbivorous. Many kinds are rare and very rare, being perhaps restricted to small areas by the presence or absence of particular food-plants, certain other insects, peculiarities of soil and climate, &c.

The family is, however, on this account very interesting to the entomologist, and also on that of their peculiar structure, notably the long slender limbs, angular or otherwise peculiarly-shaped pronotum, regular venation of the anterior pair of wings, usually called elytra (or tegmina) which afford good generic or specific distinctions, and the usually short, curved, serrated ovipositor of the females.

Of the habits of the Australian species, and perhaps of most of the others, little appears to be known; the solitary life of the widely scattered individuals rendering the elucidation of their life-history very difficult.

The chief and most recent authoritative monographer of the Phaneropteridæ is Brunner van Wattenroyl, and since the publication of the "Addimenta," 1891, to his excellent "Monographie der Phaneropteriden" (Wien, 1878), no general work appears to have been issued, nor any Australian species described.

In the following pages is presented a concise record of the Australian representatives of the family as far as that is possible under the circumstances. Genera and species, however, not represented in the S. A. Museum will only be recorded, with Brunner's synoptical descriptions in English, while full descriptions will be given of the others from the specimens at disposal and such information about habits and distribution attached as is warranted by the author's observations and experience.

The colour of living specimens is some shade or tint of green in most genera, but is easily bleached by exposure to sunlight as with preserved specimens, and wholly extracted

through immersion in alcohol, which changes the green into a pale brownish-yellow. Colour is, therefore, a most unreliable character to any one not familiar with the living insects, although it may be perfectly constant for some species, or variable with others; the latter is, however, comparatively rare with indigenous forms. Killing with chloroform is apt to convert the fuscous tints into more or less bright ferruginous shades. Some species, again, are naturally of a testaceous colour, especially those living among the dry grass during the latter part of the very warm and dry summer, acting as a protective gift at a time when scarcity of insect-life causes a keen search by insectivorous birds.

One of the causes that so comparatively few of the Phaneropters find their way into collections is that they are extremely brittle and delicate when dry, so that they are very apt to arrive in a hopelessly fragmentary condition, and impossible to restore to respectable appearance, or for safe determination.

Brunner's types have been inaccessible, but his descriptions and figures are so clear, that the chance of misinterpretation does not appear to be very great. The new descriptions have been drawn up on the same plan of Brunner's, and, I hope, will recommend themselves to your judgment. In several instances the original descriptions have been slightly departed from, or extended by adding some distinctive characters from the specimens before me, preferring to extend the genus or species rather than to form new ones.

The abbreviation "Br. Mon.," followed by figures, refers to Brunner's "Monographie der Phaneropteriden," Wien, 1878, pp. 1-401, published by the K. K. Zool. and Botan. Society of Vienna in their Transactions, which has been followed throughout, and "Br. Mon. Add." to his "Addimenta" to the same in 1891 by the same Society (vol. XLI., part 1., pp. 1-196).

SYSTEMATIC DESCRIPTION.

Tribe Locustodea.

Tarsi depressed. Fore tibiæ provided with foramina.

This tribe is divided by Brunner into 14 families, of which the following is the first in order:—

FAMILY PHANEROPTERIDÆ.

First and second joint of tarsi laterally rounded. Prosternum without appendages. Hind tibiæ above with an apical spine on both sides, below with two spines on each side.

The family is subdivided into 43 groups, with 164 genera, most of which are illustrated by Brunner by a full figure or details of

one species. I add, here, another, making the total 165. The former number embraces 685 species described by Brunner, of which 100 inhabit Europe, 150 Asia and the Malayan Archipelago, 95 Africa and its islands, 52 North and Central America, 240 South America and West India, 38 Australia, and 16 New Guinea and Polynesia. Of 10 species the habitat was not known, and 15 species, including 3 Australian, inhabit two continents (one species being found in three). Twelve species are, herein, added to the above (all Australian), which raise the total for Australia to 50, and the grand total to 697 species. In the following enumeration the New Guinea, Polynesian and some other species have been included, the former on account of their geographic proximity, and the latter because so closely related to the Australian forms, that their omission might have impaired the completeness of the record.

The following characters are employed by Brunner, and have been adopted by me as leading ones, viz. :—

1. The presence of a spine at the coxæ (or hip-joints) of the fore tibiæ.
2. The form and armature of the fore tibiæ on the upper side.
3. The form of the foramina (open, shell-like, or cleft-like) or assumed auditory organs of the fore tibiæ.
4. The character of the venation of the elytra.
5. The presence and form of the crenulations or dentations at the apex of the ovipositor of the females.
6. The presence and form of the articulately-inserted styles of the subgenital lamina of the males.

These prove very efficient in limiting and defining the groups and genera, while Walker's descriptions in the British Museum Catalogue are, so far as the Locustodæ are concerned, wholly inefficient for certain recognition, and therefore disregarded in modern classification, especially as he includes the Phaneropteridæ, Decticidæ, Gryllacidæ, &c., in one and the same family, of all of which he only mentions some 71 species altogether as Australian.

Considerable increase in the number of indigenous species may be expected in future, when those of the little explored tropical parts of this continent become better known and determined, for the warmest and warmer parts of the world are the principal home of the Phaneropteridæ. It is hoped that this paper may contribute somewhat to incite more vigorous researches.

A. GROUP DUCETIÆ (Br. Mon. 15, 108).

Anterior coxæ unarmed. Pronotum with a distinct humeral sinus. Elytra, and sometimes the wings, perfectly explicate. Vertex flat or inclined, somewhat elongated, forming a distinct

angle with the frontal fastigium. Subgenital lamina of male without free styles, but deeply cleft. Old World species. There are two genera, one with four, the other with two species.

Genus DUCETIA, *Stål.* (ibid).

Foramina open on both sides, somewhat narrowed. Fore tibiæ sulcate and spinulose above, appearing as if divided laterally at the base. Femora spined below.

DUCETIA JAPONICA, *Thunberg* (ibid, fig. 16).

Elytra somewhat acuminate. Radial and ulnar areas with few venules. Fore margin of wings almost straight, with triangular area near apex.

	Male.	Female.
Length of body ...	16 mm.	20 mm.
Length of pronotum ...	4 "	4.5 "
Length of elytra ...	26 "	28 "
Width of elytra...	5.5 "	5 "
Length of hind femora...	22 "	22 "
Length of ovipositor ...	— "	6 "

Habitat.—Queensland, India, Ceylon, Philippine Is., Japan.

B. GROUP ACRIDOPEZÆ (Br. Mon. 1, 139).

Vertex very much inclined, elongate, fastigium not forming any angle with the front, or scarcely conspicuous, laminately and horizontally produced. Pronotum short, embracing the head. Palpi slender. Femora slender all round.

Genus ACRIDOPEZA, *Guérin* (ibid).

Elytra of the male rather large, of the female short and very much arched; latter without wings. Male without free styles. Ovipositor of female extremely short, valves free, smooth. Monotypic.

ACRIDOPEZA RETICULATA, *Guérin* (ibid, fig. 33).

Brownish. Head paler, spotted with blackish. Antennæ black, with narrow pale-testaceous bands. Elytra of male brownish, marbled, paler and darker, the veins partly blackish; those of the female with one larger and one or two smaller black spots, also the portion of the right elytron, covered at rest by the left, which is deep shining-black. Legs (except base of tibiæ and the tarsi, which are black) testaceous, banded with black. Abdomen black, the covered parts of the segments, also the whole underside of the female, bright crimson, posterior margins with bright blue guttæ, the blue fading after death; of the male the same parts of segments, brownish-testaceous, the guttæ whitish.

	Male.	Female.
Length of body ...	20-25 mm.	22-27 mm.
Length of pronotum ...	5 "	5-6 "
Length of elytra ...	35-42 "	18-20 "
Width beyond base ...	6-9 "	9-12 "
Width before apex ...	10-13 "	9-12 "
Length of hind femora	21-24 "	16-20 "
Length of ovipositor ...	—	1.8 "

This peculiar insect appears to be very local in its distribution. The males are usually found on the trunks and thick lower branches of Eucalypts (*E. obliqua*), or the stems of Eucalyptus-shrubs where trees are absent, and in hot sunshine take readily to their wings, but in cooler weather are rather sluggish. The females are also found in similar situations, but more frequently nearer (or on) the ground, among tufts of grass, sedges, or small shrubs. Their movements are slow, and when suddenly approached or alarmed, rise as high as possible on their legs and raise the elytra, at the same time extending the abdomen, thus exposing the brilliant colouring, which, no doubt, serves to ensure their safety from attack by birds, lizards, &c., as denoting inedibility, for they make no attempt to fly or escape. When taken by the hand, a copious brownish fluid is exuded from the mouth, which stains the parts touched,

Habitat.—All the specimens in the Adelaide Museum are from the Mount Lofty Ranges, where they are (or were) by no means rare in some of the gullies watered by a rivulet, occurring there from January to March. In October, 1861, the author observed and captured some at Bundaleer, where they frequented small scattered clumps of stunted Eucalypts. They also are found in Victoria, New South Wales, Queensland, and North Australia.

C. GROUP APHIDNIÆ (Br. Mon. 19, 146).

Anterior coxæ spined. Frontal fastigium not produced. Vertex produced in the form of a pointed horn or crest-like tooth, much elevated above the fastigium.

Genus MACHIMA, *Brunner* (ibid, 149).

Hind femora and tibiæ with long spines, or leaf-like dilated.

Genera and species of this group are chiefly American.

MACHIMA PHYLLACANTHA, *Burmeister* (ibid, 150, fig. 39).

Vertex with a short spine. Pronotum unarmed. Colour green, marbled with brownish and with white lines.

	Male.	Female.
Length of body ...	20 mm.	25 mm.
Length of pronotum ...	5 "	6.5 "
Length of elytra ...	33 "	35 "
Width of elytra...	7 "	8 "
Length of hind femora ...	20 "	24 "

Habitat.—New Holland (*Serville*); Brazil (*Burmeister*, Geneva Museum). *Serville*'s location of this species is possibly a mistake; it may, however, occur in some of the Pacific Islands, whence specimens may have found their way into the hands of Australian collectors, and through them reached the great French⁷ entomologist. The doubt requires to be cleared up, hence the species is inserted here.

D. GROUP PSYRÆ (Br. Mon. 19, 158).

Vertex flat or tumid, not spined. Fore tibiæ with conchate foramina in front and open ones behind. Elytra mostly of leathery texture and more or less subhyaline, radial veins contiguous, transverse veinlets much raised. Ovipositor longer, or as long as the pronotum, compressed, slender, gradually incurved, apex gradually acuminate, at the base roundly tumescent, margins crenulate or serrulate towards the tip, or rarely unarmed. Subgenital lamina with or without free styles.

The group is chiefly of Asiatic habitat, a few genera belonging to Africa, some species to the Sunda Islands, and one to New Guinea.

Genus CASIGNETA, *Brunner* (Mon. 19, 163; fig. 46).

Fastigium of vertex contiguous in a line with the frontal.

Disk of pronotum subrotundate, deflexed lobes, roundly inserted. Mesosternal lobes triangular, metasternal rounded. Fore tibiæ slender, doubly as long as pronotum, sulcate above, and distantly spined.

CASIGNETA LAMELLOSA, *Brunner* (Mon. Add. 77).

Cerci (male) very long, scarcely incurved, apex claw-like. Subgenital lamina compressed, longer than pronotum, base divided in two widely-gaping lamella contiguous from the middle, acuminate,

	Male.			
Length of body	22 mm.
Length of elytra	38 "
Width of elytra	7 "
Length of pronotum...	5 "
Length of hind femora	24.5 "

Habitat.—Celebes.

Genus PHAULA, *Brunner* (Mon. 20, 167; fig. 48).

Shiningly-smooth. Fastigium of vertex depressed, frontal acuminate. Pronotum with disk rotundate, and deflexed lobes roundly inserted. Elytra linear, margins parallel, branches of veins straight, mediastinal scarcely visible, first radial branch

oblique, simple, or with three branchlets, of which the first is branched and terminating in the hindmargin, transverse veinlets irregular. Fore tibiæ terete above and spined, or subsulcate and unarmed. Ovipositor shining.

The genus occurs in Borneo, the Philippine Islands, Java, Sumatra, Singapore, Africa, &c., one species extending to New Guinea.

PHAULA PEREGRINA, *Br.* (Mon. Add. 84).

Disk of pronotum flat, rather concave, with the deflexed lobes obtuse-angularly inserted. Size small. Subgenital lamina (male) short, obtuse triangular.

			Male.
Length of body	...	...	20 mm.
Length of pronotum	...	...	5 "
Length of elytra	...	...	32 "
Width of elytra	...	...	7.5 "
Length of hind femora	...	...	20 "

Habitat.—New Guinea, Waihou Islands.

PHAULA DENTICAUDA, *Brunner* (*ibid.*).

Size much larger.

Habitat.—Celebes.

E. GROUP EPHIPPITHYTÆ (*Br. Mon.* 21, 188).

Anterior coxæ armed with a spine. Vertex flat or tumid, not spined. Foramina of fore tibiæ on both sides open or rimate. Ridges of pronotum rounded or acute, but neither crested nor crenulate. Ovipositor very short and shiningly-smooth, valves free. Subgenital lamina of male in narrow lobes resembling produced styles, which are, however, absent, except in *Dictyota*, where free ones are present.

Almost wholly endemic and comprising seven genera.

Genus EPHIPPITHYTA, *Serville* (*ibid.*, 188).

Pronotum constricted before the midde, saddle-shaped. Hind femora spined below throughout their whole length. Ovipositor as long or slightly longer than the cerci.

EPHIPPITHYTA TRIGINTIDUOGUTTATA, *Serville* (*ibid.*, fig. 54).

Yellowish-green, shining. Face, deflected lobes of pronotum, meso- and meta-notum, and sometimes the first segments of the abdomen with creamy white stripes laterally. Occiput spotted with brown. Antennæ uniformly yellowish. Fore part of disk of pronotum and the posterior angles with short black stripes. Elytra green, subpellucid, veins and veinlets very prominent, radial vein and hindmargin marked with black angular spots

(about 32 in the figure, hence the specific name). All the femora and some of the tibiæ have the extremities black. Hind tibiæ with three brownish bands, which are sometimes obsolete.

	Male.	Female.
Length of body ...	32-36 mm.	31-35 mm.
Length of pronotum...	6- 8 "	7- 8.5 "
Length of elytra ...	48-58 "	54-61 "
Width of elytra ...	10-13 "	10-14 "
Length of hind femora	27-33 "	32-37 "
Length of ovipositor...	— "	3.5-4 "

Habitat.—New Holland (*Serv.*), New South Wales, Queensland, North Australia (*Brun.*).

Comparing the figure and descriptions of Brunner, usually very exact, with Prof. McCoy's (*Prod. Zool. Vict.*, Dec. XII., plate 120; 1885) and the specimens in the Adelaide Museum it is apparent that both the latter represent the *same* species, and are distinct from the first, as shown by the detailed description below. Prof. McCoy's description takes no cognizance of the venation of the elytra, nor the difference in the contour of the wings. His figures are excellent, however.

EPHIPPTHYTA QUADRIGESIMAGUTTATA, *sp. nov.*

(*E. trigintiduogutta*, McCoy, *Prod. Zool. Vict.*, 120).

Dull brownish-green, shining. Face, lateral lobes of pronotum, and sides of meso- and meta-thorax with milk-white stripes. Occiput blackish. Antennæ basal part green for two-fifths of entire length, remainder brown. Anterior part of pronotum and hind angles blackish to black, also the extremity of the shoulders of the elytra. Latter semipellucid, green, veins much raised, the costal field near apex blackish, and from about 38 to 45 more or less intensely black guttæ along the radial vein (9-11), the hindmargin (7-10), and the anterior branch of the ulnar vein (2-3). All the femora and tibiæ are more or less marked with black at the extremities, as are also the tips of the spines. The hind tibiæ have three broad blackish bands on the inner side, the terminal one extending to the tarsi.

	Male.	Female.
Length of body ...	21-24 mm.	28 mm.
Length of pronotum...	5- 7 "	5.5 "
Length of elytra ...	38-41 "	48 "
Width of elytra ...	7- 9 "	8-9 "
Length of hind femora	25-26 "	28 "
Length of ovipositor...	— "	3 "

Habitat.—Murray Scrub, Sandy Creek, South Australia; Victoria (*McCoy*).

This species differs from *E. 32-guttata*, Serville, by the elytra being much more suddenly contracted beyond the middle; the colours of the marginal space, the greater number, disposition and intensity of the guttæ, the different curvature of the first radial branch and the colour of the antennæ. After death the body, legs, and parts of the elytra become more or less brown, and in alcohol the whole insect assumes a pale testaceous tint, except the dark spots.

The insect feeds on the Australian Cyprus Pine (*Callitris verrucosa*), and is but seldom seen. The three specimens in the Adelaide Museum were obtained at Monarto and Sandy Creek. At the former locality the writer captured three specimens close-together on one tree in 1872.

Genus EPHIPPITHYTOIDEA, *gen. nov.*

Fastigium of vertex terete, not much depressed, sub-contiguous with the frontal. Face moderately long, much retracted, slightly sulcate laterally, carinate about the eyes. Pronotum saddle-shaped, constricted, disk rounded posteriorly. Deflexed lobes roundly-inserted in front and angular behind, and distinctly sulcate. Elytra narrow-linear, hindmargin concave, nearly of equal width throughout, apex rounded; radial veins contiguous for some distance beyond the first radial branch; the latter is emitted slightly before the middle and forked towards its extremity; anterior ulnar vein parallel with radial branch emitting four branchlets to hindmargin. Transverse veinlets much raised, numerous, oblique, and closely reticulate. Tympanal area small, veins very strong, and a speculum in both elytra of the male. Wings as long as the elytra, apex rotundate. Fore and middle femora near apex with a few small spines and distant short hairs, hind femora armed nearly to the base, knee-joints with long spinose lobes, basal part very much incrassated, apical part very slender. Fore tibiæ with rimato-conchate foramina on both sides, terete above, posterior margin spined. Meso- and meta-sternum with short broad lobes. Supra-anal lamina of males deflexed between the hairy cerci; latter stout, bilobed at apex. Subgenital lamina in two lobes very thick in the middle, styles not apparent. Female unknown.

This genus differs from all others by the subtriangular lobes of the pronotum, the latter being convex above, besides many other distinctions. In general appearance, however, it resembles *Ephippithya* so much that a superficial observer may easily mistake it for a smaller variety.

EPHIPPITHYTOIDEA SPARSA, *sp. nov.*

Dusky yellowish varied with grey and blackish dots, &c., shining. Face black, the labium, a long wedge-like stripe

in the middle, two small spots below the same, a short stripe on either side, the base of the antennæ, and the cheeks pale yellowish. Eyes prominent, globose, dark brown. Pronotum, fore and middle femora and tibiæ, also the hind femora near the base blackish above, with very numerous pale round dots; exterior of hind femora with two black lines contiguous with black bars beyond; knee-joints black, also both extremities of hind tibiæ and an intermediary band. Abdominal segments partly blackish banded. Elytra sub-pellucid, veins ochraceous, reticulating veinlets mostly whitish, except within some black spots along the radial and ulnar veins, of which there are about 12-14. Wings dusky.

	Male.
Length of body (male only) ...	25 mm.
Length of elytra	38 "
Width of elytra	5 "
Length of hind femora	19 "

Habitat.—Roebuck Bay, Western Australia (*Messrs. A. E. Krapton and Tepper, jun.*). A single specimen was captured in November, 1891.

Genus *ALECTORIA*, *Brunner* (female), (*Mon. Add.* 10, 95; fig. 15). (Synonym, *Hectoria*, *Tepper* (male) (*Trans. Roy. S. A.*, vol. XI.)

Pronotum deeply constricted before the middle and crested behind. Crest with short tumid base, hollow, open below where projecting beyond the base, laterally with five diverging curved veins ending in the inferior hindmargin; anterior margin of pronotum with a smaller spine and a larger on each side behind the anterior constriction in the male. Elytra rugulose, first radial branch emitted much behind the middle, simple. Subgenital lamina of male deeply and roundly emarginate. Ovipositor short, not longer than cerci.

Brunner's description of the genus is taken from the female, alone, mine (*loc. cit.*) from the male, the latter supplementing the former in various details. In *Brunner's* figure the crest is represented with subparallel concentric lines of veins, while in my specimens they appear as described above, the eyes are also much larger than shown by the figure. Further, the fastigium of the vertex is declining and not at all prominent. The antennæ have the tips black, and five very narrow blackish rings at equal distances, the last about the middle, from thence to the base they are absent and the colour uniformly pale-green. The elytra have the margins almost parallel, narrowing very slightly to the obliquely truncate apex, *not suddenly narrowed* beyond the middle. The tympanal area of the elytra of the male is ample in both, the transverse plicate vein in the left elytron is,

however, very much stouter than in the right. All these differences are probably sexual, some are certainly so.

ALECTORIA SUPERBA, Br. (female) (ibid) (*Hectoria Pontoni*,
Tepper, male).

Olive (or yellowish) green. Crest of pronotum greenish-yellow with ferruginous and black crenulate margin. Elytra and legs marked with brownish spots and bands. All the tarsi of both sexes are brown.

	Male.	Female.	Female Nymph.
Length of body...	20 mm.	36 mm.	15 mm.
Length of pronotum ...	5 "	15 "	3 "
Length of elytra ...	45 "	58 "	11 "
Width of elytra near base	8 "	12 "	4.5 "
Width of elytra {beyond } {middle }	7 "	9 "	3 "
Length of hind femora...	24 "	32 "	18 "
Length of ovipositor ...	— "	2 "	1 "

Habitat.—Peak Downs, Queensland (*Brunner*); Beltana (*legit A. Ponton*), Terowie (*legit J. M. Bagot*), South Australia.

Genus CAEDICIA, Stål. (Br. Mon. 21, 189).

Dorsal part of pronotum flat, lateral edges more or less angular. Hind femora unarmed, or only with spines beyond the middle. Elytra lanceolate or slightly dilated beyond the apex. Deflexed lobes of pronotum higher than long; hind margin of meso- and meta-sternum lobed, lobes as long as high. Breast very broad. Deflexed lobes highest in the middle, hind margin either rounded or straight. Marginal area of elytra irregularly veined. Hind femora very stout at the base. Fastigium of vertex acuminate, almost contiguous with the frontal.

Thus far the above characters are in common with the remaining genera of the group to a greater or lesser extent, the following are the distinctive ones of the genus:—Elytra gradually narrowed from the middle, the first radial branch forked at or somewhat before the middle.

The species are all Australian excepting two from tropical West Africa.

CAEDICIA PICTIPES, Stål. (ibid, 90).

Shiningly-ferruginous, striped with black. Disk of pronotum black, lateral stripes yellow. *Legs banded with black.*

Length of body (male and female) ...	30-32 mm.
Length of pronotum ...	6 "
Length of elytra ...	40-42 "
Width of elytra ...	9 "
Length of hind femora ...	27-28 "
Length of ovipositor ...	2 "

Habitat.—Cape York, Queensland (*Stål.*); Tongatabu (*Brunner*).

CAEDICIA MARGINATA, *Brunner* (*ibid*, 191).

Ferruginous, varied with green. Legs green, not banded. Fore tibiae sulcate and spined above along the external margin. Meso- and meta-sternal lobes triangular. Hind margin of elytra straight or slightly sinuous. Hind margin of pronotum and tympanal area bordered with black. Size large.

				Male.
Length of body	...	...	...	19 mm.
Length of pronotum	...	...	...	4.5 "
Length of elytra	...	...	...	35 "
Width of elytra	...	...	...	6 "
Length of hind femora	...	...	...	23 "
Length of ovipositor...	...	...	...	—

Habitat.—Murray Bridge, South Australia; Kangaroo Island (*Tepper*); New Holland (*Brunner*).

Brunner's description of the male agrees very well with the specimens in the Adelaide Museum, including females, and larvæ and nymphs of both sexes, which were obtained in January and March, 1884, by the author at the above localities respectively (also an adult male). The following characters are supplementary. The prothorax, legs and antennæ are wholly ferruginous, the abdomen purplish, the elytra pale ferruginous in front of the radial veins, the colour extending partly to the costal margin and also to the base and margin of the triangular ulnar area, the remaining spaces being pale green, the colours shading gradually into each other. The dark spotted borders are very narrow, and the knee-joints of the femora blackish or brown.

CAEDICIA CONCISA, *Brunner*, (*ibid*, 192).

Bright green. Pronotum and tympanal area not spotted. Anterior margin of elytra bordered with ferruginous, remainder bright-green, opaque; radial branch forked before the middle, transverse veinlets irregular.

				Male.
Length of body	...	...	...	23 mm.
Length of pronotum	...	...	...	5.5 "
Length of elytra	...	...	...	29 "
Width of elytra	...	...	...	7.5 "
Length of hind femora	...	...	...	23 "

Habitat.—North Australia (*Brunner*).

CAEDICIA LONGIPENNIS, *Brunner* (*ibid*, 192, fig. 55).

Elytra green, pellucid, radial branch forked beyond the middle, transverse veinlets parallel.

	Male.	Female.
Length of body ...	23 mm.	26 mm.
Length of pronotum ...	5 "	6.5 "
Length of elytra ...	40 "	42 "
Width of elytra ...	7 "	9 "
Length of hind femora	25 "	28 "
Length of ovipositor ...	— "	2 "

Habitat.—Sydney, New South Wales ; Queensland (*Brunner*).

CAEDICIA VALIDA, *Walker* (McCoy, Prod. Zool. Vict., Dec. XII., t. 120).

Dull green. Abdomen and legs brownish-green ; face, lobes of pronotum, femora exteriorly, and the tympanal area of female, whitish. Disk of pronotum subequally wide. First radial branch forked before the middle. Cerci of male straight Ovipositor of female much curved towards the apex.

	Male.	Female.
Length of body ...	25 mm.	27 mm.
Length of pronotum ...	6 "	6 "
Length of elytra ...	32 "	42 "
Width of elytra ...	9 "	10 "
Length of hind femora	17 "	23 "
Length of ovipositor ...	—	5 "

Habitat.—Melbourne, Victoria.

As neither the description, so far as given by Walker and McCoy, nor the excellent figures of the latter appear to agree with any of Brunner's species or those in the Adelaide Museum, this species (*Phaneroptera valida*, Walker and McCoy) is recorded here, although somewhat doubtfully, as some of the requisite characters (venation) are not included in the original descriptions. The figures of McCoy, however, plainly denote its position in this genus.

CAEDICIA LONGIPENNOIDES, *spec. nov.*

Size large. Olive-green, abdomen much duller. Disk of pronotum wider behind, lateral margins narrow, pale testaceous ; deflexed lobes of pronotum wide behind the middle, lower margin slightly sinuate, posterior rounded. Elytra subpellucid, with irregular subparallel veinlets, which are distinct and darker than the inclosed membrane. First radial branch forked in the middle, with two, sometimes three, simple ones beyond. Cerci of male incurved, so that the tips touch or sometimes cross each other. Subgenital lamina neither very acute nor narrowed. Ovipositor of female about half the length of the disk of pronotum.

	Male,	Female.
Length of body ...	10 mm.	25-28 mm.
Length of pronotum ...	6.5 "	6.5-7 "
Length of elytra ...	37 "	40-45 "
Width of elytra ...	6.5 "	12 "
Length of hind femora ...	19 "	25 "
Length of ovipositor ...	— "	2.5-3 "

Habitat.—Vicinity of Adelaide, South Australia (2 fem.); Wentworth, New South Wales. Captured in January and February, feeding on shrubs of *Bursaria*.

The species differs from *C. longipennis* in the lobes of the pronotum being widest behind the middle; in the first radial branch being divided at or behind the middle, in the greater width of the elytra, and in the purplish colour of the abdomen. From *C. major* it is separated by the shorter body, &c. The insects are rare.

CAEDICIA SEPTENTRIONALIS, *Brunner* (Br. Mon., 139).

Olive green. Elytra scarcely longer than the hind femora. Transverse veinlets irregular, first radial branch forked before the middle, first branchlet sometimes divided again.

	Male.	Female.
Length of body ...	24 mm.	29 mm.
Length of pronotum ...	5 "	6 "
Length of elytra ...	35 "	32-36 "
Width of elytra ...	8.5 "	9 "
Length of hind femora ...	24 "	24-27 "
Length of ovipositor ...	—	1.5 "

Habitat.—Rockhampton, Port Denison, Queensland (*Brunner*).

CAEDICIA MAJOR, *Brunner* (ibid).

Size large. Elytra rounded at the hind margin, very broad, extending considerably beyond the hind femora; first radial branch forked before the middle, the only succeeding one simple; transverse veinlets distant.

Length of body (female) ...	...	42 mm.
Length of pronotum ...	...	8 "
Length of elytra ...	...	50 "
Width of elytra ...	...	15 "
Length of hind femora ...	...	28 "
Length of ovipositor ...	...	2 "

Habitat.—Cape York, Queensland (*Brunner*),

CAEDICIA OLIVACEA, *Brunner* (ibid).

Greenish-olive, lateral ridges of pronotum ferruginous. Fore tibiae unarmed, except apical spine. Hind femora spined below.

Lobes of metasternum triangular. Radial branch forked before the middle.

Length of body (male and female) ...	23	mm.
Length of pronotum... ..	5-6	"
Length of elytra	32	"
Width of elytra	10	"
Length of hind femora	18	"
Length of ovipositor (female) ...	3	"

Habitat.—Sydney, New South Wales; Port Denison, Rockhampton, Queensland; Eastern Australia (*Brunner*).

CAEDICIA INERMIS, *Brunner* (Br. Mon., 194).

Greenish-yellow. Hind femora unarmed below. Lobes of metasternum rounded (also *C. scalaris*). First radial branch forked before the middle.

	Male	Female.
Length of body	18 mm.	22 mm.
Length of pronotum	4.8 "	5 "
Length of elytra	30 "	29 "
Width of elytra	8 "	9 "
Length of hind femora	17 "	17 "
Length of ovipositor	—	3 "

Habitat.—North Australia, Western Australia (*Brunner*).

CAEDICIA HALMATURINA, *spec. nov.*

Dusky yellowish-green. Disk of pronotum wider behind, deflexed lobes as long as high, broadest in the middle, lower margin semi-circular, angular ridges pale-testaceous. Elytra oblong oval, radial veins closely contiguous and quite straight, except near apex, the anterior one terminating in frontal margin; first radial branch curved near base, forked before the middle, succeeded by two faint simple ones. Tympanal area very small. Hindmargin with blackish dots. Posterior part of metanotum, foraminal part of fore tibiae and the upper side of abdomen purplish-crimson, posterior part of segments much darker. Cerci straight, almost parallel. Ovipositor short and sharply curved.

	Female.
Length of body... ..	19 mm.
Length of pronotum	4.5 "
Length of elytra	25 "
Width of elytra	6.6 "
Length of hind femora... ..	15 "
Length of ovipositor	3 "

Habitat.—Kangaroo Island, where a specimen of a female was captured by the author on March 12, 1884, near Mount Tisbet.

The species approaches *C. inermis* in appearance, but differs in shorter broader elytra, spinose fore tibiae, &c., and the purple colour of the abdomen and knees.

CAEDICIA SCALARIS. *Brunner* (ibid, 195).

Pale-green. Elytra with very distinct veins, first radial branch forked beyond the middle, and the transverse venules very regular and ladderlike.

	Male.
Length of body	21 mm.
Length of pronotum	5 "
Length of elytra	32 "
Width of elytra	8 "
Length of hind femora	18 "

Habitat.—Sydney, New South Wales (*Brunner*).

CAEDICIA MINOR *Brunner* (Br. Mon., 195).

Fore tibiae terete above, spined along external margin. Hind-femora below armed with 8-10 spinelets along the posterior margin. Size small.

	Male.	Female.
Length of body	20 mm.	22 mm.
Length of pronotum	4.2 "	4.8 "
Length of elytra	30 "	35 "
Width of elytra	6 "	7 "
Length of hind femora	18.5 "	22 "
Length of ovipositor	— "	1.5 "

Habitat.—Port Denison, Queensland (*Brunner*).

CAEDICIA HOSPES, *Brunner* (ibid, 196).

Resembling *C. minor*, but much larger. Hind femora below armed with 15-20 spinelets.

	Female.
Length of body	26 mm.
Length of pronotum	7 "
Length of elytra	45 "
Width of elytra	13 "
Length of hind femora	27 "
Length of ovipositor	2 "

Habitat.—Amboyna (*Brunner*).

CAEDICIA OBTUSIFOLIA, *Brunner* (ibid).

Vertex very oblique. Fore tibiae unarmed above (except apically). Radial branch forked much before the middle. Hind femora below with 8-10 spinelets. Ovipositor very small. Eyes oblong. Elytra rounded at apex.

	Male.	Female.
Length of body	23 mm.	23 mm.
Length of pronotum	5 "	5 "
Length of elytra	28 "	28 "
Width of elytra	9 "	9 "
Length of hind femora	17 "	17 "
Length of ovipositor	— "	1.5 "

Habitat.—Cape York, Queensland (*Brunner*).

CAEDICIA ACUTIFOLIA, *Brunner* (ibid, 197).

Vertex flat, eyes globose. Elytra distinctly acuminate. Radial vein with four branches. Hind femora below armed with 12-15 spinelets along anterior margin. Ovipositor very short.

	Female.
Length of body	28 mm.
Length of pronotum	6 "
Length of elytra	38 "
Width of elytra	10 "
Length of hind femora	21 "
Length of ovipositor	1.5 "

Habitat.—Cape York, Queensland (*Brunner*).

CAEDICIA BISPINULOSA, *Brunner* (Br. Mon., 197).

Size small. Vertex flat. Eyes globose. Elytra with scattered brownish dots in the disk, radial branch forked in the middle. Hind femora below, with two apical spots. Ovipositor long roundly curved and acuminate.

	Female.
Length of body	21 mm.
Length of pronotum	4 "
Length of elytra	27 "
Width of elytra	6.5 "
Length of hind femora... ..	15 "
Length of ovipositor	3 "

Habitat.—Sydney, New South Wales (*Brunner*).

CAEDICIA HIRSUTA, *spec. nov.*

Size small. Eyes oval, brown. Pronotum subconcave, deflexed lobes rounded below, equally high as long. Elytra rather narrow; veinlets of marginal area irregular and distant, connected by crowded reticulation, first radial branch forked before the middle, succeeded by three more, of which the last is forked near its termination; anterior ulnar vein with two to three branchlets. Legs very slender, all covered, as well as the pronotum, with short stiff hairs. Hind femora spined below, the others unarmed. Fore and middle tibiae with minute spines

below, also hind tibiæ above and partly below. Meso- and meta-sternal lobes triangular, acuminate, latter much larger than the former. Abdomen, subgenital lamina, and cross-wise incurved cerci hirsute.

				Male.	
Length of body	...	...	...	20	mm.
Length of pronotum	...	...	...	5	"
Length of elytra	...	...	...	37	"
Width of elytra	...	...	...	8-10	"
Length of hind femora	...	...	...	24	"
Length of hind tibiæ	...	...	...	24	"

Habitat.—Yam Creek, North Australia (*Prof. R. Tate*, March, 1882).

This species differs from all others within the group by the short stiff tomentum with which most parts are invested, and by the ulnar vein being branched and forked. There are only two male specimens, which originally may have been green, but through long immersion in alcohol, have become uniformly pale testaceous in colour. When the female is discovered it may perhaps be necessary to form a new genus for the reception of this species.

CAEDICIA ROSEOPENNIS, *spec. nov.*

Green and ferruginous. Size small. Vertex flat. Eyes globose, brown with black markings. Head purplish, pronotum, legs, abdomen, and the elytra in part ferruginous, remainder of the last green. Disk of pronotum bordered purplish-brown laterally. Deflexed lobes angularly inserted, much higher than long, lower margin subsinuate. Elytra resembling those of *Symmachis* in outline and venation, disk with small, remote, dusky spots along the middle, hindmargin with minute, crowded black dots. First radial branch forked much before the middle, second simple, third indistinct, much bent and ramified. Tympanal area of male very short, plicate veins irregular and enclosing a sub-circular opaque area of dark-brown colour. Wings transparent, pale rose-colored, except towards apex, veinlets green. All femora wholly unarmed, marked with fuscous stripes exteriorly. Fore tibiæ subterete above, with a few spinelets below towards apex. Meso- and meta-sternal lobes subrotundate, latter much larger than former. Ovipositor not much longer than cerci, much incurved, gradually acuminate. Subgenital lamina of male terminating in two slender terete lobes.

		Male.		Female.	
Length of body	...	13	mm.	20	mm.
Length of pronotum	...	4	"	5	"
Length of elytra	...	24-26	"	25	"
Width of elytra	...	5	"	6	"
Length of hind femora	...	13	"	14	"
Length of ovipositor	...	—	"	2½	"

Habitat.—Cooke's Plains, east of the Lower Murray River, where one female and four males were captured by the author on January 5th, 1887. The insects appeared to feed on *Bursaria spinosa*.

This species resembles *Symmachis* considerably in outline and venation of the elytra, and also in the form of the deflexed lobes of the pronotum, it also appears to exhibit affinities with *C. inermis* and *C. bispinulosa*; from all of which it differs by the rosy colour of the wings, the form of the lobes of the pronotum, the unarmed femora, &c.

CAEDICIA PORRECTA, *Brunner* (Mon. Add. 96).

Dull olive-green. Eyes oblong. Pronotum with the disk very flat, scarcely wider behind, lateral ridges brownish red, deflexed lobes highest beyond the middle. Elytra wider than the length of pronotum, the first radial branch forked in the middle and again near its end. Hind tibiæ sulcate above and unarmed, excepting the apical spine. Hind femora spined towards the apex. Ovipositor very short.

				Female.
Length of body...	...	...	...	26 mm.
Length of pronotum	...	...	...	6·8 "
Length of elytra	...	...	...	40 "
Width of elytra	...	...	...	9 "
Length of hind femora...	...	...	...	22 "
Length of ovipositor	...	...	...	2 "

Habitat.—Rockhampton, Queensland.

Genus DIASTELLA, *Brunner* (Br. Mon., 198).

Elytra widest in about one-third part of their length from the apex; radial branch forked at (or near) the base. Fore tibiæ sulcate and unarmed, excepting the apical spine. All femora spinulose below. Besides other distinctions, this genus differs from the preceding by the short broad anterior femora.

DIASTELLA LATIFOLIA, *Brunner* (ibid, fig. 56).

Pale green. Antennæ, and also the fore and middle legs brownish-yellow marbled with brown. Hind tibiæ with two brownish bands. Elytra coriaceous, opaque. Abdomen purplish above.

				Male.
Length of body ...	...	...	...	23 mm.
Length of pronotum	...	...	...	6 "
Length of elytra...	...	...	...	39 "
Width of elytra ...	...	...	...	12 "
Length of hind femora ...	...	...	...	21 "

Habitat.—Moreton Bay, Queensland (*Brunner*).

DIATELLA FLEXUOSACERCATA, *Brunner* (*ibid*, 98).

Pronotum scarcely wider behind than in front. Elytra with zebra-like oblique brownish stripes. Cerci of male elongate and flexuose.

				Male.
Length of body	...	...	...	22 mm.
Length of pronotum	...	...	...	5 "
Length of elytra	...	...	...	37.5 "
Width of elytra	...	...	...	10.2 "
Length of hind femora	...	...	...	21 "

Habitat.—New Guinea.

Genus PROTINA, *Brunner* (*Mon. Add.*, 10, 98, fig. 16).

Face somewhat swollen. Pronotum rather large, not constricted, disk anteriorly plain, posteriorly-produced and suddenly incurved, forming a pointed transverse ridge, deflexed lobes roundly inserted, highest behind the middle. Elytra broad, first radial branch forked before the middle. Hind femora with compressed base, spined beyond the middle. Hind tibiæ curved towards the apex. Mesosternal lobes triangular, metasternal rounded. Ovipositor rather long.

PROTINA GUTTULATA, *Brunner* (*ibid*).

Olive-green. Antennæ ringed with black. Elytra with distant, small, irregularly-scattered brown spots.

				Female.
Length of body	...	...	...	33 mm.
Length of pronotum	...	...	...	8.5 "
Length of elytra	...	...	...	50 "
Width of elytra	...	...	...	15 "
Length of hind femora...	...	...	...	27 "
Length of ovipositor	...	...	...	7 "

Habitat.—Peak Downs, Queensland.

Genus SYMMACHIS, *Brunner* (*Br. Mon.*, 21, 199).

Fastigium of vertex obtuse, horizontally contiguous with the frontal one. Elytra broadest in the middle or beyond, radial branch forked in the middle, tympanal area of male very short.

Brunner established the genus upon the male only. I consider a specimen of a female in the Adelaide Museum as appertaining to this genus; it has served me for the following description.

SYMMACHIS LACTEIPENNIS, *Brunner* (*ibid*, fig. 57).

Whitish-green. Head, pronotum, and femora whitish. Lower margin of deflexed lobes of pronotum semi-circularly rounded, gradually passing into hindmargin. Elytra pale-green, pellucid, postradial vein much curved at apex, terminating in hindmargin;

first radial branch forked before the middle, second and third simple; ulnar vein much branched, forked at its termination, reaching hindmargin one-third from apex; primary transverse veinlets net-like branched. Tympanal area simple, without transverse, raised veins, a small brown spot at the base opposite to another near hind angle of disk of pronotum and a third at the termination of the plicate vein. Anterior tibiæ near foramina and at the base, also the ulterior lobes of anterior tarsi, fuscous. Ovipositor short, broadly lanceolate, acute, hirsute (as well as cerci, which it scarcely exceeds), disk shining, margins most minutely serrate at and near apex. Subgenital lamina very short, sub-triangular.

	Male.	Female
Length of body ...	17 mm.	15 mm.
Length of pronotum ...	5 "	4 "
Length of elytra ...	30 "	28 "
Width of elytra ...	7 "	7 "
Length of hind femora ...	18 "	15 "
Length of ovipositor ...	—	2.5 "

Habitat.—Murray Bridge, South Australia, where the female was captured by Mr. C. Poare during the early part of April, 1891. The insect appears to be rare.

Notwithstanding the discrepancy of the smaller size of the female, which may be due to dwarfing or locality, and other differences, hesitation to form a new species seems to be justified in this case, until more material comes to hand.

Genus *DICTYOTA*, *Brunner* (Br. Mon. 22, 199).

Pectus compressed. Meso- and meta-sternal lobes longer than broad. Deflexed lobes of pronotum highest beyond the middle, inferior margin emarginate over the coxæ. Elytra with the transverse veinlets in close parallel lines in the marginal area. Base of hind femora very slender.

Besides the above synoptical characters the genus is distinguished by the short vertex, the high ridges surrounding the antennæ, which exceed the frontal vertex considerably, and the sharply angular pronotum.

The exceptional character of free styles in connection with the subgenital lamina connects this genus with several other groups notably the *EURYPALPÆ* (monotypic) from Borneo, Sumatra, &c.

DICTYOTA VIRIDISSIMA, *Brunner* (Br. Mon., 199).

Bright-green and whitish. Pronotum with rough, transverse, lateral ridges very minute or absent. Elytra in the middle about one and a-half times as wide as the length of the pronotum; transverse veinlets in the marginal area rather remote, radial branch forked in the middle. Size small.

	Male.	Female.
Length of body ...	22 mm.	25 mm.
Length of pronotum ...	5 "	6 "
Length of elytra ...	31 "	40 "
Width of elytra ...	7.5 "	11 "
Length of hind femora ...	20 "	26 "
Length of ovipositor ...	— "	4 "

Habitat.—Rockhampton, Moreton Bay, Queensland (*Brunner*).

DICTYOTA INDIVISA, *spec. nov.*

Size moderate. Head (except vertex), all femora, and sternum whitish. Pronotum wider behind, lateral carina ferruginous. Eyes brown. Elytra dull olive-green, radial and ulnar veins brownish, former bordered paler at the base. Transverse veinlets in the marginal area rather remote. Radial veins widely separate at the apex, first branch not forked, nor any of the three succeeding ones (to this character the specific name alludes). Cerci not much incurved. Abdomen greenish, banded with brown. Ovipositor about twice as long as the cerci.

	Female.
Length of body ...	23 mm.
Length of pronotum ...	6 "
Length of elytra...	38 "
Width of elytra ...	9 "
Length of hind femora ...	19 "
Length of hind tibiæ ...	14 "
Length of ovipositor ...	5 "

Habitat.—Vicinity of Adelaide, the only specimen before the author, having been captured by Mr. Zietz, jun., in the parklands of the city on April 26, 1889. It appears to have been overlooked hitherto by collectors.

The species is allied to *D. viridissima*, *Brunner*, but differs chiefly in proportions, the four simple radial branches, and the comparatively short hind tibiæ.

DICTYOTA COSTULATA, *Brunner* (*ibid*, 201).

Size large. Olive-green, head and pronotum whitish, latter with rough transverse ridges; transverse veinlets of marginal area of elytra very close, radial branch forked much before the middle, succeeded by three simple ones.

	Male.
Length of body ...	30 mm.
Length of pronotum ...	9 "
Length of elytra...	50 "
Width of elytra ...	13 "
Length of hind femora ...	29 "

Habitat.—Sydney, New South Wales (*Brunner*).

DICTYOTA PRUINOSA, *Brunner* (Br. Mon., 201, fig. 58).

Size large. Brownish-green; head, pronotum, and the base of elytra and femora whitish. Lateral ridges of pronotum rough and scabrous. Width of elytra twice the length of pronotum, form lanceolate, apex acuminate; transverse veinlets of marginal area very close; radial branch forked in the middle. Fore coxæ with a small spine.

	Female.			
Length of body	38 mm.
Length of pronotum	10 "
Length of elytra	65 "
Width of elytra	20 "
Length of hind femora	33 "
Length of ovipositor	4 "

Habitat.—New Holland; Auckland, New Zealand (*Brunner*).

Size and the whitish dust covering it give the species the aspect of *Stilpnochlora*, a Brazilian and West Indian genus of the group STEIRODONTIA, otherwise far removed.

DICTYOTA ELDERI, *spec. nov.*

Size moderate. Pale-green. Head, pronotum (except hind-margin and posterior angles of deflexed lobes, which are green), all the legs, base of elytra, abdomen, and the under side of the thorax creamy or testaceous-white. Disk of pronotum equally wide in front and behind, lobes with three furrows, all rough with minute pits. Elytra lanceolate, broadest at or slightly beyond the middle, apex rounded; transverse veinlets in marginal area moderately crowded, in parts considerably reticulate; ulnar vein brown; radial veins much separated at the apex, the posterior terminating in the apex; first radial branch forked beyond the middle, and succeeded by two simple ones. Hind femora slender, subterete. Hind tibiæ almost triangular, spines below small to minute.

	Female.			
Length of body	30 mm.
Length of pronotum	6.5 "
Length of elytra	40 "
Width of elytra	10 "
Length of hind femora	30 "
Length of hind tibiæ	21 "
Length of ovipositor	3 "

Habitat.—Mount Squires, Central Western Australia, where the only specimen extant was captured by Mr. R. Helms, the botanist to the Elder Exploring Expedition, in August, 1891. It has been named in honour of the generous promoter of the expedition—Sir Thomas Elder—at whose sole expense it has been con-

ducted, and who has greatly benefited the cause of geographical science and natural history during his life.

The species is allied to *D. pruinosa*, but differs in size, colour, proportions, the branches of the radial vein, its termination in the apex, &c.

Genus POLICHNE, *Stål.* (Br. Mon. 22, 202).

Front prominent, elongate. Eyes very oblong. Elytra linear, narrowed. Deflexed lobes of pronotum longer than wide, with the hind margin much rounded. Hind margin of meso- and meta-sternum truncate. Base of hind femora not dilated, wholly unarmed.

The genus has the aspect of *Tylopsis*, an Old-World genus forming a monotypic group, on account of its long forehead, the long narrow lobes of the pronotum and narrow elytra, but its other characteristics place it among the EPHIPPITYTÆ.

POLICHNE PARVICAUDA, *Stål.* (ibid, fig. 59).

Pale-green or testaceous. Front white. Ridges of pronotum reddish.

	Male.	Female.
Length of body	15 mm.	18 mm.
Length of pronotum	4 "	4 "
Length of elytra	29 "	30 "
Width of elytra	4 "	4 "
Length of hind femora	20 "	22 "
Length of ovipositor	—	3 "

Habitat.—Mount Lofty Range, Kangaroo Island, Tintinarra (S.E.), South Australia; Dimboola, Caromby, (N.W.) Victoria (*Tepper*); Sydney, New South Wales; North Australia; Lord Howe's Island (*Brunner*).

The species varies considerably in colour, viz., from bright-green to pale-testaceous, apparently due to its surroundings or the food taken, for among the green grass no pale specimens, nor among the dry later in season any green ones, appear to be taken. The dark-brown or purplish bordering of the pronotum is, however, constant. The individuals, although never numerous, are not rare in grassy scrublands and fields from January to March. There are some ten specimens in the collection at the Adelaide Museum, six of which are green, the others pale, both comprising both sexes.

POLICHNE FERRUGINEA, *spec. nov.*

Size somewhat smaller than the preceding. Ferruginous. Face, pectus, and femora rather pale. Meso- and meta-notum testaceous. Elytra very narrow, rounded at apex, posterior radial vein forked at apex, both branches curved and terminatin

in the hind margin; transverse veinlets much raised, oblique or at right angles, crowded in ulnar area except at base. Veins and veinlets of the wings ferruginous. Cerci straight, divergent. Supra-anal lamina deeply emarginate. Ovipositor rather long, slightly shorter than the valves.

					Female.
Length of body	...	...	...	...	16 mm.
Length of pronotum	...	...	...	...	4 "
Length of elytra	...	...	...	...	30 "
Width of elytra	...	...	...	...	3 "
Length of hind femora	...	...	...	...	21 "
Length of ovipositor	...	...	...	...	3 "

Habitat.—Mount Lofty Range, South Australia.

The species is described from a single specimen obtained by Mr. E. Guest at Balhannah, but appears to be sufficiently distinct to merit specific rank. It has to be mentioned, that among the individuals placed under *P. parvicauda* by the author, there is a testaceous form with short elytra, comparatively broad, and more rounded at the apex, than those of the green ones. These may ultimately prove to form a separate species.

POLICHNE BREVIPES, *Brunner* (Mon. Add. 99).

Size small. Eyes large, globose. Deflexed lobes of pronotum equally high and long, rounded below. Elytra green, tympanal area of male with a shining black spot. Hind femora scarcely exceeding the elytra one and a-half times, minutely spined below.

					Male.
Length of body	...	...	...	...	16 mm.
Length of pronotum	...	...	...	...	4.5 "
Length of elytra	...	...	...	...	31 "
Length of hind femora	...	...	...	...	16 "

Habitat.—Peak Downs, Queensland.

POLICHNE LONGIPES, *Brunner* (ibid).

Size large. Pronotum very short, deflexed lobes somewhat higher than long. Fore femora brownish below, with some black spinelets. Hind femora exceeding the elytra two or three times, spined distantly below.

					Female.
Length of body	...	...	...	...	20 mm.
Length of pronotum	...	...	...	...	4.5 "
Length of elytra	...	...	...	...	33 "
Length of hind femora	...	...	...	...	24 "

Habitat.—Rockhampton, Queensland.

POLICHNE ARGENTATA, *Brunner* (ibid).

Green. Size small. Fastigium of vertex rather broad, sulcate.

Deflexed lobes of pronotum with a silvery white margin. Marginal area of elytra black-reticulate, with irregular ivory-white veinlets; margin hyaline.

	Male.	Female.
Length of body ...	17 mm.	17 mm.
Length of pronotum ...	3 "	3.6 "
Length of elytra ...	21 "	24 "
Length of hind femora ...	16.5 "	20 "

Habitat.—Peak Downs, Queensland.

POLICHNE SPINULOSA, *Brunner* (ibid, 101).

Size large. Eyes oblong. Fore and middle femora spined along the whole external margin, hind femora in the middle alone.

	Female.
Length of body ...	22 mm.
Length of pronotum ...	5 "
Length of elytra ...	32 "
Length of hind femora ...	25 "

Habitat.—Rockhampton, Queensland.

Genus PARACAEDICIA, *Brunner* (Mon. Add. 10, 101, fig. 17).

Resembles CAEDICIA, but the fore tibiae are terete or sulcate above, and quite smooth, also with conchate foramina in front and open ones behind. Meso- and meta-sternal lobes triangular.

This genus contains New Guinea and Sunda Island species, and forms the connection between the Ehippithytæ and Phlaruocentra groups, the latter being of African habitat. They are large insects, with large broad elytra.

PARACAEDICIA TIBIALIS, *Brunner* (ibid).

Elytra one-coloured, lanceolate, first radial branch forked long before the middle, transverse veinlets irregularly reticulate, radial vein emitting 3 or 4 branches into the hindmargin besides the first one. Fore tibiae above at the base and the hind ones below wholly black.

	Female.
Length of body ...	36 mm.
Length of pronotum ...	8.2 "
Length of elytra ...	50 "
Width of elytra ...	13 "
Length of hind femora...	27 "
Length of ovipositor ...	2 "

Habitat.—Key Island.

PARACAEDICIA RARORAMOSA, *Brunner* (ibid).

Fore tibiae not black, hind ones black above. Two radial branchlets besides the first.

				Female.
Length of body ...	...	...	...	33 mm.
Length of pronotum ...	...	...	...	9 "
Length of elytra ...	...	...	...	54 "
Width of elytra ...	...	...	...	15 "
Length of hind femora...	...	...	...	30 "
Length of ovipositor ...	...	...	...	3.5 "

Habitat.—Halmahera (?!) Island.

PARACAEDICIA OBESA, *Brunner* (ibid).

Fore and hind tibiae uniformly green Disk of pronotum almost round, deflexed lobes roundly inserted. Hind femora towards apex sparsely spined. Anal segments of male with two horns. Cerci simple.

	Male.	Female.	Var. minor male
Length of body ...	23 mm.	30 mm.	21 mm.
Length of pronotum ...	6 "	7.8 "	5.2 "
Length of elytra ...	39 "	47 "	36 "
Width of elytra ...	9 "	11.5 "	7.3 "
Length of hind femora ...	21 "	24.5 "	17.5 "

Habitat.—New Guinea, Easter Islands.

PARACAEDICIA SPINOSA, *Brunner* (ibid, 103).

Anal segment of male truncate. Cerci with a long spine internally.

				Male
Length of body ...	...	...	...	22 mm.
Length of pronotum ...	...	...	...	6 "
Length of elytra ...	...	...	...	36 "
Width of elytra ...	...	...	...	7 "
Length of hind femora ...	...	...	...	22 "

Habitat.—Aru Islands.

PARACAEDICIA SERRATA, *Brunner* (Mon. Add. 103).

Hind femora below densely serrate for the whole length. Fore and middle tibiae flattened.

				Female.
Length of body ...	...	...	...	34 mm.
Length of pronotum ...	...	...	...	8 "
Length of elytra ...	...	...	...	50 "
Width of elytra ...	...	...	...	14 "
Length of hind femora ...	...	...	...	26 "
Length of ovipositor ...	...	...	...	2 "

Habitat.—New Guinea.

PARACAEDICIA PLANICOLLIS, *Brunner* (ibid, 104).

Disk of pronotum flat, deflexed lobes angularly inserted,

equally long and high. First radial branch forked angularly at the base. Fore femora smooth below, hind ones with 12-15 spinelets.

				Female.	
Length of body	...	...	...	21	mm.
Length of pronotum	...	...	...	6	"
Length of elytra	...	...	...	40	"
Width of elytra	...	...	...	10	"
Length of hind femora	...	...	...	24	"

Habitat.—Uncertain.

PARACAEDICIA NIGROPUNCTATA, *Brunner* (ibid).

Elytra dotted all over with small, distant, black spots; they scarcely exceed the length of the pronotum in width.

				Female.	
Length of body...	...	...	...	23	mm.
Length of pronotum	...	...	...	5.5	"
Length of elytra	...	...	...	46	"
Width of elytra	...	...	...	7.5	"
Length of hind femora	...	...	...	23.2	"
Length of ovipositor	...	...	...	2	"

Habitat.—New Guinea.

PARACAEDICIA VERRUCOSA, *Brunner* (ibid).

Elytra with callous white dots accompanying in series the radial veins, first radial branch forked in the middle.

				Male.	
Length of body	...	...	...	25-28	mm.
Length of pronotum	...	...	...	7-7.8	"
Length of elytra	...	...	...	42-48	"
Width of elytra	...	...	...	11-12	"
Length of hind femora	...	...	...	24-27	"

Habitat.—Aru Islands.

F. GROUP TAENIOMENÆ (Br. Mon. 22, 203).

Ovipositor as long or longer than the pronotum, its margin serrulate or crenulate near the apex, rarely smooth. Subgenital lamina of male with free styles, or without them. Fore and middle tibiae sulcate above and mostly spined along the external margin. (These characters also apply to several other but non-Australian groups.) Fore tibiae spined above, but the apical spine is absent. Elytra with the frontal margin dense and ivory-white. Subgenital lamina of male with articulately-inserted styles. Ovipositor much longer than the pronotum, gradually curved, acuminate, and with the disk bright.

Restricted to Australia.

Genus TAENIOMENA, *Brunner* (ibid).

Synonym, *Tinzeda*, part, Walker (Brit. Mus. Cat.)

Hind femora unarmed below. Deflexed lobes of pronotum longer than wide, lower margin nearly straight. Ovipositor distinctly serrulate.

Besides these, the principal distinctions are the narrow pointed elytra, with white stripes; the long slender legs, and the long attenuated ovipositor.

TAENIOMENA ALBOSIGNATA, *Brunner* (ibid, 204, fig. 60).

(*Tinzeda eburnina*, pars. ?, Walker).

Yellowish-green. Face whitish; a bright-white line in the middle of the pronotum, along the lower margin of the deflexed lobes, along the costal margin of the elytra, the interior side of the radial vein, and at the base of the tympanal area of the left elytron; the costal margin and the radial vein being also narrowly marked with a ferruginous border, and the base of the post-ular vein with a blackish streak. Deflexed lobes of pronotum much longer than high, hind angle rounded. Elytra very narrow, much acuminate, not extending beyond the ovipositor of female, but much longer in male. Radial veins distant at base and apex, contiguous intermediately. First radial branch not forked, following one or two simple. Anterior-ular vein straight, parallel with radial, long. Tympanal area of male with a stout plicate vein, which is much raised in left elytron, and joined to a semicircular continuation posteriorly. Wings slightly longer than elytra. Fore femora below unarmed, or with a few minute black spines. Subgenital lamina of male narrow, hindmargin roundly emarginate. Ovipositor long and broad, gradually acuminate, finely serrated towards apex for the third part of its length.

	Male.	Female.
Length of body ...	15 mm.	20 mm.
Length of pronotum ...	4 "	4 "
Length of elytra ...	33 "	26 "
Width of elytra ...	4.5 "	5 "
Length of hind femora ...	22 "	25 "
Length of ovipositor ...	—	12 "

Habitat.—Tintinarra, S.E. (January 7, 1887, *Tepper*), Lucindale (December 24, 1891, *L. Campbell*), Adelaide, South Australia; Sydney, New South Wales; Port Denison, Queensland (*Brunner*).

This species is at once recognisable by the elytra of the female scarcely exceeding the ovipositor, and the roundly emarginate subgenital lamina. There are two females and one male in the Adelaide Museum. The ova are elongate-oval and almost flat, being 4 mm. long, 2 mm. wide, and brownish-grey.

TAENIOMENA SOROR, *Brunner* (Br. Mon., 204).

Bright-green; similarly marked, but larger than the preceding. Deflexed lobes of pronotum much higher behind the middle. Elytra in both sexes much longer than hind femora, without the border of dark dots along the radial white line. Fore femora distinctly spined (3-5). Subgenital lamina very elongate, hind margin cleft. Ovipositor not much curved, very flat, very slightly narrowed, toward apex serrulate-dentate, brown, the remainder pale- to dark-green.

	Male.	Female.
Length of body ...	16 mm.	20 mm.
Length of pronotum ...	5 "	5-6 "
Length of elytra ...	36 "	31 "
Width of elytra ...	5 "	5 "
Length of hind femora ...	26 "	26 "
Length of ovipositor ...	—	10-12 "

Habitat.—Mount Lofty Range, near Adelaide (two females one male), Roseworthy scrub (one male), South Australia.

The species is readily recognizable by the sub-triangular form of the deflexed lobes of the pronotum (which are much wider than in *T. albosignata*), and the elytra extending considerably beyond the hind femora. Both are distinguished from all other described species by the long slightly-curved ovipositor. The leaves of *Bursaria spinosa* appear to supply the food of *T. soror*, all the specimens were found on those bushes.

One of the males placed in this species has the anterior vein furnished with three distinct branches, and the subgenital lamina deeply cleft, although otherwise resembling the other. In the absence of more material it was not thought advisable to form another species.

TAENIOMENA SOROROIDES, *spec. nov.*

Pale-green to testaceous, marked with ivory stripes like *T. albosignata*, the stripe of the pronotum extending triangularly over the head to the vertex of the fastigium, and those of the marginal and radial areas (along the posterior border) are marked more or less distinctly by irregular, minute, black or dusky dots. Deflexed lobes of pronotum narrow, oblique, as high or higher than long, and highest at or slightly beyond the middle, lower margin sub-semicircularly rounded. Elytra narrowed from near the base. Plicate vein of the tympanal area of male prominent and oblique on left elytron. Subgenital lamina with base of emargination cleft, apices incurved. Ovipositor shorter and more incurved than in *T. soror*, finely and closely dentate at and near apex.

	Male.	Female.
Length of body ...	13 mm.	17 mm.
Length of pronotum	4 "	4.5 "
Length of elytra ...	30-39 "	32-34 "
Width of elytra ...	3 "	3 "
Length of hind femora	20-26 "	23 "
Length of ovipositor...	—	7-9 "

Habitat.—Mannum, Leigh's Creek, Western Plains, Port Pirie Parallana and Adelaide (?), South Australia.

This species is distinguished from others by the shorter more curved ovipositor and the high, narrow, oblique lobes of the pronotum. There are four males and as many females in the collection, all more or less bleached and two totally so through immersion in alcohol, the colour is therefore uncertain, the line of blackish dots along the radial ivory-line is, however, quite constant. As the specimens have been gathered from such distant localities, the matching of the sexes is not quite beyond a doubt.

TAENIOMENA LOBATA, *Brunner* (Br. Mon., 205).

Pale-testaceous. Front and sides of face, base of antennæ, middle line and lower half of lobes of pronotum, broad border of marginal area, underside of pectus, and the thick part of hind femora almost white; lateral border of pronotum, a short streak near base of anterior radial vein, post-ulnar vein from tympanal area along nearly the entire length of hindmargin of elytra, the branch at the plicate vein, and a streak on the upper side of the hind femora are blackish. Vertex of fastigium much pointed, and beak-like produced. Bases of antennæ very stout and subcontiguous with the fastigium. Disk of pronotum more or less flat, the deflexed lobes small, narrow, the hind angle produced as a long keeled lobelet (keel blackish). Elytra with radial and ulnar veins very remote at the bases. Tympanal field of male short, plicate vein in both elytra not much raised. All femora unarmed. Cerci of male long semicircularly incurved. Subgenital lamina semicircularly emarginate, nearly as long as the cerci. Ovipositor much longer than pronotum, semicircularly-incurved, flat, broad, acuminate, shining, apex blackish or brown, both margins near apex serrulate or dentate (smooth in the nymph-stage).

	Male.	Female.
Length of body ...	11 mm.	13 mm.
Length of pronotum ...	3 "	3 "
Length of elytra ...	24 "	30 "
Width of elytra ...	3 "	4 "
Length of hind femora ...	— "	24 "
Length of hind tibiæ ...	— "	25 "
Length of ovipositor ...	— "	5-6 "

Habitat.—Tanunda, Riverton, Mount Bryan, South Australia; Coromby, N.W. Victoria (*Tepper*); New South Wales (*Brunner*).

The species is distinguished from all the others by the upper angle of the posterior margin of the narrow lobes of the pronotum being produced into a keeled lobelet, and the pale colour; both of which characters and the general aspect are so abnormal for the genus, that the formation of a separate one for its reception and, perhaps, that of *T. minor*, mihi, might be permissible. The insects are not very rare, and live among the dry grass from November to January. There are one male (without hind femora) and three females (one a nymph) in the Adelaide Museum.

TAENIOMENA FRASERENSIS, *spec, nov.*

Moderately large. Head, base of antennæ, legs and underside of pectus pale-glaucous-white. Antennæ testaceous. Eyes brown. Disk and lobes of pronotum, also marginal area of elytra glaucous, remainder of latter olive-green. Abdomen above brownish-black, terminal segment whitish, underside, &c., brownish-testaceous. Palpi and tarsi green. Disk of pronotum almost flat, wider behind, deflexed lobes as high as long, lower margin semicircularly rounded, widest in the middle, white border nearly obsolete. Elytra widest at base, transverse venules very distinct, crowdedly reticulate in the marginal area; radial veins widely separate at base, then closely contiguous, and again separating considerably somewhat beyond the middle. White lines broad, the posterior bordering of dark-reddish or blackish dots, striæ very distinct; posterior margin entirely bordered with brown. Tympanal area green, short; plicate vein pale, straight, much raised (but not branched), shining. Fore femora with two or three spinelets, hind femora with five or six. Cerci semicircularly incurved, sharply acuminate, tips black. Subgenital lamina not as long as the cerci, posterior margin triangularly emarginate, apex of lobe acuminate.

	Male.
Length of body	20 mm.
Length of pronotum	5 "
Length of elytra	38 "
Width of elytra	5 "
Length of hind femora	23 "

Habitat.—Fraser Range, interior of Western Australia.

The remarkably bright colouring, the form of the lobes of the pronotum, the emargination of the subgenital lamina, and the venation of the elytra separate this species from the others. Some specimens of *T. sororoides*, mihi, from Parallana, in the far north of South Australia, resemble it in size and general aspect; but the form of the lobes is different, and the radial

branch (in one instance) crosses the anterior-vulnar vein. The only specimen in the Adelaide Museum was taken by Mr. R. Helms, collector to the Elder Exploring Expedition, in November, 1891.

TAENIOMENA MINOR, *spec. nov.*

Grass-green, face paler. White lines along radial vein and the base of tympanal area wholly obsolete. Disk of pronotum somewhat concave, middle white line continued to vertex of fastigium. Deflexed lobes longer than high, wider behind, inferior margin nearly straight, with narrow white border. Elytra brownish at apex, medial-plicate vein of tympanal area strongly raised, almost transverse; shoulder-vein very marked; hindmargin of area sharply curved, brownish. Fore and middle femora and tibiae almost unarmed; hind femora entirely so. Cerci of male incurved, subgenital lamina rather widely cleft, tips incurved. Ovipositor widest at base, gradually acuminate, much curved, near apex finely dentately serrate.

	Male.	Female.
Length of body ...	13 mm.	17 mm.
Length of pronotum ...	3.5 "	4 "
Length of elytra ...	30 "	28 "
Width of elytra ...	4 "	4 "
Length of hind femora ...	21 "	22 "
Length of ovipositor ...	—	9 "

Habitat.—Callington, South Australia (*Tepper*), feeding on *Acacia calamifolia*, November 25, 1887, and apparently limited to sandy scrublands.

This species differs from others by the total absence of the white line along the posterior radial vein, its slender form of body, and several other characters.

Genus ELEPHANTODETA, *Brunner* (Br. Mon., 22, 206).

(*Tinzeda*, pars., Walker).

Hind femora spined below. Deflexed lobes of pronotum equally high and long, lower margin rounded. Ovipositor broadest in the middle, the margins very minutely serrated.

Wholly restricted to Australia.

The genus resembles DICTYOTA, on account of the whitish dust covering the forepart, and TAENIOMENA, in the corneous bordering of the base of the elytra, also in the absence of the apical spine of the fore tibiae (which is usually the last to disappear); but differs in the characters indicated above. The generic name refers to the *ivory-like* border of the elytra.

ELEPHANTODETA EBURNATA, *Brunner* (Br. Mon., 207, fig. 61).

Size large. Head and pronotum yellowish-green, frontal margin from the base bordered bright ferruginous, blackish-inclined at

the base, marginal area milky-white at the base. Ovipositor about two and a-half times the length of the pronotum, base greenish, margins ferruginous.

	Female.		
Length of body...	34 mm.
Length of pronotum	7-8 "
Length of elytra	47-51 "
Width of elytra	10 "
Length of hind femora...	30-32 "
Length of ovipositor	17 "

Habitat.—Sydney, New South Wales; Cape York, Queensland; Lord Howe's Island (*Brunner*).

ELEPHANTODETA FARINOSA, *Brunner* (*ibid*).

Size moderate. Head, pronotum, and base of femora whitish or glaucous-green. Disk of pronotum rounded, with a faint whitish or yellowish line in the middle. Elytra pale grassy- or olive-green, the frontal margin at the base of the marginal area hoary in the male, milky-white in the female, with a short dark streak on the inner edge at the shoulders. Abdomen of female banded alternately green and purplish-brown, the latter tint usually narrower than the former. Ovipositor green at base, remainder brown, apex darkest; broad, compressed, semicircularly curved, apex much elevated, finely dentate at the underside, total length about one and a half times that of the pronotum.

	Male.	Female.
	(Dried specimens.)	
Length of body ...	15 mm.	20-23 mm.
Length of pronotum ...	5 "	5 "
Length of elytra ...	38 "	36-31 "
Width of elytra ...	6 "	7 "
Length of hind femora	20 "	21-24 "
Length of hind tibiæ...	23 "	23 "
Length of ovipositor ...	— "	8-9 "

Habitat.—Brighton (*Dreyssig*), Mount Lofty Range, Murray Bridge (*Tepper*), Morgan (*Evans*), Teatree Gully (*Smith*), Goolwa (*Zietz*), Balaklava (*Lewis*), Dowlingville (*Willis*), South Australia; New Holland (*Brunner*).

This species differs from the preceding one in smaller size, proportion of length of ovipositor to that of pronotum, the pale medial line of the latter, &c., and is widely distributed in the southern parts of South Australia, where the other appears to be absent. There are seven females and one male in the Museum collection, and it is a curious fact, that in three specimens of the former, the first radial branch is *forked* beyond the middle, in the right elytra, but simple in the left, while the other four specimens exhibit normal and symmetrical venation.

G. GROUP PHANEROPTERÆ (Br. Mon., 23, 209).

Hind tibiæ spined above or unarmed, the apical present only at the external margin. Fastigium of vertex acuminate. Elytra linear or lanceolate, mostly longer than the wings. Fore and middle tibiæ smooth above, excepting the apical spine (characters also applying to numerous other groups, containing Old World species almost exclusively). Elytra very narrow, radial veins distinctly separated at the base. Subgenital lamina of male without styles, or, if present, extremely minute.

Genus PHANEROPTERA, *Serville* (Br. Mon., 23, 209, fig. 63).

Disk of pronotum almost flat, as are also the deflected lobes of the male. Elytra with the hindmargin straight or sub-rotundate. All femora unarmed below. Wings much longer than the elytra.

The 11 species of this genus inhabit Europe, Asia, Africa, some of the Malayan islands, and a single is recorded by Brunner from "North Australia;" whether rightly so or not must for the present remain doubtful until specimens have come to hand from there.

PHANEROPTERA SUBNOTATA, *Stål* (ibid, 215).

Yellowish-green. Antennæ pale yellow at base, brownish beyond. Subgenital lamina longer than cerci of male, much attenuated, sub-tubular, apex emarginate and incised.

	Male.	Female.
Length of body ...	12 mm.	14 mm.
Length of pronotum ...	3 "	3.2 "
Length of elytra ...	14.5 "	17 "
Length of hind femora ...	14 "	16 "
Length of ovipositor ...	—	4.5 "

Habitat.—North Australia, Borneo, Singapore (*Brunner*), Philippine Islands (*Stål*), Java, &c. (*Serville*).

Genus AGNAPHA, *Brunner* (Mon. Add., 14, 108).

Resembles PHANEROPTERA in habit. Pronotum with the disk flat, deflexed lobes trapezoid in shape and higher than long. Elytra scarcely wider than the length of pronotum. Wings hardly exceeding the elytra. Fore femora spined below.

The genus is restricted to Oceanic islands.

AGNAPHA FUSCA, *Brunner* (ibid).

Brownish-ferruginous. Occiput with four black stripes; these are continued over the pronotum forming two discoidal ones and sometimes one along each of the lateral ridges. Elytra dull ferruginous with brown stripe. Wings smoky with darker tips.

				Female.
Length of body...	...	...	...	20 mm.
Length of pronotum	...	...	...	4.2 "
Length of elytra	...	...	...	27 "
Width of elytra	...	...	...	4.5 "
Length of hind femora...	...	...	...	18 "
Length of ovipositor	...	...	...	7 "

Habitat.—Easter Island.

H. GROUP ANAULACOMERÆ (Br. Mon., 27, 277).

Fore and middle tibiæ terete, sometimes wholly unarmed, rarely sulcate, and if so the apical spine is either wanting, or if present the meso- and meta-sternal lobes are elongated. (Characters in common with numerous other groups.) Frontal fastigium acuminate or obtuse, not laminately produced (excepting some species of the ANAULACOMERÆ). Fore femora—sometimes also the middle ones—always terete below, hind ones flattened near the apex. Subgenital lamina of male without styles. Ovipositor mostly longer than pronotum, slightly curved, acuminate, and very bright. (Characters including *Ctenophlebie*.) Elytra subpellucid, radial branch forked. Deflexed lobes of pronotum either roundly or obtuse-angularly inserted.

This group contains four genera, of one of which two species inhabit some of the Pacific Islands and one Australia (as far as known); otherwise it is essentially South American.

Genus AULACOMERA, *Stål* (ibid, fig. 85).

Disk of pronotum rather flat, without elevated lines.

Thirty species, mostly American; but some also from India, &c.

AULACOMERA INSULARIS, *Stål* (ibid, 295).

Olive-green. Pronotum and legs uniformly green; deflexed lobes equally long and high. Elytra rather broad, first radial branch forked in the middle. Pronotum longer than the face. Ovipositor not much longer than the pronotum. Size small.

				Male.
Length of body...	...	...	...	18 mm.
Length of pronotum	...	...	...	5 "
Length of elytra	...	...	...	28 "
Width of elytra	...	...	...	7 "
Length of hind femora	...	...	...	17 "
Length of ovipositor	...	...	...	6.8 "

Habitat.—Samoa Islands (*Stål*).

AULACOMERA INCERTA, *Brunner* (Br. Mon., 295, fig. 85a, c).

Olive. Pronotum flat, lobes equally long and high, roundly

inserted. Elytra linear. Ovipositor one-half longer than pronotum Size large.

	Male.	Female.
Length of body ...	18 mm.	21 mm.
Length of pronotum ...	5.5 "	5.2 "
Length of elytra ...	32 "	35 "
Width of elytra ...	6 "	7 "
Length of hind femora ...	19 "	20 "
Length of ovipositor ...	—	8.5 "

Habitat.—Tongatabu ; Fiji (*Brunner*).

AULACOMERA ACUMINATA, *Brunner* (Mon. Add., 148).

Size small. Pronotum with deflexed lobes longer than high. Elytra with hindmargin rounded, apex acuminate, tympanal area and sometimes the whole hindmargin brownish, first radial branch emitted much before the middle of vein, and forked towards its apex. Anal segment of male truncate, cerci long, incurved, subgenital lamina short, broad, triangularly emarginate.

	Male.
Length of body ...	15 mm.
Length of pronotum ...	4.5 "
Length of elytra ...	22 "
Width of elytra ...	6 "
Length of hind femora ...	17.5 "

Habitat.—Queensland.

NARRATIVE OF AN EXPLORING TOUR ACROSS
MELVILLE ISLAND, WITH NOTES ON ITS
BOTANY.

By MAURICE HOLTZE, F.L.S.

[Read June 7, 1892].

In October, 1887, an exploring party left Port Darwin for Melville Island, situated about 40 miles to the north of Port Darwin. It was organized by the Government Resident, the Hon. J. L. Parsons, with the view of exploring the interior of the island, of which, owing to the warlike and uncompromising attitude of its natives, so very little as yet is known. The party consisted of 11 Europeans, five Chinese carriers, and six natives of the mainland, and was under the leadership of a bushman of great experience, Mr. P. Saunders. The aboriginals were taken as scouts, and to assist in night-watching, and their intense fear of the wild inhabitants of the island made them most reliable sentinels. There is an old legend amongst the natives of the mainland that raids had been made in olden times by the savage inhabitants of Melville Island upon those of the mainland, and it was with considerable trouble that these six natives were induced to accompany us.

The party arrived late in the afternoon of the 7th October opposite two small creeks about ten miles north-east from Cape Gambier, where our leader intended to land; the strong tidal influence of Clarence Straits drifted our vessel, however, during the night about 12 miles further to the east, where we landed the next morning on a fine sandy beach. From here we had to cut our way through a dense dry jungle about a mile in width, after which we came to a long mangrove flat, and altered our course to north-north-west. About a mile further we came to a chain of billabongs with plenty of water, which, however, was strongly polluted by buffalos. This creek we followed for about a quarter of a mile, and camped then for the day on an open place, so as to arrange everything for an early start next morning.

During the afternoon a lubra passed our camp, in the distance, who ran away yelling with fright on catching sight of us. Shortly after a native appeared, who harangued us from a distance and evidently ordered us off the island. As I wished to establish some sort of intercourse with the inhabitants, and as he was unarmed and accompanied by a lubra, which showed that he had no intent to attack just then, I advanced alone on him, bearing

in my right hand the universal peace-token of all primitive tribes—a green bough—while my left was shown with the open palm, to prove myself to be unarmed, although I must confess that my revolver was loosened in its pouch and ready for action, and my eyes on the alert. I was allowed to approach him within about ten yards, when he commenced to retreat; but he stopped when I stopped, showing his will to keep me at a distance. He was a strong well-made man, completely nude, while his lubra wore an apology for a bark apron. He made me understand by gesticulations that we should leave the island at once, upon which I did my best to show him we had come as friends, and would leave the island on the opposite coast. I after this offered him a handkerchief, which he took from a bush where I had to put it. A second handkerchief was then demanded for his lubra, and transferred to her in the same way, after which we parted amicably.

The afternoon passed quietly, the packs being adjusted amongst our carriers—each man to carry about half hundredweight, his blanket, and a waterbottle, while each European was to carry his rifle, revolver and ammunition, blanket, mosquito-net, and a water-bottle. Our stores consisted of rice, biscuits, tinned meat, tea, and sugar. A bottle of whisky, together with a few medicines, lint, and bandages, and some rockets for signalling, completed our outfit. During the first watch, about half-past seven, several natives, accompanied by lubras, were heard around the camp. A few shots being fired in the air by the leader's orders, they retired precipitately under discordant screaming, and we were no more disturbed during the night. The next morning we started early, going north for about two miles over a fairly-grassed country, showing signs of being visited by buffalos. At two miles and a-half we reached the summit of the coast range, about 200 feet above the level of the sea, composed of ironstone conglomerate, sparsely timbered with *Eucalyptus*, *Grevillea*, *Acacia*, interspersed with *Bombax*, *Erythrophlœum*, *Metrosideros*. Three miles further on a small permanent creek, with good water running eastward, was crossed, and about three miles further on another creek running north was met.

From this point the country rises gradually and is intersected by low ironstone ridges. Continuing our course for another mile and a-half we camped for dinner, and after a short rest, our leader and Mr. Hingston, the surveyor, went a short distance in an easterly direction, hoping to find a creek to fill the water-bags. In this they succeeded at a distance of about 200 yards, but while returning to the camp they were attacked by natives, who had followed us evidently at a distance, and a spear pierced the leader's arm. At the sound of their firearms the party hurried

to their assistance, and pursued the blacks for some distance, who, however, were soon lost in the dense growth on the other side of the creek. The spear being extracted, and the wound dressed, we continued in the same direction, and reached, after about two miles, a tidal creek about 20 yards wide. Luckily for us it was low tide, and we were therefore able to cross easily, the banks showing that at high tide there was more than twelve feet of water. From here we went for about four miles over open forest-country, and camped on the edge of a flat, on a short allowance of water. After the camp was formed, the leader, myself, and two other members of the party, accompanied by two of the blacks, followed the flat down in a north-easterly direction for about a mile, when we discovered a clear spring in a pandanus thicket, which we named "The Rose." The blacks soon brought the coolies down, and all the water-bags were replenished. After a quiet night the water-bottles were filled again, and we started on a north-north-westerly course for about two miles when we came to a large creek fringed with mangroves. Following this for about three-fourths of a mile in a south-south-westerly direction, a narrow part of the creek was reached, where a couple of trees were felled, over which we crossed to the other side. A quarter of a mile westerly brought us to a salt-water river about 50 yards wide, which forced us to alter our course to north-west. We travelled in this direction for about three miles over a high sandy flat, and camped for dinner with a short allowance of water.

After a rest we continued our trip in a north-easterly direction, over ridges covered with ironstone boulders, the intense heat and scarcity of water making this sort of travelling most unpleasant. After going about three miles we struck a pandanus-flat, and following this down in a north-westerly direction for about a mile we discovered a beautiful strong-running freshwater stream, which was named the "Bath." A swim in the cool water and a copious drink revived the party wonderfully, and after filling our waterbags we pushed on for a couple of miles more, and camped for the night on a high ironstone ridge.

On the 11th October a paperbark swamp was encountered shortly after starting, which forced us to alter our course to north-east, and after a mile's travel the sea was at last sighted. A large swamp, however, blocked our way; and here the first plant new to me—*Lycopodium cernuum*—was found. There was no chance to avoid this swamp, so we had to cross it, travelling for about a quarter of a mile, sometimes up to our belts in black mud. The course was continued in a north-easterly direction for half a mile, when a large river, which was called the "Johnson," was seen running on our left, going east. Pushed on for about two miles to

the south-south-west, following an open swamp; crossed, and camped for dinner.

After this a tramp of hardly a mile brought us to the south of Brenton Bay. As our destination was Lethbridge Bay, fifteen miles to the west, we pushed ahead on the sandy sea-beach till late in the afternoon, when we camped. Water was fortunately found in a sandy hollow after digging about three feet, and we passed the night undisturbed.

The next morning an early start was again made, and we expected to see the ship about 10 a.m. However, after a tramp of nine miles we encountered a large inlet of the sea not marked on the map, which was named "Robinson's Inlet," which stopped our further travel. A raft of dry wood and bushes was soon made, and four of our best swimmers placing their clothes and weapons on this raft, crossed over to the other side with instructions to signal the vessel. After a short while they returned, however, with a native canoe, which they had found, and which enabled those members of the party who were not good swimmers to cross to the other side. A tramp of about two miles brought the Bright-Red Cliffs in Lethbridge Bay in our view, and shortly after the s.s. Active was also seen awaiting our coming.

The country around Lethbridge Bay was dotted with signal-fires, and showed that the natives had watched the movements of the vessel round the coast, and intended evidently to oppose a landing on their island with all their might. While waiting on the beach for the Active's boats, the natives managed to crawl through the bush near enough to give us as a parting salute a shower of spears, which, however, although they fell into our midst, did no harm.

The most prominent feature botanically observed on Melville Island is the fact that no bamboos at all were met with, and the fact that the spears of the inhabitants, which were thrown at us, were made of thin mangrove stems and stringybark would almost prove their absence on the island. A botanical novelty which I would have liked very much to have taken with me was found in the shape of a *Livistona humilis* with four distinct branches.

The list of plants observed during the trip is far from complete, as the hurried way in which I had to make my observations enabled me only to see the more prominent plants, particularly trees, besides which, the season being so advanced most grasses and herbaceous plants were made already unrecognisable. No orchids whatever were observed, and, with the exception of the *Lycopodium cernuum*, no plant which I had not previously collected on the mainland.

ENUMERATION OF PLANTS OBSERVED ON MELVILLE ISLAND.

- RANUNCULACEÆ:—*Clematis glycinoides*, De Cand.
 NYMPHÆACEÆ:—*Nymphaea stellata*, Willd.
 ANONACEÆ:—*Ucariæ Holtzei*, F. v. M.; *Polyalthia Holtzeana*,
 F. v. M.
 MYRISTICÆ:—*Myristica insipida*, R. Br.
 MENISPERMEÆ:—*Stephania hernandifolia*, Walpers.
 CAPPARIDÆ:—*Capparis umbonata*, Lindl.
 FLACOURTIÆ:—*Cochlospermum Fraseri*, Planch.
 PITTOSPOREÆ:—*Pittosporum melanospermum*, F. v. M.
 DROSERACEÆ:—*Drosera petiolaris*, R. Br.
 GUTTIFERÆ:—*Calophyllum Soulattri*, Burmann.
 MELIACEÆ:—*Dysoxylum Schultzii*, C. De Cand; *Carapa Moluc-*
censis, Lamark.
 RUTACEÆ:—*Xanthoxylum parviflorum*, Benth.
 MALVACEÆ:—*Sida rhombifolia*, Linne; *Hibiscus tiliaceus*,
 Linne; *Hibiscus cannabinus*, Linne; *Thespesia populnea*,
 Solander; *Bombax Malabarica*, De Cand.
 STERCULIACEÆ:—*Sterculia quadrifida*, R. Br.; *Brachychiton*
paradoxus, Schott; *Helicteres Isora*, Linne; *Melochia*
corchorifolia, Linne; *Elaeocarpus Arnhemicus*, F. v. M.
 EUPHORBACEÆ:—*Petalostigma quadriloculare*, F. v. M.;
Hemicyclia lasiogyne, F. v. M.; *Croton Verreauxii*, Baillon.
 URTICACEÆ:—*Tremna cannabina*, Loureiro; *Ficus scabra*,
 G. Forster; *F. glomerata*, Willdenow; *Antiaris macro-*
phylla, R. Br.
 CASUARINEÆ:—*Casuarina equisetifolia*, R. and G. Forst.
 BURSERACEÆ:—*Canarium Australianum*, F. v. M.; *Ganophyllum*
falcatum, Blume.
 ANACARDIACEÆ:—*Buchanania obovata*, Engler.
 AMARANTACEÆ:—*Gomphrena canescens*, R. Br.; *Amaranthus*
leptostachyus, Benth.
 LEGUMINOSÆ:—*Jacksonia dilatata*, Benth.; *Psoralea Testariæ*,
 F. v. M.; *Indigofera hirsuta*, Linne; *Canavalia obtusifolia*,
 De Cand.; *Abrus precatorius*, Linne; *Pongamia glabra*,
 Ventenat; *Caesalpinia Bonducella*, Fleming; *Peltophorum*
ferrugineum, Benth.; *Erythrophlaeum Laboucherii*, F. v. M.;
Acacia praelongata, F. v. M.; *A. drepanocarpa*, F. v. M.;
A. auriculiformis, Cunning.; *A. latifolia*, Benth.; *Albizzia*
procera, Benth.; *A. monilifera*, F. v. M.
 ONAGREÆ:—*Jussiaea suffruticosa*, Linne.
 SALICARIÆ:—*Pemphis acidula*, R. and G. Forst.
 RHIZOPHOREÆ:—*Rhizophora mucronata*, Lamark.; *Ceriops*
Candolleana, Arnott.
 MYRTACEÆ:—*Verticordia Cunninghamii*, Schauer.; *Calycotrix*
microphylla, A. Cunn.; *Melaleuca Leucadendra*, Linne;

M. symphyocarpa, F. v. M.; *Eucalyptus miniata*, A. Cunn.; *E. clavigera*, A. Cunning.; *E. alba*, Reinwardt.; *E. tetradonta*, F. v. M.; *Metrosideros paradoxa*, F. v. M.; *Eugenia Armstrongii*, Benth.; *E. Holtzeana*, F. v. M.; *Barringtonia acutangula*, Gaertner.; *Careya australis*, F. v. M.; *Sonneratia acida*, Linne fil.

MELASTOMACEÆ:—*Osbeckia Australiana*, Naudin.; *Melastoma Malabathricum*, Linne.

RHAMNACEÆ:—*Zizyphus Oenoplia*, Miller; *Alphitonia excelsa*, Reisseck.

VINIFERÆ:—*Vitis adnata*, Wallich; *V. acetosa*, F. v. M.

LEEACEÆ:—*Leea Brunoniana*, Clarke.

UMBELLIFERÆ:—*Didiscus villosus*, F. v. M.

OLACINEÆ:—*Ximenia Americana*, Linne.

LORANTHACEÆ:—*Loranthus longiflorus*, Desrous.

PROTEACEÆ:—*Persoonia falcata*, R. Br.; *Grevillea Chryso-dendron*, R. Brown; *G. heliosperma*, R. Brown; *G. Dryandri*, R. Brown; *G. mimosoides*, R. Brown; *Hakea arborescens*, R. Brown; *Banksia dentata*, Linne fil.

RUBIACEÆ:—*Sarcocephalus cordatus*, Miquel; *Gardenia megasperma*, F. v. M.; *Iwora Dallachyana*, F. v. M.; *Timonius Rumphii*, De Cand.; *Guettarda speciosa*, Linne; *Morinda citrifolia*, Linne.

PASSIFLOREÆ:—*Modecca australis*, R. Brown.

CUCURBITACEÆ:—*Trichosanthes Holtzei*, F. v. M.; *Luffa foetida*, Cavanilles.

COMPOSITÆ:—*Pleurocarpaea denticulata*, Bentham; *Brachycome iberidifolia*, Bentham; *Vittadinia macrorrhiza*, A. Gray; *Helichrysum lucidum*, Henckel.

GOODENIACEÆ:—*Scaevola Koenigii*, Vahl.; *Goodenia Armitiana*, F. v. M.

GENTIANEÆ:—*Limnanthemum Moonii*, Thwaites.

LOGANIACEÆ:—*Strychnos lucida*, R. Brown.

MYRSINACEÆ:—*Aegiceras majus*, Gaertner.

SAPOTACEÆ:—*Mimusops parvifolia*, R. Brown.

EBENACEÆ:—*Diospyros cordifolia*, Roxburgh.

JASMINEÆ:—*Jasmanum didymum*, G. Forster; *J. simplicifolium*, G. Forster.

APOCYNÆÆ:—*Alstonia verticillosa*, F. v. M.; *Wrightia saligna*, F. v. M.; *Parsonia velutina*, R. Br.

ASCLEPIADEÆ:—*Sarcostemma australe*, R. Br.; *Marsdenia velutina*, R. Br.

CONVOLVULACEÆ:—*Ipomoea Turpethum*, R. Br.; *I. Pes Capræ*, Roth.; *I. graminea*, R. Br.; *Evolvulus linifolia*, Linne; *Cressa Cretica*, Linne.

SOLANACEÆ:—*Solanum viride*, Solander.

- SCROPHULARINÆ:—*Minulus Uvedalicæ*, Benth.
- LENTIBULARINÆ:—*Utricularia chrysantha*, R. Brown; *U. cyanea*, R. Brown; *U. leptoplectra*, F. v. M.; *U. Singeriana*.
- BIGNONIACEÆ:—*Dolichandrone filiformis*, Seemann.
- ACANTHACEÆ:—*Thunbergia fragrans*, J. Koenig; *Acanthus ilicifolius*, Linne; *Hypoesstes floribunda*, R. Brown.
- LABIATÆ:—*Coleus scutellarioides*, Benth.; *Pogostemon verticillatus*, Hasskarl; *Anisomeles salvifolia*, R. Brown.
- VERBENACEÆ:—*Clerodendrum floribundum*, R. Brown; *C. Holtzei*, F. v. M.; *Gmelina macrophylla*, Benth; *Vitex glabrata*, R. Brown; *Avicennia officinalis*, Linne.
- ASPERIFOLIÆ:—*Cordia subcordata*, Lamarck.
- CYCADEÆ:—*Cycas media*, R. Brown.
- TACCACEÆ:—*Tacca pinnatifida*, R. and G. Forster.
- HEMODOURACEÆ:—*Haemodorum subvirens*, F. v. M.
- DIOSCORIDEÆ:—*Dioscorea transversa*, R. Brown.
- LILIACEÆ:—*Smilax australis*, R. Brown; *Asparagus racemosus*, Willd.; *Dracaena angustifolia*, Roxb.
- PALMÆ:—*Livistona humilis*, R. Br.
- PANDANEÆ:—*Pandanus odoratissimus*, Linne f.
- AROIDEÆ:—*Amorphophallus variabilis*, Blume.
- TYPHACEÆ:—*Typha angustifolia*, Linne.
- PONTEDERIACEÆ:—*Monochoria cyanea*, F. v. M.
- PHILLYDREÆ:—*Phillydram lanuginosum*, Banks.
- FLAGELLARIACEÆ:—*Flagellaria Indica*, Linne.
- CYPERACEÆ:—*Cyperus decompositus*, F. v. M.
- GRAMINEÆ:—*Panicum semialatum*, R. Brown; *Setaria glauca*, Palisot; *Spinifex longifolius*, R. Brown; *Imperata arundinacea*, Cyrillo; *Andropogon exaltatus*, R. Brown; *A. contortus*, Linne; *Arundo Roxburghii*, F. v. M.
- LYCOPODINÆ:—*Lycopodium cernuum*, Linne.
- FILICES:—*Lygodium scandens*, Swartz; *Gleichenia flabellata*, R. Brown; *Adiantum lunulatum*, Burmann; *Cheilanthes vellea*, F. v. M.; *Aspidium exaltatum*, Swartz; *Polypodium phymatodes*, Linne; *P. quercifolium*, Linne; *Acrostichum scandens*, J. Smith; *A. aureum*, Linne.

SOME HABITS AND CUSTOMS OF THE CHINGALEE TRIBE, NORTHERN TERRITORY, S.A.

By A. G. B. RAVENSCROFT.

(Communicated by E. C. Stirling, M.D.)

[Read July 5, 1892.]

LOCALITY.—The Chingalee Tribe occupy a large area of country of which Charlotte Waters is the centre; extending northward 96 miles to Daly Waters; southwards 60 miles to Powell's Creek; eastwards 100 miles; and westwards 70 miles.

WATER-SUPPLY.—These aboriginals are by no means solely dependent upon the creeks for their water-supply, as they have shallow wells in various parts of the scrub, 12 and 15 miles distant from the water-courses. One of these native wells is remarkable as regards its construction, being sunk vertically for eight feet, and then a drive was run for six feet. These natives do not appear to be particular as to the purity of their drinking water, and camp by preference at their wells, in which the water is generally more or less tainted, instead of at water-holes. Also the water contained in their wooden vessels often fairly stinks, owing to their habit of putting leaves in it to prevent its spilling, and then neglecting to remove them. This causes a fermentation to be set up, which renders the water quite unsuitable to a thirsty European. The water in the wells is generally of an inky colour, and gives the impression of being contaminated with sewage.

RELIGION.—The idea of a Supreme or any other Supernatural Being does not appear to exist. Neither is there any conception of a hereafter; for, when asked what becomes of them after death, the invariable reply is "all along same dingo." It may be stated, however, that amongst the Dawson blacks of Queensland there is current a kind of "Adam and Eve" story to the effect that long ago blacks of both sexes lived in the sky, who were let down on the earth to play during the day; and taken up again at sunset. On one occasion a blackfellow and his lubra were left behind, and after this the others never again visited the earth. From this pair the blacks of the Dawson River were said to be descended.

CUSTOMS.—Circumcision is generally practised. Two per cent. of the males have also the urethral canal laid open. This latter operation consists in making on the underside of the penis an incision into the canal extending from the base to the orifice. The cut is then plugged with clay until healed. At the age of ten years the boys are circumcised; but the severer operation is only

performed at a more advanced period of life. The natives firmly believe that the operation on the urethra prevents the possibility of procreation. My observations here during the past five years have supported this view ; although, on the other hand, it has come to my knowledge that the lubras of natives of other tribes so operated upon have borne children. These blackfellows, however, always deny the paternity, and, referring to the child, assert, "That one belong another blackfellow ; me no get 'um piccaninny." The women are operated upon when about nine years of age with a stone knife, but the nature of the operation is obscure, although it mutilates them much. The idea here, also, is that it prevents procreation, and as far as my observations go, such lubras have never conceived. There is another custom of a revolting nature which may be mentioned, and which I have investigated with considerable trouble. Old men are often noticed with no lubras, but accompanied by one or two boys, whom they jealously guard. The impression conveyed at first to my mind was that the men were suffering from a form of *proctorexia* ; but this proved to be incorrect upon questioning a communicative and intelligent boy belonging to one of these old men, whose statements have since been corroborated. By words and gestures the boy was made to understand what I thought. He laughed and shook his head, and proceeded by a suggestive pantomime to illustrate what took place. The old man, when he wished to indulge in the vice, would lie down by the fire and beckon a boy to him, and place him in a sitting posture in front. Judging from the amount of energy displayed by the boy in his description, which he illustrated by an occasional spit on the hand, the requisite excitation must be a laborious process. Upon my suggesting that the boy was only romancing, he at once exhibited an indignation at the idea of his word being doubted more virtuous than the language in which it was expressed.

SUPERSTITION.—During my stay in the Newcastle Waters country I found the blacks had a curious superstition connected with some pieces of crystallized quartz. Coming upon a camp one day, I began to examine its contents, and found a large bundle of "paper-bark." On unrolling it I found parcel inside parcel until I came to a very small one containing four or five pieces of crystallized quartz. Taking these back to the station, I inquired the use of them, and the blacks told me they were called Mowija, and were used to kill an enemy by creeping up to him when asleep and touching him on the chest with the quartz, after which he was certain to die. Taking the stone to the camp, I pretended to touch the men with it, which made them look terribly frightened and run as if for their lives. I then drew a piece across my own chest, and there was a general cry of genuine horror.

NOTES ON GLACIAL PHENOMENA ABOUT MOUNT GAMBIER.

By P. H. PRIESTLEY

(Communicated by Prof. Tate).

[Read September 6, 1892.]

ABRIDGED.

One of the most striking and persistent geological features is a stratum of sand, which overlies the limestone of the district. Round Naracoorte are sand-dunes sometimes attaining thirty and forty feet high; these continue intermittently along the high ground through Penola to Mount Gambier. This tract seems to be the watershed of the South-East; spreading away to the west are the Mosquito Plains and the swampy lands of Lucindale and Millicent; on the east are sandy ridges and small sandy flats which stretch disjointedly to the western districts of Victoria. On the western side sand is not so frequent, although great patches occur, as from Mount Gambier to Tantanoola; on the south of Mount Gambier the watershed terminates, and slopes to the sea.

The origin of this sand is not so clear as would appear at first sight; that it is partly of marine origin is proved by the presence of existing sea-shells in it, as may be gathered by reference to Tenison-Woods' "Notes on the Geology of S. A." It is in the immediate vicinity of Mount Gambier, however, that the clue is to be found.

At any one of the numerous quarries close to Mount Gambier, a number of pot-holes in the limestone may be seen in the face; these vary in width from one to five and six feet, and in depth up to ten feet; they are filled, some with the surrounding soil, others with clay (a greenish-gray predominating), interspersed with angular and rounded rock-fragments of various sizes up to two pounds in weight. The angular fragments have their edges as fresh as when first broken off the parent rock, and the rounded ones present the appearance of having been well-rolled by water.

Beneath the volcanic-tuff, the sand-layer ranges from a few to eighteen or twenty inches in thickness; it appears, to a great extent, to be angular, although containing a proportion of rounded grains, and at the same time contains a great number of edged fragments weighing up to a quarter of a pound, and rolled pieces of like size; when sufficiently thick, as at an old well about two

miles west of Mount Gambier, on the right of the road to Millicent, where it is five feet, false-bedding is seen. I have failed to discover any striated stones or animal remains in it; though roots and partially-decayed vegetable matter are common; the vegetation, which grew on this surface, was destroyed by the showers of volcanic ash, and the remains of *Banksias*, &c., are not infrequent in the lowest stratum of volcanic tuff.

On removing the sand from the underlying limestone, its surface is seen to be as smooth as a coarse limestone can be; and is in strong contrast with a weathered face of the same stone. The conclusion is irresistible that the whole has been ground down by some hard substance. Ice?

The leading surface-feature, as viewed from the summit of the Mount, is seen to be the presence of a number of irregularly-placed low hills, running in no definite direction, no cliffs, no valleys. These are hills of denudation, and in most cases are constituted of Woods' "Upper Crag," and the quarries in the lower ground are chiefly in his "Coralline Crag." Their formation cannot be due to rain, because of the smoothness of the surface where protected from weathering influences; or to running water, as the slope of the ground, which is only about one to two hundred feet in sixty miles, would not be sufficient to create a rapid flow, were such a body of water possible.

The phenomena, which cannot be satisfactorily explained without the aid of *Ice*, are (1) the angular and rounded stones in the sand-bed; (2) the pot-holes; (3) the smoothed surface of the underlying limestone; and (4) the rounded outline of the hills.

With regard to the thickness of the ice-cover, there is little to guide one in forming an opinion; the small quantity of detritus may indicate a thick sheet, and the small size of the pot-holes suggests rapidly-moving ice, whilst the depth of denudation points perhaps to a thick ice-sheet, or at any rate to long-continued action. All strata of a later date than Woods' "Upper Crag" have been removed, and in some places his "Coralline Crag" has been denuded to a depth of twenty-five or thirty feet at least.

DESCRIPTIONS OF SOME NEW SPECIES OF
MARINE MOLLUSCA FROM AUSTRALIA.

By PROFESSOR RALPH TATE, F.L.S., F.G.S.

[Read September 6, 1892.]

PLATE I.

Voluta Verconis, *spec. nov.* Pl. i., fig. 5.

Elongate-fusiform, spire turrated, short; aperture about two-thirds the total length.

Pullus hemispheric of two and a half smooth whorls; spire-whorls three and a half, the anterior ones angulated antemedially and nodosely-plicate on the angulation, extending to the anterior suture, but evanescent towards the posterior suture. Body-whorl with ten nodosities on the periphery, abruptly terminating plications, which occupy the median area; at about the anterior-fourth the suture commences to ascend on the penultimate whorl, finally attaining to the angulation; outer lip incrassated, but bevelled-off inside to a thin simple edge; columella with four plications.

The sculpture consists of axial linear grooves, hardly visible by the unaided eye, and transverse wavy-striæ; the latter occur on the spire-whorls and the shoulder of the body-whorl, and are visible only by the aid of a lense.

The colour is whitish, with intricate-linear fulvous markings; chesnut spotted around the posterior suture, and on the body-whorl also about midway between the angulation and the front.

Dimensions of two adult specimens in millimetres:—

	(1)	(2)	Mean ratio.
Total length ...	28	23·5	100
Length of aperture	18·5	15·5	66
Greatest width ...	11	9	38

Habitat.—Two adult specimens, as shown by the incrassation of the lip and its ascension on the spire, were taken alive by Dr. Verco, from 13 fathoms in Yankalilla Bay, St. Vincent Gulf; and a living adolescent example from 30 fathoms off Corney Point, Spencer Gulf. Two dead shells dredged in Investigator's Straits (*Zietz*, in S. Aust. Mus.); also one dead shell in 22 fathoms by Dr. Verco.

Affinity.—In its general characters this new species resembles a dwarf *V. Kreuslera*, Angas, being about one-third its size; from which it differs by its proportionately shorter spire (the ratio of

the total length to that of aperture in *V. Kreuzera* is 100 to 62), more angulated whorls, by the ascension of the anterior part of the body-whorl on the spire, and by its wavy-striated surface. The last character, which it has in common with *Voluta (Volutoncus) coniformis*, Cox, is very exceptional in the genus.

Columbella cominellæformis, *spec. nov.* Pl. i., fig. 8.

Shell elongately oval, moderately solid, shining, unicolorous (pellucid-white, rose, or purplish-brown); apex somewhat apiculate; pullus semicylindrical of two smooth whorls, the first very small, the second narrow and elongate. Spire-whorls four, strongly nodulose-plicate (nine or ten on the penultimate), spirally distantly linear-sulcate, and striated transversely; the two posterior whorls are subangulated.

The body-whorl has about two plications in its posterior part, which become evanescent in an alignment with the hinder angle of the aperture; the rest of the surface is without ornament, but is sculptured with striæ of growth and incised spiral lines, the latter passing into sulci separating depressed narrow ridges on the base.

Aperture narrowly subquadrate; canal short, everted; the outer lip has a blunt edge. The medial part of the body-whorl behind the aperture is slightly compressed and there is a slight tabulation at the suture, which produce a slight insinuation at the posterior angle of the aperture.

Dimensions.—Length, 10; breadth, 4.25; length of aperture, 5 mm.

Localities.—I have collected about a dozen examples in as many years, extending from Fowler Bay, St. Vincent Gulf, Cape Northumberland to Victoria.

This species has much the same build as *C. Smithii*, Angas, and *C. atrata*, Gould, but it is conspicuously different by its smooth body-whorl and nodulose plicæ, and is moreover a much larger shell.

Turbonilla crenulifera, *spec. nov.* Pl. i., fig. 2.

Shell elongately cylindrical, thin, translucent-white, regularly axially ribbed, without spiral sculpture; the ribs are slightly arched, broad, and are continued backwards as crenatures on the very narrow obtuse shoulder of the whorl.

Whorls, excepting the apical ones, six; the pullus is heterostrophe, with the apex transverse and exsert. The axial plicæ decrease in strength as they approach the anterior suture, and on the last whorl are almost obsolete. The aperture is quadrately oval, the columella has an inconspicuous fold.

This species has much the aspect of a *Parthenia*.

Dimensions.—Length, 5; breadth, 1.25 mm.

Localities.—Streaky and Fowler Bays in the Great Australian Bight.*

Ectorisma, *gen. nov.*

Etymology.—*Ectos*, outside; *ereisma*, support; having reference to the external ligament.

Type.—*Ectorisma granulata*, *spec. nov.*

Shell oval, thin, transparent, equivalve, inequilateral, slightly nacreous within; valves gaping behind; surface granulated.

Right valve with a small cuneiform cardinal tooth. Left valve, with an obsolete socket beneath the umbo; the posterior and anterior margins of the hinge-line, where overlapped by the right valve, simulate ridge-like lateral teeth, the development on the posterior side being very pronounced, whilst it is somewhat obsolete anteriorly. Ligament external, supported in the anterior part by a linear-lanceolate extension of the hinge-line.

Mantle open in front, mantle-margin without distinct sinus; siphons united, very short, encircled with cirri; foot conical.

This genus by its external ligament, thin and granulated test, and its gaping valves, is closely allied to *Pholadomya*; from *Neeromya* it differs by its dentition and closed valves. It has certain resemblances to *Poromya*, *Cryptomya*, and other related genera having an internal cartilage.

Ectorisma granulata, *sp. nov.* Pl. i., figs. 3, 3a.

Shell inequilateral, transversely oval-oblong, ventricose; anterior side rounded; posterior side longer, with a narrowed subtruncated margin; posterior margin slightly spreading to form a gape, 2 mm. at the widest, and about 6 mm. in length.

The umbos are large, transverse, approximate. Surface of valves ornamented with granules arranged in radial rows, the granulation is, however, more or less absent in the umbonal region, which is of a pearly lustre externally. There are 15 cirri surrounding the base of the united siphons.

Dimensions.—Antero-posterior, 15; umbo-ventral, 11; sectional diameter, 7.5 millimetres.

Locality.—Hardwicke Bay, Spencer Gulf; two living specimens dredged from 8 to 10 fathoms by Dr. Verco.

GENUS MYSELLA.

Mr. E. A. Smith, in *Annals and Mag. of Nat. Hist.*, 1891, p. 235, suppresses this genus by including it under *Tellinomya*, Brown (usually regarded as a section of *Montacuta*); and at the

* Tasmanian examples have been submitted to me by Rev. H. T. Hull, who considers it identical with *Chemnitzia Beddomei*, Petterd.

same time overlooks the fact that I had already in 1887 * transferred the genus to the vicinity of *Montacuta*. Nevertheless, I am of the opinion that the details of the dentition are not identical in the two, and that *Mysella* should be retained.

The left valve has a relatively large, diverging, flattened tooth posterior to the triangular cartilage-pit; the anterior margin of the pit is thickened and margined to simulate a transverse tooth; in front of this is a small socket.

The right valve has the hinge-margin on each side of the umbo produced, which is overlapped by the hinge-line of the opposite valve; the posterior tooth-like edge interlocks above the cardinal tooth of the left valve, and the anterior, which is shorter, is received in the socket in front of the ridge-like edge of the cartilage-pit. These tooth-like margins of the right valve must be regarded as representing cardinal and not lateral teeth. I have failed to detect any trace of an ossicle, though I am not disposed to attach any particular value to its presence or absence.

Mysella ovalis, *spec. nov.* Plate i., fig. 7.

Shell thin, whitish or pale-horn coloured, pellucid, shining, ornamented with a few concentric ridges and intermediate striæ of growth; equivalve.

Valves transversely oval, sub-equilateral, depressedly convex; hinge-line arched, the anterior slope slightly incurved and shorter than the posterior slope, which is straight; anterior margin inconspicuously truncatedly-rounded, posterior margin more pointed; the ventral margin is moderately curved outwards. Umbos small, acute, approximate, antemedian.

Dimensions.—Antero-posterior diameter, 14·5; umbo-ventral diameter, 10; sectional diameter, 4·25; anterior radius, 6; posterior radius, 8·5.

A larger valve has the following diameters:—Antero-posterior, 15; umbo-ventral, 11·5.

Habitat.—Hardwicke Bay, two examples from ten fathoms, and Investigator Straits near Troubridge, two valves from 22 fathoms (*Dr. Verco*).

This third species differs from its congeners by its less inequilateral shape and by its rounded ventral margin, but approaches more to *M. anomala* than to *M. donaciformis*.

Lucina perobliqua, *spec. nov.* Plate i., fig. 10.

Shell thick, white, obliquely oval, subventricose, inequilateral; dorsal margin concave in front, nearly straight and rapidly descending behind; posterior margin truncatedly rounded; ven-

* Trans. Roy. Soc., S. Aust., vol. IX., p. 99.

tral margin strongly arched, roundly curving to the anterior margin.

Surface with close-set concentric striæ in the umbonal region gradually becoming linear sulci with increasing growth; towards the front margin the flat ridges do not exceed .5 mm. wide, but they are somewhat unequal in width. The anterior and posterior slopes are ornamented with narrow, slender, minutely crenulated, radial threads; the medial area is, however, obscurely radiately-lined. The right valve has two cardinal teeth and a lateral on each side, the left valve has one cardinal tooth and two laterals on each side.

Dimensions of a large example.—Antero-posterior diameter, 28; umbo-ventral diameter, 23; sectional diameter, 15 mm.

Habitat.—As a beach-specimens collected in South Yorke-Peninsula by Messrs. Matthews and McDougall. Numerous single valves dredged by Dr. Verco, from 15 and 22 fathoms in Investigator's Straits; and from 30 fathoms off Corney Point, Spencer-Gulf.

Affinities.—This species has been known to me for some years past, but as the condition of the specimens did not permit of detailed definition, it had been regarded tentatively as the senile stage of *L. Tatei*, Angas. Some of the specimens recently obtained by Dr. Verco permit a critical comparison to be made. In outline the new shell is more comparable with *L. obliqua*, Reeve, but that shell is decussated throughout with radial and concentric striæ. *L. Tatei*, which does not much exceed 8 mm. in the umbo-ventral diameter, is ornamented with linear raised concentric lines, with broad intervening furrows, tessellated by conspicuous radial ridges; whilst the umbonal portion of *L. perobliqua*, corresponding in area with a large valve of *L. Tatei*, is marked with close-set concentric striæ, and the lateral borders only with radial threads. As yet no examples of *L. perobliqua* have been obtained so small as the largest *L. Tatei*, but the smallest of them show an obliquity which is not presented by the latter.

***Lucina paupera*, spec. nov.** Pl. i., fig. 6.

Shell quadrately- and somewhat obliquely- oval, equivalve, very inequilateral, solid, dirty-white, very finely ridged concentrically; the concentric ridges very thin, inconspicuously elevated and distant, the interstices smooth; at about three-fourths to the front they become closer together and thicker; there is no trace of radial ornamentation.

The antero-dorsal margin is nearly straight, and rapidly descending; the post-dorsal margin is arched, and abruptly joins the much-rounded posterior margin; ventral margin considerably arched.

Umbones acute, incurved, approximate; the lunule is broadly lanceolate and shallow, each valve equally contributing to its formation; escutcheon very narrow and slightly depressed, with subangular margins.

Right valve with a cardinal tooth and an anterior lateral tooth; the posterior lateral is imperfectly developed. Left valve with two divergent cardinal teeth; there are no laterals. Inner margin of valves plain.

Dimensions.—Antero-posterior diameter, 11; anterior radius, 6·5; posterior radius, 4·5; umbo-ventral diameter, 10; sectional diameter, 6 mills.

Habitat.—Three miles off Rickaby, Hardwicke Bay, Spencer Gulf, in eight fathoms. One perfect shell (*Dr. Verco*).

This new species has much the outline of *L. quadrata*, Angas, though with a less arched antero-dorsal margin. The concentric ornamentation, the great inequilateral form and the simple dentition are associated characters, which give distinctness to this species.

***Cardita gemmulifera*, spec. nov.** Pl. i., fig. 9.

A single living specimen of a *Cardita* taken in company with *C. Beddomei*, in 17½ fathoms off Corney Point by Dr. Verco, differs sufficiently from that species to justify a distinctive denomination. The costæ are ornamented with close-set rounded tubercles in place of narrow transverse ones, and the sectional outline of the shell is slightly more tumid.

Dimensions.—Antero-posterior, 10; umbo-ventral, 9; sectional diameter, 6·75 mm.

***Lithodomus projectans*, spec. nov.** Pl. i., fig. 1.

Shell cylindrical-oblong; umbones tumid, involute, projecting beyond the anterior margin; somewhat narrowed posteriorly, without angulation, to the roundly-truncated margin; anterior margin rounded; post-dorsal margin strongly arched; ventral margin nearly straight, but slightly curved antemedially.

Test covered with a reddish-brown, thick, glossy epidermis, marked with a few linear sulci which pass into abrupt subimbricating folds on the posterior slope. Interior of a violet-brown colour.

Dimensions.—Antero-posterior diameter, 28; greatest transverse diameter, 12·5; sectional diameter, 12 (vix.).

Locality.—Port Darwin (*W. T. Bednall*).

This species is conspicuous by its projecting umbos and strongly arched dorsal line, in which particulars it resembles *L. cinnameus*, Chemnitz, from which it differs by its less arched dorsal line, straighter ventral margin and by the absence of *decussated sculpture*. It is referred to under *L. brevis*, Tate, Trans. Roy.

Soc., S. Aust., 1887, p. 186, as a near alliance to that fossil-species.

Lithodomus euneiformis, *spec. nov.* Pl. i., fig. 4.

Shell cuneately-oblong, without any posterior angulation, widest near front, attenuating rapidly to the narrow truncated and thickened margin; anterior side very short, truncatedly-rounded; ventral margin nearly straight, but slightly incurved about the byssal region and corresponding with an almost imperceptible depressed area, which descends with a backward inclination from the umbo. Umbos large, tumid, involute, approximate, nearly terminal, but not protruding beyond the vertical plane of the anterior margin.

Test, which is covered with a thick, brown, glossy epidermis, is marked with somewhat distant furrows, becoming on the posterior slope very prominent and subimbricate; the surface is otherwise smooth and without sculpture.

Dimensions.—Antero-posterior diameter, 17; umbro-ventral diameter, 8; sectional diameter through the umbos, 7.

Habitat.—Occupying crypts in a friable consolidated shell-ooze in eight fathoms, two miles off Port Victoria, St. Vincent Gulf; many examples (*Dr. Verco*).

This is a very distinct species on account of its shape and absence of radial sculpture, unless it may prove to be *Modiola pulex*, Lamarck, of King George Sound; the diagnosis of which is, however, so brief as not to be satisfactorily applicable to it.

Myrina crenatulifera, *spec. nov.* Pl. i., figs. 11, 11a.

Test rather thick, moderately inflated, obliquely truncate-oval very inequilateral, equivalve; covered with a thin, brown, glossy epidermis, which is raised into slender folds of growth. The umbones are prominent, inflated, approximate, incline-over towards the front, and are nearly terminal. The anterior outline is oblique, narrowly and regularly arcuate, interrupted only beneath the hinge-extremity by an inconspicuous byssal-sinus; the posterior side is more arched and regularly rounded to the obliquely semicircular ventral margin; the dorsal outline is straight. The hinge-line is broad, transversely plicated at both ends, the plications being interrupted by a ligamental groove, which descends obliquely from the umbo; there are about twenty plications on the anterior side, and about thirty posteriorly.

The interior is bluish-brown, and glossy, with a paler or white clouding circumferentially. The edge of the valves is slightly thickened, particularly in the post-dorsal margin, which is furnished with from four to six tooth-like crenatures—the terminations of radial ridges.

Dimensions.—Antero-posterior diameter, 2 mm.; dorsal-ventral diameter, 2 mm.; sectional diameter, 1·5 mm.

Locality.—In shell-sand, MacDonnell Bay; several examples (*Mr. A. Adcock*).

This little shell has rather the external form of *Crenella* than of *Myrina*, but as the ligamental pit is wholly excavated in the hinge, and not descending underneath it, as in the former, I refer it to the latter genus, which has hitherto been known in Australian waters only by one species—*M. Coppingeri*, E. A. Smith, Challenger Rep., from east of Cape York, in 1,400 fathoms.

EXPLANATION OF PLATE I.

Fig.

1. *Lithodomus projectans*. Nat. size.
 2. *Turbonilla crenulifera*. Enlarged 5 x.
 3. *Ectorisma granulata*. Left valve slightly enlarged.
 - 3a. *Ectorisma granulata*. Side view of hinge of right valve.
 4. *Lithodomus cuneiformis*. Slightly enlarged.
 5. *Voluta Verconis*. Slightly enlarged.
 6. *Lucina paupera*. Slightly enlarged.
 7. *Mysella ovalis*. Slightly enlarged.
 8. *Columbella cominellæformis*. Enlarged 2 x.
 9. *Cardita gemmulifera*. Enlarged 2·5 x.
 10. *Lucina perobliqua*. Nat. size.
 11. *Myrina crenatulifera*. Right valve, exterior, enlarged 8 x.
 - 11a. *Myrina crenatulifera*. Right valve, interior, enlarged 8 x.
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A THIRD SUPPLEMENT TO A LIST OF THE
LAMELLIBRANCH AND PALLIOBRANCH MOL-
LUSCA OF SOUTH AUSTRALIA.

BY PROFESSOR RALPH TATE, F.L.S., F.G.S.

[Read September 6, 1892.]

Some Lamarckian species said to have been collected in South Australian waters have up to the present remained unrediscovered; whilst it is not improbable that the recorded localities are correct, yet because of the known distribution of the species there are grave doubts as to the accuracy of the record.

TELLINA VIRGATA, *Lin.*; *Lamarck*, An. s. V., vol. V., p. 521., gives the Indian Ocean as the habitat; but Bertin, in his Monograph of the Tellines, states that Lamarck's specimens were collected in 1801 by Peron and Lesuer at St. Pierre and St. Francois Isles.

TELLINA STAURELLA, *Lamarck*, with the habitat "seas of New Holland." Bertin says that the types of *variety C.* were collected by Peron and Lesuer at Kangaroo Island, and at St. Pierre and St. Francois Isles.

The above species are known as inhabitants of the Indo-Pacific region reaching the northern shores of Australia, and there are no records of their occurrence in the temperate seas of Australia other than those above quoted.

CRASSATELLA LAMARCKII, *Nyst.*, Bull. Acad. Roy. de Belgique, 1846.

Syn.—*Crassatella sulcata*, *Lamarck*, varieties *a*, *c*, An. s. V., vol. V., p. 481 (non Solander). ? *Crassatella sulcata*, *Reeve*, Icon. Conch., t. 2, fig. 6.

The type specimens of Lamarck's *var. c* are from Kangaroo Island; the other from "La baie des Chien marins."

According to some authors, *Crassatella pulchra*, *Reeve*, and not *C. sulcata*, *Reeve*, represents the Lamarckian species, in which case it is not improbable that *C. Kingicola*, *Lamk.*, may include it. However, I have no authentic record of that species for South Australia, though its occurrence in Port Philip Bay and Bass-Straits and on the East coast is well assured.

Some additional species of *Kellia* and allied genera, which have been collected by Mr. A. Adcock in South Australian waters, have reached me too late for inclusion in this communication.

Addenda and corrigenda to previously recorded species are placed within brackets.

[*Clavagella multangularis*, *Tate*.

Aspergillum (*Humphreyia*) *multangulare* proves to have the right valve free within the adherent disk, and is therefore transferred to *Clavagella*.

Dr. Verco has dredged it in Hardwicke Bay.

Ectorisma granulata, *Tate, antea*, p. 127.

Hardwicke Bay.

Narano rubiginosa, *A. Adams and Angus*.

Ref.—Proc. Zool. Soc., 1863, p. 425, t. 37, fig. 17.

This species differs from *N. divaricata* by its thin delicate test, regular ovate-oblong and ventricose form, and finer divaricate sculpture; in consequence of the last character, the surface is iridescent when viewed by sun-light.

The colour of the South Australian examples is pellucid-white with a pale-pink suffusion in the umbonal regions extending in rays, especially on the posterior side. The largest example, which is smaller than the type, has the following dimensions:—Antero-posterior, 13; umbro-ventral, 10; and sectional diameters, 7 millimetres.

The habitat of the two species is moreover different; *N. divaricata* lives in rocky cranies, whilst *N. rubiginosa* burrows in ooze. The original record is "Port Jackson, four fathoms, enclosed in a nodule of clay;" I do not know if it has been re-taken.

Localities.—Aldinga Bay, very rare and small, in shell-sand (*R.T.*). Dredged in Hardwicke Bay, Spencer Gulf, from eight to ten fathoms, four perfect shells, and five single valves (*Dr. Verco*).

Lucina perobliqua, *Tate, antea*, p. 128.

Investigator's Straits and Southern Yorke-Peninsula.

Lucina paupera, *Tate, antea*, p. 129.

Hardwicke Bay, Spencer-Gulf.

Cardita gemmulifera, *Tate, antea*, p. 130.

Spencer Gulf.

[*Cardita bimaiculata*, *Deshayes*.

Ref.—Proc. Zool. Soc., 1852, t. 17, figs., 4-5.

Syn.—*C. Gunnii*, *Deshayes*, op. cit. p. 101; *C. Atkinsoni*, Ten Woods, Proc. Roy. Soc., Tasm.

The two species of *Deshayes*, here quoted, should be regarded as one and the same; the first was attributed to New Zealand, though it is not admitted by Prof. Hutton in his revised list of New Zealand Mollusca, and the second to Tasmania; because of the assumed far-distant localities, the describer may have been induced to attach undue value to individual differences,

which he would not have done had he known that they belonged to the same habitat.

Of the two names *C. bimaculata* is to be preferred because the diagnosis is accompanied by figures.]

[GENUS MYLITTA, *D'Orbigny and Recluz.*

Our species quoted under *Pythina* should be transferred to the above-named genus; as according to Mr. E. A. Smith, *Annals and Mag. Nat. Hist.*, 1891, p. 227, *Pythina* is restricted to *P. Deshayesiana*, Hinds, and differs from *Kellia* only by its divaricate plications.

Mylitta Deshayesii, *D'Orb. and Recluz.*

Syn.—*Pythina Deshayesii*, *auctores*; *P. Deshayesiana*, *Tate*, *Trans. Roy. Soc., S. Aust.*, 1887, non *Hinds*.

Mylitta Tasmanica, *T. Woods*

Syn.—*Pythina Tasmanica*, *T. Woods*; *id.*, *Tate*, *op. cit.*

Smith says that this species "is identical with the preceding"; but this I think is a very hastily-formed opinion, and I doubt if he has seen the shell or giving attention to the figure or description of it.

Mylitta gemmata, *Tate.*

Syn.—*Pythina gemmata*, *Tate*, *op. cit.*

This species has been obtained in a living state at Edithburgh associated with *Ephippodonta* spp. by Mr. Matthews.]

[**Kellia rotunda**, *Deshayes*. *Var.*, *E. A. Smith*, *Challenger Report*, t. xi., f. 5.

A single specimen obtained by Mr. Adcock at Hardwicke Bay is larger and less rotund than examples comparable with the types. This variety is figured by Smith, as above quoted, who remarks "the specimens from Bass Strait exhibit a precisely similar outline (to the figured example from Port Jackson), and consequently approach very closely to *K. cycladiformis* of New Zealand; and, indeed, I am rather inclined to believe that they will prove eventually variations of one and the same species."]

Mysella ovalis, *Tate, antea*, p. 128.

Hardwicke Bay and Investigator's Straits.

[**Diplodonta Adamsi**, *Angas.*

The generic reference to *Sacchia* in vol. xi., p. 68, is erroneous.]

Myrina crenatulifera, *Tate, antea*, p. 131.

MacDonnell Bay.

[**Lithodomus cuneiformis**, *Tate, antea*, p. 131.

St. Vincent-Gulf.]

[*Barbatia Carpenteri*, Dunker.

Ref. and Syn.—*Anomalocardia Carpenteri*, Dunker, Nov. Conch., t. 30, figs. 7-9, 1860. *Arca (Barbatia) radula*, E. A. Smith, Challenger Lamellibranchiata, p. 260, t. 17, figs. 3-3b. 1885.

There can be no doubt that the above-quoted names refer to one species only; indeed, the types of each are from the same locality—Port Philip Bay, in Victoria. The name employed in the Challenger Report is adopted from the M.S. of A. Adams, in the Cumingian Collection, and its earliest appearance in print is due to Angas, in Proc. Zool. Soc., 1865, p. 655—thus five years after Dunker's diagnosis. Dunker's name must in all fairness be accepted.]

Lima squamosa, Lamarck.

If the difference in the number of ribs be a reliable distinctive character to separate *L. squamosa* and *L. multcostata* (there being about 24 to the former and about 36 to the latter), then *L. squamosa* must be included in our local list; as Mr. Adcock has collected two medium-sized valves on the beach at Port Lincoln. Both species are recorded from the tropical seas of Australia, but I do not know of an authentic occurrence of *L. squamosa* in any other part of Australia. It is true that Menke records the name for Swan River, but it is not certain if it be correctly applicable, as at the time when Menke wrote his "Molluscorum N. Hollandiæ," the Sowerbian species had not been separated from that of Lamarck.

Pecten undulatus, Sowerby.

Ref.—Thes. Conch., vol. i., p. 60, t. 19, figs. 206, 207; *id.*, Reeve, Conch. Icon., t. 20, fig. 73.

A white, triangularly orbicular, depressed shell, ornamented with seven or eight broad rays, which are radially ribbed; the interstitial spaces with shagreen-sculpture. About an inch-and-a-half in diameter.

Off Corney Point, in 17 to 30 fathoms; and Investigator's Straits, in 15 fathoms (*Dr. Verco*). Also Port Phillip Bay!; off East Moncoeur Island, Bass Straits (*Challenger Report*), and Tasmania.

[*Terebratulina cancellata*, Koch.

By a typographical error, this species was quoted in vol. IX. p. 110, as *Terebratella cancellata*.]

THE GRYLLACRIDÆ AND STENOPELMATIDÆ OF AUSTRALIA AND POLYNESIA.

By J. G. O. TEPPER, F.L.S.

[Read September 6, 1892.]

The GRYLLACRIDÆ and STENOPELMATIDÆ form the two last families in Brunner van Wattenroyls' system of the Locustodea. They resemble each other considerably in general appearance, and approximately in habit; but while the former possess depressed tarsi without pulvilli, or sole pads, and lateral expansions to all the joints, the latter have compressed tarsi with usually distinct pulvilli and the first and second joints simple. The two families may be thus diagnosed:—

GRYLLACRIDÆ.—Tarsi depressed, first and second joints with lateral lobes separated by a furrow. Fore tibiæ without foramina and above without apical spines. Hind tibiæ above with single apical spines, below with two on each margin.

STENOPELMATIDÆ.—Tarsi compressed, first and second joints without lateral appendages, mostly provided with pulvilli. Fore tibiæ often with foramina, above with apical spines on each margin. Hind tibiæ above with single, below with two apical spines on both margins.

Although both resemble the Gryllodea, or Crickets, considerably, and have been classed with them by older authors, including Stål, their relationship with them is quite remote, and the four-jointed tarsi, the structure of the wings and the ovipositor relegate them to the Locustodea, notwithstanding their cricket-like habits and appearance. Brunner says:—"The first Gryllid undoubtedly descended from some Locustid, but the Stenopelmatids did not descend from that Gryllid, but were—if one may so express oneself—a second departure of the Locustids in the direction of the crickets."

In Brunner's monograph are 11 genera of Gryllacridæ and 36 of Stenopelmatidæ described as known, the former consisting of 132 species (*Gryllacris* alone of 95), and the latter of 91, whose general distribution will be apparent at a glance at the following table.

	Gryll.	Stenop.	Gryll. in 2 continents.
Europe	0	4	—
Asia and Malayan Archipelago...	65	14	3
Africa, with Madagascar, &c. ...	19	22	1
North and Central America ...	5	29	—
South America and W. India ...	10	7	—
Australia and Tasmania ...	21	4	1
Polynesia, incl. N. Guinea, N. Caledonia, Fiji, New Zealand, &c. ...	15	11	4
Habitat unknown... ..	2	—	—
	137 sp.	91 sp.	9 sp.

In this paper three new genera of Gryllacridæ and two of Stenopelmatidæ are added. Described as new of the former are 18 species and of the latter three, thus raising the totals of the Gryllacridæ to 155 species in 14 genera, and the others to 94 species in 39 genera, and for Australia and Polynesia alone to 39 species of Gryllacrids in 10 genera, and 18 species of Stenopelmatids in 11 genera.

In glancing at the above table it will be noticed that Europe is the only continent from which the Gryllacrids are wholly absent, while in Asia and the adjoining Austral-Polynesian regions they attain their greatest development (119 sp.), the tropical and temperate zones forming their exclusive habitat. The Stenopelmatids show a different distribution. Being found in all continents, of which Europe contains the fewest, they reach their greatest development in the widely-separated African and North American regions, the intermediate Asiatic-Australasian region only furnishing a moderate variety, notwithstanding its immense extent. Strange to say, South America and the West Indian Island furnish the minimum of both families, notwithstanding most favourable climatic conditions, and for which the want of sufficient exploration can scarcely afford an adequate explanation.

The individuals of both families are nowhere numerous or even common. Their habits are extremely retired, and little known in detail. Many species are undoubtedly nocturnal, notably those of almost uniformly dingy or dark colouring; while the tiger-like banding of black and yellow of many Australian species appears to denote diurnal activity among grass. Some species of the Stenopelmatids never see the light of day, exclusively inhabiting dark caves. All cave-inhabiting Orthoptera belong to that family.

Most of those Australian Gryllacridæ which have been observed by me live by day in hollows under logs of wood, stones, vegetable rubbish, in disused outhouses, &c.; many inhabit hollow spaces under bark on the trunks and thicker branches of Eucal-

ypts, their lair having two openings usually. While at rest in these, their head is near and toward one of the openings; the long, highly flexible antennæ being stretched behind towards the other, so as to receive timely warning of the approach of an enemy or prey from that direction. When disturbed they prove very nimble and swift runners, but do not as a rule take to-wing in daylight or in wet weather, but do so at night, or even in cloudy afternoons before sunset. If handled incautiously they are able to inflict severe bites, drawing blood readily, their mandibles being very strong, sometimes of enormous size, and the largest in general among insects. Being carnivorous, they are highly beneficial in assisting to keep down other species that would be highly injurious to agriculture if increasing without check.

I. GRYLLACRIDÆ.

The GRYLLACRIDÆ are distinguished from all other Locustids (1) by the delicate, mantis-like structure of their wings, which are richly provided with veins and veinlets, but without tympanal organs; (2) the long, articulately-inserted, movable spines on the under side of the fore and middle tibiæ; and (3) the lobe-like lateral expansion of the tarsal joints. The last abdominal segment of the male is also very abnormal, the eighth being usually enlarged, still more so the ninth, becoming cucullate and enclosing the anal organs. Brunner has figured eight different types, without, I think, exhausting them. These, however, are scarcely generally useful for more than specific distinction when both sexes are known, and assist in no wise the mating of individuals, because no corresponding structure or proportionate character exists in females.

Presence or absence of wings forms a good character to separate the family into three groups, as the organs of flight are either perfect, more or less rudimentary or wholly absent. When rudimentary, it is easy, as pointed out by Brunner long ago, to distinguish adults from nymphs by observing whether the anterior or costal margin is directed upwards or downwards, the latter infallibly denoting the adult, the former the nymph-stage. The size, shape, and venation of the wing-lobes form good specific or even generic characters.

The anterior (perfect) organs of flight, known as elytra or tegmina, are so richly and variably supplied with veins and veinlets, that their venation is useless for the object of diagnosis, while the form of the apex can only be employed in closely-related species.

The posterior or real wings, however, afford good characters for distinction by the various colouring of veins and membrane.

These are either uni-colourous or of different tints, the veins and veinlets being either lighter or darker than the membrane, or *vice versa*, or the former lined on either side more or less by lighter or darker borders.

The chest or pectus is of very uniform structure, and only in the genus *Epacra* are there any prominent lobe-like expansions

The ovipositor is more or less straight in the adult, of considerable length usually, and stout at the base, where the lower valves are sharply turned up and quite enclosed by the upper ones. The apex is smooth and shining, neither acute nor serrated. In the nymph-stage it is shorter than in the adult, and often (if not always?) shortly incurved from near the base and carried over the back. Its length, curvature, &c., afford good characters.

Size and proportions of the various species appear to be fairly constant, also the colouring, which cannot be neglected in determination.

The most prominent characters are, however, found in the number, size, and arrangement of the spines of the legs, especially of the under side of the hind femora and the upper side of the hind tibiæ, also the relation they exhibit in number and size to each other. The femoral spines are in four to five pairs in the majority of the Australian species examined by me, but are wanting wholly or partially in rare cases, or increase to nine. Those of the hind tibiæ are quite as variable. Even this character, however, cannot be wholly relied upon, as the numbers not only vary within the species, but actual disparity in the same individual may occur, obsolete spines being indicated by wider intervals or minute tubercles, and increase of numbers by intercalated spinelets separated by narrower interspaces. But the greatest uniformity prevails in regard to the movable spines of the fore and middle tibiæ, at least in those examined by me. Here the number is five on each margin, the only exception observed being a female of *Eonius tigrinus* with four pairs. The same remark applies to the spines of the under side of the hind tibiæ, the usual number being three. The subjoined table of the variations of the spines of hind femora and hind tibiæ will show the extent of the observed variability, rarely obscured by other characters, and also serve as a ready means of identification.

TABLE showing Variability of Spines of Hind Legs in the Species and Sexes of AUSTRALIAN GRYLLACRIDS and STENOPELMATIDS.

	Sex.	Hind femora below.				Hind tibiæ above.			
		Right Side.		Left Side.		Right Side.		Left Side.	
		intus	extus	intus	extus	intus	extus	intus	extus
A. GRYLLACRIDÆ.									
<i>Gryllacris magnifica</i> ...	Fem.	9	4	8	4	5	4	5	4
<i>atrogeniculata</i> {	Male	4	3	4	3	5	6	5	6
	Fem.	5	4	5	4	3	4	3	4
<i>marmoriceps</i> {	M.	3	4	4	3	3	3	3	3
	F.	4	3	3	3	3	3	3	3
var. <i>nigrifrons</i> {	F.	1	3	4	5	3	3	3	3
	M.	5	3	5	3	0	0	0	0
<i>longicornis</i> {	F.	5	4	5	2	}	0	0	0
	(nymph)	5	3	5	4				
	"	5	2	4	3				
<i>ferrotestacea</i> {	F.	4	3	4	4	5	4	5	4
	F.	3	4	4	4	3	4	5	4
<i>lutescens</i> ... {	M.	5	4	5	4	6	4	4	4
	F.	4	4	4	4	4	4	5	4
	"	4	4	4	4	5	4	4	3
"	"	4	3	4	3	4	4	6	4
"	"	4	4	4	3	4	4	4	4
<i>straminea</i> ...	—	2	6	4	7	6	6	6	6
<i>subdebilis</i> ...	—	4	7	4	2	5	7	6	5
<i>incerta</i> ...	F.	9	4	11	5	6	6	6	6
<i>paulula</i> ...	—	4	5	3	5	4	4	4	4
<i>Molineusiana</i> ...	—	8	8	9	8	7	6	7	6
<i>Paragryllacris infuscata</i> {	M.	5	4	5	4	5	4	5	4
	F.	5	4	5	4	7	5	7	5
<i>latelineolata</i> {	F.	5	4	5	3	3	4	2	4
	"	6	4	5	3	4	4	5	4
<i>pallidolinea</i> {	M.	5	3	5	3	4	4	3	3
	F.	4	4	4	4	4	2	4	4
	"	5	3	5	4	4	4	4	4
var. <i>minor</i> {	M.	5	3	4	3	5	4	6	4
	F.	4	3	0	0	4	3	3	3
"	"	4	3	3	3	4	3	—	—
<i>insignis</i> ...	M.	4	4	6	4	4	4	5	4
<i>deserta</i> ...	M.	2	3	3	3	3	5	5	5
<i>Eonius tigrinus</i> ... {	F.	3	2	2	3	4	4	4	4
	"	2	2	2	2	4	4	4	4
<i>atrofrons</i> ...	F.	6	5	5	4	6	3	6	3
<i>fumatus</i> ...	F.	2	3	3	3	6	4	5	4
<i>Apteronomus Bordaënsis</i> {	M.	5	2	5	4	6	5	5	5
	"	5	3	5	2	5	4	5	5
var. ? ...	"	0	0	0	0	5	4	5	4
<i>Ametrosomus Helmsi</i> ... {	F.	6	5	7	8	9	7	10	6
	"	3	3	4	5	9	5	10	5
B. STENOPELMATIDÆ.									
<i>Penthoplophora Driffieldi</i>	F.	10	2	9	1	10	8	10	7
<i>Pachypodagrus crassi-</i>	M.	12	6	13	5	6	6	6	6
	"	12	5	12	4	6	5	6	5
<i>pes</i> ...	F.	12	6	12	7	9	8	6	6
<i>Magareyi</i> ...	F.	6	0	6	0	6	6	6	6

The following list of genera indicates their general distribution, and the systematic place of the new ones :—

- GRYLLACRIS, *Serv.*, all regions.
 DIBELONA, *Br.*, South America.
 HYPERBÆNUS, *Br.*, South America.
 PARAGRYLLACRIS, *Br.*, Australia.
 NEANIUS, *Br.*, Australia.
 EONIUS, *gen. nov.*, Australia.
 EREMUS, *Br.*, Old World.
 EPACRA, *Br.*, Australia.
 APOTRECHUS, *Br.*, Australia.
 APTERONOMUS, *gen. nov.*, Australia.
 AMETRUS, *Br.*, Australia.
 AMETROSOMUS, *gen. nov.*, Australia.
 SCHIZODACTYLUS, *Brullé*, Asia.
 COMICUS, *Br.*, Africa.

The principal work upon which this paper is based is Brunner's Monograph of the two families, Vienna, 1888, and his descriptions of the species not actually known to me are herein reproduced. The abbreviation "Br." signifies that author's name.

GRYLLACRIS, *Serville*

Head short, globose. Occiput covered by pronotum. Vertex declined, fastigium usually wider than first antennal joint, margins obtuse, acute or keeled, and contiguous in a straight line with the frontal. Antennæ very long, usually about three times the body; joints numerous, first joint large, more or less gibbous. Eyes pear-shaped, rather prominent. Usually three ocelliform spots. Face broad, transverse or elongate. Cheeks rounded, and quite smooth. Mandibles strong. Pronotum short, truncate before and behind, disk uneven, more or less coloured; deflexed lobes roundly inserted and low, inferior margin straight. Elytra and wings *perfectly explicate*, former ample, more or less hyaline, many-veined, transverse veinlets very distinct, more or less brownish, alike in both sexes. Hind wings cycloidal, hyaline and diversely coloured, veins and veinlets often bordered brownish. Pectus narrow, *meso- and meta-notum obscurely triangular*. Fore coxæ armed with a spine. Fore and middle femora compressed, sulcate below, unarmed. Hind femora compressed, dilated cricket-like, sulcate below, the margins more or less spined. Fore and middle tibiæ terete above, with 4-5 articulately inserted spines on each margin below. Hind tibiæ *flattened above, with (mostly) five spines on either side, also three short apical spurs*. Three first tarsal joints *broadly lobed laterally, lobes of fourth joint much longer*, claws small. Abdomen obese, seventh and eighth segments of male more or less inflated, arched, latter often much

elongated, ninth segment narrow at apex, furcately deflexed, wholly enclosing the anus. Cerci elongate, pilose. Subgenital lamina of male *transverse with articulately inserted styles*. Ovipositor incurved, elongate, rarely straight, apex obtuse or obliquely truncate, superior valves enclosing the inferior at the base.

GRYLLACRIS CYANEA, Br. (Mon., 82).

"Head *brownish-blue, labrum black*, face with three citron-yellow ocelliform spots. Antennæ, first two joints brownish, remainder pale. Pronotum laterally with reddish ferruginous callosities, deflexed lobes bordered black. Elytra *testaceous*, transverse veinlets *broadly bordered with brown*. Wings smoky, veinlets bordered brown. Fore and middle legs *blackish blue*. Hind femora with upper longitudinal half ferruginous, lower blackish-blue, below with five internal and eight external spines. Hind tibiæ chestnut-brown. Ovipositor very straight and slender, brown, apex obtuse. Subgenital lamina triangularly emarginate.

Female.

Length of body ...	...	...	...	27 mm.
Length of pronotum ...	...	...	...	5 "
Length of elytra...	...	...	...	21 "
Length of hind femora ...	...	...	...	16 "
Length of ovipositor ...	...	...	...	23 "

Habitat.—North Australia."

GRYLLACRIS MAGNIFICA, Br. (ibid, 83).

Size large. Head, pronotum, and legs brownish-black, or in reflected light dark-blue. Antennæ lighter or duller brown, or the basal half blackish. Face with impressed dots. Ocelliform spot rather small, triangular, oval, or orbicular, pale to bright yellow. Labrum and mandibles ferruginous to reddish. Pronotum with deep transverse furrows near fore and hind margins, a conspicuous rounded ridge preceding the latter; medial line narrow, impressed; lateral lobes somewhat higher behind, subangular, inferior margin rounded. Elytra testaceous, hyaline (white and opaque with spirit specimens); veins testaceous to brownish; transverse veinlets from deep brownish black to light brown. Wings pale smoky, or concolorous with elytra, veinlets narrowly bordered with brown, and forming very regular concentric lines. Hind femora below with eight to nine internal and four external pale spines with black tips. Hind tibiæ above with five internal and four external spinelets. Abdomen above with all the segments banded brownish or black at the base. Ovipositor nearly straight, very long, apex conical. Subgenital lamina of female triangular, apex rounded.

	Female.	
Length of body	24--29	mm.
Length of pronotum	5	"
Length of elytra	45--52	"
Length of hind femora	13--16·5	"
Length of ovipositor	35--43	"

Habitat.—Port Adelaide, Lyndoch, &c., South Australia; Broken Hill, Central Australia (Coll. S.A. Mus.).

Brunner's description of this magnificent species is unmistakably applicable to the four specimens in the Adelaide Museum, but as they vary in size and colour, it has been slightly departed from. The insects live solitarily under logs, &c., when the ground is dry, or under the loosely-adhering dry bark of Eucalypts, usually about the thicker branches. They appear to be much rarer now than they were some thirty years ago.

GRYLLACRIS ATROGENICULATA, *spec. nov.*

Size moderate. Head from front view broadly *oval*, testaceous, occiput and fastigium deep lustrous brownish black. Fastigium *rather more than twice the width of first antennal joint*. Ocelliform spot scarcely distinct. Face, clypeus, labrum, base and first two joints of antennæ, and the palpi testaceous, borders of frontal fastigium, and a spot under each eye, deep brown. Pronotum with disk rotundately depressed or rounded, fore and hind-margin raised, convex; interruptedly impressed medial line broadly bordered with deep brown, the colour extending to scutellum. Elytra of male *exceeding abdomen by about half their length*, of the female *scarcely reaching base of ovipositor*, testaceous, veins and veinlets brown, apex subacute. Legs of body-colour, except *apex of femora and base of tibiæ*, which are *deep black*. Hind femora incrassated at the base only (female) or to the middle (male), below with four to five internal and three to four external spines. Hind tibiæ above with three to five internal and four to six external spines. Abdomen of male with eighth segment produced, ninth segment cucullate, sulcate, pilose. Subgenital lamina of male with the medial lobe *much extended, quadrate, apical angles produced laterally*, lateral lobes not extended, angular. Styles slender, pilose. Ovipositor stout, straight, apex incurved, obliquely acuminate from below, acute, finely serrated above.

	Male.	Female.
Length of body	25 mm.	32 mm.
Length of pronotum	4·5 "	6 "
Length of elytra	38 "	28 "
Length of hind femora	12 "	15 "
Length of ovipositor	—	12·5 "

Habitat.—Leigh's-Creek (*Poole*), The Peake, Central Australia (*Driffeld*), (Coll. S.A. Mus.).

The species resembles Brunner's *G. nigrogeniculata* (male, Manilla) in general aspect, but the elytra are twice as long, the fastigium much wider, the spines of the hind femora much less in number, &c., hence I have considered the creation of a new species justifiable.

GRYLLACRIS MARMORICEPS, *spec. nov.*

Size moderate to large. Head oblong from front view, vertex much raised above pronotum. Face pale, with fine impressed dots; apex of labrum (male) or clypeus (female) brown, marginal ridges of cheeks dark brown, also the mandibles. Fastigium of vertex twice as wide (male) or wider (female) than first antennal joint, much depressed and flattened, marbled *paler and darker testaceous and traversed by black sinuous lines*. Lower ocelliform spot conspicuous, small, oval, acuminate above, pale-yellow; upper pair subtrigonal, dull, all bordered blackish, this colour extending to apex of fastigium, and continues in three sinuous black lines to posterior margin of occiput, two being lateral and one central, the former joined obliquely at two-thirds of their course (from front) to the middle one by emitting on either side a fine but often interrupted line, the central line being continued *from* the junction to the hindmargin; a depressed, pale, pyriform spot at the base of either of the antennæ borders and defines the frontal fastigium. Disk of pronotum straight, flattened, with a short black medial streak in front and a depressed line behind; fore margin convex, hindmargin nearly straight; deflexed lobes longer than high, nearly quadrangular, angles rounded, callosities promiscuous. Elytra more than one and a half times the length of body, veins slightly darker than body-colour. Wings rather longer than elytra, very pellucid, veins and veinlets not bordered darkly. Hind femora (male) with three or four external, and two internal spinelets (female with three). Hind tibiæ above with three or four very minute spinelets on either margin. Abdomen with ninth segment cucullate, *external margin densely but minutely spined, centrally with two very much longer spines*, remote from each other and the lateral ones. Ovipositor nearly straight, gradually tapering, apex dark, rugose, acuminate.

	Male.	Female.
Length of body...	34.5 mm.	37 mm.
Length of pronotum ...	6.5 "	7.5 "
Length of elytra ...	50 "	50 "
Length of hind femora...	17 "	18.5 "
Length of ovipositer ...	— "	39 "

Habitat.—Morgan, on the Lower Murray River, South Australia (*Evans*) (Coll. SA. Museum).

VAR. NIGRIFONS.

Size smaller than the typical form, which it resembles in aspect and in the markings of the head, but differing by a broad deep black band across the face, almost obliterating all other markings, except the small, nearly circular ocelliform spot. The size is very variable, also the number of spinelets of the hind femora, which vary from 3.5 external and 1.4 internal ones, the hind tibiæ exhibit three on each upper margin with all the specimens before me. The antennæ are about four times the length of the body.

	M.	M. (nymph)	F.	F.	F. (nymph)
Length of body ...	23 mm.	20 mm.	30 mm.	21 mm.	30 mm.
Length of pronotum...	4 "	4 "	5 "	5.5 "	6 "
Length of elytra ...	39 "	9.5 "	34 "	35 "	13 "
Length of hind femora	15 "	12 "	15 "	16.5 "	15 "
Length of ovipositor...	—	—	29 "	35 "	18 "

Habitat.—Ardrossan, Yorke's Pen. (M. & F., *Cadd*); vicinity of Adelaide (M. nymph, F. and F. nymph), South Australia (various contributions) (Coll. S.A. Museum).

The species with its variety is one of the best characterised among those examined on account of the constant markings of the head. Should the variety be deemed to deserve raising into higher rank, its varietal name might become the specific.

GRYLLACRIS LONGICORNIS, *spec. nov.*

Size large. Rusty testaceous, concolorous. Head from front view oblong-oval. Face rugose, with impressed dots, shining. Labrum (adults) oval-elongate. Clypeus subhexagonal, lateral sides shortest; above the latter a *short, conspicuous ridge* on each side, parallel, *directed towards the space between the eyes and antennæ*. Antennæ very long and slender, exceeding four times the length of body; first joint slender. Fastigium of vertex rounded, shiningly smooth, about four times the width of first antennal joint, apex slightly emarginate, apical and lateral margins *bordered narrowly with a pale line recurving upon itself, pale medial line continued to hind margin*. Space between these marginal lines, occiput and sides of head *minutely and irregularly marbled by fine pale lines*, area between them darker than the body-colour. Eyes elongate, black. Pronotum unmarked, anterior and posterior margins straight; lobes much longer than high, inferior margin straight, parallel; humeral sinus very small. Elytra and wings concolorous, pellucid; veins and veinlets of body-colour. Wings with transverse veinlets, bordered very narrowly with dark testaceous. Fore and middle legs long and slender; hind legs much incrassated at base; hind femora below

with two to four external and four to five internal spinelets, being variable on the left and right of the same individual. Hind tibiæ above *scarcely flattened and unarmed*, or the spinelets almost imperceptible with a lens. Ovipositor very slender, nearly straight, gradually pointed, shorter in the nymph than the adult, and, being shortly recurved, is carried over the body. One adult female and two female nymphs.

	Female—Adult.	Nymphs.
Length of body ...	35 mm.	28 mm.
Length of pronotum ...	8 "	7 "
Length of elytra ...	46 "	9.5-10 "
Length of hind femora ...	16 "	15 "
Length of ovipositor ...	27 "	12-15 "

Habitat.—Palmerston, Northern Territory of South Australia (presented by the Hon. S. J. Magarey, M.B.) (Coll. S.A. Museum).

GRYLLACRIS FERROTESTACEA, *spec. nov.*

Size rather large. Ferruginous testaceous, concolorous. Head from front view oval. Face rugose; labrum *subcircular, raised basal part small*. Clypeus transverse, *anterior and posterior margins straight*. Mandibles and eyes black. Ocelliform spot of body-colour, elongate, acute above. Fastigium of vertex highly arched, twice as wide as first antennal joint, apex more or less emarginate, unmarked. Antennæ about two and a half times as long as the body, and of the colour of the latter entirely. Pronotum with the disk somewhat saddle-shaped, flattened, and with a depressed medial line; fore and hind margins convex, former sometimes with a short black line, latter with a black band; lobes *slightly longer than high*, margins straight, angles rounded. Elytra and wings long, concolorous; veins ferruginous, veinlets paler, membrane pellucid. Hind femora stout, below with four spinelets on each margin usually. Hind tibiæ above with four external and five internal spinelets. Ovipositor very slender, considerably incurved, *finely hirsute*; apex gradually acuminate, not acute; inferior keels *short, enclosing a small circular depressed area*.

	Female.
Length of body ...	27-34 mm.
Length of pronotum ...	5 "
Length of elytra ...	50 "
Length of hind femora ...	15-17 "
Length of ovipositor ...	44-45 "

Habitat.—Northern Territory of South Australia (presented by Dr. S. J. Magarey) (Coll. S.A. Museum).

This species resembles *G. lutescens* in general aspect, but the colour and various other distinctions render it advisable to separate the two for the present, until the discovery of the other sex will decide the question.

GRYLLACRIS LUTESCENS, *spec. nov.*

Size large. Pale dirty yellow. Eyes, *fore and hindmargins of pronotum*, bases of abdominal segments, banded black or blackish. Head oval, wider than the pronotum, face slightly rugose with irregular impressed dots, ridges not conspicuous. Labrum almost *circular*, the *middle of base suborbicularly raised* with a medial depressed line continued over the clypeus, which is transverse, posterior margin curved. Frontal fastigium short, inferior limit undefined. Ocelliform spot oblong, acute above, *ivory white*. Space between the antennæ mostly *blackish*, and *enclosing the three pale spots*. Fastigium of vertex short, about one and a-half times the width of first antennal joint, with conspicuous lateral keels, unmarked. Antennæ very slender, pale, about four times the length of body. Eyes black. Pronotum with *fore margin straight, more or less marked with black*, hindmargin *rounded*, produced, *bordered broadly with black*; lobes slightly higher in front, margins straight, angles rounded. Elytra and wings testaceous, pellucid. Transverse veinlets of the latter pale, very slightly bordered dusky. Hind femora below with four spinelets on each margin usually. Hind tibiae above with five to six external and four internal spinelets. Abdomen of male with ninth segment cucullate (Brunner's type "D"), internal margin *not dentate*, but *centrally with two long spines*. Subgenital lamina of male *deeply trilobate, each lobe again emarginate*. Ovipositor sword-shaped, slender, apex conical. Subgenital lamina of female oboval, keels widely separating, extending to the apex. One male, four females.

	Male.	Female.
Length of body ...	30 mm.	28-37 mm.
Length of pronotum ...	5 "	5-5.5 "
Length of elytra ...	47 "	36-40 "
Length of hind femora ...	15 "	15-17 "
Length of ovopositor...	— "	33-40 "

Habitat.—Innamincka, Central Australia, &c. (Coll. S.A. Museum).

GRYLLACRIS DIMIDIATA, *Br.* (Mon. 87).

"Size large. Colour brownish testaceous. Face black. Femora all black below. Knees testaceous, also all the tibiae.

			Female.
Length of body ...	...	...	30 mm.
Length of pronotum ...	...	...	8 "
Length of elytra ...	...	...	39 "
Length of hind femora ...	...	...	20 "
Length of ovipositor ...	...	...	25 "

Habitat.—New Britain."

GRYLLACRIS EXCELSA, *Brunner* (Mon 107, fig. 41, D.).

"Size large. Colour testaceous. Head brownish. Labrum testaceous. Antennæ brown. Femora below and at apex brownish.

		Male.	Female.
Length of body	... ..	48 mm.	42 mm.
Length of pronotum	... ..	11 "	11 "
Length of elytra	... ..	38 "	35 "
Length of hind femora	... ..	26 "	23 "
Length of ovipositor	... ..	—	26 "

Habitat.—Duke of York Island."

GRYLLACRIS APPENDICULATA, *Br.* (ibid 108, fig. 41, H.).

"Size small. Brownish ferruginous, with piceous marks. Occiput and pronotum with brownish lines, latter also with two lateral brown lines, but without the medial line. Wings hyaline, transverse veinlets bordered brownish.

		Male.	Female.
Length of body	... ..	28 mm.	32 mm.
Length of pronotum	... ..	7 "	7·8 "
Length of elytra	... ..	27 "	31 "
Length of hind femora	... ..	18 "	19 "
Length of ovipositor	... ..	—	20 "

Habitat.—New Britain."

GRYLLACRIS AURANTIACA, *Br.* (ibid 112).

"Size small. Ferruginous. Fastigium of vertex depressed, margins keeled. Wings deeply orange at the base, fore part without brown marks, the brownish bands distinctly circumscribed. Abdomen of male with ninth segment rounded. Ovipositor falcate. Subgenital lamina of female flat.

		Male.	Female.
Length of body	... ..	28 mm.	27-31 mm.
Length of pronotum	... ..	6·5 "	7-7·8 "
Length of elytra	... ..	27 "	27-29 "
Length of hind femora	... ..	16 "	16-18 "
Length of ovipositor	... ..	—	1-17 "

Habitat.—New Britain, Amboyna."

GRYLLACRIS DUBIA, *Le Guillon* (ibid 111).

"Deeply ferruginous. Wing concolorous, pale, hyaline, veins and veinlets pale. Hind femora below with ten very minute spinelets on each margin. Fore tibiæ above brownish, streaked with blackish, also hind femora.

				Female.
Length of body ...	...	...	...	22 mm.
Length of pronotum ...	...	...	...	5.6 "
Length of elytra ...	...	...	...	20 "
Length of hind femora ...	...	...	...	14.8 "
Length of ovipositor ...	...	...	...	16 "

Habitat.—Fiji Islands."

GRYLLACRIS OCEANICA, *Le Guillon* (Br. Mon., 112).

"Pale reddish-yellow, medial ocelliform spot small, labrum brownish-yellow, mandibles brownish-red, palpi testaceous, elytra subpellucid, all the tibiæ brownish in the middle. Abdomen brownish above." Length of body of male, 19 mm. (Original description, 1841).

Habitat.—Hamoia (most probably SAMOA) Island."

GRYLLACRIS STRAMINEA, *Br.* (ibid, 115).

Size moderate. Straw-coloured. Head oblong from front view, depressed. Face brownish-ferruginous, mandibles much darker; medial line raised, uncoloured; ocelliform spot large, angularly oval, yellowish-white, extending almost to the apex of frontal fastigium. Eyes black, elongate-oval. Fastigium of vertex scarcely as wide as the first antennal joint; apex prominent, ferruginous, slightly sulcate. Antennæ wholly pale, concolorous with body; about five times the length of the latter; first joint longer than the eyes. Pronotum with the disk very uneven, medially depressed, foremargin rotundately produced, hindmargin almost straight, shortly emarginate; lobes with the inferior margin semicircular, deeply sulcate. Elytra and wings very pale and pellucid, veins and veinlets concolorous with membrane, in length slightly exceeding the ovipositor, apex of former acuminate. Legs rather short. First spine of fore and middle tibiæ longest, the others gradually shorter. Hind femora below, with two to four internal and six to seven external spinelets, mostly very small. Hind tibiæ above, with six spinelets on each margin. Ovipositor curved downward at the base, then almost straight; apex incurved, gradually acuminate, shining. One female.

	Male (<i>Brunner</i>).	Female.
Length of body ...	24 mm.	22 mm.
Length of pronotum ...	4.5 "	4 "
Length of elytra ...	36 "	36 "
Length of hind femora ...	14 "	14 "
Length of ovipositor ...	—	19 "

Habitat.—South Australia (Adelaide, *Brunner*) (Coll. S.A. Museum).

In so assigning the female in the South Australian Museum, from which the above description has been mainly drawn up, it must be remarked that, though slightly shorter in the body, it agrees very well with the principal characters, the differences being sexual and individual.

GRYLLACRIS LIGATA, Br. (Mon., 115).

“Size large. Pale testaceous. Head pale, face with a broad, deeply black transverse band; also the pronotum. Ovipositor narrow, acuminate, incurved.

	Male.	Female.
Length of body	45 mm.	47 mm.
Length of pronotum	8 “	10 “
Length of elytra	43 “	48 “
Length of hind femora	18 “	22 “
Length of ovipositor	—	33 “

Habitat.—New Britain, and New Hanover Islands.”

GRYLLACRIS DEBILIS, Br. (ibid, 116).

“Size small. Pale ferruginous. Fastigium of vertex rounded, one and a half times the width of first antennal joint. Ocelliform spot scarcely distinct. Elytra obtuse, subpellucid. Wings cycloidal, hyaline. Femora at apex and base of tibiæ reddish. Hind femora below, with four internal and five external spines. Ovipositor slender, scarcely incurved, and scarcely exceeding the hind femora, acuminate. Subgenital lamina of female obtusely triangular.

	Female.
Length of body	21 mm.
Length of pronotum	4 “
Length of elytra	18 “
Length of hind femora	10·5 “
Length of ovipositor	12·5 “

Habitat.—North Australia.”

GRYLLACRIS SUBDEBILIS, spec. nov.

Size small. Uniformly testaceous. Head from front view sub-orbicular, depressed. Face with indistinct *pale medial line, ocelliform spots none. Eyes and mandibles black.* Fastigium of vertex twice as wide as first antennal joint; lateral ridges near apex narrowly brownish; also a small spot on each side of superior external angle of clypeus. Antennæ about twice the length of body, and of the same color. Pronotum with disk sub-triangular, medially depressed; fore and hindmargins raised, former convex, latter concave; lobes deeply sulcate, inferior margin slightly rounded, angles subrotundate. Elytra scarcely

exceeding the ovipositor, concolorous. Wings shorter, similar to elytra. Legs long, pale. Hind femora below with four external and seven internal spinelets (on the right, while there are only two on the left). Hind tibiae above with five to seven external and five to six internal spinelets. Ovipositor *short, much incurved, acuminate*, and with a *fuscous line on each side*.

	Female.			
Length of body...	16 mm.
Length of pronotum	4 "
Length of elytra	21 "
Length of hind femora...	12.5 "
Length of ovipositor	7.5 "

Habitat.—Northern Territory of South Australia (Coll. S.A. Museum). (Presented by Hon. S. J. Magarey, M.B.).

This species appears to be allied to *G. debilis*, Br., but differs from it and all others examined in the structure of the pronotum, elytra, and ovipositor, the latter especially being remarkably short.

GRYLLACRIS FERRUGINEA, *Brunner* (Mon., 117).

"Size small. Deeply ferruginous. Resembling *G. debilis*. Pronotum deeply sulcate. Elytra deeply ferruginous. Hind femora below with 10 spinelets on each margin.

	Male.	Female.
Length of body ...	10 mm.	21 mm.
Length of pronotum ...	5.6 "	5.6 "
Length of elytra ...	19 "	19 "
Length of hind femora...	13 "	13 "
Length of ovipositor ...	—	14 "

Habitat.—Fiji Islands."

GRYLLACRIS EXIGUA, *Br.* (ibid, 117).

"Size very small. Testaceous. Fastigium of vertex scarcely wider than first antennal joint, obtuse. Antennae very long. Elytra ferruginous, less than one and a half times the length of the hind femora. Latter below almost smooth. Described from a specimen without body.

Length of pronotum ...	...	...	3.5 mm.
Length of elytra ...	...	...	10 "
Length of hind femora ...	...	...	8.5 "

Habitat.—New Caledonia."

GRYLLACRIS HYALINA, *Br.* (ibid, 117).

"Size moderate. Straw-coloured. Fastigium much wider than first antennal joint. Ocelliform spot citron-coloured, elliptical. Elytra acuminate, straw-coloured, subpellucid, two and a

half times longer than hind femora. Wings obtuse, triangular, subhyaline. Hind femora with eight internal and five external spinelets. Ovipositor almost straight, acuminate. Subgenital lamina of female triangular, with incurved sides, apex truncate.

				Female.
Length of body ...	...	...	...	18 mm.
Length of pronotum ...	...	...	...	4 "
Length of elytra ...	...	...	...	25 "
Length of hind femora ...	...	...	...	10 "
Length of ovipositor ...	...	...	...	14 "

Habitat.—Australia."

GRYLLACRIS GEMINA, Br. (Mon., 17).

"Resembles the preceding, but differs by the fastigium being scarcely wider than the first antennal joint; elytra nearly three times the length of the hind femora, latter dotted with black, all the tibiæ at the base indistinctly blood-red, and the subgenital lamina of the female very little emarginate.

				Female.
Length of body...	...	...	...	18 mm.
Length of pronotum ...	...	...	...	4 "
Length of elytra ...	...	...	...	32 "
Length of hind femora...	...	...	...	11.5 "
Length of ovipositor ...	...	...	...	14 "

Habitat.—North Australia."

GRYLLACRIS MAJOR, Br. (ibid, 118).

"Size moderate. Straw-coloured. Fastigium scarcely wider than first antennal joint, flattened. Ocelliform spot large, citron-coloured. Elytra very large, acuminate, about three times larger than hind femora. Latter with seven to eight long spinelets on each margin. Tibiæ blood-red about the base. Ovipositor distinctly incurved. Subgenital lamina of female obtusely triangular.

				Female.
Length of body ...	...	...	...	21 mm.
Length of pronotum ...	...	...	...	5 "
Length of elytra...	...	...	...	41 "
Length of hind femora ...	...	...	...	13 "
Length of ovipositor ...	...	...	...	21 "

Habitat.—Sydney, N. S. Wales."

GRYLLACRIS ADVENTA, Br. (ibid, 118).

"Resembles the last. Fastigium with subcarinate margins narrower than first antennal joint. Hind femora below with

four to five spinelets on each margin. Ovipositor nearly straight, apex suddenly incurved, acuminate. Subgenital lamina of female narrow in the middle, apex truncate, quadrangulately emarginate.

				Female.
Length of body ...	...	...	...	23 mm.
Length of pronotum ...	...	...	...	4.5 "
Length of elytra ...	...	...	...	34 "
Length of hind femora ...	...	...	...	12 "
Length of ovipositor ...	...	...	...	17 "

Habitat.—Queensland."

GRYLLACRIS INCERTA, spec. nov.

Size rather large. - Pale testaceous. Head from front view subglobose, much wider than pronotum. Face pale, nearly smooth, shining. *Clypeus* shortly subtriangular, emarginate. Labrum short, broader than long, base narrow, with a ridge fitting into the emargination of the clypeus. Mandibles deep black. Ocelli-form spot inconspicuous, orbicular. Fastigium of vertex tumid, termination indistinct, about three times as wide as first antennal joint; subtriangular space between apex and spot whitish, with reddish borders. Pronotum very round, foremargin straight, hindmargin slightly emarginate; lobes higher than long, margins nearly straight, angles rounded. Elytra broad, twice as long nearly as the body; veins and veinlets of body colour. Wings as long as elytra, pellucid, veinlets pale. Hind femora below with four to five external and ten to eleven internal spinelets. Hind tibiae above, with six spinelets on each margin. Ovipositor slightly acuminate, somewhat dilated towards the apex, but not acute, and unarmed. Subgenital lamina of female broad, deeply and widely emarginate.

				Female.
Length of body ...	...	...	...	32.5 mm.
Length of pronotum ...	...	...	...	5 "
Length of elytra ...	...	...	...	54 "
Length of hind femora ...	...	...	...	17 "
Length of ovipositor ...	...	...	...	32 "

Habitat.—Leigh-Creek, South Australia (*A. A. Poole*, in Coll. S.A. Museum).

There being only a specimen of the female in the collection, the claim to specific rank is perhaps uncertain; but the form of the clypeus, labrum, pronotal lobes, and subgenital lamina distinguish it from all the others. The ova removed from it are oblong-cylindrical, pale testaceous, measure 4.5-5 mm. in length and 1.25 mm. in transverse diameter, and under a Coddington lens, exhibit close, regular, and oblique lines in transverse sets.

GRYLLACRIS PAULULA, *spec. nov.*

Size small. Testaceous. Head oval from front view. Face with upper part blackish-brown variegated, *the lower border extending from below the eye in a semicircular curve to or partly over the clypeus*, with undefined, though distinct, outline; remainder of latter and the labrum pale; mandibles ferruginous, palpi pale. Ocelliform spot oval, acute above, pale yellow. Eyes elliptical, wider above. Fastigium of vertex one and a half times the width of first antennal joint, apex conical, disk in front *rather deeply depressed, bordered by high narrow keels*; exteriorly with a whitish oval spot on each side behind the antennæ, dark-brown (also occiput), and with a fine pale, indistinct medial line. Pronotum saddle-shaped, front straight, with a narrow triangular black spot in the middle; hindmargin straight, slightly raised, with a blackish-brown band extending beyond the humeral sinus; lobes rather high, subangular, margins almost straight. Elytra with apex rounded, veins ferruginous. Wings paler, veins and veinlets scarcely darker than membrane, pellucid. Legs rather long, fore and middle tibiæ, also all knees, pale blackish-brown. Hind femora stout, below with three to four internal and five external spinelets, the emargination between the last spine and the knee being short and deep. Hind tibiæ pale, with four spinelets on each margin. Abdomen, with base of all segments, *banded blackish-brown, dorsally and laterally*. Ovipositor slightly incurved, apex acuminate, subacute, smooth. Subgenital lamina of female semicircular, with two strong keels below. Two females.

	Female.			
Length of body	23-25 mm.
Length of pronotum	3-4 "
Length of elytra	25-27.5 "
Length of hind femora	11-13 "
Length of ovipositor	30-34 "

Habitat.—S. Australia; Western Plains (*A. J. Percy*), Monarto (*Tepper*) (Coll. S.A. Museum).

Allied in size to *G. subdebilis*, and in wing structure to *G. atrogeniculata*, but differing from either by the marking of the face, form of fastigium, the banding of the abdomen, &c.

GRYLLACRIS MOLINEUSIANA, *spec. nov.*

Size small. Pale testaceous. Head from front view sub-cuneiform, almost flat above. Face blackish-brown, apex of fastigia, disk of clypeus and labrum dark-reddish, margins darker, medial line obsolete, ocelliform spot large, broadly oval, bright yellow, lateral spots on external sides of fastigium also bright yellow. Eyes greyish-brown. Fastigium of vertex about

one half wider than first antennal joint, same as body-colour. Antennæ not much exceeding the elytra in length. Pronotum with disk almost evenly rounded, slightly constricted behind, medial impressed line ending at posterior furrow, foremargin slightly rounded, hindmargin produced, rounded. Elytra and wings ample, veins mostly pale reddish-brown, membrane of body-colour, pellucid, apex bluntly acuminate. Fore and middle tibiæ, also all the tarsi, crimson. Hind femora below with eight external and eight to nine internal spinelets. Hind tibiæ above with seven internal and six external spinelets. Abdomen above the last segment *pitchy and deep black*, eighth segment enlarged, ninth segment with *apex wasp-like acuminate*. Subgenital lamina of male *very short, medial lobe spine-like, lateral lobes almost obsolete*. Styles longer than cerci, both pilose.

	Male.			
Length of body	18 mm.
Length of pronotum	3.5 "
Length of elytra	33 "
Length of hind femora...	12 "

Habitat.—Wirrabara Forest Reserve, South Australia (Coll S.A. Museum).

The specimen described was captured and presented by A. Molineux, Esq., F.L.S., the active Secretary of the Bureau of Agriculture, and is dedicated to him as a slight acknowledgment of his unobtrusive and disinterested zeal in promoting natural history for many years. The species is distinct from all others by the intense dark colour of the terminal abdominal segments, the ninth approaching Brunner's type "A," but the subgenital lamina presents quite a different aspect. The external darkly-tipped spines of the hind femora are much larger than the internal, the more or less red-coloured ones of the hind tibiæ are almost equal in size.

PARAGRYLLACRIS, *Gerstaecker* (Brunner, Mon., 369, fig. 44).

Habits of *Gryllacris*, but differing in the form of the subgenital lamina of the male, the latter possessing no *articulately* inserted styles, and the hind femora (in the typical form) being armed with five to seven minute spinelets.

Fastigium of vertex usually twice as wide as the first antennal joint. Elytra ample, obtusely acuminate, never obtuse, veins and veinlets more or less infusate. Wings subhyaline, never striped. Hind femora below with rather stout spines, often distant or absent. Fore and middle tibiæ below with five pairs of spines. Hind tibiæ above with five spines usually on each side. Abdomen of male with the eighth dorsal segment normal, the ninth more or less hood-like, the hindmargin truncate or

allous-appendiculate. Subgenital lamina of male broad, transverse, medially lobed, laterally with style-like appendages. Ovipositor always nearly straight, very long and slender. Subgenital lamina of female very transverse.

Species all Australian.

I have retained Brunner's genus, and included some new species that appeared to conform to the characters, but doubt whether it can be maintained as more than a subgenus to *Gryllacris*, because the main distinctions appertain to the male sex alone, which is very inconvenient, it not always being possible either to have *both* sexes handy, or to mate individuals correctly, when not caught *in coitu*. Concerning the number of spinelets of the hind femora, it has been shown already that they are too variable even individually to serve as a reliable guide. It is therefore quite possible that some of my species under this genus may have to be transferred to *Gryllacris* upon better acquaintance, and *vice versa*.

PARAGRYLLACRIS COMBUSTA, *Gerstaecker* (Br. Mon., 370, fig. 44a).

“Testaceous, shining. Pronotum marked with black. Face deep black, concolorous, or with a yellowish spot. Occiput testaceous, marked brownish. Medial vitta large, trifoliate. Veinlets of elytra paler than membrane.

	Male.	Female.
Length of body ...	32 mm.	37 mm.
Length of pronotum ...	7.5 “	8 “
Length of elytra ...	37 “	38 “
Length of hind femora...	18 “	18 “
Length of ovipositor ...	— “	23–26 “

Habitat.—Sydney, N.S. Wales; Rockhampton, Queensland; Lord Howe's Island.”

PARAGRYLLACRIS INFUSCATA, *Br.* (Mon. 371).

Testaceous. Head deep black (or partly dark brown), except hind margin of cheeks, ocelliform spot, clypeus, labrum and palpi, which are testaceous. Fastigium of vertex one and a-half times to twice as wide as first antennal joint, depressed, margins keeled. Antennæ first and second joints pale, remainder black (or brown). Pronotum testaceous (or brownish), hindmargin black, anterior angles acute (or rounded?). Elytra and wings ample, hyaline, veins and veinlets brownish. Femora all brownish at the apex. Hind femora with four to five spinelets on each margin. Fore tibiæ blackish, except at apex (or only about the knees), spines testaceous. Hind tibiæ above with (four to seven) black (or black tipped) spinelets. Ovipositor not (or not much) longer than hind femora, gradually incurved, acuminate. Sub-

genital lamina of female short, transverse, margins rounded (subsemicircular). Keels wide apart. Subgenital lamina of male hooded (cucullate) in the form of Brunner's type "C." Cerci small, visible from the side above the lateral lobes.

	Male (m.).	Female (m.).	Female (Br.).
Length of body ...	33 mm.	38 mm.	35 mm.
Length of pronotum ...	6.5 "	6.5 "	6 "
Length of elytra ...	38 "	40 "	47 "
Length of hind femora ...	16 "	15 "	16 "
Length of ovipositor ...	—	33 "	15 " (?)

Habitat.—South Australia: Blakiston (*T. D. Smeaton*), Adelaide (*Selway*), (Coll. S.A. Museum), (Adelaide, *Brunner*).

There is some doubt whether I have correctly assigned my specimens to Brunner's species, but it is the only one which they at all approach in general aspect, and I deem it inadvisable to constitute a new one for their reception.

PARAGRYLLACRIS CALLOSA, *Br.* (*ibid*, 371, fig. 44 B).

"Testaceous chestnut. Occiput brown. Fastigium of vertex one and a-half times wider than first antennal joint, flattened. Face and antennæ testaceous. Pronotum concolorous. Elytra acuminate, of smoky colour, also the wings; veins and veinlets brownish, latter 'perfect.' Hind femora below unarmed, or with two to three spinelets. Abdominal segments bordered brownish. Eighth abdominal segment of male not produced, ninth segment horizontally produced, triangularly emarginate, on both sides with a very prominent callous tubercle. Ovipositor very long and straight.

	Male.	Female.	Female.
Length of body ...	28 mm.	28 mm.	38 mm.
Length of pronotum ...	6 "	6 "	8.5 "
Length of elytra ...	38 "	28 "	55 "
Length of hind femora ...	16 "	16 "	20 "
Length of ovipositor ...	—	37 "	36 "

Habitat.—Port Denison, Sydney, N.S. Wales; Melbourne, Victoria."

PARAGRYLLACRIS LATELINEOLATA, *Br.* (*Mon.*, 128, fig. 44 C).

Variety (?). Pale yellow. Fastigium of vertex flat, one and a-half times to twice as wide as first antennal joint, margins acute. Face and clypeus rough with impressed dots, testaceous (to dark brownish). Labrum and mandibles reddish ferruginous. Antennæ ferruginous (or first two joints pale). Pronotum with anterior angles produced, somewhat acute, fore and hind margins striped brownish. Elytra subhyaline, veins ferruginous, transverse veinlets bordered darkly very narrowly. Hind femora

below with three to four spinelets on each margin. Knees all brownish. Eighth abdominal segment of male very parabolically produced, ninth segment orange-coloured, much elongated, cucullate, truncate. Subgenital lamina of male transverse, middle lobe short, emarginate, lateral lobes almost as long, styliform, terete. Ovipositor very narrow, slightly incurved; seventh ventral segment of female trapezoidal. Subgenital lamina of female ample, rotundate margin obtuse.

	Male (Br.)	Female (Br.)	Female (m.)	Female (m.)
Length of body ...	33 mm.	36-40 mm.	33.5 mm.	32 mm.
Length of pronotum	6.5 "	7- 8.5 "	6.5 "	6.5 "
Length of elytra ...	38 "	40-46 "	36 "	38 "
Length of hind femora	17 "	20-22 "	13 "	15 "
Length of ovipositor	—	40 "	43 "	42 "

Habitat.—South Australia: Vicinity of Adelaide (Coll. S.A. Museum). Melbourne (*Brunner*).

The two specimens in the South Australian Museum are doubtfully included in this species as a variety. The bracketted parts of the above description denote the differences. Some ova were obtained from one specimen. They are brown, elongate-elliptical, 4.5 mm. long by 1.3 mm. wide, and ornamented by regularly arranged microscopical impressions.

PARAGRYLLACRIS PALLIDOLINEA, *spec. nov.*

Size moderate or large. Brownish testaceous. Head globose from front view; occiput high. Face, clypeus and cheeks rugose, pale, almost whitish testaceous. Labrum ferruginous. Ocelliform spot pyriform. Frontal fastigium deeply sulcate laterally, apex separated from fastigium of vertex by a straight line. Fastigium of vertex about twice as wide as first antennal joint, much rounded, prominent, shining, with a *pale, somewhat sinuous, medial line, indistinct, pale, cerebriform reticulations all over it and extending to occiput*; posterior margin of the latter pale. Pronotum stout; fore and hind margins more or less broadly blackish, an acute prolongation of the anterior blackish band accompanying the impressed medial to about the middle; fore and hind margins nearly straight; lobes much longer than high, margins nearly straight, angles rounded. Dorsal abdominal segments with obscure posterior margins. Elytra ample, veins and veinlets brown, membrane much paler. Wings slightly exceeding elytra, veins ferruginous, transverse veinlets rather irregular, pale, often with a very narrow dark medial line and bordered narrowly with brownish on each side; membrane similar to elytra. Legs of body-colour, knees more or less dark. Hind femora stout, base very much incrassated, with a deep medial longitudinal furrow, below with three to four (male) or five

(female) external and five (male) or four (female) internal spinelets. Hind tibiae above with three to four spinelets on each margin in both sexes. Ninth abdominal segment of male hooded (type "C" of Brunner). Subgenital lamina of male with *four lobes of subequal length and width*.

	Male.	Female.
Length of body ...	31 mm.	38 mm.
Length of pronotum ...	5.5 "	6.5 "
Length of elytra ...	36 "	40 "
Length of hind femora ...	15 "	18-29 "
Length of ovipositor ...	—	35-40 "

Habitat.—Vicinity of Adelaide, South Australia; three specimens.

Variety.—MINOR. Resembling the above, but smaller.

	Male.	Female.
Length of body ...	27 mm.	28-30 mm.
Length of pronotum ...	5.5 "	6.5 "
Length of elytra ...	35 "	38 "
Length of hind femora...	15 "	17-18 "
Length of ovipositor ...	—	38 "

Habitat.—Neighbourhood of Adelaide; three specimens. (Collection S. A. Museum).

PARAGRYLLACRIS EXSERTA, Br. (Mon., 372).

"Differs from *P. latelineolata* in smaller size, brownish colour, and the transverse veinlets of the wings being narrowly circumscribed with brownish. Hind femora below with four internal and five external spinelets. Abdomen of male with the *last dorsal segment less produced*. Subgenital lamina with the medial lobe longer, *lateral lobes narrow, exsertedly produced*.

	Male.
Length of body ...	28 mm.
Length of pronotum ...	5.8 "
Length of elytra ...	38 "
Length of hind femora...	15 "

Habitat.—Queensland."

PARAGRYLLACRIS LOBATA, Br. (ibid).

"Testaceous chestnut colour. Face brownish, very rugose with impressed dots. Ocelliform spot orbicular, citron yellow. Labrum and mandibles ferruginous. Elytra and wings smoke-coloured, transverse veinlets very narrowly bordered with brownish. Hind femora below, with six internal and three to four external spinelets. Abdomen of male with last segment moderately produced, chestnut-coloured, ninth segment ending in two very short spines.

				Male.
Length of body	...	...	...	30 --43 mm.
Length of pronotum	...	...	...	6.5-- 8 "
Length of elytra	...	...	...	42 --44 "
Length of hind femora	...	...	...	19 --20 "

Habitat.—Rockhampton, Queensland."

PARAGRYLLACRIS MODESTA, *Br.* (ibid).

"Size small, deep brownish-testaceous. Fastigium of vertex scarcely wider than the first antennal joint, angles keeled. Face smooth. Pronotum with anterior angles obtuse. Elytra and wings smoky, veins and veinlets brown. Hind femora below with six internal and four external spinelets. Abdomen with last segments scarcely produced, ninth ending in two spines. Subgenital lamina with middle lobe tridentate, lateral lobes very narrow, longer than the middle.

				Male.
Length of body..	...	...	...	24 mm.
Length of pronotum	...	...	...	5 "
Length of elytra	...	...	...	34 "
Length of hind femora	...	...	...	14.5 "

Habitat.—Port Adelaide, South Australia."

PARAGRYLLACRIS INSIGNIS, *spec. nov.*

Size small. Pale testaceous. Head oval from front view, slightly depressed, *all parts*, except the eyes, of *body colour*. Fastigium of vertex tumid in front, about twice as wide as first antennal joint. Antennæ about three times the length of body. Pronotum somewhat saddle-shaped, disk broad, flat, behind slightly depressed medially, constricted only near foremargin; lobes subquadrangular, angles rounded, margins straight, callosities scarcely developed; hind margin with a dusky border. Elytra broad, acuminate, veins pale ferruginous. Wings somewhat shorter, veins pale, membrane of both elytra and wings very pale and pellucid. Fore and middle tibiæ with second spine longest, concolorous. Hind femora below with four external, and five to six internal blackish-tipped spinelets. Hind tibiæ above with four external and three to four internal spinelets. Abdomen of male with *ninth segment enlarged, tumid* (resembling Brunner's type "A," but the subgenital lamina in the form of type "C"). Subgenital lamina of male with *medial lobe deeply emarginate, lateral lobes styliform*.

				Male.
Length of body	...	...	...	24 mm.
Length of pronotum	...	...	...	3.5 "
Length of elytrya	...	...	...	40 "
Length of hind femora	...	...	...	12 "

Habitat.—Western Plains, South Australia (*A. J. Percy*) (in Coll. S.A. Museum).

The species differs from others chiefly, by the want of colour marks, and the peculiar structure of the last abdominal segment, besides size and other details.

PARAGRYLLACRIS DESERTA, *spec. nov.*

Resembling *P. latelineolata*, Br. Size small. Pale testaceous. Fastigium of vertex *slightly carinate in front*, more than twice as wide than the first antennal joint; margins acute, subcarinate. Face and clypeus very rugose from impressed dots, testaceous. Medial ocelliform spot oval, citron coloured, laterally above two small ones testaceous. Labrum testaceous, above with a piceous triangular spot. Mandibles piceous to black. Antennæ pale ferruginous testaceous. Pronotum with the disk marked by a short black wedge-shaped streak in front and behind, bordered broadly piceous; lobes with anterior angles rounded. Elytra subhyaline, veins pale ferruginous. Wings similar, veins very narrowly bordered brownish. Hind femora below with *three spinelets* on each margin, knees brownish. Hind tibiæ above with five spinelets on each margin. Tibiæ of all the legs more or less blackish near the middle, apices indistinctly dark coloured. Abdomen with eighth and ninth segments *pilose*, otherwise resembling *P. latelineolata*. The subgenital lamina of the male also resemble those of that species, but the lateral lobes are *distinctly and unequally divided at the apex*, forming a shorter, broader, medial lobelet, and slender, styliform, lateral lobes.

	Male.			
Length of body	28 mm.
Length of pronotum	3.5 "
Length of elytra	32 "
Length of hind femora	9.5 "

Habitat.—Cootanoorina, interior of South Australia, where it was captured by Mr. R. Helms in June, 1891 (Coll. S.A. Mus.).

NEANIUS, *Brunner* (Mon., 373, fig. 45).

Body subapterous. Head large, as wide as pronotum. Vertex rounded, fastigium about twice as wide as first antennal joint. Pronotum smooth, shining, anterior angles rounded, hindmargin subemarginate. Elytra and wings rudimentary. Hind femora below with numerous spines. Fore tibiæ below with four spinelets on each side. Abdomen with ninth segment of male hood-like. Subgenital lamina of same transverse, middle lobe narrowly produced, lateral styles free. Ovipositor slender, slightly incurved. Species Australian and Asiatic.

NEANIUS LOBATUS, *Br.* (*ibid.*).

"Testaceous. Face pale. Elytra with lobes rather broad, reaching to the hindmargin of the metanotum. Subgenital lamina of male broad, middle lobe narrow, dilated and bilobed at the apex.

	Male.			
Length of body	17 mm.
Length of pronotum	5 "
Length of elytra	3.6 "
Length of hind femora	12 "

Habitat.—New Guinea."

The only other species known, *N. squamosus*, inhabits Ceylon.

EONIUS, *gen. nov.*

Subapterous. Head much wider than pronotum, occiput elevated, vertex rounded. Fastigium broad, apical part keeled. Antennæ twice longer (more or less) than the body. Pronotum smooth, shining; anterior angles rounded; hindmargin slightly concave. Elytra and wings very rudimentary. Fore and middle tibiæ below with three pairs of large spinelets, and one or two pairs of smaller apical spinelets. Hind femora below spinulose. Hind tibiæ above flat, and usually armed with four spinelets. Ovipositor slender straight, apex straight above, acuminate from below, acute.

The genus appears to be allied partly to *Neanius*, and partly to *Apotrechus*, but differs from the former in the very large head, broad fastigium, and long straight ovipositor, and from the latter in having rudimentary elytra, the pronotum wider behind, the hind tibiæ flat above, and the ovipositor being longer than the body. Its place in the system is indicated by the following synopsis:—

5. Elytra rudimentary, lobelike. Fore tibiæ with four pairs of spines.
6. Size small. Occiput slightly elevated. Lobes angular. Antennæ long. Hind femora with numerous spines. Hind tibiæ with four spines on each margin. Ovipositor shorter than the body *Neanius.*
- 6.6. Size large. Occiput much elevated. Lobes rounded. Antennæ short. Hind femora with two to three spines on each side. Hind tibiæ with four spines usually on each side. Ovipositor as long or longer than body. *Eonius.*

EONIUS TIGRINUS, *spec. nov.*

Size large. Yellow to testaceous, banded with black. Head oval from front view. Face black or piceous, almost smooth,

shining, with numerous fine oblique and irregularly transverse lines visible only with a lens. Frontal fastigium hexagonal, bounded below by an elbowed (paler or darker) impression and a straight line. Ocelliform spot round or oval, whitish. Clypeus subtransverse, lower part brownish. Labrum large, almost round, brownish. Fastigium of vertex about twice the width, or more, of first antennal joint, depressed, carinate in front, elevated and rounded above, deep castaneous with indistinct, pale, medial line. Antennæ less than twice the length of body, very slender, pale. Pronotum convex in front, concave behind, fore and hind margins black, lobes callous, almost as high as long, angles much rounded, inferior margin straight. Elytra and wings quite rudimentary. Hind femora with two to three spinelets on each margin below. Hind tibiæ above with *four spinelets on each margin*. Legs and tarsi of body-colour. Abdominal segments posteriorly bordered with deep brown or blackish. Cerci of female short. Ovipositor long, shining, yellow, apex black. Subgenital lamina transverse, very short, entire. One adult and one female nymph.

	Female—Adult.		Nymph.	
Length of body	41 mm.	27	mm.
Length of pronotum	6.5 "	5	"
Length of elytra...	...	2 "	1.5	"
Length of hind femora	15 "	15	"
Length of ovipositor	45 "	20	"

Habitat.—Mannanarie, Northern District of South Australia. (*Driffield*, in collection of S.A. Museum).

The adult specimen was reported to have been captured in an uninhabited hut; the nymph is a spirit specimen, dried and much distorted, from an unrecorded locality, but most probably from the Far North of this province. The eggs taken from the specimen are elongate elliptical, nearly white, and 5 mm. long. About 22 were secured.

EONIUS ATRIFRONS, *spec. nov.*

Size moderate. Testaceous. Head oblong-oval from front view, of body-colour except a *patch of deep shining black, round, outline undefined*, occupying the greater part of the face, including the bases of the antennæ, apex of fastigium and upper part of clypeus. Ocelliform spot small, oval. Pronotum with fore and hind margins black. Abdominal segments broadly black behind. Legs short, pale, concolorous. Hind femora below with five to six internal and four to five external spinelets. Hind tibiæ above with *six internal and three internal spinelets*.

				Female.
Length of body...	...	...	...	24 mm.
Length of pronotum	...	...	...	6 "
Length of elytra	...	...	...	2.5 "
Length of hind femora	...	...	...	14 "
Length of ovipositor	...	...	...	15 "

Habitat.—Leigh Creek, Far North of South Australia (Coll. S.A. Museum.)

EONIUS FUMATUS, spec. nov.

Size moderate, Smoky-brown, indistinctly banded. Head small. Vertex low, *dark brownish*. Face, bases of antennæ, and legs pale. Ocelliform spot obsolete. Pronotum with hind margin only blackish. Legs slender. Fore tibiæ below with five spines on each side. Hind femora below with three slender spinelets on each side. Hind tibiæ flat above, with six external and four internal spinelets. Ovipositor moderately incurved, apex acute. Subgenital lamina of female broad, semi-circular, entire, with a narrow, deep black band near its posterior margin.

				Female.
Length of body ...	...	...	...	23 mm.
Length of pronotum	...	...	...	5 "
Length of elytra ...	...	...	...	3 "
Length of hind femora	...	...	...	14 "
Length of ovipositor	...	...	...	32 "

Habitat.—Kingston, South-Eastern part of South Australia (*D. Redman*, in collection of S. A. Museum).

EREMUS, Brunner (Mon., 374, fig. 46).

"Size mostly small. Wingless. Head large, usually as wide as the pronotum. Fastigium of vertex wider than the first antennal joint. Hind femora spined below, rarely unarmed. Fore tibiæ below armed with four rather large spines. Abdomen of male with ninth segment produced or hood-like. Subgenital lamina of male broad, with free styles. Ovipositor variable in length, acuminate or obtuse.

Habitat.—Asia, Africa, and Australia; 12 species known."

EREMUS SPINULOSUS, Br. (ibid, 377).

"Size large. Pale testaceous, ferruginous above. Head very large, shiningly ferruginous, occiput pale or infuscate. Pronotum unmarked. Hind femora below with very small crowded spinelets on both sides.

		Male.	Female.
Length of body ...	...	36 mm.	39 mm.
Length of pronotum	...	7.5 "	7.7 "
Length of hind femora	...	17 "	18.5 "
Length of ovipositor	...	—	18.5 "

Habitat.—Fiji Islands "

EREMUS MUELLERI, *Br.* (Man., 378).

“Size small. Testaceous, head brownish. Pronotum with the lobes scarcely deflected, angles obtuse. Hind femora below with four external and three internal (smaller) spinelets. Hind tibiæ above with five very small spinelets on both margins.

				Female.	
Length of body...	...	...	...	14	mm.
Length of pronotum	...	...	...	3·8	“
Length of hind femora...	...	...	...	9	“
Length of ovipositor	...	...	...	8	“

Habitat.—Queensland.”

EPACRA, *Brunner* (Mon., 381, fig. 48).

“Habit of *Gryllacris*. Head elongate from front view. Fastigium of vertex rather narrower than first antennal joint. Eyes large, reniform. Antennæ very long. Elytra and wings very large, straw-coloured, as well as the veins, hyaline. Pronotum truncate in front and behind, with deep sulci; meso- and meta-notum acute or lobed. Hind femora slender, armed below with more or less stout spines. Hind tibiæ above with seven spinelets on each margin. Ovipositor long, scarcely incurved. Limited to Australia.”

EPACRA AENEA, *Br.* (ibid, 382).

“Straw-coloured ferruginous, face brassy black. Fastigium with raised, keel-like margins, Antennæ, knees, clypeus, and palpi ferruginous. Meso- and meta-sternal lobes triangular, acuminate. Hind femora below with four strong black spines towards the apex, and four small ones towards the base internally, and six strong spines externally.

			Male.	Female.
Length of body	...	...	29 mm.	29 mm.
Length of pronotum	...	...	6 “	6 “
Length of elytra	...	...	44 “	48 “
Length of hind femora	...	...	16 “	18 “
Length of ovipositor	...	...	— “	21 “

Habitat.—Rockhampton, Cape York, Queensland.”

EPACRA MODESTA, *Br.* (ibid).

“Face brownish, labrum straw-coloured. Pronotum not striped. Meso- and meta-sternal lobes acute, rotundate. Tibiæ brownish at the base. Hind femora below with very small spinelets (four to five on external margin). Ovipositor nearly straight, apex acuminate.

				Female.
Length of body ...	...	...	...	32 mm.
Length of pronotum ...	...	...	...	5·8 "
Length of elytra ...	...	...	...	44 "
Length of hind femora...	...	...	...	14 "
Length of ovipositor ...	...	...	...	19 "

Habitat.—Cape York, Queensland."

APOTRECHUS, *Brunner* (Mon., 383, fig. 49).

"Size large. Wingless. Head much wider than pronotum; occiput rounded, elevated. Fastigium very broad. Eyes small. Pronotum wider in front than behind, anterior angles produced. Hind femora slender, scarcely armed below. Fore and middle tibiæ below with three to four spines. Hind tibiæ terete, smooth, or nearly so. Abdomen of male with ninth dorsal segment produced, hood-like. Subgenital lamina of male transverse, without styles. Ovipositor short, stout, incurved. *Gryllacris*, Erichson, Gerstaecker."

APOTRECHUS AMBULANS, *Erichson* (ibid).

"Size moderate. Testaceous. Disk of pronotum and succeeding segments dark reddish-brown, excepting the hind margin. Head testaceous above, a large part of face brownish, ocelliform spots pale yellow, medial one nearly round. Thoracic segments with a continuous yellow medial line. Hind femora below with two to three short spines on each side. Hind tibiæ wholly unarmed, terete. Ovipositor stout, longer than hind femora, slightly incurved, obtusely acuminate.

		Male.	Female.
Length of body ...	...	22 mm.	29 mm.
Length of ovipositor ...	...	—	17 "

Habitat.—Tasmania."

APOTRECHUS UNICOLOR, *Br.* (ibid, 140).

"Size small. Testaceously ferruginous. Face brownish, rough, with horizontal folds, ocelliform spots absent. Pronotum ferruginous, disk uneven. Hind femora below with two spines towards apex. Hind tibiæ flat below. Ovipositor very short, scarcely extending beyond the cerci, acuminate.

		Male.	Female.
Length of body ...	...	35 mm.	42 mm.
Length of pronotum ...	...	7 "	8 "
Length of hind femora ...	...	14 "	17·5 "
Length of ovipositor ...	...	—	5 "

Habitat.—Port Denison, N.S. Wales."

APTERONOMUS, *gen. nov.*

Size small. Wingless, or wings scale-like. Head moderately large, not much wider than pronotum; occiput rounded. Fastigium nearly twice as wide as first antennal joint, vertex depressed, carinate. Pronotum equally as wide in front as behind, lobes rounded. Eyes small, elliptical. Hind femora with very small spinelets. Fore tibiæ below with five spines on each side. Hind tibiæ flattened, spinelets very minute. Abdomen of male with ninth dorsal segment rather short; supra-anal and subgenital laminae prominent, latter narrow, acutely triangular, deeply cleft. Styles distinct.

The following synopsis will indicate the place in the system occupied by this genus:—

4.4. Body wingless, or lobes quite rudimentary. Head broader than pronotum. Occiput elevated.

5. Size large. Head much wider than pronotum. Fastigium very broad, subrotundate. Fore tibiæ below with three to four spines on each side. Abdomen of male with ninth dorsal segment produced, hood-like. *Apotrechus.*

5.5. Size small. Head not much wider than pronotum. Fastigium rather narrow, depressed in front, keeled. Fore tibiæ below with five pairs of spines. Abdomen of male with ninth dorsal segment short, not hood-like. *Apteronomus.*

APTERONOMUS BORDAENSIS, *spec. nov.*

Testaceously-brown, banded indistinctly darker. Head pale, face almost concolorous. Ocelliform spot pale testaceous, partly bordered with brown, with two pale spots below apex of fastigium. Clypeus trapezoidal, quadrangular, narrower below, as wide above as high. Labrum elongate-oval, ferruginous. Fastigium of vertex narrow, widely separated from the antennæ, margins angular, parallel, scarcely keeled, without lateral pale marks, apex semicircular, dark-brown. Antennæ concolorous, three times the length of body. Pronotum rounded above, shiningly smooth, fore margin convex and raised, hind margin concave; lobes nearly as high as long, angles much rounded, margins narrowly incurved. Hind femora below with five internal and two to four external minute spinelets. Hind tibiæ flattened above, with five internal and four to five external spinelets. All the legs (also the antennæ) closely covered with short tomentum. Subgenital lamina of male narrowly triangular, deeply cleft, lateral lobes none.

	Male.		
Length of body	14-16	mm.	
Length of pronotum... ..	2.5-3	“	
Length of hind femora	15	“	

Habitat.—Western extremity of Kangaroo Island, near Cape Borda, where two males were captured by myself at the end of February, 1886, and were found under the loosely adhering bark of the trunk of Eucalypts in moist situations. A third specimen resembling the above two in most characters, but exhibits minute scale-like wing-lobes, is for the present included. Its face is marked with a broad blackish-brown band, and the hind femora are wholly unarmed. Collection of S. A. Museum.

AMETRUS, *Brunner* (Mon., 384, fig. 50).

“Head with occiput elevated. Fastigium of vertex three times wider than first antennal joint. Antennæ short, slender. Face broad, rounded, Pronotum short, anterior angles obtuse, hindmargin obtusely and triangularly emarginate, transverse furrows deeply impressed. Elytra and wings rudimentary, lobe-like and lateral. Fore coxæ much compressed, spined. Hind femora below with internal margin wholly and external partly spined. Fore and middle tibiæ below with two spines on each side. Hind tibiæ long, very thick, terete, above with six spines on each side, those on the inner side being the longer ones. Tarsi very short. Abdomen of male with ninth dorsal segment hood-like, short, inferior margin triangularly emarginate. Cerci very short. Subgenital lamina quadrate, medial lobe obtuse, produced, lateral lobes acuminate, styles none.

AMETRUS TIBIALIS, *Br.* (ibid).

“Size moderate. Uniformly ferruginous.

	Male.		
Length of body... ..	29	mm.	
Length of pronotum	5.2	“	
Length of elytra	3	“	
Length of hind femora... ..	14.7	“	
Length of hind tibiæ	16	“	

Habitat.—Melbourne, Victoria.”

AMETROSOMUS, *gen. nov.*

Head with occiput elevated, maxillary palpi very long, filiform. Antennæ about three times the length of the body. Fastigium of vertex scarcely twice as wide as first antennal joint, apex depressed, margins keeled. Eyes large, reniform. Pronotum short, anterior margin raised, disk with a distinct suborbicular callosity on each side, angles much rounded, hindmargin almost

flat, broadly and triangularly emarginate; posterior lateral callosities large, oval; lobes high, inferior margin subemarginate, posterior angles truncate. Elytra and wings lobelike, very narrow. Anterior coxæ subquadrangular, unarmed. Fore and middle legs much compressed, with five spines on each margin. Hind femora below with three to six internal and three to eight external minute spinelets (being different on the right and left side of the same specimen). Hind tibiæ slender, flattened above, with nine to ten internal and five to seven external, very minute spinelets. Ovipositor very short, much incurved, apex obtuse, rounded. Subgenital lamina of female broadly transverse, very short, entire, posterior margin subsemicircular.

The insect has the aspect of *Ametrus*, Br., but is quite different in many points, as shown by the following synopsis, which, at the same time, indicates the place of the genus in the system. The numbers refer to those in Brunner's Monograph, 1888.

3.3. Hind tibiæ spined. Tarsi very short. Elytra and wings lobelike.

4. Hind tibiæ much incrassated. Fastigium of vertex broad. Antennæ short. Fore and middle tibiæ below with two-three spines on each side. *Ametrus*.

4.4. Hind tibiæ slender. Fastigium narrow. Antennæ long. Fore and middle tibiæ with five spinelets on each side. *Ametrosomus*.

AMETROSOMUS HELMSI, *spec. nov.*

Size moderate. Colour brownish, with dark brown bands. Face pale. Ocelliform spot circular, cream-coloured. Clypeus subsemicircular. Legs slender, pale. Two specimens.

	Female.		
Length of body	27 mm.
Length of pronotum	5 "
Length of elytra	2 "
Length of hind femora	14-16 "
Length of ovipositor	3.5 "

Habitat.—Blyth Hills and Barrow Range, Central Australia, captured by Mr. R. Helms (Coll. S.A. Mus.).

B. STENOPELMATIDÆ.

The STENOPELMATIDÆ differ from all other Locustodea in the form of the tarsi, these being *compressed* instead of depressed, and the first and second joints do not possess any lateral lobes, so greatly developed in the Gryllacrids. Another character serves to separate them into two main groups, viz., the presence or absence of pulvilli (cushions) on the underside of the tarsi, the an-

terior and posterior one possessing one, and the metatarsus two. Intimately connected with this character is another observable in the structure of the base of the hind femora. In all those species which are furnished with pulvilli the hind femora are jointed to the coxæ by an intruding angle plainly visible from the *outside*, but in those without pulvilli the base of the femora is rounded and the angle only seen from the inside.

A second most important distinction consists in the presence or absence of foramina, or auditory organs, of the fore tibiæ, which, when present, are always open on both sides, except in one of the new genera, where they are quite rudimentary.

The form, arrangement, and number of the spines of the legs provide also excellent characteristics within certain limits, but being variable, sometimes not only in the various individuals but even on the right and left sides of the same insect, cannot be considered as of decisive value alone.

The genital characters are very peculiar, and sometimes of extravagant forms, baffling adequate description in words.

The ovipositor is usually of the normal structure among the members of the tribe, and affords good specific distinctions in some cases.

The fastigium of the vertex is also very useful in diagnosing. It merges either gradually into the face without distinct demarcation, or is set off more or less distinctly. Its width and markings are also important as specific distinctions.

The antennæ and mouth parts are unsuited for systematic use, notwithstanding their great, and sometimes enormous, development; being mostly of a very uniform or variable type.

The form, etc., of the clypeus and labrum, appear to deserve considerable attention.

The pectus or chest is either very narrow or very broad and flat (in rare cases), but offers little or nothing feasible to base good distinctions upon.

Organs of flight are mostly absent, but when present they resemble those of crickets to a great extent in their structure.

The presence of auditory organs in part of the family naturally suggests the possession of corresponding organs for producing sounds. These are, apparently, to be sought for in the roughened surfaces of some of the basal segments of the abdomen. Several varieties of structure have been observed.

The habits of these insects, being extremely retired and wholly nocturnal, are little known. All of the cave-inhabiting Orthoptera belong to this family, and in some cases it has been observed that the eyes have become atrophied or wholly obsolete. Other species live in burrows under stones, logs of wood, or under loose bark and in hollows of trees. On account of their formid-

able mandibles they can inflict painful bites, and are not pleasant to encounter incautiously. Their food consisting mainly, if not entirely, of self-caught insects, they must be regarded as being more or less beneficial to man, and not hurtful.

Owing to the paucity of material, most probably due to the rarity of representatives of the family, I shall content myself for the present by offering only a synoptical key, collated principally from that of Brunner van Wattenwyl in his monograph of 1888, and descriptions of three new species belonging to two new genera.

SYNOPSIS OF AUSTRALIAN AND POLYNESIAN STENOPELMATIDÆ.

1. Tarsi with pulvilli, metatarsus with two. Angle of insertion of hind femora visible laterally from outside. SECTION A.

2. Anterior margin of pronotum straight or rounded, without submarginal furrow. Fastigium of vertex separate from frontal, more or less produced between the antennæ. Anterior coxæ armed with a spine. Middle tibiæ below spinulose.

3. Fore tibiæ with foramina on both sides, or rarely on the internal margin. (One Madagascar genus, *Hypocophus*, only).

ANASTOSTOMATÆ.

4. Hind tibiæ flattened above, with three to four spines (dilated at the base) on each side. Fore tibiæ smooth above. Wingless. DEINACRIDA, *White* (*Br. Mon.*, 268, fig. 5).

a. Pronotum shining. Hind femora always with some apical spines on each margin. Middle tibiæ above unarmed, excepting the apical spines. Hind tibiæ with a fixed small spur.

b. Pronotum lurid, striped with brown. Abdomen chestnut-coloured. Cerci of male somewhat terete. Hind tibiæ with three spines on the external margin besides the apical ones. New Zealand.

D. thoracica, White.

bb. Pronotum brown. Abdomen lurid, each segment banded brown at base and apex. Cerci of male depressed. Hind tibiæ externally with four spines besides the apical. New Zealand.

D. ligata, Brunner.

aa. Pronotum very rough. Hind femora spined on both sides. Middle tibiæ above with two spines on external margin, besides apical. Hind tibiæ with large articulates inserted spurs. New Zealand.

D. heteracantha, White.

4.4. Hind tibiæ above rounded with numerous spines, not dilated.

5. Vertex compressed (seen from above). Fastigium not so wide as first antennal joint, sulcate. Occiput rounded, not carinate. Pronotum truncate behind. Fore tibiæ above flat or terete. Tarsi without arolia between the claws. Femoral knee-lobes all spined. ANASTOOTOMA, *Gray* (*Br. Mon.*, 270, fig. 6).

- a. Size large. Colour chestnut, dusky. Femora all spined below. Hind femora roughly granulated all over. Queensland, New Zealand, New South Wales. *A. Australasic*, Gray.
- aa. Size small. Reddish piceous. Fore and middle femora below unarmed, or nearly so. Hind femora spined above.
- b. Colour bright. Hind tibiæ above with seven spines on each side. Ovipositor scarcely exceeding the cerci. Queensland, New South Wales. *A. erinaceus*, Burmeister.
- bb. Colour dull. Hind tibiæ above with eight to nine spines. Ovipositor scarcely shorter than hind femora. Queensland. *A. opacum*, Brunner.

5.5. Vertex flat (seen from above). Fastigium as wide or wider than the first antennal joint, not sulcate, flat, of equal width throughout or contracted towards the apex, contiguous with the frontal in a line, not produced.

6. Subgenital lamina of male transverse, styles flat.

7. Fore tibiæ with internal margin bispinose above. Wingless.

8. Head of male as broad as pronotum, mandibles extremely large. Fastigium depressed, not narrowed at the apex, contiguous with the frontal in a line.

CARCINOPSIS, *Br.* (Mon., 275, fig. 9).

- a. Wingless. Hind tibiæ with first and second internal spurs short, subequal in length. Australian species.
- b. Legs concolorous. Vertex high. Fastigium not as wide as first antennal joint. New Caledonia. *C. unicolor*, Brunner.
- bb. Femora and tibiæ banded brown towards the apex. Vertex depressed. Fastigium wider than the first antennal joint. New Caledonia. *C. signata*, Brunner.
- aa. Winged species. India; not Australian.

8.8. Head never as wide as pronotum, mandibles normal. Fastigium contracted at the apex, acuminate, contiguous with the frontal. *AISTUS*, *Brunner* (Mon., 278, fig. 10).

Monotypic. Size small, chestnut-coloured, shining. *A. gracilis*, Br.

6.6. Subgenital lamina of male elongate, styles narrow.

7.7. Fore tibiæ above terete, internal margin below with three to five spines. Hind tibiæ shortly spinulose. Second spur as long or longer than the first.

8. Fore tibiæ with foramina on both sides. Second internal spur of hind tibiæ scarcely as long as the first. Australian species.

9. Foramina distinct. Hind femora extending much beyond the body. Fore tibiæ with three spines on the internal margin.

TRIHOPLOPHORA, *Br.* (Mon., 280, fig. 13).

Monotypic. Piceous, sides and underside pale. Face pale, marbled with piceous. Eastern Australia. *T. abnormis*, Brunner.

9.9. Foramina rudimentary. Hind femora scarcely exceeding the body. Fore tibiæ with five spines on the internal margin.

PENTHOPLOPHORA, *Tepper*.

Monotypic. Yellowish testaceous. Pronotum and abdomen banded black. Central Australia. *P. Driffeldi*, Tepper.

8.8. Foramina on internal margin only. Madagascar genus.

33. Fore tibiæ without foramina. MIMNERMI.

4. Fastigium rounded or flattened, not sulcate. Hind tibiæ slender, with short spines. (Elytra abbreviated). Five African genera.

4.4. Fastigium deflexed between the antennæ, compressed, sulcate. Hind tibiæ stout, above with strong spines. Australian and American genera.

5. Head not wider than pronotum. Fastigium not as wide as first antennal joint. Hind tibiæ above with two spines on internal margin. Lobes of pronotum very low, angular. American species. CRATOMELUS, *Brunner* (ibid, fig. 24).

5.5. Head wider than pronotum. Fastigium about four times as wide as first antennal joint. Lobes of pronotum high, rounded. Hind tibiæ above not spined. Australian species.

PACHYPODAGRUS, *Tepper*.

a. Size large. Brownish ferruginous, banded with brown. Hind femora below with 12 internal and four to six external spines. Ovipositor long. *P. crassipes*, *Tepper*.

aa. Size moderate. Greyish-testaceous, concolorous. Hind femora below with six internal and no external spines. Ovipositor short. *P. Magareyi*, *Tepper*.

2.2. Pronotum wider in front, narrower behind, fore margin sinuous, intramarginal furrow distinct, &c. Extra-Australian genera. STENOPELMATUS, &c.

1.1. Tarsi without pulvilli (except one American genus, *Gammarotettix*, with one pulvillus on the metatarsus), very much compressed. Angle of insertion of the base of the hind femora visible only on the inner side. Bases of antennæ approximate. Fore tibiæ without foramina. SECTION B.

2. Fore and middle femora with movable spines at the apex. Hind tibiæ above with crowded spines of equal length, below terete and unarmed. Asiatic and Australian species.

RAPHIDOPHORÆ.

3. Fore femora with a movable, rather large spine on the inner side at the apex. Malayan and Australian species.

RAPHIDOPHORA, *Serville* (Br. Mon., 294, fig. 25).

a. Hind metatarsus above unarmed and smooth (except apical spine). Spines of the knees of the anterior femora long. Hind femora below spined on the inner margin. Antennæ stout. Australia. *R. crassicornis*, *Brunner*.

a. Hind metatarsus above hirsute and spined. Abdomen with seventh dorsal segment obtusely produced. New Guinea.

R. foeda, *Brunner*.

3.3. Fore femora with small spines on both sides of the apex. Eyes very prominent seen from above. First spur on internal margin much shorter than the metatarsus.

NEONETUS, *Br.* (Mon., 300, fig. 27).

Size very small. Testaceous, variegated with brownish. Monotypic.
New Zealand. *N. variegatus*, Brunner.

2.2. Fore and middle femora unarmed at the apex, or with only a few spinelets. European, American and Australian genera.

3. Hind tibiae above with one of the spinelets usually remote from the others, which are crowded, below terete, rarely spined.

DOLICHOPODÆ.

4. Antennæ slender. Styles absent. European species.

4.4. Antennæ incrassated, contiguous at the base. Subgenital lamina of male lanceolate, styles present. New Zealand species.

PACHYRHAMMA, *Br.* (Mon., 301, fig. 29).

a. Fore femora below unarmed, hind ones very narrowed, about one and a half times the length of the body.

P. Edwardsi, Scudder.

aa. Fore femora below with three or four small spinelets on the anterior margin. Hind femora scarcely longer than the body, base incrassated.

P. Nova-zealandie, *Br.*

3.3. Hind tibiae above with most of the spines remote from each other, also the spinelets small or tooth-like rarely crowded. One European, five American, and one Australian genus.

CEUTEPHILI.

4. Hind tibiae below with crowded spinelets, sulcate. Europe.

TROGLOPHILUS, *Krauss.*

4.4. Hind tibiae below with distant spinelets, terete. All American and Australian species.

5. Hind tarsi above with first and second joints hirsute or with two rows of spinelets. Antennæ fasciculately pilose beyond the middle. American genus.

HETEROMALLUS, *Br.* (Mon., fig. 35).

5.5. Hind tarsi above with first and second joints unarmed or shining, except the apex of the latter. New Zealand.

TALITROPIS, *Bollen* (*Br.*, Mon., 312, fig. 36).

Monotypic. Shiningly ferruginous. Rather small.

T. Sedilloti, *Bollen.*

PENTHOPLOPHORA,* *gen. nov.*

Head elongate. Vertex produced beyond the eyes. Fastigium rounded, narrow towards the apex. Medial ocelliform spot, minute, annular, indistinct, *lateral spots absent*. Antennæ scarcely *one and a half times* the length of the body. Eyes large, reniform, depressed. Face flat. Clypeus transverse. Labrum obovate, longer than wide, base stout. Mandibles covered. Palpi very slender. Pronotum rounded, lobes higher than long, highest behind, inferior sub-semicircular. Fore coxæ

* Five-armed,

very stout, spined. Femora sulcate below. Hind femora much dilated at the base, not longer than the body. Foramina of fore tibiae *quite rudimentary* (notably posteriorly), terete above, below *with five spines on each margin*. Hind tibiae above with two long terminal spurs inside, and with four short ones externally, also below one on each side. Abdomen stout, cylindrical, segments not granulose. Cerci of female very slender, shorter than supra-anal lamina. Subanal valves elongate-oval. Ovipositor slender, gradually incurved, acuminate from below, apex very acute. Subgenital lamina broad, nearly semicircular.

The large insect, for whose reception the genus is established, differs too much from all others to admit of its inclusion in *Trihoplophora*, its nearest ally, as will be seen by inspecting the synoptical key.

PENTHOPLOPHORA DRIFFIELDI, *spec. nov.*

Size large. Yellowish testaceous. Head concolorous, except a small blackish spot on each external superior angle of clypeus. Eyes black. Pronotum with anterior and posterior margins broadly black. Abdominal segments banded blackish.

	Female.			
Length of body	35 mm.
Length of pronotum	6.5 "
Length of hind femora	16 "
Length of ovipositor	37 "

Habitat.—Angebuckina in the Far North of South Australia, whence this remarkable insect was brought by my friend, the late C. E. Driffield, to whose memory it is dedicated. Collection S.A. Museum.

The rudimentary foramina render this species very interesting, connecting those species without them directly with the others which possess them in a perfect form. On the anterior side they are tolerably distinct, although small, and denoted by brownish shading, but on the opposite side are only indicated by a minute impression.

PACHYPODAGRUS,* *gen. nov.*

Head distinctly wider than pronotum, oval. Occiput elevated. Vertex declined. Fastigium rounded, slightly sulcate, three to four times wider than the first antennal joint. Medial ocelliform spot small, circular, not very distinct, lateral ones inconspicuous or absent. Antennæ very slender, not much longer than the body. Eyes large, *elliptical*, depressed. Pronotum cylindrical, sulci deep, lobes high, inferior margin semicircular. Elytra ab-

* Thick-gouty.

breviate, veins distinct. Wings scale-like. Mesosternal lobes short broad, metasternal large rounded. Femora all sulcate below. Hind femora incrassated, pinnate striæ biserial and indistinct, upper margins smooth, lower margins spined. Fore tibiæ stout, above terete, spineless, without foramina, below with four to five external and three internal spinelets. Hind tibiæ *very much incrassated*, terete and smooth at the base, then suddenly thickened, above slightly flattened with numerous spines, some of them being connected by low transverse ridges. First external spur with two small ones at its base, second of equal length. Pulvilli of tarsi small, those of first joint elongated. Abdomen with eighth dorsal segment of male produced, medially divided at the apex into two broad triangular lobes. Cerci short, terete, hirsute. Subgenital lamina of male short, divided into three lobes, the middle one narrow, thick and long, apex obtuse; lateral lobes in the form of low tubercles. Ovipositor nearly straight, apex bluntly acuminate.

The genus appears to me much more nearly related to the American *Cratomelus* than to the geographically nearer Asiatic members of the tribe. The differences are indicated in the synopsis.

PACHYPODAGRUS CRASSIPES, *spec. nov.*

Size large. Brownish ferruginous, banded with brown. Legs pale, spines and claws tipped with black. Ocelliform spot small, circular, indistinct. Hind femora below with 12 internal and four to six external spinelets. Hind tibiæ very stout, above with six spinelets on each margin, besides the apical spurs. Ovipositor straight, very long. Two males, one female.

	Male.	Female.
Length of body ...	25-30 mm.	30 mm.
Length of pronotum...	6 "	7.5 "
Length of elytra ...	3.5-5 "	6 "
Length of hind femora	17 "	18 "
Length of ovipositor	--	47 "

Habitat.—Oladdie, South Australia (*McGregor*); Silverton, New South Wales (*F. A. Fiveash*); Northern Territory of South Australia (*Hon. S. J. Magarey, M.B.*); (Collection of S.A. Museum). The smaller male had been preserved originally in spirit, then dried, the body is therefore in a considerably shrunken condition; the other specimens were simply dried, which may account for the difference in dimensions.

PACHYPODAGRUS MAGAREYI, *spec. nov.*

Size moderate. Greyish-testaceous, concolorous. Clypeus quadrangular, transverse, lower margin distinctly sulcate, about

one-third less in width than the upper. Mandibles blackish, almost embracing the labrum. Fore and middle tibiae with four external and three internal spines. Hind femora with six spinelets on the inner margin, the outer being unarmed. Hind tibiae moderately stout, with six spinelets on each margin. Ovipositor short, slightly incurved.

	Female.			
Length of body	27 mm.
Length of pronotum	5 "
Length of elytra	2 "
Length of hind femora	14 "
Length of ovipositor	23 "

Habitat.—Northern Territory of South Australia.

The species is dedicated to Dr. S. J. Magarey, M.L.C., who presented it in 1886, with a number of other insects, to the S.A. Museum.



ON THE CAMBRIAN ROCKS AT CURRAMULKA.

By G. B. PRITCHARD.

(Communicated by Professor Tate.)

[Read November 3, 1891.]

This paper is the outcome of a trip to Curramulka for the purpose of obtaining information with regard to the Cambrian rocks which were recently discovered at this locality.

Curramulka is one of the hundreds on the eastern side of Yorke Peninsula, and the township of the same name lies about twelve miles to the north-west of Port Vincent, at about the lowest part of a basin-shaped hollow; and it is in and around this township that the formation in question occurs.

This area is coloured, to indicate that the rocks belong to the metamorphic series of Silurian age, by Mr. H. Y. L. Brown, in his sketch map of geology of South Australia; but recently Mr. A. W. Fletcher, B.Sc. (*Proc. Roy. Soc. S.A.*, vol. XIII., part II., p. 249), proved that they were fossiliferous, and from the material he brought to light they were seen undoubtedly to belong to the Cambrian, thus adding another locality for fossils of this age.

The whole of the country between Port Vincent and Curramulka to within a mile of the latter place is covered by several feet of travertine, the wells and tanks showing this deposit to be from about seven to ten feet in thickness.

EOCENE.

Deposits of Eocene age are met with at the coast, where they are exposed in, for the most part, low-lying cliffs along the western shores of St. Vincent's Gulf, from near Black Point to Edithburgh to the south, a distance of about 32 miles, without a break. The rock in the neighbourhood of Port Vincent and Stansbury consists of a yellowish polyzoal limestone containing echinoderms, brachiopods, and a few lamellibranchs, and bears a strong resemblance, not only lithologically, but also in the character of its contents, to the polyzoal limestones at Aldinga; and at Waurm Ponds and the Moorabool Valley, in Victoria. How far the Eocene extends inland I cannot say, as in no place along the route I took was the travertine cover removed to expose the underlying rock. The following is a list of the species which have been obtained from this coast, and it will be readily seen that these beds belong to the same horizon as those just mentioned:—

ECHINODERMATA.

- Cidaris (spines and plates).
 Echinus Woodsii, *Laube*.
 Paradoxechinus novus, *Laube*.
 Holaster Australiae, *Duncan*.
 Fibularia gregata, *Tate*.
 Scutellina patella, *Tate*.
 Monostychia deltoidalis, *Tate, m.s.*
 Maretia anomala, *Duncan*.
 Eupatagus, two sp.
 Lovenia Forbesi, *T.-Woods*.

BRACHIOPODA.

- Terebratula (?) bulbosa, *Tate*.
 Waldheimia furcata, *Tate*.
 Waldheimia sufflata, *Tate*.
 Waldheimia Vincentiana, *Tate*.
 Waldheimia Tatei, *T.-Woods*.
 Terebratella Tepperi, *Tate*.
 Terebratulina Scoulari, *Tate*.
 Terebratulina lenticularis, *Tate*.
 Magasella compta, *Sowerby*.
 Magasella deformis, *Tate*.
 Rhychonella squamosa, *Hutton*.

LAMELLIBRANCHIATA.

- Pecten Eyrei, *Tate*.
 Spondylus gaderopoides, *McCoy*.

CAMBRIAN.

The rock is a hard crystalline limestone, varying from flesh-colour and grey to blue. I did not obtain any fossils from either the flesh-coloured or grey limestone, the latter seeming more particularly to carry minerals, while the blue yielded the fossils. This variation in lithological character would seem to indicate the existence of three beds, and if such is the case their relations to one another have yet to be worked out.

Area.—The boundary of the outcrop which I actually traversed was as follows:—Eastwards for a distance of about two and a-half miles a road is met running north and south; the outcrop is lost to view on the brow of a slight elevation close to this road; following the boundary southwards it runs parallel to the road for about one and a-quarter miles, then turns to the right, and has a general westerly direction for two and a-half miles, crossing the Port Vincent-road at about a mile south of the township and the next road to the west at the same distance. The outcrop along this portion of the southern boundary is lost

to view on the brow of the hills, which there form a part of the basin. Northwards, about one mile, the outcrop apparently disappears at a short distance from the cross roads, thence along the boundary westwards crossing the Minlaton road, which runs about south-west, at half-mile from the point just mentioned, thence through section 59 N., crossing the Mount Rat and Port Victoria-road at the boundary of sections 59 N. and 81.

So that filling in the remainder approximately I should estimate the area of actual outcrop at about ten square miles. That the limestone does occur at no great depth below the surface in the surrounding country is evidenced by the following facts:—To the east, in section 51 E., there is an opening somewhat below the general level of the surface which leads into a cave in the Cambrian limestone. About one-half mile further, in section 50, near the boundary fence, there is a well about 20 feet deep, which, after passing through the travertine, entered a yellow clay for some feet, and then angular fragments of the blue limestone. Also to the south, in section 34, the property of Mr. Talbot, a quarter-mile from the road, there is a very large cave in the same rock. It is comparatively easy to enter, and when some distance in the passages become very numerous, some of them just allowing a person to crawl along, and then suddenly they open out into large chambers. The walls in some parts have a slight incrustation of stalactitic material, but so far as I went there was nothing striking in this respect; the limestone forming the walls inside is very interesting from its peculiar nodular or concretionary appearance, which has, no doubt, been due to weathering action. The floors in some places have a covering of two feet or more of dust, which is full of bones; among the few obtained were the lower jaws and skulls of rats, lower jaws of an opossum, and numerous limb-bones of various small marsupials. The length of this cave is unknown; but it is said to extend for miles, though no one has yet reached the end of the passages. In section 37, the property of Mr. Bickers, about 100 yards from the road, there is a well, the depth of which is 120 feet. Below the travertine here is a yellowish sand, which was passed through for nearly the whole depth, and at the bottom a hard breccia was reached, which was made up of small angular fragments of the Cambrian limestone, held together by a matrix of brownish sand.

A well in the township gives us a depth of 140 feet. Only 40 feet of this was sunk when in search for water, as the first 100 feet was in a natural cave, and there has always been a constant supply of water in it.

A small outcrop of about half a mile square in extent is said to occur at about four miles south of Curramulka; but as I had not

an opportunity of visiting the locality, I cannot speak definitely about it.

Caves in the same rock are also said to occur in the neighbourhood of Mount Rat, which lies about four miles to the north-west.

The fossil fauna of this locality contains *Conocephalites australis*, *Orthisina*, *sp. nov.*, *Ophileta*, *sp. nov.*, *Salterella*, *n. sp.*, and some other species, which are enumerated by Professor R. Tate in his paper on "The Cambrian Fossils of South Australia."

Minerals occur in the grey rock, but apparently only in small quantities. I obtained small specimens of the green and blue carbonates of copper, copper pyrites, galena, calcite, and fluorite.

GLACIATED ROCK SURFACES.

To the north of the township there are evidences which seem to be attributable to none other than glacial action, for the exposed surface of the rock is very flat and smooth, and in many places scratched and scored, the general direction of the striæ being north and south, and occasionally deep and smooth grooves are met with. I did not see any rocks of foreign material in this locality but numerous angular and subangular fragments of the hard limestone. At the coast, however, about one mile to the north of Port Vincent, there are several large boulders of a coarse granite, with large felspar crystals, which may have been carried there by glacial agency; but as I am informed that granite occurs *in situ* both to the north and south of this locality, the presence of these boulders may have been due to other causes.

In this connection I would draw attention to an appearance on the weathered surface of this limestone, which simulates very much glacial striæ. Upon breaking a fragment off the rock it is found to be due to a series of small veins of calcite being weathered at a faster rate than the matrix, this being a little below the level of the surface.

In conclusion, it might be interesting to mention that during the recent dry season many farmers have been sinking for water, and in some places a good supply has been obtained at a depth of from 7 to 12 or 14 feet, that is just below the travertine in a deep red loam which overlies the Cambrian limestone in places to a depth of a few feet.

THE CAMBRIAN FOSSILS OF SOUTH AUSTRALIA.

By PROFESSOR R. TATE, F.G.S., F.L.S.

[Read September 6, 1892.]

Plate II.

The history of the discovery of Cambrian rocks in our Province is briefly and succinctly given by Mr. Etheridge (Trans. Roy. Soc. S. Aust., vol. XIII., p. 10, 1890) in an introduction to his paper descriptive of some corals obtained from this horizon. During the past two years additional palæontological discoveries have been made at Parara and Curramulka, on Yorke-Peninsula; and as a fairly representative fauna of the Lower Cambrian or Olenellus-zone has now been obtained; it is highly desirable that it should be publicly recorded. At least twenty-three determinable species have been elaborated; whilst various obscure fossils, whose zoological relations cannot be interpreted, represent some four or five additional ones.

The fossils are in an excellent condition, their tests being in all cases well preserved; but the absence of a bold outcrop, or face of stone, and the want of bedding planes in the rock reduce fossil-collecting to the level of the labourer who breaks stones for road-metal. The difficulty of obtaining complete specimens, or in relief on the stone, is obviously very great; whilst the intractable nature of the matrix does not permit of developing the fossils. The location of those genera, whose essential characters are internal, is guess-work, because in no instance have interior aspects or casts been obtained.

The following list contains all the definable elements of our Cambrian fauna. The note on the occurrence of *Hyalostelia* is by Mr. W. Howchin, F.G.S.

GASTROPODA.

Stenotheca rugosa, Hall. Plate ii., fig. 4.

Ref.—Walcott, American Jour. Sc., 1887, t. 1, fig. 11.

Stenotheca rugosa, var. *paupera*, Shaler and Foerste, Bull. Mus. Comp. Zool., 1888, p. 29, t. 1, fig. 9.

Stenotheca ? rugosa (Hall), Walcott, Tenth Annual Report U. States Geol. Surv., 1890, p. 617, t. 74, fig. 1.

All of the few examples of this species, obtained at Ardrossan, are referable to the variety *paupera*.

Ophileta subangulata, *spec. nov.* Plate ii., figs. 8a-b.

Shell minute, concave above, smooth, composed of two rapidly increasing whorls, which are in contact but not embracing. The periphery of the last whorl is compressedly rounded, the upper surface slightly declining from it to about two-thirds the breadth, thence steeply sloping to the suture; this sudden change of slope simulates a keel in the anterior one-third of the whorl, producing a slight concave slope between it and the periphery. Base tumidly convex.

Dimensions.—Major and minor diameters, 3· and 1·5 respectively.

Locality.—Cambrian limestone at Parara, near Ardrossan (several examples).

The two species of *Ophileta*, figured by Etheridge, Proc. Roy. Soc., Tasmania, 1863, tab. 2, figs. 13, 14, from the Cambrian or "Caroline Creek beds" of the Mersey River District, Tasmania, are very different from the one here described.

Platyceras primævum, Billings, seen from above, as figured by Shaler and Foerste, Bull. Mus. Comp. Zool., 1888, p. 30, tab. 2, fig. 10, has the general outline of *Ophileta subangulata*, but the last whorl is "throughout evenly rounded," and moreover is devoid of the submedial angulation. Despite the similitude, I do not think the two species are congeneric.

Platyceras Etheridgei, *spec. nov.* Pl. ii., figs. 7a-7c.

Shell small, broadly conical; apex obtuse, posterior, recurved, but not spiral, usually protruding beyond the posterior margin; aperture roundly oval, but irregular in outline, subtruncated and narrowed posteriorly. Surface ornamented with rather thick subimbricating concentric folds of growth, and curved beneath the apex coincidentally with the posterior margin; faintly radially wrinkled.

This very common species exhibits considerable variability in the outline of the aperture, and the amount of backward projection of the apex. The shells seem to have lived on irregular surfaces, and in some instances at least upon trilobites.

Dimensions.—The proportionate measures of the basal diameter and height are as 4 to 3; the longest diameter observed is 6 mills.

Locality.—Curramulka, in Cambrian limestone.

The species is dedicated to Mr. R. Etheridge, junr., who has contributed so largely to the elaboration of the Cambrian fauna of Australia.

The irregularity of its margin and less-tumid sides distinguish *P. Etheridgei* from *P. Dawsoni*, Walcott.

LAMELLIBRANCHIATA.

Ambonychia macroptera, *spec. nov.* Pl. ii., fig. 10.

Shell very small, obliquely triangular, sub-convex, umbones terminal; ornamented by numerous slender radial ridges about as wide as the alternating furrows; posterior margin medially subangulated.

Wing nearly as large as the valve, much expanded posteriorly, with a prominent fold or border on its ventral margin, separated however from the hinge-line by a deep suture; superior to the marginal fold the surface is broadly depressed, the dorsal margin is straight but ascending. The surface is marked by sigmoidal growth-folds, and the posterior margin is coincidently curvilinear.

Dimensions.—Oblique axis, 3.5; transverse axis, 2.5; width of wing at posterior end, 2.5; its oblique axis, 3 millimetres.

Locality.—Cambrian limestone at Curramulka (three examples).

PALLIOBRANCHIATA.

Orthisina compta, *spec. nov.* Pl. ii., figs. 6-6a.

Transversely subquadrilateral, equilateral; hinge nearly straight, not quite so long as the greatest width of the valve.

Dorsal (?) valve flatly convex with depressed anterior- and posterior-ventral areas, which are separated by a submarginal roundly elevated medial fold.

Surface marked by distant, broad undulations; in the umbonal area these have a rhomboid outline, but towards the front are medially incurved, coincident with the curvature of the ventral margin; the folds and intervening furrows are distantly and coincidently linear-striate, and ornamented radially by depressed subangular plications (about 30), which are wider than the interstitial furrows. Hinge area with a subquadrate, subconvex, nearly vertical median projection, flanked on each side by a linear-lanceolate, longitudinally plicate-striate area.

Dimensions.—Length of hinge-line, 7; greatest antero-posterior diameter, 9; greatest umbo-ventral diameter, 6.

Locality.—Cambrian limestone at Curramulka.

Orthis (?) peculiaris, *spec. nov.* Plate ii., fig. 5.

Transversely subquadrilateral, equilateral; hinge-line in the longest antero-posterior diameter, straight.

Ventral (?) valve flatly convex, with an abruptly depressed and deeply bilobed ventral margin; the mesial furrow decreases in depth as it ascends to near the umbo; the lateral margins are obliquely arched, nearly straight, forming an angle of about 70° with the hinge-line.

Surface marked by depressed unequal folds of growth.

This valve is considered ventral, because the broken surface in the umbonal region indicates that there had been a small, slightly-elevated beak.

Dimensions.—Length of hinge-line, 20; umbo-ventral diameter, 11; greatest vertical depth of medial furrow, 7 millimetres.

Locality.—Cambrian limestone at Parara, near Ardrossan (one valve).

PTEROPODA.

Salterella planoconvexa, *spec. nov.* Plate ii., figs. 3-3b.

Salterella sp., Tate, Trans. Roy. Soc. S. Aust., 1890, p. 249.

Test rather thick, externally finely and closely wrinkled-striated transversely. Shell broadly conical, tapering to an acute point; plano-convex in a medial transverse section; lateral margins rounded or subangulated. Dorsal surface convex, but towards the apex marked with a shallow medial depression bounded by broad obscure ridges. Ventral surface with a broad shallow medial depression, more conspicuous in the apical region.

A natural longitudinal fracture discloses two invaginated septa, and a transverse section near the apex one invagination.

Dimensions of a moderate-sized example:—Length, 28; dorso-ventral diameter, 7; lateral diameter, 10 mills.; but the proportionate measures of the diameters are variable. The longest example measures 35 mm. in length.

Locality.—In the Cambrian limestones at Curramulka.

This species has an external resemblance to *Hyolithes Billingsi*, Walcott, which is described as possessing flat transverse septa. *S. Hardmanni*, Etheridge, the only described Australian species of the genus is elongate-conical, with a circular transverse section, and consequently is far removed from *S. planoconvexa*, which seems to stand alone among congeners.

Hyolithes communis, *Billings*. Plate ii., fig. 2.

Ref.—*Hyolithes communis*, Shaler and Foerste, Bull. Mus. Comp. Zool., 1888, t. 2, f. 23, p. 34; *id.*, Walcott, Tenth Annual Report, U. States Geol. Surv., 1890, t. 77, figs. 3 and 4.

Shell straight, gradually tapering, marked by fine transverse striae and concentric ridges; the transverse sections are circular or slightly oval.

Locality.—Cambrian limestones at Curramulka.

Hyolithes conularioides, *spec. nov.* Plate ii., figs. 1-1a.

Shell straight, elongate, tapering to an acute point, apical angle about 20°; lateral angles sharp. The dorsal and ventral surfaces similar (?); each with two elevated subacute ridges separated by a deep concave medial furrow, the slope from the ridges to the lateral margin moderately steep. Posteriorly the

ridges become less prominent and the marginal areas less arched. Surface very finely and closely wrinkled-striate transversely.

Length.—25 mills.

Locality.—Cambrian limestones at Curramulka.

TRILOBITA.

Dolichometopus Tatei, *H. Woodward.*

Geological Magazine, August, 1884, t. xi., fig. 3, p. 343.

Conocephalites australis, *H. Woodward.*

Op. cit., t. xi., figs. 2a., 2b.

Olenellus (?) Pritchardi, *spec. nov.* Plate ii., fig. 11.

Head broad, semicircular in outline, about 15 mm. broad, and 8 mm. long, slightly convex; margin rather broad and continuous all round, separated about midway from the glabella and cheeks by a narrow low ridge; glabella oblong, slightly convex, ill-defined by a groove; eye-lobes crescentiform, narrow, elongate, arching from the base and becoming confluent with the glabella near its summit; the area between the glabella and eye-lobe is slightly depressed, broad and subdeltoid.

The absence of glabella-furrows and the uncertainty of the presence of genal spines render doubtful the generic location of this trilobite, which is named after Mr. G. B. Pritchard, whose zeal as a collector has so largely enriched our knowledge of the Cambrian fauna of this province.

Microdiscus subsagittatus, *spec. nov.* Plate ii., fig. 12.

Head obtusely sagittate-triangular, about 7 mm. broad and long; the glabella is oblong, strongly convex, obtusely-rounded, but not narrowed in front, one slight furrow crosses its posterior-third, posterior to which it is narrowed.

Cheeks slightly overhanging the outer marginal groove.

The shape of the head serves to distinguish this species from all others to figures of which I have had access.

Gen. ? Spec. ? Plate ii., figs. 9 and 13.

I figure two very distinct free-cheeks, each having a genal spine, which cannot be referred to any associated species of which the heads are known. Up to the present no glabella without the cheek-pieces have as yet been found.

It is also noteworthy that the remains of trilobites consist solely of heads, of which a considerable number has been collected, neither body-rings nor tail-pieces having yet been discovered.

ENTOMOSTRACA.

Leperditia, *spp.*

The presence of this genus is indicated by the occurrence of two species, one, which has much resemblance to *L. dermatoides*,

Walcott, is oval in outline, and about 3 mm. in the long diameter; the other has a circular outline, with a diameter of about 1 mm. Both are moderately common, but I have not secured any example of either sufficiently free from matrix to permit of a critical comparison with figured species, or to figure with a sufficient degree of accuracy.

ZOANTHARIA.

Protopharettra (?) Scouleri, *Etheridge, fils.*

Trans. Roy. Soc. S. Aust., vol. XIII., p. 18, t. 2, figs. 5-7, 1890.

Ethmophyllum Hindei, *Etheridge, fils.*

Op. cit., p. 14, t. 2, figs. 1-4; t. 3, figs. 9, 10.

Coseinoeyathus Tatei, *Etheridge, fils.*

Op. cit., p. 17, t. 3, figs. 3-5 (non figs. 1, 2, and 6-8).

Coseinoeyathus (?) Etheridgei, *spec. nov.*

C. Tatei (pars), *Etheridge, fils.*, op. cit., t. 3, figs. 1-2, 6-8 (non figs. 3-5).

The coral to which I would restrict the name of *C. Tatei*, which comes from the Ardrossan limestone, is cup-shaped, very rapidly enlarging, with the basal part consisting of vesicular tissue. From that species I separate the specimens from the Flinders Range, in which the septal structure is meandriform amongst vesicular tissue. The habit of the two corals is so very different as to suggest generic distinction, though it would seem that the anatomical characters are identical.

SPONGIDA.

Girvanella, sp., *Etheridge, fils.* Op. cit., p. 19, tab. ii, fig. 8.

Hyalostelia, sp.

Zittel's *Hyalostelia* comprises a genus of palæozoic sponges with siliceous spicules and of hexactinellid type. Their remains are not uncommon in the Carboniferous limestone of Scotland, Ireland and the North of England. The long spicular rods attracted attention as early as 1844, when McCoy referred them to the Annelida, figuring them in his "Carboniferous Fossils of Ireland" under the name *Serpula parallela*. On the discovery in the Scotch beds of six-rayed spicules in association with the rods, its affinity with the sponges was at once apparent, and led to its being classed with *Hyalonema*, or "glass-rope sponge" of the present seas. A better acquaintance with the fossil-forms revealed differences of structure from the existing genus that has led Zittel to still further amend the classification by separating the palæozoic forms from the recent under the generic name of *Hyalostelia*.

Examples of this sponge have been found in the rocks of the Northern Hemisphere as low down as the Ordovician, but so far as I know they have not hitherto been detected in beds of Cambrian age. It was therefore with some interest that I discovered their presence in two transparent sections made of the Curramulka limestone. *Hyalostelia* has regular six-rayed spicules, often with one ray much longer than the rest, and these are interlaced with elongated spicular rods. All these features are apparent in the Curramulka specimens. In the stone the spicules and rods are not in their natural position, but are scattered irregularly in the matrix. The long-rayed arm was clearly seen in one of the spicules, but as its position was not coincident with the plane of the section, it was ground away before the required thinness was obtained. The same thing occurred with the rod-shaped spicules which have been cut at various angles in the transparent sections. The remains of this sponge obtained so far are very limited, and not under the most favourable conditions; it would therefore be premature to attempt a specific determination of the Curramulka specimens, but their very small size renders it probable that they are specifically distinct from the examples of *Hyalostelia* already known.

EXPLANATIONS TO PLATE II.

Fig.

- 1-1a. *Hyalithes conularioides*. Lateral view and demi-sectional outline. Enlarged 2x.
2. *Hyalithes communis*. Nat. size.
- 3-3b. *Salterella planoconvexa*. Dorsal and ventral aspects, and sectional outline. Nat. size.
4. *Stenotheca rugosa*. Lateral view. Enlarged 3x.
5. *Orthis peculiaris*. Nat. size.
- 6-6a. *Orthisina compta*. Dorsal (?) valve and cardinal area of the same. Enlarged 2x.
- 7a-7c. *Platyceras Etheridgei*. Three views, enlarged 2·5x.
- 8a-8b. *Ophileta subangulata*. Upper surface and lateral aspect, enlarged about 3x.
9. Free cheek of unknown trilobite. Enlarged 1·5x.
10. *Ambonychia macroptera*; much enlarged.
11. *Olenellus* (?) *Pritchardi*. Enlarged 2x.
12. *Microdiscus subsagittatus*. Enlarged 3x.
13. Another free cheek. Enlarged 2x.

CRITICAL REMARKS ON A. BITTNER'S "ECHINID- EN DES TERTIARS VON AUSTRALIEN."

By PROFESSOR RALPH TATE, F.G.S.

[Read October 4, 1892.]

A reference to the above-mentioned paper, published in the Transactions of the "Kaiser-Kong. Akad. der Wissenschaften in Wien," and read before that Society March 10, 1892, is here made partly as a supplement to my communication on the Echinoids of the Australian Eocene in Trans. Roy. Soc. S. Aust., vol. XIV., p. 270, 1891, but more particularly as an illustration of the evil of intrusting diagnostic work (except under very special circumstances) to external authors, who cannot have that thorough knowledge of the mode of occurrence and habits of the objects which is so essential to exactitude in defining the limits of variability of species.

Last year I despatched to Dr. Stur, as Director of the Imperial Museum of Vienna, a large suite of fossils from the Older Tertiary strata of Australia, amongst which were sixteen species of echinoids, fairly well represented individually; this material served as the basis of Mr. Bittner's paper. I exercised the greatest care in the selection of the specimens, being desirous to forward only those of established species; in the case of *Psammechinus Woodsi*, *Paradoxechinus novus*, and *Fibularia gregata* the series was fairly large, so as to embrace, in my opinion, considerable range of individual variation. Of the small number of species sent to the Vienna Museum Mr. Bittner makes five additional species, some new varieties, and establishes three new genera. His communication has, however, despite the forcible effort at species-making, a value by illustrating the extent of individual variation of certain common species, and by defining minute details of structure which may indicate some generic relationships not hitherto recognised; it is, moreover, accompanied by four well-executed plates.

The same author supplies a bibliographic reference which was unknown to me, viz:—*G. Cotteau*, "Mem. Soc. Zool. de France, 1890," wherein are described some new or little-known echinoids, including some species from our Eocene strata. That paper is not yet accessible to me.

The following additional references are noteworthy.

SALENIA TERTIARIA, *Tate*.

Pleurosalenia tertiaria, Pomel, Classification method, p. 94, 1883.

Salenia tertiaria, Bittner, op. cit., t.1, figs. 6 to 7, p. 333.

PSAMMECHINUS WOODSI, *Laube*.

Id., Bittner, op. cit., t. 1, fig. 1, p. 334; and *var. fasciger*, t. 1, fig. 2, p. 336.

Psammechinus humilior, Bittner, op. cit., t. 1, fig. 3, p. 337.

Laube's species is very variable in shape and in the density of the granular ornamentation, particularly on the interambulacral plates. Bittner's *P. humilior* is a large depressed form, and the most commonly occurring. *P. Woodsi*, *var. fasciger*, Bittner, differs by the slight tumidulosity of the interambulacral areas, but this character is also associated with depressed tests, like those of *P. humilior*, as well as with the conic shapes such as Bittner figures. All these occur in the River Murray Cliffs. The species is represented in the Aldinga Cliffs also by the *humilior*-form which graduates into an extreme state, in which the secondary granulation is almost obliterated. It would be quite possible to select half-a-dozen specimens to which as many distinctive names could be applied.

PARADOXECHINUS NOVUS, *Laube*.

Coptechinus lineatus, Bittner, op. cit., t. 1, fig. 4, p. 338.

Ortholophus lineatus, Duncan.

Coptechinus pulchellus, Bittner, op. cit., t. 1, fig. 5, p. 342.

Paradoxechinus novus, Bittner, op. cit., t. 4, fig. 4, p. 344.

I have always been dubious as to the distinctiveness of *Ortholophus lineatus*, Duncan, from *Paradoxechinus novus*, Laube; but I had reserved an expression of opinion till I had an opportunity of examining an example of Duncan's species collected at the locality of his type. Bittner's interpretation of the characters of *Ortholophus lineatus* leaves, however, no doubt, I think, as to the identity of the two. It is noteworthy that Duncan regards *Coptechinus* as a synonym with *Paradoxechinus*, whilst Bittner makes Duncan's genus *Ortholophus* synonymic with *Coptechinus*, but places *Paradoxechinus* independently. Duncan in his classificatory arrangement of the echinoidal genera removes *Paradoxechinus* far from *Psammechinus*; but my own observations on our Eocene species of the two genera induce me to bring them into very close relationship.

As the result of an examination of many scores of specimens, collected at the same locality and horizon, of what I recognise as *P. novus*, including those obtained from the same place as Laube's type, I find that the test varies from low-depressed to

moderately sub-conical, that the ornamentation of the plates exhibits very great diversity, ranging from a few radial lines of granulations of varying prominence to densely-packed granulations without any conspicuous radial arrangement; Bittner's *Coptechinus pulchellus* is a form between these extremes.

MONOSTYCHIA AUSTRALIS, *Laube*.

Id., Bittner, op. cit., t. 2, figs. 5-8, p. 345.

MONOSTYCHIA ETHERIDGEI, *Johnston*.

Micraster Etheridgei, Johnston, Proc. Roy. Soc. Tasm., 1877, p. 116.

Monostychia Etheridgei, Johnston, Geology of Tasmania.

During a recent visit to Table Cape I collected a single example of a small *Monostychia*, which is without doubt Johnston's species. The original generic reference by Johnston must have been a *lapsus calami*, as the diagnosis of the species imperfectly indicates a *Monostychia*-like fossil, and the subsequent reference as given above may be regarded as a corrected erratum. *M. Etheridgei* differs from *M. australis* by its narrow oblong-oval outline and its low regularly-convex dorsal surface, broadest behind, with blunt incisions, and gradually narrowing to the somewhat-produced shortly-rounded anterior margin; the tumid ambital margin is very distinctive. Length 18.5, greatest breadth 14.5, thickness 3.75 mm. Specimens from the Murravian beds attain to twice these dimensions.

FIBULARIA GREGATA, *Tate*.

Id., Bittner, op. cit., t. 2, fig. 2, p. 347; *var. orbiculus*, t. 2, fig. 1.

Fibularia Tatei, Bittner, op. cit., t. 2, fig. 3, p. 348.

Mr. Bittner's new species represents an individual state of a profusely-abundant and protean form.

CASSIDULUS LONGIANUS, *Gregory*.

Australanthus longianus, Bittner, op. cit., t. 3, fig. 2, p. 350.

Gregory's species is made the type of a new genus. I am not prepared to discuss the advisability of this step.

CATOPYGUS ELEGANS, *Laube*.

Tristomanthus elegans, Bittner, op. cit., t. 4, fig. 3, p. 352.

Bittner established a new genus for the reception of our fossil, *Nucleolites subcarinatus*, Goldf., and *Echinanthus subhemisphaericus*, Ebert. The Australian species had already been separated from *Catopygus* under the subgeneric title of *Studeria*, and there is no valid reason for its rejection and the substitution of *Tristomanthus*.

PYGORHYNCHUS VASSALI, *Wright*.

Pliolampas Vassali, Pomel, Classification method.

ECHINOLAMPAS POSTEROCRASSUS, *Gregory*.

Progenolampas Novæ-Hollandiæ, Bittner, op. cit., t. 3, fig. 1, p. 357.

The specimens forwarded to Vienna are authentic examples of Gregory's species, which Mr. Bittner seems to find sufficient individual characters in them to make a new species. Whether or not there is good foundation for the creation of a new genus, I have no desire at present to discuss, but I must strongly protest against such reckless species-making.

ECHINOLAMPAS GAMBIERIENSIS, *Ten.-Woods*.

? *Echinolampas Morgani*, Cotteau.

I question very much if there be more than one species of this genus in the River Murray Cliffs, but being unacquainted with Cotteau's diagnosis of his new species, I can only cast a doubt on its validity. My knowledge of *E. Gambieriensis* is very extensive, as the species is common, though the possible occurrence of a second species must be admitted.

HOLASTER AUSTRALIÆ, *Duncan*.

? *Galeraster Australiae*, Cotteau.

H. Australiae, Bittner, op. cit., t. 3, fig. 3, p. 359.

H. difficilis, Duncan, regarded by me as a crushed *H. Australiae*, is erected by Pomel into a new genus with the name *Corystus*.

CARDIASTER TERTIARIUS, *Gregory*.

Id., Bittner, op. cit., p. 360.

MICRASTER ARCHERI, *Ten.-Woods*.

Cyclaster lycoperdon, Bittner, op. cit., t. 4, figs. 1, 2, p. 360.

? *Cyclaster Morgani*, Cotteau.

Of this familiar echinoid of the River Murray Cliffs two examples were sent to Vienna under the name of *Brissopsis Archeri*, Woods; and because Mr. Bittner had no knowledge that the species had been diagnosed he substitutes a new designation.*

Bittner admits that *Micraster brevistella*, Laube, is congeneric with his new species, but I have already shown that Woods' name has priority; as to Cotteau's *Cyclaster Morgani*, there is good reason to believe that it belongs to the same species.

* Unter dem Namen *Brissopsis Archeri*, Woods, welcher meines Wissens nicht publicirt worden ist (*sic*).

Had I been influenced by my own judgment, and not by Duncan's, I should have continued to retain *Hemiaster Archeri*, Ten.-Woods, in *Brissopsis*, to which Duncan refers *Cyclaster* as a synonym. However, the characteristic, incomplete, simple, peripetalous fasciole has already been described by me, and subsequently figured by Bittner; the association therewith of an almost obsolete anterior groove may make it desirable to employ the name of *Cyclaster* for our species in place of *Micraster* or *Brissopsis* as hitherto.

LOVENIA FORBESII, *Ten.-Woods*.

Sarsella Forbesii, Pomel, Classification, p. 28; *id.*, Bittner, op. cit., p. 364.

EUPATAGUS ROTUNDUS, *Duncan*.

Euspatangus rotundus, Bittner, op. cit., p. 365.

EUPATAGUS MURRAYENSIS, *Laube*.

Euspatangus Murrayensis, Bittner, op. cit., p. 365.

HEMIASTER PLANEDECLIVIS, *Gregory*.

Id., Bittner, op. cit., t. 2, fig. 4, p. 366.

GUALTERIA AUSTRALIÆ, *Cotteau*.

This is an interesting addition to the echinoid-fauna of the Australian Eocene, and is unrepresented in my collection.



THE EFFECTS OF SETTLEMENT AND PASTORAL OCCUPATION IN AUSTRALIA UPON THE INDIGENOUS VEGETATION.

By SAMUEL DIXON.

[Read October 4, 1892.]

I propose to consider in this paper the general effect of settlement in Australia upon the native vegetation, not only by the direct results of cultivation in destroying it, but also those produced indirectly by the introduction of foreign plants; and finally the effect of grazing upon the indigenous fodder-plants.

To generalise on these subjects over such an extensive area as Australia may seem to be presumptuous in view of its widely-different soils and climatic conditions, and though I am fully aware that no one can be in a position to compare all the typical districts, yet I venture to record the results of my own observations in both the settled and unsettled districts of extra-tropical Australia, having paid particular attention as a practical grazier during the last thirty years to the native growths.

Settlement in Australia has been largely influenced by legislation. The pioneer has usually been the cattle-breeder who, following the surface-waters, has penetrated under enormous difficulties to the distant interior; next came the wool-grower, who stocked the back country (*i.e.*, back from the rivers), sunk wells and tanks, and enclosed large tracts with wire-fences; in the districts with regular rainfalls the cultivators of the soil succeeded, who now usually combines grazing on a small scale.

In New South Wales and Victoria the principle of "Free Selection before Survey" allowed the farmer to select the richest and most fertile spots, which became centres for the dissemination of foreign plants commonly of little value, in fact, weeds, the rankness of growth of which frequently overcame the indigenous vegetation, especially the herbaceous. On the exhaustion of the soil by cultivation and grazing with cattle in succession, the ubiquitous red gums (*Eucalyptus rostrata*) re-occupied the land, and was accompanied in a small degree by various species of Acacias (*e.g.*, *A. decurrens*, *A. pycnantha*, &c.), and under their protecting shade there reappeared the perennial grasses, such as species of *Stipa*, *Danthonia*, *Panicum*, &c. In other districts the worn-out farms, being grazed with sheep, are now grassy pasture lands and with the exception of the native grasses comparatively few species of the indigenous flora remain.

In North-Western Victoria and South Australia, where very extensive tracts have been cultivated in the "mallee scrubs," it might have been expected that the original mallee (*Eucalyptus oleosa* and *E. gracilis*) would have reappeared, but so far this is not the case, as wherever that mode of cultivation known as "mullenizing" has been sufficiently prolonged to ensure the death of the primitive growth by uprooting the underground stem—popularly known as the "mallee root"—regeneration is almost wholly unknown, and if thoroughly stocked with sheep, it never does take place, owing to the infrequent germination of the seeds and the extreme slowness of growth of the seedlings.

Sufficient time has not yet elapsed since settlement took place to formulate the conditions under which the original vegetation can be expected to reclothe the surface exhausted by farming, but in the cooler and moister regions we find, as stated above, that *Eucalyptus rostrata* does rapidly resume its sway over the cultivated tracts where it originally prevailed; but in the warmer and drier zones we are without any extensive examples of the native vegetation reasserting its dominion. These former areas present the best examples of the overwhelming growth of introduced weeds—the stinkwort (*Inula graveolens*) in summer, and the Cape weed (*Cryptostemma calendulacea*) and sundry thistles, &c., in spring. In the tropical region, however, where abandoned sugar-cane fields are now covered with *Lantana*, we may expect the original dense growth to reappear by degrees.

Necessarily as cultivation proceeds a larger area becomes despoiled of all the native plants, the forests are cleared, and repeated ploughings complete the extermination. Here, introduced plants find a suitable habitat for propagation, and each isolated farm becomes a centre of dissemination of the various weeds, which injuriously affect the grain-crops in the northern hemisphere; a list of these troublesome plants would be very extensive, and it is steadily increasing, and although some few annuals of indigenous growth reproduce in these cultivated spots, yet none of them do so to any injurious extent, none can therefore be considered "weeds."

It would be very difficult to indicate any Australian plant which has increased in numbers while the land is regularly cultivated for a lengthened period; intermittent cultivation does, however, tend to the individual-increase of certain vigorous species, thus on limestone soils we find *Zygophyllum*, *Erodium*, *Erysimum*, &c., similarly where cultivation has been attempted in, or at the boundary of, the saltbush-country, which has prepared the soil for the retention of the seeds, and if stock be kept off for two or three years, the more tenacious plants, such as *Kochia*, *Atriplex*, &c., reappear.

In the moister regions, cultivation generally annihilates everything indigenous, and after its cessation annuals very slowly reappear. Each locality has of course its peculiar species, but the common Purslane (*Portulaca oleracea*), so widely spread through Asia and Australia, and known by the aborigines as "Parakylia," is almost universal in rich soils.

Many garden plants are spreading rapidly, and becoming weeds, so that it is now quite common to find some of them in secluded localities to which they have spread from a selector's garden; the showy *Vinca rosea*, so abundant on the Queensland coast is a good example, but I do not know of any introduced forest-tree which has reproduced itself largely, except under cultivation, although *Pinus halepensis* might have been expected to do so.

It is safe to conclude that on the whole cultivation means absolute destruction to the Australian flora, whether of the tropical, subtropical, or temperate climates; and because the richest soils are naturally those most suitable for cultivation, the species endemic in those localities are most likely to become extinct. The Illawarra district of New South Wales affords a striking example of the alteration which may take place within a very limited period; in few spots can the botanist now discover the specimens of the peculiar and lovely flora for which it was celebrated, when first settled, and this almost the loveliest district of Australia has now become commonplace and comparatively uninteresting to the botanist.

The farmer, the squatter, the miner, and the swagman all cause extensive conflagrations, and by their oft-recurrence the arborescent growths are reduced to mere scrubs, and the more tender plants, such as orchids and other flowering plants, are utterly destroyed with a recklessness which can only be fittingly described as insane. In aboriginal times fires were much less frequent, and in the forest regions were rarely intentional. Although in the plains-country, between the coastal forest-belts and the desiccated interior, fires were systematically employed in hunting wallabies and kangaroos, yet as these plains were usually grassy little harm resulted; in fact, these fires at long intervals assisted the germination of the hard seeds of the Acacias, &c., and were so far beneficial. Now, however, frequent fires and the subsequent grazing by sheep, which eat off the tender shoots of almost every shrub and the hearts out of the Xanthorreas, and nibble the shoots of other arenaceous-loving plants, prevent anything but the hardiest surviving; from this cause alone many rare plants, most of which are of sporadic occurrence, and would seem to be survivals of a still more ancient flora, are being surely destroyed, although under

other circumstances none of our floras are so likely to remain in their primitive condition as those where the siliceous nature of the soil naturally produces plants which from their innutritious quality fail to support any sort of stock, nor do introduced plants as a rule find this class of soil congenial. It is to be expected therefore that the *Banksias*, *Hakeas*, *Melaleucas*, and other plants eminently characteristic of Australia and peculiar to its sandy poor soils will remain comparatively unaffected in those parts of the continent which are not adapted to carry stock, are unsuited for cultivation, and remain comparatively free from bush-fires.

On these grounds the unique and singularly lovely flora of Western Australia, especially of its "sand plains," and the moist district immediately contiguous to King George Sound, may possibly remain for centuries to come. Indeed to this peculiar flora occasional fires are to some extent beneficial, as not only are the long buried seeds germinated, but many species produce in the succeeding year their most luxuriant blooms. Of this, the locally named Cabbage- or Flame-tree, *Nuytsia floribunda*, is the most conspicuous instance, whose strikingly-brilliant orange-coloured bunches of bloom are only to be seen in their full gorgeousness at this time.

The *Xanthorreas* too invariably flower after a thorough scorching and thereby afford to bushmen sound data for reckoning the period which elapsed since the last fire.

Indeed, of West Australia it may be said that no other part of the continent is so likely to have some of its indigenous flora preserved intact; because not only from the poorness of the soil and the fire-resisting quality of so many of its endemic plants, but also from the presence of several poisonous and deleterious plants which will not allow of overstocking, which is proving so prejudicial to the Eastern-Australian floras. With the exceptions referred to of West Australia and other analogous soils with corresponding floras, the constant recurrence of extensive conflagrations are in the highest degree prejudicial, and particularly to the forest-regions, and must ultimately destroy the noble growths of those giant forms which add so much to the value and beauty of our forests. In ordinary seasons sufficient moisture exists to prevent extensive destruction, but at intervals extremely dry seasons are experienced, and the undergrowths become highly inflammable; and then miles of country are completely devastated; and although only old or partially-decayed trees are consumed, the scorching of the upper branches of vigorous trees causes these to die away, and, ultimately rotting, the whole trunk becomes involved in decay, so that the next fire makes a prey of every tree so affected; the inevitable result being that wherever fires con-

stantly recur, trees valuable for timber cannot be produced, and finally the forest-regions are reduced to mere expanses of unsightly and useless scrubby growths.

The unwise system of permitting "free selection" within the boundaries of natural forests has produced such enormous destruction of timber that it becomes impossible to even roughly estimate the amount of loss from this cause alone, not only from the fires which the selectors have originated wilfully or carelessly, but from the injury done by stripping the very best timber-trees for the sake of the sheet of bark so obtained, and, in spite of the regulations intended to stop this senseless havoc, the practice is still common to ruin a tree worth possibly four or five pounds sterling for the sake of a sheet of bark worth possibly sixpence or a shilling.

The outlook for succeeding generations is indeed dismal should the destruction of the forests continue as in the past; our watersheds will become bare, bald hills and mountains, from which torrential floods will devastate the alluvial plains, and though the grazing area will be much extended, it will be at the expense of those forest-regions which so greatly affect and modify the extremes of climate for which Australia is remarkable.

We can look to other countries to learn the extent of injury which the destruction of the indigenous flora may entail. Of this Spain affords a good example. Since the Roman period her extensive forests of oak, chesnut, and pine have almost entirely disappeared, and the extremes of climate being thus intensified, that country has lost much of her fertility, and consequently is less able to support a large population.

To counteract the disastrous result of the wholesale destruction of that portion of the Australian flora which now clothes the forest-regions with the very best and most valuable hard woods, an enlightened public sentiment needs to be cultivated, and though a beginning has been made, much remains to be done; and it cannot be too much insisted on that the preservation of the Eucalyptus in its numerous species is of the very greatest and most vital importance to the best interests of Australia. It is of truly national consequence, for not one single instance of an exotic timber-producing tree can be quoted which so completely fulfils the conditions demanded by the soil and climate of Australia as the various Eucalypts now do, namely, great resistance to extremes of heat and cold, rapid reproduction, and a wonderful power of recovery from the effects of fire.

That the public sentiment in favour of the preservation of the indigenous flora is awakening is evidenced by the readiness of large and small land-owners to plant round their homesteads various shelter-trees, which some of the Colonial Governments encourage by the gratuitous distribution of young seedlings.

Ring-barking, especially in New South Wales, where it has been often carried out very injudiciously, has produced deplorable results. Owing to the policy of "selection before survey," it is not infrequent to see magnificent timber ring-barked so as to comply with the "improvement" clause, so that it is possible to see trees worth £5 to £10 a-piece which have thus been ring-barked—destroyed under the pretence to "improve" the "selection." Even on pastoral properties the practice of ring-barking has not been an unmixed benefit, for although the crop of grass is often increased, the more tender herbaceous and shrubby plants die out, partly from the loss of shade, which permits the full effect of frost to be felt, and further injury results from the earlier drying-up of the grasses thus exposed to the full heat of the sun.

In the South-Eastern portion of South Australia a similar result to that caused by ring-barking has been produced by depasturing stock. Large tracts of dead gum-trees are there to be seen, and it appears to me as if the trampling down of the soil by cattle has so altered the conditions of growth, that the trees, losing their vigour, have fallen a prey to insect-pests, which, yearly increasing, have finally killed them.

The only instance in which settlement in Australia has had the effect of increasing the indigenous vegetation on a large scale occurs in the Cobar district, where the Cypress-pine (*Callitris verrucosa*) has increased to such an extent that much less stock can now be carried there. This has arisen apparently from the grass being eaten off by stock, so that bush-fires no longer travel over large areas, and the young plants, which are easily destroyed by fire, growing closely together and seeding abundantly, take complete possession of the soil, to the exclusion of other plants. This is the only instance within my knowledge of any native plant largely extending its area after settlement has taken place.

On the borders and beyond the limits of successful cultivation alien plants do not flourish every season, but some individuals produce seed which, on the occurrence of a wetter season than usual, grow and reproduce with great rapidity wherever the surface of the ground has been broken. This may be observed along our Great Northern railway within the dry interior, where the common weeds of the farming districts have sprung-up and propagated, though it is not yet apparent if these strangers will maintain themselves in so arid a climate, or successfully compete with the indigenous flora—most probably not!

In the regions where cultivation is profitable, the introduced plants prove formidable rivals to the native ones in the struggle for existence, and attain a luxuriance of growth quite unknown in their original habitats; nor do they confine themselves to cul-

tivated areas alone, since carried about in the hair of horses, in the wool of sheep, or exuded in the dung of cattle, many of them are now to be found in exclusive possession of the best soils. With some, as the thistles, the invasion is transitory, as after exhaustion of the soils of the special constituent required by them, the growth becomes weaker, and the plants finally disappear.

The extension of railways throughout Australia has also greatly assisted in a wide and rapid distribution of imported plants, not only from the seeds present in the hay on which the horses used in the construction of the various lines, but also in the facilities offered for the transportation of fodder grown in coastal regions, into the most distant pastoral districts, and as the soil throughout the interior regions of Australia is commonly of very excellent quality, climatic conditions seem the only bar to their indefinite increase.

It is, however, in the regions of cultivated lands and their immediate vicinity that the most striking examples of the effects of these introductions are to be noted. Two or three plants in particular may be instanced which under certain conditions take complete possession of the soil, to the utter exclusion of any other; the most universally spread and the best known is the corkscrew- or clover-burr (*Medicago denticulata*). Coming up annually with the first fall of rain, it spreads in dense, close masses with prostrate stems, and entirely chokes the growth of any other annual; when the heat of summer is felt it quickly dries up and its abundant seed-vessels then freely cover the ground. No introduced plant has produced greater loss to the woolgrowers than this, for although a fairly good fodder, the seed-pods, coiled up into two or three whorls, readily become affixed by their serrated edges to the wool on the bellies and legs of sheep. To the flock-master the presence of these troublesome seeds means a loss of one penny per lb. on all those parts of the fleece which contain them, so that the total yearly loss amounts to hundreds of thousands of pounds. The best soils with the best climate producing it in the greatest abundance; so that our native clovers, especially the delightfully-scented and invaluable *Trigonella suavissima*, have no chance to survive against so vigorous an enemy.

Another plant, the Bathurst Burr, *Xanthium spinosum*, a South American introduction, is also yearly the cause of great loss to the wool-grower, and though it is only a summer-growing plant, and ripening its troublesome burrs in autumn, yet is useless as a stock food, and to some extent also interferes in certain situations with the reproduction of native plants.

A third example is the South African *Cryptostemma calen-*

dulacea, or Cape-weed, which, like the clover-burr, fairly smothers-out of existence native annuals and perennial grasses; its abundantly produced seeds germinate with the first fall of rain, and the plant grows very rapidly and vigourously. An individual of this procumbent species will often cover a space of 30 inches in diameter, but commonly such exuberant growth is on ground where the surface has been broken by cultivation or otherwise.

Other examples of introduced plants, which take complete possession of the soil, often covering acres, especially where it is very rich, are afforded by various species of the thistle-tribe, and several other European composites have also become very common. Amongst the numerous shrubby plants which threaten to displace the Australian indigenes, none are more noteworthy than the sweet-briar (*Rosa rubiginosa*), and the dog-rose (*R. canina*), which on neglected properties take complete possession, and are difficult to eradicate. In the coldest and moistest parts of Australia the Bramble (*Rubus fruticosus*) is already forming tangled brakes as impenetrable as the masses of furze or whin (*Ulex europæus*) to be found under the same conditions. A full list of introduced plants would include a large proportion of small or of no economic value.

The destructive effects of settlement upon the indigenous flora of Australia is nowhere more apparent than in the purely pastoral districts where the rainfall is decidedly scanty. Throughout the immense region known as Riverina, and to the extreme western and northern runs of South Australia, the injury to the original vegetation by overstocking has assumed so great a magnitude as to entail a national loss. Continuous overstocking has destroyed the bushy vegetation and the perennial grasses. The numerous species of *Atriplex*, *Kochia*, *Rhagodia*, and other Salsolaceous plants, *Mesembrianthemum*, and a long list of other small shrubs, together with the smaller tree-growths of various Acacias, *Myoporum*, &c., which formerly provided abundant sustenance for sheep and cattle during ordinary droughts, have now disappeared, and only inedible shrubs, mostly of the Proteaceus order, remain. The effects of this destruction had begun to be felt at each period of drought more and more, and now the rabbit-plague comes to finish the devastation begun by injudicious stocking, so that throughout the territories above mentioned hundreds of square miles are to be found which (except during favourable seasons when the rainfall is sufficient for the growth of annual grasses and herbs) have ceased to carry stock. Indeed, for miles back from the river frontages, and in the neighbourhood of wells and dams, an unproductive surface, trodden down until almost impervious to water, now extends. Hence, from the diminished

yields of wool and the tremendous losses of stock, which each drought now entails, extensive squatting properties fall into the hands of financial institutions, who find that "runs" which formerly produced thousands of pounds per annum now require an income to be spent upon them, as it is only in very wet seasons that a surplus over the expenditure may be expected.

On the Lower Murray River, in the mallee country, many such dire experience could be related, and it does not appear probable that these extensive tracts can become again covered with their original flora so rich and varied in drought-resisting plants, a flora which is unequalled in the world for the abundance and variety of the very best fodder-plants. If it were possible to exclude herbivorous animals from these desolated areas we might hope that in the course of years, the seeds now buried might vegetate and gradually re-clothe the country; but unfortunately, though every few months of drought destroys millions of rabbits, there always remain enough to re-stock the country, and so rapidly do they reproduce that very few months are sufficient to cover the country in incredible numbers. It may possibly happen that in the course of years, as the shrubs from which they derive moisture during the hot months become gradually extinct, they may perchance become extinct also; but it is appalling to think of what must first happen when we find such trees as Sandalwood (*Myoporum platycarpum*), Mulga (*Acacia aneura*), Myal (*A. cyclops*, &c.), Leopard-wood (*Flindersia maculata*), Dog-wood (*Eremophila longifolia*), and many others, all carefully ring-barked by these destructive rodents.

Only the two extremes of country are safe from these pests, namely, the very moist, where they become attacked by entozoa; and the very dry, say, inside the five-inch rainfall belt, where the rainfall in some years is only two inches, or less.

It is no exaggeration to say that the devastations to the Australian flora by this rabbit-plague are more than all the other causes put together, and the pecuniary loss to Australia has already amounted to many millions of pounds sterling.

In Western Australia the destructive effects of settlement are not so conspicuous; two factors of much importance preventing systematic overstocking exist, and the rabbit-plague has not yet reached there. From the siliceous nature of much of South-Western Australia, there are very large tracts, the prevailing flora of which is so extremely innutritious that neither cattle nor sheep can be profitably kept; and though after fires in the summer the winter rains produce an abundance of tender shoots, stock can only be grazed for short periods. These "sand-plains" are, of course, altogether unfit for the cultivation of any food-producing plants, whilst in other districts the prevalence of plants

poisonous to all ruminants prevents any attempt at systematic overstocking

Originally the gorge of the Lower Murray was well-covered with herbaceous plants and grasses, which were confined to the actual banks of the river and to the lagoons, some of which are two to three miles long, and one to half a mile across. Here the "lignum" (*Muehlenbeckia Cunninghamsi*), attained its largest growth, 15 to 20 feet high, and so thickly matted together as to be impenetrable; but at the present time, many miles of this valley have been denuded of lignum, reeds, bulrushes, and grasses, and the prevailing aspect is an uninteresting expanse of dry mud and sand, only diversified by a few Eucalypts. The destruction of the swamp-vegetation throughout Riverina has considerably lessened the amount of stock which formerly grazed upon it during the long hot summers and during droughts.

No class of country suffers so extremely from excessive stocking as the sand-hill country, and especially the sand-dunes which fringe much of the coast-line of Southern Australia. As natural growth is exterminated, the sand, no longer protected by the herbs and shrubs shading its surface, and binding it together with their very long and widely-spreading roots, is driven by the prevailing winds over the surrounding country, to the destruction of all lowly vegetation; even forest-trees are overwhelmed in the advancing sand-waves. This phenomenon is not confined to the coast-line, but instances, usually on a limited scale, may be found in the interior.

The destructive effect by stock trampling down and consolidating the clay-surfaces around watering-places has already been adverted to; but whilst the whole vegetation in purely pastoral districts is affected more or less by this trampling, yet the effect upon the growth of certain species of grasses is of a more particular kind. Those whose seeds are provided with long awns, such as *Andropogon*, *Aristida*, *Stipa*, &c., are able to penetrate the soil and await the rains to germinate them, while the more valuable and nutritious ones—as, for instance, *Panicum*, *Sorghum*, *Sporobolus*, &c.—being without those special arrangements, are liable to disappear, not alone from the difficulty of obtaining suitable lodgment in the ground, but also from all stock preferring their more succulent stems to the hard siliceous culms of their rivals.

From these causes, overstocking, rabbits, and introduced plants, it appears probable that in the near future the features peculiar to the Australian landscape from its endemic floras will be greatly modified. As, for instance, the aspect of our Pacific slope has been in certain spots much altered by the spread of the cactus, and our water-courses are choked up in various parts of the colonies by the spread of the common water-cress (*Nasturtium officinale*).

The results of overstocking hitherto referred to have been mainly due to sheep. Cattle, although very destructive to some of the shrubby trees, such as Emu-bush or Bitter-bush (*Heterodendron oleaefolia*), Quondong (*Santalum persicarium*), Mulga (*Acacia aneura*), of all of which they are extremely fond, breaking down the branches to reach the young growth, are otherwise not nearly so destructive as sheep; and where not grazed in excessive numbers, the native grasses have greatly increased in quantity, but the influence of big cattle in consolidating the surface soil and making it more retentive affect the native vegetation rather beneficially, and the long paths made in crossing the country often develop into small watercourses, and the vegetation of the lower-lying ground of the drier part is thereby improved.

It is not to be supposed that in pointing out the dire results of overstocking, especially with sheep, that moderate and judicious grazing has the same effect. Of course, the exigencies of bad seasons, with little or no rain, may compel overstocking; but, if not persisted in, the injury done is not permanent, and a few wet years recuperate the pastures.

In newly-stocked country, where the rainfall is light and precarious, the indigenous perennial grasses exist as tufts wide-apart; hence, while the stock is few in numbers and not kept continuously in the same spot, these perennial grasses greatly increased and covered the ground fairly well, but as the stock multiplies the perennial grasses and the shrubs became fewer, or died out, and their place is occupied by annual grasses and herbs. By preference the stock eat the sweetest and best, and the result of much overstocking for lengthy periods is that inferior grasses prevail, as evidenced by the poverty and poor condition of the animals, despite the abundance of feed. An intelligent system of grazing will allow the best grasses to reproduce themselves, and thus secure an increase of the yield of wool and lambs.

Many of the innutritious grasses are importations, and one of the worst is an Indian grass (*Homarthria*, sp.), which has spread very widely on the better soils, and is very abundant in the districts near to Sydney, where originally the kangaroo grass (*Anthistaria ciliata*) was common. Of native innutritious grasses species of *Andropogon* and *Aristida* furnish typical examples.

Generally the results of settlement appear on the whole extremely injurious to that portion of our vegetation which comprises the best fodder-producing plants, and that the very existence of the indigenous forests is threatened by the constantly-recurring conflagrations, and it may perhaps be permitted to suggest remedies of a practical nature to mitigate these deplorable effects. In all natural forest-country very extensive forest-reserves ought to be set apart in such a manner as to be beyond

the possibility of resumption by the political heads of the Crown Lands Department of each colony, whose fiscal necessities have frequently caused the public estate to be alienated for the benefit of private individuals. Each reserve would require one forester at least, who should be permanently resident thereon. The boundaries of each forest should be as far as possible natural ones. It is true most of the colonies have now a forest department, but some of the reservations are unsuitable, and those suitable are often too limited in extent; whilst the resumption of the reservation is too easily obtained.

In respect to the preservation of our exceptionally rich and abundant fodder-plants on areas where the rabbit plague is kept within reasonable limits, graziers will find it entirely to their own interests to encourage the most valuable growth by the adoption of a system of alternate grazing of sheep and cattle on the different divisions of their holdings. Seasons of heavy and continuous rains invariably cause the long-buried seeds to spring in wonderful abundance, and these only require sufficient time to reach a development which will withstand a moderate amount of grazing.

It cannot be too often repeated that the fat-producing quality of our native vegetation, which covered originally all the interior at present stocked, is quite unequalled in the world for its abundance and hardiness to withstand an ordinary drought and it is notorious that stock fed on it will travel hundreds of miles to market without serious deterioration. Unless some such plan is widely acted on it is safe to forecast the extinction of that portion of our vegetation whose great value and importance is due to its economic value as a food for stock, and capable of increasing and multiplying under such conditions of heat or cold, drought or flood, as no other vegetation can possibly do.

The longer this extinction progresses the greater and greater will be the losses entailed by periods of drought, and it has been already demonstrated on an extensive scale that this destruction renders valueless very large tracts of country; and that in other parts, where the rainfall is greater and more regular, the edible shrubs and perennial grasses are liable to be supplanted by annuals and worthless perennial grasses. Hence the preservation of our indigenous flora, whilst looked upon as a fad by the ignorant and unthinking, is really in its cumulative effects one of great national importance—an importance difficult to exaggerate as affecting our food-supplies and the greatest of our sources of exported wealth.

FURTHER NOTES ON AUSTRALIAN COLEOPTERA
WITH DESCRIPTIONS OF NEW GENERA AND
SPECIES.

By the Rev. T. BLACKBURN, B.A.

XII.

The following pages contain *inter alia* descriptions of a number of new species of *Coccinellidæ*, collected in various parts of Australia by Mr. A. Koebele, and sent to me subsequently to the collection dealt with in Part XI of this series of memoirs.

HYDROPHILIDÆ.

BEROSUS.

B. majusculus, Blackb. This appears to be the Southern form of *B. externespinosus*, Fairm. All the South Australian examples I have seen have their legs entirely testaceous, while those from Queensland have their posterior four femora widely black at the base. In both forms the apical spines of the elytra are variable, and I do not find any constant character apart from colour to distinguish the two.

PHILHYDRUS.

P. lævigatus, Blackb. I have recently received from Mr. Tryon, of Brisbane, some examples of *P. maculiceps*, Macl., taken by Mr. Relton. *P. lævigatus* being not unlike it, it may be well to record that besides the colour differences, the maxillary palpi are considerably shorter in *lævigatus* and the puncturation of the elytra is evidently closer, the rows of larger punctures, moreover, being scarcely traceable, whereas in *maculiceps* they are very well defined under a good lens.

DERMESTIDÆ.

TROGODERMA.

T. Reitteri, sp. nov. Ovale; nigro-hirtum; nigrum, antennis pedibus et elytrorum humeris (nonnullorum exemplorum marginibus postice quoque) rufis; obscure sat sparsim punctulatum; sulcis antennariis profundis bene determinatis, triangularibus, postice clausis.

Feminae (?) antennarum clava 3-articulata. Long., $1\frac{1}{3}$ l.; lat., $\frac{7}{10}$ l.

The distinctive characters of this species are its sparse

puncturation, the conspicuous red blotch on the shoulder, and (in one sex at any rate) the three-jointed club of its antennæ.

N.S. Wales, near Sydney.

T. varipes, sp. nov. Ovale; fulvo-hirtum; nigrum, tibiis tarsis et (nonnullorum exemplorum) elytrorum apice rufis; sat crebre sat fortiter punctulatum; sulcis antennariis profundis bene determinatis, triangularibus, postice clausis.

Maris antennarum clava 4-articulata, articulo clavam præcedenti sat dilatato.

Feminae clava 4-articulata, articulo clavam præcedenti haud dilatato. Long., $1\frac{1}{5}$ — $1\frac{3}{5}$ l.; lat., $\frac{7}{10}$ —1 l.

I have examined a considerable number of specimens without detecting any character likely to be sexual except that in the smaller and narrower examples the joint of the antennæ preceding the club is evidently dilated so as to be somewhat intermediate in width between the preceding joints and the first of the club.

S. Australia; near Adelaide.

T. baldiense, Blackb. I am disposed to think that this insect is probably identical with *T. apicipenne*, Reitter. Unfortunately Herr Reitter gives no information as to the structure of the antennæ or their cavities in describing that species, so that it is impossible to feel any certainty; but a recent reconsideration of the nomenclature of the *Dermestidae* in my collection has resulted in the opinion that the above alteration is probably required.

LAMELLICORNES.

ONTHOPHAGUS.

O. blackwoodensis, sp. nov. Sat nitidus; niger, vix violaceo-tinctus elytris ad apicem (et nonnullis exemplis pygidio) rufo-maculatis, antennis palpis tarsisque rufis vel testaceis; corpore subtus pedibusque minus crebre fulvo-hirsutis, capite prothoraceque fortiter sat crebre punctulatis; hoc æquali, illo antice sat fortiter emarginato; elytris sat fortiter striatis, striis crenulatis, interstitiis leviter convexis, rugulosis.

Maris vertice tuberculum in medio ferenti, sutura clypeali carinata arcuata.

Feminae vertice carinam transversam angulatam ferenti, sutura clypeali ut maris. Long., $2\frac{1}{4}$ l.; lat., $1\frac{2}{3}$ l.

S. Australia; near Blackwood.

O. henleyensis, sp. nov. Sat nitidus; niger, nonnullis exemplis leviter viridi-tinctis, corpore subtus pedibusque minus dense fulvo- vel cinereo-hirsutis; capite sat fortiter prothorace

crasse sat crebre punctulatis; illo antice fortiter emarginato, emarginaturæ lateribus fortiter productis; elytris sat fortiter striatis, striis crenulatis, interstitiis fortiter convexis sat crasse rugulosis.

Maris vertice cornubus 2 (his rectis, minus elongatis, vix divergentibus, haud ad basin conjunctis) armato, sutura clypeali carinata sat recta.

Feminae vertice carina transversa arcuata armato, hac ad latera magis elevata, nonnullis exemplis in medio interrupta. Long., $3-3\frac{1}{2}$ l.; lat., $1\frac{4}{5}-2\frac{1}{5}$ l.

S. Australia; Henley Beach and other localities.

O. nitidior, sp. nov. Sat nitidus; niger, vix cupreo-micans, corpore subtus pedibusque minus dense fulvo-vel cinereo-hirsutis; capite crebre prothorace fortiter sat crebre vix crasse nec rugulose punctulatis; illo antice sat fortiter emarginato; elytris sat fortiter striatis, striis crenulatis, interstitiis leviter convexis sat fortiter nec rugulose punctulatis.

Maris vertice lamina erecta transversa instructo, hac supra fortiter arcuatim emarginata; sutura clypeali carinata, vix arcuata.

Feminae vertice carina transversa angulata instructo, sutura clypeali ut maris. Long., $1\frac{4}{5}-2\frac{1}{5}$ l.; $1\frac{3}{10}-1\frac{2}{5}$ l.

The frontal lamina of the male is so deeply emarginate that its two ends stand up almost like horns when looked at from a certain point of view.

N.S. Wales; taken by Mr. Sloane near Mulwala.

APHODIUS.

A. Tasmaniae, Hope. Harold (Berl. Zeit., 1861, p. 94) re-described this species very fully, and pointed out that *A. Howitti* is a variety of the same. He, however, says nothing about the sexual characters, having, I presume, only one sex (evidently the female) before him. The male differs by its very much wider prothorax, which to a casual glance appears considerably wider than the elytra, but is in reality just the same width as the widest part of the elytra; the prothorax of the male, moreover, is much less strongly punctulate than that of the female, and the anterior tibiæ are much narrower and more elongate with their external teeth, though not much shorter, yet evidently narrower so as to be more widely separated one from another. The prothorax of the female to a casual glance appears of the same width as the elytra, but measurement shows it considerably narrower than the widest part of the elytra.

A. yorkensis, sp. nov. Mas. Sat parallelus; nitidus; in lateri-

bus longe ciliatus; rufo-ferrugineus, antennis palpisque flavis; capite grosse punctulato, clypeo antice truncato, lateribus rotundatis integris; prothorace subquadrato, quam longiori quinta parte latiori, quam elytra latiori, æqualiter subtiliter nec crebre punctulato, basi marginata; scutello modico punctulato (ut *A. Tasmaniae*): elytris crenato-striatis interstitiis sparsissime punctulatis leviter convexis; pedibus minus elongatis, tibiis anticis valde arcuatis, extus tridentatis, dentibus inferioribus 2 permagnis, dente superiori parvo.

Feminae prothorace multo minore, quam longiori dimidio latiori, quam elytra angustiori, sat fortiter punctulato; tibiis anticis fere rectis, dentibus inferioribus minoribus, superiori majori. Long., 4—5½ l.; lat., 1⅔—2⅔ l.

At once distinguished from *A. Tasmaniae*, Hope, by the lateral margin of the prothorax being evenly continued along the base. The prothorax of the male is very large and massive, being not very much smaller than the elytra. The head is evidently more coarsely punctulate than that of *A. Tasmaniae*; it has a fairly-well marked tubercle in front of each eye, but no defined elevation on the median part.

S. Australia; Yorke's Peninsula.

MÆCHIDIUS.

M. tibialis, sp. nov. Minus elongatus, subovalis; sat nitidus; rufus, capite elytris pedibusque obscurioribus; capite antice fortiter triangulariter exciso, clypeo medio longitudinaliter carinato, lateribus sinuatis; prothorace fortiter transverso, antice sat fortiter angustato, leviter sat crasse nec crebre punctulato, lateribus leviter sat æqualiter arcuatis, angulis omnibus acutis (posticis retrorsum directis); elytris leviter striatis et obscure geminatim seriatim nec crebre granulatis; femoribus sat dilatatis; tibiis anticis extus dentibus 3 sat magnis sat æqualibus (inferioribus 2 approximatis, a tertio sat remotis) armatis; tibiis posterioribus 4 robustis, in medio transversim carinatis, ad apicem extus lobato-productis, lobo truncato articulo tarsorum basali longitudine æquali; unguiculis simplicibus; elytris propygidium haud tegentibus, pygidio longitudinaliter carinato. Long., 4 l.; lat., 2 l.

The femora and tibiæ of this species resemble those of some *Liparetri* (e.g., *L. ordinatus*, Macl.), but the apical prolongation of the external margin of the posterior four tibiæ is more like that of some *Dynastides* (e.g., *Cryptodus paradoxus*, Macl.). The exposed propygidium is a character I have not seen in any normal *Mæchidius*. The general facies is quite that of *Mæchidius*, as also the structure of the head, sterna, &c. (so far as I can see without dissection); the antennæ fall into prosternal cavities

exactly as in *Mæchidius*. I should be inclined to propose a new generic name for this species if it were not that Mr. Waterhouse has already characterised a genus (*Epholcis*) very near *Mæchidius*, but without referring to the structure of the legs or the length of the elytra in its species, so that I cannot be quite sure this insect might not be referred to it. It is better therefore, for the present, to regard it as an extreme form of *Mæchidius*.

N.S.W. ; taken by Mr. Froggatt near Bungendore in a nest of *Termitide*.

PSEUDORYCTES.

P. tectus, sp. nov. Rufo-ferrugineus, sat nitidus ; subtus dense fulvo-pubescentis ; capite minus parvo ; scutello punctulato minus transverso, tibiis extus bicarinatis.

Maris prothorace quam elytra subangustiori, tota superficie excavato, parte excavata dense hirsuta, margine antico cornu magno (hoc supra caput antrorsum producto et ad apicem sursum reflexo, apice profunde bilobo, lobis extrorsum oblique directis) armato, utrinque in cornu elongato valido (hoc ad apicem acutum introrsum curvato) producto ; antennarum flabello valde elongato quam stipes vix breviori ; tarsis elongatis. Long., 10 l. ; lat., $5\frac{1}{2}$ l.

Femina latet.

I think this species may be referred to *Pseudoryctes*, although its tarsi are evidently longer than those of *P. mullerianus*, White, and the upper carina of its tibiae is much more developed than in that species.

Australia ; a single specimen in the S.A. Museum ; its exact habitat not known.

BUPRESTIDÆ.

ASTRÆUS.

A. navarchis, Thoms. M. J. R. H. Neervoort van de Poll, in his Monograph of *Astræus*, gives merely "Australia" as the habitat of this species. I have seen an example in the collection of C. French, Esq., which that gentleman informs me was taken in Western Australia. M. Thomson gave Tasmania as the habitat, but I take it that this was a mistake.

A. Oberthüri, V. de Poll. The exact habitat of this species also seems to have been unknown to M. van de Poll. Mr. French gives Queensland as the locality, where an example in his collection was taken.

A. simplex, sp. nov. Sat elongatus ; nitidus ; pube albida nisi in elytris vestitus ; capite prothoraceque nigris, hoc ad latera illo antice viridi-cyaneis, elytris cyaneis maculis quaternis

flavis ornatis, corpore subtus viridi, antennis nigris, pedibus viridibus, tibiis apicem versus tarsisque testaceis, his paullo infuscatis; capite ruguloso, in fronte linea elevata glabra; prothorace convexo, canaliculato, fortiter sat æqualiter punctulato; elytris costatis, interstitiis planis, apicibus fortiter divergentibus, spinis suturalibus marginalibusque validis. Long., $4\frac{2}{5}$ l.; lat., $1\frac{1}{3}$ l.

The yellow spots on the elytra are as follows:—One basal sub-circular, one marginal ante median much like the corresponding spot in *A. Samouelli*, one post median fasciaform but not nearly reaching the suture, one half-way between the last mentioned and the apex rotundate. The fig. of *A. dilutipes*, V. de Poll (Tijd, voor Ent. XXXII., pl. iii., fig. 17) would represent this species if the spots near the middle of the suture were removed, the apical spots brought forward, and the legs differently coloured.

S. Australia; in the collection of C. French, Esq.

BUBASTODES (gen. nov.).

Bubasti similis sed antennis brevibus, foveis poriferis in articulorum facie interna positis; scutello perparvo.

I think this genus is allied to *Bubastes*, which it closely resembles in its cylindric and robust appearance and general style of colours, pattern, and sculpture; but its antennæ are those of a *Chrysobothris*, and its scutellum is little more than punctiform. In the example before me the basal ventral segment is longitudinally sulcate.

B. sulcicollis, sp. nov. Robusta; subcylindrica; sat nitida; supra vix perspicue, subtus sparsim breviter, pubescens; obscure ænea, elytris viridibus (certo adspectu obscure cupreo-micantibus); capite convexo crasse ruguloso in medio longitudinaliter carinato, clypeo antice fortiter emarginato; prothorace quam longiori dimidio (postice quam antice quarta parte) latiori, late profunde canaliculato, crasse nec crebre (latera versus sat crebre) umbilicato-punctulato, lateribus fortiter rotundatis, margine antico leviter sinuato-emarginato postico leviter bisinuato, angulis anticis acute vix productis posticis subrectis; elytris inæqualiter minus fortiter punctulato-rugulosis, striatis, lateribus haud crenulatis, ad apicem oblique obsolete emarginatis; corpore subtus in medio pedibusque sparsim crasse, illo ad latera crebre magis subtiliter, punctulato-rugulosis. Long., $7\frac{1}{2}$ l.; lat., $2\frac{3}{5}$ l.

The description of *Castalia globithorax*, Thoms. (which its author thought might form a new genus), suggests the probability of its being congeneric with this insect, but it is evidently not

conspecific, as M. Thomson's species is said to have an impressed line on the head, and its prothorax "confertim punctulatus."

S. Australia.

NEOBUBASTES (gen. nov.).

Bubasti similis sed minus convexus, pronoti carina marginali fere integra.

This species is another ally of *Bubastes*, but incapable of being referred to that genus on account of the lateral carina of its pronotum (which in *Bubastes* is very short and entirely on the under surface) being well defined, visible from above, and continuous almost to the front margin. Beyond its somewhat less cylindrical (though equally robust and scarcely less parallel) form I do not find any other character likely to be a generic distinction from *Bubastes*.

N. aureocincta, sp. nov. Robusta; sat parallela; minus convexus; sat nitida; setis albidis supra sparsissime subtus magis crebre, vestita; ænea, capite prothoraceque viridi cupreoque vix manifeste micantibus, elytris læte viridibus, marginibus basalibus lateralibusque splendide aureis, his intus igneo-cupreo mutantibus; capite convexo crebre fortiter ruguloso-punctulato; prothorace quam longiori fere duplo (postice quam antice fere tribus partibus) latiori, supra æquali, crebre fortiter (fere ut caput sed antice magis subtiliter) ruguloso-punctulato, antice sinuato-emarginato postice bisinuato, lateribus sat rotundatis, latitudine majori ante medium posita, angulis anticis obtusis haud productis posticis fere rectis; scutello concavo; elytris quam prothorax vix latioribus, minus fortiter minus crebre (latera versus magis crebre magis rugulose) ruguloso-punctulatis, fortiter striatis, postice ad latera crenulatis, ad apicem rotundato-truncatis; corpore subtus pedibusque crebre fortiter (femoribus minus fortiter) punctulatis. Long., 8 l.; lat., 3 l.

Var. ? *scutalis* differt statura multo minore (long., 6 l.) corpore subtus pedibus capite prothorace læte cæruleis, hoc in disco obscuriori, scutello planato.

MacDonnell Ranges, Central Australia; in the collection of C. French, Esq. The var. ? *scutalis* is in my own collection, and was taken in S. Australia, but I do not know its habitat more exactly.

BUBASTES.

B. vagans, sp. nov. Cylindrica; minus nitida; obscure viridis, elytris obscure cupreo-purpureis, antennis femorum apice tibiis tarsisque igneo-cupreis; corpore subtus sparsim cinereo-pubescenti; capite inter oculos haud concavo, vertice linea subtili longitudinali impresso, crebre fortiter rugulose

punctulato; prothorace quam longiori circiter tertia parte latiori, sat crebre (latera versus magis crasse rugulose) punctulato; elytris crebre subtilius rugulose punctulatis, striatis, interstitiis inæqualiter convexis piceis sparsim magis fortiter punctulatis, apice emarginatis et bispinosis, Long., 9 l.; lat., $2\frac{4}{5}$ l.

A narrower and more elongate species than *B. inconsistans*, Thoms., with the sides of the prothorax quite straight and parallel from the base nearly to the front margin, and the disc of the same much less closely punctulate. These same characters also furnish distinction from *B. globicollis*, Thoms. *B. sphenoida*, L. & G., is said to have the prothorax canaliculate; in the other described species the head is concave or foveate between the eyes.

S. Australia; sent to me by Mr. Masters.

CURIS.

C. discoidalis, sp. nov. Sat elongata; sat convexa; nitida; supra læte viridis, capite prothoracis disco et in elytris macula magna discoidali communi (hac a basi late, a marginibus lateralibus minus late distanti) purpurascens, corpore subtus femoribus tibiisque viridibus, antennis tarsisque purpurascens; capite longitudinaliter concavo, fortiter punctulato; prothorace transverso, vix canaliculato, punctulato (antice in medio subtiliter, basin lateraque versus magis crasse), lateribus sat rotundatis; elytris postice rotundato-truncatis, abdomen fere tegentibus, fortiter punctulatis, vix manifeste costatis, juxta latera striatis (interstitiis hinc subcarinatis), lateribus prope apicem apiceque denticulatis; sternis sat æqualiter subfortiter nec crebre, abdomine fortiter sat crebre, punctulatis. Long., $5\frac{1}{2}$ l.; lat., 2 l.

Resembles *C. Peroni*, Fairm., and *despecta*, Fairm., in build, but the elytra are not distinctly costate, and the middle of the prosternum is quite strongly punctulate, uniformly with the metasternum, but less coarsely than the side-pieces of the prosternum. The purple colouring on the prothorax consists of a wide median vitta (divided down the middle) occupying the middle one-third of the width; on the elytra it consists of a large common spot triangularly emarginate in front (so that its front comes near the base at the shoulders, and on the suture is distant from the scutellum nearly a third of the length of the suture), and separated from the lateral margin on either side by nearly a third of the width of each elytron. In the type the green colour of the elytra is of a very rich pure shade in front, but along the margins becomes golden and then coppery in tone hindward. The prothorax, compared with that of *C. caloptera*,

Boisd., is shorter, and has more strongly rounded sides; it is slightly narrower than the widest part of the elytra; it is extremely like that of the species which I believe to be *C. intercribrata*, Fairm., in all respects except in the median channel being scarcely marked. The puncturation of the elytra is very much stronger than in *C. caloptera*, Boisd.

W. Australia; near Yilgarn; in the collection of C. French, Esq.

CYRIA.

C. tridens, Blackb. In describing this species (vide supra, p. 41) I omitted to mention its habitat, which is Richmond River District, N.S. Wales. Mr. French tells me that it is the insect on which the name *C. gagates* was founded. It is impossible to form a decided opinion on the point by reading the *description*—which does not even mention the colour of the elytra (unless the term “nigra” applied to the insect in general is to be strictly applied to every part except the eyes—in which case there would be no reason to connect *C. tridens* with it)—but I have no doubt Mr. French’s memory is trustworthy in the matter—and, indeed, I had thought of the question of identity with *gagates* when I described *tridens*; but it is of little consequence, for, as far as I can ascertain, no description of *C. gagates* has ever been published, the name occurring in a privately-circulated memoir of the late Rev. W. F. Hope. The species I named *tridens* is certainly distinct from *C. imperialis*, Don., of which *gagates* is said to be a variety.

HYPOSTIGMODERA gen. nov.

Gen. *Stigmoderæ* valde affinis; differt maris antennis biflabellatis.

The extraordinary insect on which I found this genus seems to be a perfectly typical *Stigmodera* in all respects except that the antennæ of the male are strongly biflabellate, resembling very closely those of the male in the *Elaterid* genus *Euphemus*; the antennæ of the female are those of an ordinary *Stigmodera*.

H. variegata, sp. nov. Minus elongata; supra cœruleo-nigra, elytris paullo pone basin fascia lata communi (et paullo ante apicem macula sat magna) testaceis ornatis; subtus sat læte cœrulea vix viridimicans, cum pedibus concolor; capite longitudinaliter sulcato sat crebre sat fortiter punctulato; prothorace quam longiori dimidio latiori, distincte (præsertim pone medium) canaliculato, quam caput paullo magis crebre minus fortiter punctulato; elytris postice bidentatis sat fortiter striatis, interstitiis sat crebre sat fortiter punctulatis 1° 3° 5° que (antice et postice sat fortiter in medio minus evidentem) quam cetera magis convexis, later-

ibus haud denticulatis; corpore subtus sat fortiter (prosterno fortiter vix crebre, segmento ventrali apicali quam cetera multo magis fortiter magis crebre) punctulato. Long., $4\frac{1}{2}$ — $4\frac{3}{4}$ l.; lat., $1\frac{1}{2}$ — $1\frac{4}{5}$ l.

This species is extremely like *Stigmodera bella*, Saund., in shape and sculpture; so much so that it would be difficult to specify any difference in these respects, except that each elytron is terminated by two *almost equal* teeth, that the head is more elongate, and the ventral segments somewhat differently sculptured. The markings of the elytra are very different from those of *S. bella*, consisting of a very wide common testaceous fascia commencing nearer to the base than that of *S. bella*, and extending nearly to the middle of the elytra, with both its front and hind margin sinuous, and a testaceous spot on each elytron considerably before the apex (nearly round in the male example before me, transversely elongate in the female), touching neither lateral margin nor suture.

Queensland; Darling Downs; in the collection of Mr. French.

STIGMODERA.

S. cara, sp. nov. Mas. Sat elongata; splendide cuprea, elytris testaceis, horum basi sutura (his anguste) apice et fasciis 2 (altera subbasali altera pone medium posita) purpureis plus minusve viridi-tinctis, abdomine rufo-testaceo viridi-micanti, antennis viridibus; capite longitudinaliter concavo fortiter sat crebre punctulato; prothorace quam longiori duabus partibus (postice quam antice fere duplo) latiori, inæqualiter punctulato (sc. basi media fortiter minus crebre, latera versus crebre rugulose, antrorsum gradatim magis crebre magis subtiliter), lateribus postice fere parallelis antice arcuatim convergentibus, basi subangulatim bisinuata, angulis anticis acutis sat productis posticis sat rectis; elytris ad apicem oblique sat minute emarginatis et biapiculatis, punctulato-striatis, interstitiis obscure transversim rugatis et subtiliter punctulatis, lateribus postice sat fortiter denticulatis, basi subangulatim sinuata; corpore subtus breviter argenteo-pubescenti; prosterno antice confertim rugulose (inter coxas grosse sparsim), metasterno fortiter minus crebre, abdomine leviter crebre (segmento basali medio fortiter minus crebre), punctulatis. Long., $6\frac{3}{4}$ l.; lat., $2\frac{1}{2}$ l.

Resembles *S. Burchelli*, L. and C. in size and shape, and in the puncturation, &c., of the upper surface; differing from it, however, in the angulate sinuation of the base of the elytra, in the denticulate sides of the elytra near the apex, and the much smaller apical emargination of the same. The dark fasciæ on the elytra are as follows:—A narrow bright-green base, a greenish-

purple fascia (very narrowly separated from the base) of moderate width, a narrower fascia of purple colour immediately behind the middle, and the apex to the extent of about one-seventh the length of the elytra. The testaceous greenish-glossed abdomen is very distinctive.

Queensland ; Darling Downs ; in the collection of Mr. French.

S. insignis, sp. nov. Depressa, minus angusta ; supra niger, elytris mox ante medium fascia testacea nec marginem nec suturam plane attingenti et ante basin macula magna reniformi sanguinea marginem nec suturam attingenti ornatis, corpore subtus aureo viridi, pedibus antennisque cæruleis ; capite longitudinaliter late profunde concavo fortiter minus crebre punctulato ; prothorace trans basin quam longiori (et postice quam antice) paullo plus quam dimidio latiori, sparsim subtiliter punctulato, intra angulos posticos foveolato, antice fortiter emarginato, postice in media lobato, lateribus a basi ad apicem (vix arcuatim) angustatis ; elytris postice angustato-productis, ad apicem late oblique emarginatis et bispinosis (spina externa majori), pone medium dilatatis, punctulato-striatis, interstitiis sublævibus alternis fortiter convexis, lateribus inermibus, basi late leviter convexa ; corpore subtus sparsim pubescenti, sat fortiter minus crebre (retrorsum gradatim magis subtiliter magis crebre) punctulato. Long., 7 l. ; lat., $2\frac{2}{5}$ l.

Near *S. producta*, Saund., but differing *inter alia* by the absence of a prothoracic channel and of a red spot near the base of each elytron. *S. acutipennis*, Thoms., is described as having a red spot near the base of each elytron. The subapical spot in the present species is kidney shaped, lying along the lateral margin for a distance equal to about a third of its length, with its two lobes directed towards the suture.

Victoria ; taken by C. French, Esq.

S. filiformis, sp. nov. Elongata ; parallela ; minus convexa ; glabra ; læte viridis, capite prosternoque aureo-micans, elytris sanguineis ad basin anguste viridibus violaceo-ornatis (macula oblongo utrinque subhumerali, sutura apice excepto, fascia post-mediana sinuata communi margines haud attingenti, et macula communi, subapicali trilobata) ; capite prothoraceque crebre subtiliter (fere ut *S. sanguinolentæ*, L. and G.) punctulatis ; illo angusto fortiter producto, fere plano, in vertice canaliculato ; prothorace quam longiori quinta parte (postice quam antice tertia parte) latiori, antice leviter emarginato, postice in medio late leviter lobato, lateribus leviter arcuatis ; elytris ad apicem leviter oblique emarginatis et biaculeatis, punctulato-striatis, interstitiis

sparsim punctulatis antice planis postice convexis, lateribus inermibus; corpore subtus subtilius sat sparsim (prosterni lateribus crebre rugulose, metasterno subfortiter) punctulatis. Long., $4\frac{1}{2}$ l.; lat., $1\frac{2}{3}$ l.

A slight dilatation of the suture opposite the subhumeral spots suggests the possibility that there may be varieties of this species in which the subhumeral spots are joined to the suture. None of the violet markings on the elytra touch the suture. The subapical common spot resembles a club (in a pack of cards), with one of the lobes directed towards the apex and one spreading out on each elytron. This is an exceptionally narrow elongate species; compared with *S. sanguinolenta* (apart from very different markings) its head is narrower and more produced, its form considerably narrower, its underside glabrous and much less closely punctured, &c. Its very narrow form and glabrous undersurface at once distinguish it from *amphicroa*, Boisd., its scarcely transverse prothorax from *Sieboldi*, L. and G.

W. Australia; in the collection of C. French, Esq.

S. capucina, sp. nov. Minus convexa, sat lata; supra rufa, capite prothoracis marginibus et macula magna antica (hac cucullum simulanti) scutello elytrorumque basi summo et apice summo æneis, corpore subtus antennis pedibusque æneis, abdominis lateribus flavomaculatis, hujus segmento apicali postice toto flavo; capite medio canaliculato sat crebre sat fortiter (fere ut *S. Brucki*) punctulato, oculis sat remotis; prothorace minus nitido, quam longiori tribus partibus (postice quam antice duplo) latiori, inæqualiter sat crebre rugulose (fere ut *S. Stevensi* sed paullo minus rugulose) punctulato, fere æquali, linea mediana fere lævi, antice sinuatim emarginato, postice subbisinuato, lateribus fortiter rotundatis, latitudine majori mox pone medium posita; elytris ad apicem rotundatis, pone humeros leviter sinuatis, fortiter sat æqualiter punctulato-striatis, interstitiis convexis sparsim punctulatis, lateribus inermibus, basi fere truncata; corpore subtus fere glabro; prosterno confertim rugulose (processu prosternali sparsim subtiliter excepto), metasterno abdomineque ad latera crebre rugulose (metasterno medio sparsim subtiliter, abdomine medio sat crasse minus crebre), punctulatis; metasterno medio profunde longitudinaliter sulcato. Long., 13 l.; lat., 5 l.

Near *S. Wimmeræ*, Blackb., but narrower, with the base of the elytra almost perfectly straight, also the colours different.

W. Australia; in the collection of C. French, Esq.

S. regia, sp. nov. Modice convexa; sat lata; subparallela; sat elongata; capite viridi, prothorace fere nigro ad latera late

aurantiaco, elytris in parte dimidia antica aurantiacis fascia communi lata cyaneo-nigra (hac margines haud attingenti) ornatis, in parte dimidia postica cyaneo-nigris utrinque macula transversa aurantiaca ornatis, corpore subtus in medio pedibusque laete viridibus (illo ad latera aurantiaco), segmentis ventralibus intermediis ad latera macula parva viridi utrinque ornatis, segmen- to ventrali apicalitoto aurantiaco (hoc postice in medio viridi); capite leviter convexo crebre (fere ut *S. variabilis*) punctulato, vertice linea longitudinali impresso, oculis sat approximatis; prothorace quam longiori et postice quam antice tribus partibus latiori, fere ut *S. variabilis* sed paullo minus rugulose punctulato, antice leviter sinuatim emarginato, postice subbisinuato, lateribus a margine antico fere ad basin arcuatim divergentibus, latitudine majori paullo ante basin posita; elytris ad apicem ut *S. variabilis* truncato-emarginatis, pone humeros sat fortiter sinuatis, antice leviter postice magis fortiter punctulato-striatis, interstitiis sparsim subtiliter punctulatis, alternis foveolatis, alternis postice angustioribus magis convexis, lateribus inermibus, basi sinuato-truncata; corpore subtus ad latera crebre subtilius (metasterno coxisque posticis creberrime subtiliter) in medio sparsim punctulato; pectore sat hirsuto, metasterno medio profunde longitudinaliter sulcato. Long., 16 l.; lat., $6\frac{1}{2}$ l.

The markings on the elytra are extremely like those of *S. Fortnumi*, Hope, but with the dark colour much more obscure, the front dark fascia more produced forward on the shoulder, the median dark fascia much narrower and the postmedian orange spot less strongly transverse in form; the prothorax also is almost exactly like that of *S. Fortnumi* in shape and sculpture; the general form much narrower and more parallel, the apices of the elytra much less straightly truncate and less strongly spined, the alternate interstices of the elytra foveolate, &c., will separate this species from *Fortnumi*. It also resembles some forms of *S. variabilis*, Don., from which it is at once distinguished by its prothorax much more narrowed anteriorly and therefore appearing to a casual glance less transverse. The example before me is a female, and therefore is compared above with females of *Fortnumi* and *variabilis*.

N. Queensland; in the collection of C. French, Esq.

S. ignea, sp. nov. Minus lata; minus depressa; igneo-cuprea, elytris testaceis, sutura (hac pone medium bis dilatata) et in elytris singulis linea obliqua subhumerali maculaque sublaterali pone medium posita viridibus; capite sat elongato fortiter sat crebre punctulato, longitudinaliter profunde concavo; prothorace

quam longiori (et postice quam antice) fere duabus partibus latiori, fortiter sat crebre (antice magis subtiliter, latera versus rugulose magis crebre) punctulato, antice bisinuatim vix emarginato, lateribus sat rotundatis, basi media late obsolete lobata, angulis posticis fere rectis; elytris sat fortiter striatis, striis vix distincte punctulatis, interstitiis leviter convexis obscure punctulatis, ad apicem oblique leviter emarginatis, lateribus postice denticulatis; corpore subtus setis brevibus crassis sparsim vestito, crebre sat fortiter (sternis in medio magis fortiter sat sparsim exceptis) punctulato. Long., $5\frac{1}{2}$ —6 l.; lat., 2— $2\frac{1}{3}$ l.

The green markings on the elytra appear black in a certain light; the sutural colouring is dilated considerably on either side of the scutellum, and is dilated into a large spot a little behind the middle, and into a small one just before the apex. The postmedian sublateral spots are level with the larger dilatation of the suture.

S. Australia.

S. dausonensis, Blackb. I think this will probably prove to be a var. of *S. liliputana*, Thoms.; it is, however, so unlike the type in respect of its markings that it may well retain a distinctive name.

AGRILUS.

A. *Terræ reginae*, sp. nov. Læte viridis, elytrorum vitta subsuturali mesosterno metasterni lateribus et abdominis parte dorsali superiori aureo-pulvinatis; capite (antice transversim, postice longitudinaliter) rugato; prothorace sat transverso postice angustato, minus fortiter canaliculato, transversim crebre rugato; elytris confertim subtiliter subrugulosis, apice rotundatis. Long., 3 l.; lat., $\frac{4}{5}$ l. (vix).

Queensland; sent to me by Mr. Masters.

MALACODERMIDÆ.

SELENURUS.

S. variegatus, sp. nov. Elongatus; capite (hoc ante oculos flavo-notato) palpis pedibus segmento apicali scutello antennisque nigris (harum articulis 8° 9° que plus minus albidis); prothorace nigro, trans basin flavo (parte nigra retrorsum carinam in partem flavam utrinque emittenti); elytris cœruleis flavo-bifasciatis, fascia altera antemediana communi arcuata altera postmediana forma variabili, segmentis dorsalibus postice late flavis, corpore subtus flavo plus minusve nigro-notato; mandibulis appendiculatis nec intus dentatis; antennis quam corporis dimidium paullo longioribus (maris) vel paullo brevioribus (feminae) subfiliformibus, articulo 2°

minimo, quam hic 3° duplo longiori, quam 3^{as} ceteris fere duplo longioribus inter se sat æqualibus; oculis modice prominulis; capite prothoraceque crebre subtilissime punctulato, illo medio planato; palporum maxillarum articulo ultimo præcentibus 2 conjunctis æquali, leviter obtuse elongato—subcultriformi; prothorace quam longiori vix latiori, plus minusve perspicue canaliculato; elytris crebre rugulosis, abdominis segmenta apicalia 2 vel 3 aperiens, postice plus minusve dehiscentibus, apice singulatim rotundatis; pedibus elongatis sat gracilibus, tarsorum posticorum articulo basali quam sequentes 2 conjuncti vix breviori; unguiculis granulo basali setifero subtus munitis.

Maris segmento apicali filamento contorto testaceo utrinque instructo; mandibulis extus testaceis. Long., $4\frac{1}{2}$ — $6\frac{1}{2}$ l.; lat., $\frac{4}{5}$ — $1\frac{2}{5}$ l.

The above detailed account of the structural characters is rendered necessary by the brevity of the generic diagnosis of *Selenurus*, which omits *inter alia* all reference to sexual characters. The species before me seems to differ from *Ichthyurus* by its mandibles (which are truncate close to the apex, and have a short acute appendiculate piece attached to the outer part of the truncate end) by its longer and less dehiscent elytra, and by the intermediate legs devoid of sexual character. I suspect it is congeneric with *Ichthyurus depressicollis*, MacL.

N. S. Wales; Blue Mountains.

S. sydneyanus, sp. nov. Elongatus; capite nigro (maris antice flavo, femine ad antennarum basin flavo-maculato), mandibulis flavis, antennis palpisque nigro-piceis (illarum articulis basalibus subtus rufis), prothorace flavo antice fascia nigra ornato, elytris obscure viridibus, pedibus nigro-piceis (tibiis anticis plus minusve dilutioribus), corpore subtus sordide flavo (metasterno medio nigro et abdomine plus minusve piceo-notato); prothorace haud canaliculato; elytris abdominis segmenta apicalia 3 vel 4 aperiens; cetera ut *S. variegati*. Long., 2— $3\frac{1}{2}$ l.; lat., $\frac{2}{5}$ — $\frac{3}{5}$ l.

This species is evidently congeneric with the preceding. I find no difference in its structural characters.

N. S. Wales; in the suburbs of Sydney.

HETEROMASTIX.

H. anticus, sp. nov. Mas. Niger, capite prothorace antennis palpis pedibusque læte rufo-testaceis; pubescens; capite prothoraceque nitidis vix perspicue punctulatis; hoc transverso antice vix angustato, lateribus leviter arcuatis; elytris

crebre minus fortiter punctulatis; antennis quam corpus sat brevioribus, sat robustis, articulis 3-5 sat dilatatis.

Feminae antennarum articulis 3-5 haud dilatatis, articulis singulis apicem versus infuscatis. Long., $1\frac{1}{5}$ l.; lat., $\frac{3}{5}$ l.

In one of the male examples before me the base of the hind femora is lightly infuscate. Easily distinguished from its allies by the entirely bright rufous colour of the head, prothorax, antennae, palpi, and legs—except the base of the hind femora as mentioned above.

N. S. Wales; Blue Mountains.

H. dilataticollis, sp. nov. Niger, antennarum basi prothorace pedibus anticis tibiisque ceteris testaceis; pubescens; capite prothoraceque alutaceis; hoc transverso ante medium fortiter angulatum dilatato; elytris crebre rugulose sat subtiliter punctulatis; antennis sat gracilibus quam corpus sat brevioribus. Long., $1\frac{1}{5}$ l.; lat., $\frac{3}{5}$ l.

Near *Telephorus pusio*, Gemm. (which is, I think, a *Heteromastix*), but differing from it by its larger size, the testaceous colour of the basal three joints of its antennae, the entirely testaceous front legs, the testaceous hinder four tibiae, and the stronger angular dilatation of the sides of its prothorax. I have both sexes of *H. pusio* before me, which differ little *inter se* except in the usual different shape of the apical ventral segment and the longer and stouter antennae of the male.

N.S. Wales; Blue Mountains.

CLERIDÆ.

LEMIDIA.

L. pictipes, sp. nov. Minus elongata; fulvo pubescens et setis erectis obscuris vestita; nigra, subcyanea, capite antice antennis (apice piceo excepto) femoribus anterioribus 4 genubus posticis et tibiis anticis flavis, prothorace rufo; prothorace sublævi, leviter transverso, lateribus fortiter rotundatis; elytris grosse nec seriatim punctulatis. Long., $1\frac{3}{5}$ l.; lat., $\frac{7}{10}$ l.

N.S. Wales; Blue Mountains.

L. simulans, sp. nov. Minus elongata; pallide pubescens et setis erectis obscuris vestita; nigra; capite antice, palpis, antennis, elytrorum basi macula communi subbasali (cum basi connexa) maculaque postmediana (hac suturam vix marginem lateralem nullo modo attingenti), pedibusque (horum tibiis tarsisque posticis infuscatis), flavis; capite prothoraceque sparsim sat grosse punctulato; hoc quam latiori vix longiori, lateribus fortiter rotundatis; elytris grosse seriatim punctulatis. Long., $2\frac{3}{5}$ l.; lat., $\frac{4}{5}$ l.

Resembles *L. bella*, Westw., in the markings of the elytra, but, *inter alia*, is a less elongate species, with the prothorax black and sparsely sprinkled (together with the hind part of the head) with large coarse punctures.

S. Australia; Port Lincoln.

L. munda, sp. nov. Sat elongata; setis brevibus et nonnullis valde elongatis sat sparsim vestita; picea, capite antennis palpis prothorace et pedibus anticis plus minusve flavescens; elytris in parte dimidia basali læte brunneis, fasciis binis angustis (sc. altera basali altera mediana) niveis nitidis ornatis; capite prothoraceque fere lævibus; illo inter oculos fortiter biimpresso; hoc quam latiori longiori, pone apicem valde constricto lateribus fortiter rotundatis; elytris sparsim grosse (apicem versus magis etiam sparsim) punctulatis; pedibus valde gracilibus elongatis. Long., $1\frac{3}{5}$ l.; lat., $\frac{1}{2}$ l.

A remarkable looking little species on account of its very long slender legs resembling those of a *Clytus*, the hind femora reaching back beyond the apex of the hind body. The colouring too is peculiar, more or less yellowish in front of the elytra, with the front half of those organs pale-brown, and the other half nearly black, a raised shining-white ivory-like fascia across the middle, and a somewhat similar one (but not raised) across the base. The constriction across the front part of the prothorax is unusually strong.

S. Australia; Port Lincoln.

L. soror, sp. nov. Minus elongata; setis minus elongatis et nonnullis valde elongatis pallidis sat sparsim vestita; nigra, capite antennis pedibus anterioribus 4 (his nonnullis exemplis plus minusve infuscatis vel rufescentibus), et elytrorum basi apice fasciaque mediana flavescens; capite prothoraceque fere lævi; hoc quam longiori vix latiori, lateribus fortiter rotundatis; elytris grosse seriatim punctulatis. Long., $1\frac{4}{5}$ — $2\frac{1}{5}$ l.; lat., $\frac{3}{5}$ — $\frac{4}{5}$ l.

Much like *L. concinna*, Gorham, but with an apical spot on the elytra, the median fascia yellowish and not raised above the surface, and the surface bearing fairly regular rows of large conspicuous punctures.

S. Australia; Port Lincoln; also near Petersburg.

L. pulchella, sp. nov. Minus elongata; fulvo-pubescentibus et setis elongatis obscuris vestita; nigra; antennarum basi, prothorace (macula magna antica picea excepta) et abdomine (apice excepto), rufis; tibiis tarsisque anterioribus 4 obscure rufescentibus; elytris læte viridibus; capite (parte media inter oculos fere lævi excepta) sat crebre punctulato, inter oculos profunde biimpresso, prothorace quam longiori vix

latiori, sparsissime sat fortiter punctulato, lateribus fortiter rotundatis; elytris confertim subfortiter subrugulose punctulato. Long., $2\frac{1}{2}$ l.; lat. 1 l. (vix).

A very beautiful species, perhaps nearest (but not very near) to *L. biaculeatus*, Westw.

Victoria; Alpine district.

L. angustula, sp. nov. Fere filiformis; pallide pubescens, et setis elongatis obscuris vestita; nigra; capite, antennis, palpis, prothorace, pedibus anticis, genibus tibiis tarsisque intermediis, et elytrorum basi apice maculisque binis postmedianis linearibus obliquis, rufo-testaceis; capite leviter obscure, prothorace minus perspicue, punctulatis; hoc quam latiori paullo longiori, lateribus minus fortiter rotundatis; elytris sat crebre sat grosse seriatim punctulatis. Long., $2\frac{2}{3}$ l.; lat., $\frac{3}{5}$ l.

A remarkably narrow and elongate species, not very near, I think, to any previously described.

Victoria.

L. leoparda, sp. nov. Minus elongata; sparsim nigro-hirta; nigra, capite prothorace elytris abdomineque rufis, elytris maculis 7 (ex his una communi) nigris ornatis et ad apicem nigro-marginatis; capite prothoraceque sparsissime punctulatis; hoc quam longiori vix latiori, pone apicem valde constricto, lateribus fortiter rotundatis; elytris obsolete vix seriatim punctulatis.

Var. ? *nigritula*, differt capite prothoraceque nigris, antennis palpis pedibus anticis et femoribus posterioribus 4 flavis, elytris pallide testaceis (ut typi nigro-maculatis). Long., $2\frac{1}{2}$ l.; lat., $1\frac{1}{5}$ l.

The black spots on the elytra are a large common diamond-shaped spot on the middle of the suture, and three on each elytron near the lateral margin (the first on the shoulder round, the next about the middle oval, the last elongate near the apex and touching the lateral margin), successively larger hindward. The var. ? is in the collection of Mr. French; though coloured so extremely differently from the type, it presents absolutely no other difference that I can discover.

Victoria.

TENEBRIONIDÆ.

ISOSTIRA.

The following species may for the present be attributed to this genus, although it will likely enough be regarded eventually as generically distinct. Mr Pascoe (Ann. Nat. Hist., 1870) characterised *Isotira* very briefly by saying that it agrees with

Hopatum in the form of its maxillary palpi, its elytra closely fitted to the prothorax and its incomplete elytral epipleuræ, but differs in its entire clypeus and transverse non-sinuate labrum. The insect before me (which I have received from Mr. Masters) agrees with this description, and is evidently very near to *Hopatum*. But in his description of the typical species, Mr. Pascoe says that the eyes are nearly entire; in that respect Mr. Masters' insect differs much, the ocular canthus cutting into the eyes scarcely if at all less deeply than it does in *Hopatum*.

I. raucipennis, sp. nov. Glabra; nitida; alata; obscure brunnea, corpore subtus pedibus antennisque rufescentibus; capite prothoraceque crebre fortiter granuloso-ruguloso; illo intra oculos utrinque carinato; prothorace quam longiori circiter duplo latiori, antrorsum fere a basi leviter arcuatim angustato, antice valde emarginato in medio late leviter producto, fortiter sat late canaliculato, lateribus fortiter crenulatis, angulis anticis sat acutis posticis subrectis, basi media late lobata; elytris punctulato-sulcatis, interstitiis carinatis seriatim tuberculatis; tibiis sat gracilibus ad apicem summum angustatis: corpore subtus fortiter punctulato (prosterno quam cetera segmenta magis crasse). Long., 3 l.; lat., $1\frac{2}{5}$ l.

Apparently with a good deal of general resemblance to *I. crenata*, Pasc., but differing from it (besides in the shape of the eyes already alluded to) *inter alia* by the puncturation of the head, which is said to be in *crenata* "rather finely and closely punctured on the vertex," the tuberculate elytra, &c. The well-defined rows of tubercles on each elytron are eight in number; between the last of these and the external margin is a space on which the sculpture is somewhat confused, but bears at least one fairly defined row of tubercles.

Queensland.

PLATYPHANES.

P. creber, sp. nov. Oblongus; parallelus; glaber; sat nitidus; niger, elytris æneis, pedibus picescentibus; capite antice distincte punctulato postice et pone oculos subtiliter granulato; prothorace quam longiori duplo (postice quam antice fere quarta parte) latiori, leviter fere obsolete nec crebre punctulato, toto marginato, antice profunde arcuatim emarginato, lateribus leviter sinuato-arcuatis, basi media lobata, angulis anticis fortiter productis nec acutis posticis acutis dentiformibus; elytris conjunctim quam prothorax dimidio latioribus, ad apicem sat anguste rotundatis, minus convexis, singulis striis circiter 14 impressis, striis inæqualiter nec grosse cancellato-punctulatis, latera versus striis nec

puncturis gradatim obsoletis, prope apicem striis puncturisque obsoletis; antennis prothoracis basin attingentibus, articulis 8-11 moniliformibus; sternis in parte majori lævigatis; abdomine confertim subtiliter punctulato; elytrorum epipleuris integris; prosterno antice compresso-carinato; abdominis processu intercoxali antice sat late rotundato. Long., 13 l.; lat., $5\frac{3}{5}$ l.

This is the largest species yet described of the genus. Of the species approaching it in size *oblongus*, Waterh., and *Godeffroyi*, Haag-R. (which I suspect are identical), are both described as having *ten* rows of punctures on each elytron—this having 14 rows—while *gibbosus*, Westw., is very differently shaped, having the elytra very strongly convex—or rather gibbous—behind the scutellum.

N. Queensland; in the collection of C. French, Esq.

CHARTOPTERYX.

C. victoriensis, sp. nov. Ovata; setis nigris erectis vestita; nitida; nigro-ænea, elytris cupreo cyaneoque intermixtis micantibus; capite inæqualiter punctulato, clypeo antice truncato; prothorace quam longiori fere duplo (postice quam antice dimidio) latiori, in medio sparsissime ad latera crebre sat fortiter punctulato, antice profunde arcuatim emarginato, lateribus leviter sinuato-arcuatis, basi media lobata, angulis anticis fortiter productis sat acutis posticis acutis dentiformibus; elytris pone scutellum conjunctim gibbosis, quam prothorax plus quam dimidio latioribus, ad apicem anguste rotundatis, confuse inæqualiter nec crebre foveolatis, foveis apicem versus obsoletis, lateribus ante apicem fortiter sinuatis; antennis prothoracis basin longe superantibus, articulis 9-11 brevibus; corpore subtus in medio vix perspicue ad latera crebre subtiliter punctulato; elytrorum epipleuris rugulosis haud plane integris; prosterno antice compresso-carinato; abdominis processu intercoxali antice lato rotundato; tarsorum posticorum articulo basali quam cetera conjuncta manifeste breviori. Long., $7\frac{3}{5}$ l.; lat., $3\frac{4}{5}$ l.

Somewhat resembling *C. Childreni*, Westw., but *inter alia* without the areolar sculpture of the apical part of the elytra.

Mountains of Victoria; in the collection of C. French, Esq.

CARDIOTHORAX.

C. æripennis, sp. nov. Mas. Oblongo-ovalis; niger, elytris sat nitidis subauratis; capite prothoraceque sparsim subtilissime punctulatis; illo sat lato antice late rotundato; prothorace sat transverso, sat fortiter canaliculato et foveolis nonnullis impresso, antice sat fortiter arcuatim emarginato, lateribus

fortiter rotundatis mox ante basin rectis et sat late deplanatis, parte deplanata a disco sulco profundo (hoc postice obsoleto) divisa et antice carina obliqua instructa, basi subangulatim emarginata quam apex parum angustiori, angulis anticis subacutis posticis valde acutis vix extrorsum directis, margine integro; elytris æqualiter profunde sulcatis, supra subplanatis, lateribus sat abrupte declivibus, humeris obtuse angulatis antrorsum sat prominentibus, interstitiis æqualibus fortiter convexis; femoribus inermibus; tibiis anticis modice dilatatis et subtus denticulatis, posticis sat fortiter dilatatis flexuosis, externe concavis. Long., $6\frac{3}{5}$ l.; lat., $2\frac{1}{5}$ l.

Isolated from its congeners by the following characters in combination:—Femora of male unarmed, foliaceous margins of prothorax moderately wide (about the width of one-sixth of the disc), surface nitid, elytra strongly and evenly striated, hind angles of prothorax extremely prominent and acute, hind tibiæ of male strongly compressed and flexuous. It may be remarked that *C. simulans*, Haag-Rutenberg, is founded on a female; and the description, moreover, being a very bad one, omitting nearly all important characters, it is difficult to form a clear idea of what that insect is; but the expression “lang herzförmig” applied to its prothorax certainly does not fit the prothorax of this species, the width of which is just about once and two-thirds the length down the middle line. In Mr. Bates’ tabulation of *Cardiothorax* (E.M.M., 1879, pp. 32, &c.) the present insect would stand beside *Castelnaudi* and *grandis*, from both of which the even striation of its elytra distinguishes it. The greatest width of the prothorax is exactly equal to that of the elytra by measurement, but to a casual glance the prothorax appears slightly wider. A strong character, if constant, is the oblique carina running across the foliaceous margins of the prothorax near the front, and cutting off the front angles.

N.S. Wales; Blue Mountains.

DÆDROSIS.

D. monticola, sp. nov. Elongata; sat nitida; capillis paucis hic illic vestita; nigra, tarsis et antennarum apice summo castaneis; capite subfortiter minus crebre punctulato, postice spatio pentagonali impresso, prothorace leviter transverso, crebre subtilius punctulato, postice paullo angustato, lateribus vix perspicue crenulatis; elytris profunde crenato-striatis, interstitiis sat planis, haud transversim rugulosis vix perspicue punctulatis; tibiis posticis rectis, tarsis anticis (?maris solum) fortiter dilatatis. Long., 5 l.; lat., $1\frac{1}{2}$ l. (vix).

Distinguished at once from its previously-described congeners by the very much finer puncturation of its prothorax and the

almost levigate interstices of its elytra. The long hairs on its surface are very few and far between, and need looking for. The crenulations of the sides of the prothorax are very feeble.

N.S. Wales ; Blue Mountains.

SEIROTRANA.

S. major, sp. nov. Oblongo-ovalis ; sat convexa ; sat nitida ; aenea ; prothorace sat dense longitudinaliter strigoso et fortiter punctulato, antice sat fortiter emarginato, lateribus fortiter rotundatis postice coarctatis ; elytris lineis 4 interruptis elevatis instructis, interstitiis biseriatim fortiter punctulatis et tuberculis parvis nonnullis instructis. Long., 9 l. ; lat., 4 l.

Very like *S. catenulata*, Boisd., but much larger, of a bright (almost nitid) brassy colour, decidedly convex in form, with the prothorax less strongly emarginate in front, the surface of the same marked with less closely-placed elevated lines, leaving the puncturation much more conspicuous, and the sides more strongly rounded and less strongly toothed, and the interstices of the elytra with larger punctures in the geminate series with small pustules (not placed in regular order one in front of each puncture but) very sparingly placed at distant intervals. The hind angles of the prothorax are considerably less sharply defined than in *S. catenulata*. The other large species described differ from this insect, *inter alia*, in having the sides of their prothorax entire. The basal four joints of the front tarsi in the example before me are all strongly transverse.

N.S. Wales ; taken near Tamworth by Mr. Musson.

MELOIDÆ.

HOPLOZONITIS (gen. nov.)

A Zoniti differt palpis multo magis robustis ; capite sat brevi ; antennis (? maris solius) prothoracis basin haud multo superantibus femoribus posticis (? maris solius) valde incrassatis, subtus fortiter 4-dentatis et ad tibiaram receptionem sulcatis, tibiis posticis valde compressis et curvatis ; unguiculorum lobo superiori in parte basali sola denticulato, lobo inferiori pergracili subclavato.

The heteronomous tarsi, bifid claws and head divided from the prothorax by a distinct neck, place this genus in the *Meloidæ* ; its elongate metasternum, normal maxillæ, clypeus produced beyond the insertion of the antennæ, elytra reaching the apex of the abdomen, nonclavate antennæ, claws denticulate along the basal part of their superior lobe and oval apical joint of the palpi associate it with *Zonitis*, from which it is at once dis-

tinguished by its hind legs resembling those of a *Haltica* (at any rate in one sex) with two large teeth on either side of the under-side of the femora near their apex.

H. mira, sp. nov. Elongata; sat parallela; rufa, antennis palpis femorum apice tibiis tarsisque nigris; capite prothoraceque subtiliter minus sparsim punctulato; hoc quam longiori plus quam dimidio latiori, postice truncato antice emarginato, lateribus sinuatis, disco utrinque (exempli typici) late obscure impresso; elytris obscure sat crebre rugulosis, obsolete 4-costatis, apice late rotundatis. Long., 8 l.; lat., $2\frac{2}{5}$ l.

The elytra are of very thin texture, and have dried (in the typical example) in a more or less distorted condition, but they are as long as the hind body, and are wide enough at the apex to cover the same; probably, however, their normal condition is to be somewhat open.

Queensland; Cape York; in the collection of C. French, Esq.

CURCULIONIDÆ.

MANDALOTUS.

This genus founded by Erichson in 1842, and of which he described no less than four species—all from Tasmania—seems to have been a difficulty to subsequent authors. Schönherr does not appear to have expressed any opinion about it; Lacordaire places it among a group of genera which he thought might appertain to the *Eremnides*, but of which he had never seen a type; Pascoe expresses no opinion, but merely remarks that he has never seen *Mandalotus*.

Starting from the consideration that it is extremely unlikely Erichson had four congeneric species from Tasmania which no one has since seen, I have recently been examining the Tasmanian *Curculionidæ* (of which there are a considerable number) in my collection, to endeavour to identify *Mandalotus*, and I feel no doubt I have succeeded, and that it is identical with the genus which Pascoe has since named *Dysostines*. A *Dysostines* from Tasmania, in my collection, agrees perfectly well with Erichson's generic characters for *Mandalotus*, and is not improbably the species Erichson calls *sterilis*, though on this latter point I feel some doubt. *Dysostines* presents every character that Erichson attributed to *Mandalotus*, and the diagnosis is a very full one, although, as might be expected in a diagnosis published before Schönherr's work, two of the characters of chief classificatory value (viz., the visibility of the maxillæ and the non-contiguity of the front coxæ) are passed over in silence. I think, therefore, that the name *Dysostines* must be treated as a synonym of *Mandalotus*, and that *Mandalotus* must be removed from the

Eremnides, and placed among the *Rhyparosomides*, where Pascoe has placed *Dysostinæ*.

EREMNINI.

This aggregate of species is distinguished from the *Leptopsini* by M. Lacordaire by only one character that is stated as constant and reliable, viz., that the rostral scrobes are not directed downward. This character, although slight, is one that (at any rate in many *Curculionidæ*) seems to be an important one, i.e., the direction of the scrobes does not seem to vary so much as many other characters do in species that seem to be in reality closely related to each other. It must be confessed, however, that it does not appear to be so satisfactory in its application to the Australian *Eremnini* (at least those known to me) as might be wished, since its application distributes between two subfamilies species that certainly do not seem as if they ought to be so widely separated. Among the *Adelognathi* furnished with ocular lobes in my collection are three species whose scrobes are not directed downward, that is, the lower margin of the scrobe, if continued hindward, would not pass beneath the eye, but would cut it, or at least touch its lower extremity. In one of them the head exactly agrees with the figure of the head of *Pephricus* in Tr. Ent. Soc. Lond., 1870, pl. v., fig. 72; in the other two the scrobe is placed still higher. Apart from the structure of the scrobes these species have decidedly the facies of small *Leptopsini*, but that structure certainly seems to require their being referred to the *Eremnini*.

As regards the genus to which these species should be referred, I think they might, with fair reason, be treated as representing two new genera, as their facies is distinctly of two types and very different from that of the already-named Australian *Eremnini*. But as things stand at present—only a very small proportion of the Australian *Curculionidæ* having been described—it seems to me that new genera should be formed only very reluctantly, and where there is some extremely salient structural character absolutely requiring it, as the examination of a long series of species, in many instances, shows that characters apparently very satisfactory in themselves are nevertheless of little value. As an example of this I may mention the number of claws on the tarsi. Mr. Pascoe has, very naturally, regarded the absence of one of the two claws as a good generic character in the *Eremnini* and *Leptopsini*; nevertheless, I have before me specimens which throw great doubt on its value, presenting in a number of small *Polyphrades*-like species a gradual change in this respect, beginning with the evidently two soldered claws of a typical *Polyphrades*, then passing to a form in which the two claws are more

closely soldered, and only split apart as mere points at the apex, then to a form in which the hind tarsi or the four posterior tarsi have only one claw while the claws of the front tarsi are distinctly double at their extreme point, and ending with forms in which no duality can be discerned in any of the claws.

Still, as genera have already been formed on the number of claws as their principal character, it will for the present be convenient to regard this as a *generic* character, and as only a single *Eremnid* genus is recorded to have a single claw, I think it will be well to refer to that genus (*Pephricus*) all the Australian *Eremnini* having only a single claw unless they differ from the diagnosis of *Pephricus* in some character really of first-class importance. I take then the following to be the distinctive characters of *Pephricus* as a genus:—Rostrum separated from the head on the underside by a deep transverse sulcus; antennæ shortish and more or less stout, with a funicle of 7 joints; scutellum not, or scarcely, apparent; femora unarmed; a single claw only to the tarsi; metasternum very short; basal two ventral segments sub-equal, *inter se*, the next two much shorter; hind corbels open. Thus characterised the genus *Pephricus* may receive the following two species:—

PEPHRICUS.

P. umbratus, sp. nov. Obscurus, squamis albidis fuscis et nonnullis nigricantibus indeterminate crebre vestitus: vix manifeste setosus: rostro antrorsum angustato supra sat plano: scrobibus supernis; oculis ovalibus infra paullo acuminatis; prothorace quam longiore tertia parte (postice quam antice parum manifeste) latiori, lateribus modice arcuatis; scutello vix distincto; elytris quam prothorax tertia parte latioribus, plus quam duplo longioribus basi emarginatis, leviter striatis, striis, sat fortiter punctulatis, lateribus sat rotundatis, latitudine majori paullo pone basin posita. Long., 2—2½ l.; lat., 1—1½ l.

This species differs from the two previously described by not being clothed with long setæ. The antennæ are short and stout; set back they would about reach the base of the prothorax; the scape reaches the back of the eye; joints 1 and 2 longer than wide, 1 longer than 2, 3—7 transverse, the club short and stout obovate; the head rostrum and front of prothorax viewed from the side are exactly represented in the figure of *P. echymis*, Pasc. (Tr. Ent. Soc., tab. v., fig. 72.) Viewed from above the rostrum is gradually narrowed forward, its lateral margins forming the upper margins of the scrobes, the whole of which are visible when the rostrum is looked down upon from above. The actual base of the elytra is the same width as the base of the prothorax, but

the elytra are quickly dilated behind the base ; the shoulders are distinctly marked. The legs are more or less reddish, the anterior tibiæ denticulate within. There are no defined markings, the whitish, fawn-colored, and darker scales shading off one into another ; but the paler shades predominating at the sides more or less distinctly. The sculpture of the upper surface (except the punctulate striæ of the elytra) is completely hidden by the scales.

Western Australia ; taken by E. Meyrick, Esq.

P. squalidus, sp. nov. Obscurus ; indumento terreo indutus ; setis brevibus adpressis rufis sparsim vestitus ; rostro sat plano, parte superiori in medio valde constricta ; scrobibus plane supernis fere rotundatis ; oculis subrotundatis ; prothorace quam longiori (et postice quam antice) vix latiori, lateribus sat rotundatis ; scutello haud manifesto ; elytris quam prothorax fere dimidio latioribus paullo plus quam duplo longioribus, basi emarginatis, striatis, striis minus distincte punctulatis, interstitiis postice sat convexis, lateribus modice rotundatis. Long., $1\frac{4}{5}$ — $2\frac{1}{2}$ l. ; lat., $\frac{4}{5}$ —1 l.

Usually completely covered with an earthy-looking indumentum, which it is almost impossible to remove without removing the underlying scales, but (as far as I can see) the insect without the indumentum is densely clothed with scales of various shades of brown, some of them bright, and almost coppery. The most distinctive character consists in the remarkable sculpture of the rostrum, in which the scrobes look like roundish holes inserted in the upper surface, and separated from each other by a space less than a third part the width of the whole rostrum, as viewed from above. The space between them has a little the appearance of being compressed into a kind of *ridge*, as though the true upper surface of the rostrum were here very narrow ; this quasi-ridge being at its narrowest at the hind end of the scrobes, and its sides diverging from that point forward (at the same time forming the inner edge of the scrobes). The head, rostrum, and front of prothorax, viewed from the side) are almost as in the preceding species ; but the eyes are rounder, and both eyes and scrobes appear much nearer to the upper line of the outline. The antennæ are a little longer and less stout than those of *P. umbratus*, joints 3 to 7 of the funiculus being not quite so wide as long, and the club being considerably longer and less thickened. The inner outline of the front tibiæ is spinulose rather than denticulate.

Two examples taken at no great distance from Adelaide, although smaller than the type (long., $1\frac{3}{4}$ l.), appear to me to belong to this species. They are, however, devoid of the indumentum that is usually present, their surface being clothed with

scales of various brown tints, shaded off into each other. The prothorax is covered with rather coarse flattened tubercles, closely placed, and the elytra are clothed with short curved setæ.

S. Australia; Basin of Lake Eyre.

LONGICORNES.

TRYPHOCHARIA.

T. Mitchelli, Hope. My note on this sp. (vide supra, p. 56) has elicited from Mr. French, the Victorian Colonial Entomologist, information that satisfies me of my supposed identification of this insect having been founded on a mistake, and that the specimen I regarded as *T. Mitchelli* is in reality an example of an undescribed species—which accordingly I describe as follows:—

T. Frenchi, sp. nov. Valde elongata; fusco-ferruginea, capite prothorace et elytrorum basi piceis, his in parte apicali tertia fuscis in parte intermedia sordide testacea (parte intermedia irregulariter fascia transversa angusta anfracta fusca notata); prothorace quam longiori paullo latiori, fortiter ruguloso, tuberculis 4 et spatio mediano sub-lanceolato instructo, lateribus spina modica acuta vix arcuata armatis, elytris crasse punctulatis (antice profunde, retrorsum gradatim minus profunde), ad apicem oblique truncatis et spinis binis acutis validis armatis; antennarum articulo 3° quam 4^{us} parum (quam 5^{us} haud) longiori, articulis 3° 4° que spina externa armatis. Long., 20 l.; lat., 5 l.

The type is a female, its antennæ not quite reaching the apex of the elytra.

N.S. Wales.

DIDYMOCANTHA.

D. novica, sp. nov. Nitida; minus sparsim pilosa; nigro fusca; scutello griseo-pubescenti; antennarum articulis 3° 5° que (apice excepto) 6ⁱ que basi, femoribus ad basin, tibiis in medio, elytrorum humeris summis, prosterno metasterno et abdominis basi, testaceis; prothorace quam longiori vix latiori, sat crasse umbilicato-punctulato, 11-tuberculato; elytris sat fortiter (apicem versus magis subtiliter) sat crebre punctulatis, obsolete bicostatis, apicibus rotundatis; femoribus quam *D. obliqua*, Newm. paullo brevioribus paullo minus linearibus; antennis (feminæ?) quam corpus paullo brevioribus, articulo 3° quam 4^{us} sat longiori quam 5^{us} vix breviori. Long., 7 l.; lat., 2 l.

This species appears to be very near *D. brevicollis*, Pasc. (from W. Australia), which I know only by description, but it is cer-

tainly, I think, distinct. It seems to be very differently coloured, the W. Australian insect having testaceous elytra with the shoulders and apices darker, whereas in this the elytra are brownish-black, with the shoulders testaceous. In *D. brevicollis* the tubercles on the prothorax are said to be nine (three on the disc and three on each side); in this species there are a transverse row of five tubercles a little in front of the base (the external one on each side being spiniform), a transverse row of four slightly in front of the middle, and a single tubercle on each side just about the middle. The basal four joints of the antennæ are nitid and very coarsely punctulate; the entirely dark colour of the fourth joint is probably not constant. The absence of a depressed pubescence, the colour, and many other characters, distinguish it from *D. obliqua*. The femora, without being at all clavate, are stouter than, and not quite so linear, as those of *D. obliqua*.

Victoria; Mooroolbark Ranges; taken by Mr. French.

D. (Stenocorus) annulicornis, Germ. This species seems to be identical with *D. obliqua*, Newm., of which, in that case, its name will be a synonym.

TEISPES.

T. Frenchi, sp. nov. Mas. Nitidus; piceo-niger; metasterno pedibusque rufis, hoc breviter fulvo-pubescenti, antennis rufo-piceis; mandibulis quam caput parum brevioribus, sparsim inæqualiter punctulatis; capite medio subtiliter canaliculato, antice inæqualiter punctulato (puncturis magnitudine valde diversis), postice opaco granulato; prothorace quam longiori plus quam duplo latiori, antice fortiter trisinuato, disco toto (puncturis magnis sparsis in parte postero-externa exceptis) fere lævi, parte laterali sat late opaca crebre rugulose punctulata, lateribus serratis; elytris obsolete reticulato-rugatis vix perspicue punctulatis ad apicem rotundato-truncatis (angulo suturali breviter spiniformi), vix perspicue 3-costatis, sulco elongato obsolete prope marginem lateralem instructis; femoribus posterioribus 4 subtus biserialiter denticulatis; tibiis anticis prope apicem dente singulo et ad apicem altero extus armatis; antennis quam corporis dimidium paullo longioribus, scapo oculus medium paullo superanti parum depresso, articulo 3° quam scapus paullo breviori; abdomine fere lævi, segmento apicali postice longe fulvo-ciliato.

Feminae mandibulis paullo brevioribus, prothorace angustiori. Long. (mands. incl.), 18—21 l.; lat., 6—6½ l.

The prothorax of the male is scarcely, of the female considerably, narrower than the elytra. I have in my collection an example from Port Darwin of an insect which I take to be *T.*

dorsalis, Thoms. (and which, moreover, is very likely to be *Mallo-don insulare*, Hope—Hope's name in that case having the priority). Compared with the Port Darwin species the present insect is much more nitid, the basal joint of the antennæ scarcely flattened, the lateral borders of the prothorax very much more strongly and closely punctured, in sharp contrast with the almost perfectly lævigata disc, the elytra nearly lævigata, the abdomen nearly black, &c.

N. Queensland ; presented to me by C. French, Esq.

MICROTRAGUS.

M. quadrimaculatus, sp. nov. Setis erectis sparsim vestitus ; dense nigro-fusco-squamosus, palpis testaceis, pedibus et maculis in elytris binis (humerali et subapicali) cinereo-squamosis ; prothorace quam latiori (spinis lateralibus exclusis) vix longiori, supra subplanato, inæquali, ruguloso, utrinque spina robusta conica armato ; elytris quam prothorax (spinis lateralibus inclusis) vix latioribus, tuberculorum conicorum seriebus binis instructis, ad apicem singulatim minute oblique truncatis. Long., $4\frac{1}{2}$ —6 l. ; lat., $1\frac{4}{5}$ — $2\frac{2}{5}$ l.

The disc of the prothorax bears numerous obscure little tubercles, and a larger one on each side of the median line nearer to the front margin than to the base ; some of the small tubercles form an obscure raised line across the disc somewhat behind the middle. The elytra are sparsely pitted with large fovea-like punctures. The nearly-black colour with a large ashy-white spot on each shoulder, and another near the apex of each elytron (the latter ill-defined,—the whole apex being slightly cinereous) renders this a very distinct species.

N. Queensland ; sent to me by C. French, Esq.

PENTHEA.

P. pardalis, Newm. I have recently seen in the collection of C. French, Esq., a specimen taken in N.W. Australia which appears to be a small and rather obscurely-coloured example of this insect. I believe its occurrence in Western Australia has not been previously recorded.

PHYTOPHAGA.

DONACIA.

D. Australasiae, sp. nov. Testacea, prothorace obscuriori, hoc elytris viridimicantibus ; corpore subtus confertim breviter albedo-argenteo-pubescenti ; antennis gracilibus quam corpus paullo brevioribus ; femoribus haud dentatis ;

elytris punctulato-striatis, ad apicem truncatis. Long., 4 l.; lat., $1\frac{1}{5}$ l.

This species appears to be a true *Donacia*, the insertion of the antennæ, the almost contiguous strongly exerted front coxæ, the form of the prothorax, and I think all other structural characters being quite as in that genus. It is an insect of a pale, washed-out, testaceous-brown colour, with a bright greenish gloss in certain lights. The head and prothorax are almost devoid of puncturation, and are semi-opaque, owing to being minutely coriaceous. The prothorax is a little rugulose near the base, all its angles well defined and laterally prominent. The antennæ and legs are of a brighter testaceous colour than the general surface, each joint of the former a little darker at the apex.

Queensland; sent to me by G. Masters, Esq.

RHYPARIDA.

R. Mastersi, sp. nov. Flavo-fulva, mandibulis antennis (articulis basalibus 4 exceptis) genubus et elytrorum fasciis latis 2 (altera basali altera apicali) nigris, his in margine laterali anguste connexis, tibiis tarsis mesosterno metasternoque obscurioribus; clypeo profunde emarginato (angulis anticis productis) fortiter sat crebre punctulato; fronte impunctata puncturis paucis antice positis exceptis) in medio antice longitudinaliter breviter foveolata; prothorace lævi, lateribus rotundatis; elytris seriatim sat fortiter punctulatis puncturis apicem versus subobsoletis; femoribus muticis. Long., $2\frac{4}{5}$ l.; lat., $1\frac{1}{4}$ l.

This species does not approach any yet described in colouring—and it is certainly not a variety of any of a fairly long series of species in my collection. Nevertheless the species of this genus are so subject to variation in markings that it is not improbable a good many now called species may eventually be found to be varieties. I cannot, however, suggest any species of which this may be a variety, and in any case it is convenient that well-marked varieties should have a distinctive name. In the present insect the dark fasciæ are so wide as to occupy the greater part of the elytra, the fulvous colouring appearing as a fascia, occupying about the middle one-third of the elytra, its front margin commencing on each elytron a little behind the scutellum on the suture and running obliquely hindward to the lateral margin (which it does not quite touch) at about a third of its length; the *hind* margin of the fulvous part of the elytra commencing on the suture a little behind its middle and running obliquely towards (but not quite touching) the lateral margin at about two thirds of its length from the base.

Queensland; sent to me by Mr. Masters.

STETHOMELA.

S. caudata, sp. nov. Late ovalis, valde convexa; nitida; nigro-viridis capite prothorace antennarum basi elytrorum apice summo abdomineque (segmento basali excepto) rufis; capite fortiter sat crebre (vertice lævigato excepto), prothorace acervatim sat fortiter, punctulatis; elytris seriatim punctulatis (puncturis retrorsum gradatim magis subtilibus), pone humeros profunde impressis; prosterno medio triangulariter planato, parte planata carina subtili marginata; unguiculis appendiculatis. Long., 3 l.; lat., 2 l.

An extremely distinct species. The structure of the prosternum bears a remarkable resemblance to that of some species of *Rhizobius*.

Queensland; sent to me by Mr. Masters.

PAROPSIS.

P. rufopicta, sp. nov. Breviter ovata; minus convexa; sat nitida; nigra, antennis palpis tarsisque rufescentibus, prothorace ante medium maculis 2 approximatis elytris maculis 3 (basali prope scutellum oblongo, mediana transversa oblique posita, subapicali irregulari) rufis ornatis; supra tripliciter punctulata (puncturis subtilibus et aliis sat fortibus intermixtis undique, puncturis magis crassis latera versus, positis), puncturis magnitudine intermedia in elytris irregulariter undatim seriatim; prothorace quam longiori plus quam duplo (postice quam antice paullo plus quam tertia parte) latiori, antice fortiter bisinuatim emarginato, lateribus leviter arcuatis, angulis anticis productis minus acutis posticis rotundatis; sternis fere lævigatis; abdomine sparsim fortiter punctulato. Long., $2\frac{1}{4}$ l.; lat., 2 l. (vix).

The seriate puncturation of the elytra is much confused, but seems to consist of about ten fairly continuous lines, and about as many more mixed among them, which are wavy and scarcely continuously traceable. This sculpture would place the present species in Dr. Chapuis' "Group IV." of the genus. The coarsest of the punctures are scattered about the front and sides of the head (which is very wide), and form a confused stripe along either side of the prothorax and elytra. The elytra at the base are considerably wider than the base of the prothorax; their shoulders are much rounded.

W. Australia; sent to me by G. Masters, Esq.

AULACOPHORA,

A. occipitalis, Baly. I have an example taken near Port Darwin, which is quite identical with specimens of this species from New Guinea.

RUPILIA.

R. rugulosa, sp. nov. Ovata; subopaca, subtus magis nitida; nigro-piceo, capite antice prothorace sternis et segmento ventrali apicali rufescentibus; supra sat equaliter rugulose punctulatus; prothorace quam longiori fere duplo (postice quam antice haud multo) latiori, latitudine majori ante medium posita, lateribus subangulatim rotundatis, marginibus anticis et posticis late leviter concavo, utrinque basin versus sulco obliquo impresso. Long., 4 l.; lat., $2\frac{1}{2}$ l.
N. Queensland; sent to me by Mr. Masters.

COCCINELLIDÆ.

EGLEIS.

E. varicolor. Muls. From the description of *Coccinella Kingi*, Macl., it has appeared to me that *E. varicolor* is identical with it, and Mr. Masters has now done me the favour of comparing an example with the original type of Macleay's insect, with the result of proving my conjecture right. *E. varicolor*, therefore, becomes a synonym of *C. Kingi*.

NEDA.

N. bicolor, sp. nov. Late ovata; valde convexa; nitida; supra modice vix crebre punctulata; capite antennis palpis corpore subtus pedibusque rufo-testaceis, prothorace (hujus angulis anticis anguste flavis) nigris. Long., $2\frac{1}{2}$ l.; lat., $2\frac{2}{3}$ l.

This species is a *Neda* in Mulsant's sense of the term. I am unable to discriminate the briefly-characterised sections into which Mr. Crotch divided it, but as I can find no structural character to separate it from *N. princeps*, Muls., I presume that author would have placed it in *Archaioneda*. Apart from its entirely different colouring it is very like *N. princeps* in miniature, having an exactly similar outline (which is very peculiar) when viewed from the side. The prothorax, however, is much more strongly transverse than that of *N. princeps*, and is somewhat wider in proportion to the elytra. Superficially not unlike *Synia melanaria*, Muls., but differs in the form of the clypeus and other structural characters. The flanks of the prosternum are not foveated.

N. Queensland; sent to me by Mr. Masters.

CŒLOPHORA.

C. Mastersi, sp. nov. Late ovalis; subcircularis; distincte sat crebre punctulata; nigra, capite antennis palpis prothoracis lateribus (late) margine antico et linea mediana angusta prosterno epipleuris (his externe nigris) pedibus et abdominis

lateribus rufo-testaceis, elytris ad apicem anguste rufescentibus. Long., $2\frac{1}{5}$ l.; lat., $1\frac{4}{5}$ l.

This species also bears a superficial resemblance to *Synia melanaria*, but has the clypeus of a *Cœlophora*. It is not unlike *C. Jansoni*, Crotch, but is smaller, with the prothorax and under-side marked with black, and the tips of the elytra only very narrowly reddened; its puncturation, moreover, is considerably less strong. It is also near *C. vidua*, Muls., from Java, but is a little smaller, with the median line of the prothorax red, the elytra tipped with red, the abdomen (except at the sides) black, &c.

N. Queensland; sent to me by Mr. Masters.

C. guttata, spec nov. Subcircularis; sat convexa; sat crebre minus subtiliter punctulata; nigra, prothorace (parte mediana tertia excepta) pallide flavo, capite antennis palpis et pedibus anterioribus 4 rufo-testaceis, elytris maculis binis magnis sanguineis (altera antemediana transversa, altera subapicali ovali paullo minori) ornatis. Long., $1\frac{7}{10}$ l.; lat., $1\frac{3}{5}$ l.

A very distinct species. I do not think any very near it has been described.

N. Queensland; sent by Mr. Masters.

CHILOCORUS.

C. flavidus, sp. nov. Hemisphæricus; minus subtiliter sat crebre punctulatus, puncturis magnis seriebus binis in elytris latera versus irregulariter positis; callo humerali valde prominenti; flavus, elytris macula communi elongato-triangulari in sutura alteraque transversa postmediana nigris, his maculis in sutura confluentibus. Long., $2\frac{1}{5}$ l.; lat., 2 l.

The puncturation is very similar to that of *C. renipustulatus*, Scriba. The sides of the prothorax are not pubescent. The black markings on the elytra consist of an elongate triangle, with its base occupying about the middle quarter of the base of the elytra, and its apex on the suture considerably behind the middle, and a post median fascia touching the margin on both sides, and of very irregular shape, with its hindmargin produced on the suture nearly to the apex. The two black marks meet on the suture. The spine on the tibiæ is very strongly developed.

N. Queensland; sent by Mr. Masters.

ORCUS.

This genus might easily be subdivided on structural characters of considerable importance. The species differ in the form of the clypeus to an extent that seems inconsistent with the importance attributed to that character in founding the sub-family *Chilocorites* upon it. In *O. bilunulatus*, Boisd., the clypeus is

extremely strongly dilated laterally, forming a wide lamina in front of the eyes, and entirely concealing the base of the antennæ, which lamina becomes successively feebler in *Australasia cyanocephalus celestis*, until in *chalybeus* it is reduced to a mere fine carina. Mulsant has already called attention to the presence in some species, and absence in others, of a fovea on the sides of the prosternum. The elytral epipleuræ also vary, being foveolated more or less strongly in *bilunulatus Australasiæ* and *cyanocephalus*, but not (or at least not distinctly) in the others known to me of the genus. I may say that I have not seen *O. quadrimaculatus*, De Kerville. The following species appear to be new.

O. punctulatus, sp. nov. Hemisphæricus; minus convexus; crebre sat subtiliter punctulatus; supra cyaneus, prothorace antice et ad latera ante medium anguste rufomarginato, antennis labro palpis pedibus et corpore subtus (prosterno epipleurisq[ue] nigris exceptis) testaceis; prothorace ad latera quam in disco magis fortiter punctulato sed nullo modo ruguloso; elytris ad latera sat late sat æqualiter deplanatis; clypeo ad latera sat fortiter (fere ut *O. cyanocephali*, Muls.) laminato; prosterni lateribus et epipleuris foveolatis. Long., $2\frac{1}{2}$ l.; lat., $2\frac{1}{2}$ l.

Colored almost as *O. cyanocephalus*. It is allied to that species, but is larger, more evenly rounded on the sides (not at all ovate) and not so strongly convex; the puncturation is finer and much closer throughout, the prothorax is not rugulose at the sides, and the explanate border of the prothorax is considerably wider; the basal line of the prothorax is (as in that species) distinctly separate from the hindmargin. I have no doubt of my identification of *cyanocephalus*, as my type is from Port Darwin (near the original locality), and agrees well with the description.

N. Queensland; sent by Mr. Masters.

O. splendens, sp. nov. Subhemisphæricus; minus convexus; sat crebre minus subtiliter punctulatus; supra late purpureus, subtus cum antennis palpis pedibus epipleurisq[ue] testaceus; prothorace ad latera quam in disco magis fortiter punctulato sed nullo modo ruguloso; elytris ad latera anguste deplanatis; clypeo ad latera fortiter laminato: nec prosterni lateribus nec epipleuris foveolatis. Long., $1\frac{1}{2}$ l.; lat., $1\frac{3}{10}$ l.

Easily distinguishable by its small size and bright purple colour, the underside being entirely testaceous, as well as by the strong lateral dilatation of the clypeus in conjunction with the absence of foveæ on the sides of the prosternum and on the epipleuræ. The basal line of the prothorax is scarcely separated from the hindmargin.

N. Queensland; sent by Mr. Masters.

O. ovalis, sp. nov. Late ovalis; sat convexus; subtiliter sat crebre punctulatus; supra splendide viridis, subtus cum pedibus (tarsis abdomineque rufescentibus exceptis) niger, antennis palpisque rufis; prothorace sat æqualiter punctulato; elytris ad latera anguste deplanatis; clypeo ad latera fortiter laminato; nec prosterni lateribus nec epipleuris foveolatis. Long., $1\frac{4}{5}$ l.; lat., $2\frac{2}{5}$ l.

Var. supra cyaneus.

A very distinct species, well characterised by its brilliant metallic upper surface and black under surface (except the reddish abdomen) and legs (except the tarsi). It is a little more elongate than its congeners, and is also remarkable for the sides of its prothorax being punctured very little more strongly than the disc. The basal line of the prothorax is distinct from, but very near to, the hind margin.

N. Queensland; sent by Mr. Masters.

O. Australasiæ, Boisd., var. ? *obscurus*. Differt statura multo minore, colore nigro (maculis minoribus obscure ferrugineis). Long., $1\frac{1}{2}$ l.; lat., $1\frac{2}{5}$ l. (vix).

I have seen several examples of this insect, all from Yilgarn, W. Australia, and all quite identical—and can hardly persuade myself that they are a mere variety, although I cannot find any difference from the type except in respect of size, colour, and markings. The spots on the elytra are placed as in *Australasiæ*, but are quite small, and of a very dark ferruginous tint, so as to be very inconspicuous.

W. Australia; sent by C. French, Esq.

GYMNOSCYMNUS, gen. nov. *Coccinellidarum*.

Corpus fere glabrum, prothorace setis brevibus minus conspicuis sat sparsim vestito; oculi minus subtiliter granulati fere paralleli; clypeus antice truncatus; antennæ ad basin apertæ, quam *Scymni* paulo longiores, *11-articulatæ; prosternum breve in medio sat æqualiter convexum; lamellæ abdominales segmenti basalis apicem attingentes, hujus cum margine postice confusæ; elytrorum epipleuræ subhorizontales integræ, haud foveolatæ; unguiculi appendiculati; sutura ventrali inter segmenta basale et secundum sat fortiter impressa.

The minute species for which I propose this new generic name is scarcely pubescent; the elytra appear to be absolutely glabrous,

* I have not been able to break off an antenna for microscopic examination, as I possess only a single example, but I feel satisfied that there are 11 joints in the antennæ; I can count 10 very distinctly, and am nearly certain there is another that would be distinct under a microscope.

but the head and prothorax are set somewhat sparsely with short crisp silvery hairs; its epipleuræ entire and horizontal furnish a very distinctive character, they are almost exactly like those of *Epilachna*. This genus is not very near to any other known to me; in Dr. Chapuis' arrangement of the *Coccinellidæ* its place is in the group *Scymnites*. In my tabulation of the Australian *Coccinellidæ* (Tr. Roy. Soc., S.A., XI., pp. 186-7) it falls beside the species that I have called "Eupalea?" from which it differs by its incomplete abdominal lamellæ.

G. quadrimaculatus, sp. nov. Fere circularis; nitidus; niger, elytris maculis binis magnis rufis ornatis, nonnullorum exemplorum (?marium) capite prothoracis lateribus femoribusque anticis plus minusve testaceis; supra crebrius subtiliter (latera versus magis fortiter) punctulatus; prothorace fortiter transverso, hujus basi quam elytrorum basis vix angustiori; corpore subtus sublævi. Long., $\frac{4}{5}$ l.; lat., $\frac{4}{5}$ l. (vix).

SCYMNOMORPHA, gen. nov.

Corpus pubescens; oculi subtiliter granulati sat paralleli; clypeus antice truncatus; antennæ ad basin apertæ breves 11-articulatæ; prosternum sat elongatum, antice transversim æqualiter sat fortiter convexum haud carinatum; scutellum modicum; lamellæ abdominales integræ, antice extus longe intra marginem lateralem terminatæ, postice segmenti basalis ventralis apicem nullo modo attingentes; elytrorum epipleuræ horizontales longe ante apicem terminatæ, haud foveolatæ; femora haud in sulcos recepta; unguiculi appendiculati.

This genus is certainly near *Scymnus* (Mulsant's subgenus *Pullus*), but the prosternum wide in front, and evenly convex without any depression or carinæ, seems to justify its separation. The first ventral suture is well defined, and scarcely less strongly impressed than the others. The facies is that of an elongate *Scymnus*.

S. duplopunctulata, sp. nov. Sat elongato-ovalis; albido-pubescens; convexa; nigra, corpore subtus rufescenti, antennis pedibusque rufis; capite prothoraceque crebre subtilissime elytris dupliciter (crebre subtiliter et fortiter sparsim) punctulatis. Long., $1\frac{3}{5}$ l.; lat., 1 l.

Victoria; Alpine District.

SCYMNODES.

S. Koebeli, Blackb. Among the *Coccinellidæ* recently sent to me by Mr. Koebele are a number of examples of *Scymnodes*, which I think must be referred to this species, although in that

case they prove it to be one of the most variable of its family. Among them there are hardly two to be found strictly identical in colouring or sculpture. The greater part of them appear from the labels to have been taken at one place (Toowoomba) and on one plant (*Eugenia*). As most of them would be quite unrecognisable by comparison with my description of the type form, I think it will be best to describe them as being probably varieties of *S. Koebeli*, as follows:—

- Var. ? *immaculatus* a, *S. Koebeli*, differt elytris immaculatis.
 Var. ? *Eugeniæ* a, *S. immaculato*, differt pedibus (tarsis exceptis) totis capiteque nigris.
 Var. ? *fulvohirtus* a *S. immaculato*, differt pedibus totis capiteque nigris, corpore supra fulvo- (nec cinereo-) hirsuto.
 var. ? *varipes* a *S. immaculato*, differt tibiis (præsertim anticis) plus minusve rufescentibus, elytris obsolete punctulatis magis nitidis (nonnullorum exemplorum corpore supra fulvo-hirsuto).

An example differing from the typical form only in the somewhat stronger sculpture of its elytra and under surface and its more darkly coloured head and legs I take to be a typical female. A remarkable character in *S. Koebeli* is the exceptionally strong dilatation of the elytra immediately behind the base, which causes the lateral margin to be very strongly sinuate about the middle.

SCYMNUS.

S. Sydneyensis, sp. nov. Ovalis; pubescens; sat convexus; sat nitidus; coriaceus, vix distincte punctulatus; niger, capite prothoraceque (?maris solum) rufescentibus vel testaceis, hoc in medio (præsertim postice) infuscato, elytris maculis rufis ornatis (sc. macula basali magna juxta scutellum, macula parva pone humerum, et fascia pone medium nec marginem lateralem nec suturam attingenti), abdomine postice (?maris solum) rufescenti, pedibus rufescentibus vel testaceis; prosterno medio longitudinaliter depresso, spatio depresso lato sat parallelo utrinque leviter longitudinaliter carinato; lamellis abdominalibus haud integris. Long., 1 l.; lat., $\frac{3}{5}$ l.
 N.S. Wales; taken by Mr. Koebele near Sydney.

S. Australasiae, sp. nov. Breviter ovalis; pubescens; minus convexus; modice nitidus; coriaceus, vix distincte punctulatus; rufo-testaceus, capite prothoracis parte media et elytrorum maculis nonnullis (sc. macula communi triangulari basali et binis minoribus discoidalibus posterioribus) piceis; prosterno medio longitudinaliter depresso, spatio depresso lato sat parallelo utrinque leviter longitudinaliter

carinato; lamellis abdominalibus haud integris. Long., $\frac{9}{10}$ l.; lat., $\frac{7}{10}$ l.

Among the *Coccinellidae* taken by Mr. Koebele are specimens from various localities in Queensland, N.S. Wales, and Victoria which agree in presenting the structural characters of the example here described, and are all distinguished by their very fine (scarcely distinct) puncturation, and by being of a rufo-testaceous colour with a more or less distinct infuscate triangular spot, with its base on the base of the elytra, and its apex on the suture at about one-third of the length of the same from the scutellum. In some of these the head is infuscated, and in some the middle part of the prothorax is more or less stained with black; some have also two small infuscate spots placed longitudinally on the hinder part of the disc of each elytron. I think, though not without hesitation, that they all belong to one variable species. I have, however, selected a well-marked example from Queensland for description, and consider it possible that some of the specimens I treat as varieties may yet prove to be distinct species. The insect is very near *S. insidiosus*, Blackb., from S.W. Australia, but is certainly, I think, distinct by its more needle-point puncturation, which is less closely placed on the elytra.

Queensland, &c.

S. jocosus, sp. nov. Ovalis; pubescens; modice convexus; minus nitidus; coriaceus, vix distincte punctulatus; niger vel piceo-niger, corpore subtus plus minusve rufescenti, antennis palpis tibiis anticis tarsis omnibus et elytris postice rufo-testaceis, his maculis binis magnis transversis (altera antemediana lata altera postmediana sat angusta) late flavis ornatis; posterno medio longitudinaliter depresso, spatio depresso minus angusto antrorsum a basi leviter angustato utrinque leviter carinato; lamellis abdominalibus haud integris; prothoracis basi media sublobata, lobo postice truncato. Long., 1 l.; lat., $\frac{4}{5}$ l. (vix).

Easily recognisable by the markings on the elytra, which seem constant. They consist of two large bright-yellow transverse spots on each elytron, which nearly (but not quite) touch both suture and lateral margin. The front one extends from a little behind the base to about one-third the length of the elytron, and is produced forward in the middle of its front margin. The hind one is not much more than half as wide as the other, and is situated a little in front of the apex; it is of flexuous form.

Queensland; taken by Mr. Koebele near Toowoomba on *Eugenia*.

S. cucullifer, sp. nov. Ovalis; pubescens; modice convexus;

minus nitidus ; coriaceus, vix distincte punctulatus ; pallide testaceus, metasterno abdomineque rufescentibus, elytris nigris utrinque macula magna arcuata longitudinaliter posita pallide testacea ornatis, elytrorum colore nigro in prothorace producto cucullum simulanti (nonnullis exemplis maculis in elytris divisivis vel minoribus vel carentibus, nonnullis exemplis corpore subtus infuscato) ; prosterno medio longitudinaliter depresso, spatio depresso lato sat parallelo utrinque leviter longitudinaliter carinato ; lamellis abdominalibus haud integris. Long., 1 l.; lat., $\frac{7}{10}$ l.

In the example described there is a somewhat kidney-shaped whitish-testaceous mark on each elytron, its convex side directed outward, its lobes nearly reaching the suture, its front a little in front of the middle of the length of the elytra, its hind extremity not very far from the apex of the elytra ; in another example only the two lobes of this mark are present, as two isolated spots on each elytron, in another it is altogether wanting, and the elytra are uniformly black ; all the examples have the prothorax of a very pale testaceous colour, with a large black mark projecting forward over more than half the length and width, like a hood thrown forward from the black elytra over the prothorax ; in one of them, however, the black colouring becomes a little pitchy or brownish in the front of the elytra and on the prothorax.

N. S. Wales (Richmond River) and Queensland ; taken by Mr. Koebele.

S. victoriensis, sp. nov. Sat elongato-ovalis ; albido-pubescens ; sat convexus ; niger, capite prothorace (macula magna basali mediana nigra excepta) elytrorum (nonnullis exemplis) apice summo prosterni lateribus abdominis lateribus et apice antennis palpis pedibusque rufis ; capite prothoraceque crebre subtiliter, elytris minus subtiliter vix crebre, punctulatis ; prosterno medio longitudinaliter minus depresso, spatio mediano minus lato sat parallelo haud ad marginem anticum continuato utrinque subtiliter longitudinaliter carinato ; lamellis abdominalibus haud integris. Long., $1\frac{1}{2}$ l.; lat., 1 l.

The elongate form of this species associates it with *S. auru-gineus*, Blackb., to which, however, it bears no other resemblance.

Victoria ; Alpine district.

S. subelongatulus, sp. nov. Sat elongato-ovalis ; albido-pubescens ; convexus ; niger, prothoracis margine antico summo elytrorum apice, abdomine antennis tibiis tarsisque rufis ; capite prothoraceque subtilissime vix manifeste, elytris paullo magis fortiter nec crebre punctulatis ; prosterno medio

longitudinaliter depresso, spatio depresso lato sat parallelo haud ad marginem anticum continuato, utrinque longitudinaliter carinato; lamellis abdominalibus haud integris. Long., $1\frac{2}{5}$ l.; lat., $\frac{4}{5}$ l.

Much like the preceding in size and shape, but very differently coloured and punctured.

Victoria; Alpine district.

S. sublatus, sp. nov. Late ovalis; albido-pubescens; sat convexus; rufo-testaceus, elytris piceis; capite prothoraceque vix manifeste elytris subtiliter crebre punctulatis; prosterno medio longitudinaliter depresso, spatio depresso sat lato sat parallelo haud ad marginem anticum continuato utrinque subtiliter carinato; lamellis abdominalibus haud integris. Long., $\frac{4}{5}$ l.; lat., $\frac{7}{10}$ l. (vix).

Very distinct from its previously described congeners by its short broad form (suggestive of *Ditropidus*) and its colouring.

N.S. Wales; Blue Mountains.

S. pretiosus, sp. nov. Sat late ovalis; albido-pubescens; sat convexus; colore variegatus, capite prothorace (hoc postice in medio infuscato) et pedibus (femorum posteriorum tibiisque apice et tarsis, infuscatis) flavis, elytris metasternoque nigris, abdomine rufescenti; capite prothoraceque crebre subtiliter, elytris sat sparsim sat fortiter, punctulatis; prosterno medio longitudinaliter minus depresso, spatio mediano sat lato sat parallelo utrinque subtiliter longitudinaliter carinato; lamellis abdominalibus haud integris. Long., $\frac{7}{10}$ l.; lat., $\frac{1}{2}$ l.

A very pretty species; bears a certain resemblance to the preceding, but differs in its dark metasternum and hind body, and in the colour of some other parts, as well as in the much more strong and sparse puncturation of its elytra.

Victoria; Alpine district.

S. aspersus, Blackb. The examination of more examples of *S. insidiosus*, Blackb., suggests the possibility that *S. aspersus* may be an extreme variety of it. I have not, however, seen any specimen of *insidiosus* that is not of distinctly shorter and wider form than *S. aspersus*.

S. inaffectatus, sp. nov. Sat late ovalis; albido-pubescens? (exemplo typico fere abraso); sat convexus: capite prothorace (hoc macula magna basali fere semi-circulari nigra ornato) pedibusque rufo-testaceis, elytris rufis (horum sutura picea) corpore subtus (prosterno elytrorumque epipleuris pallidis exceptis) fere nigro; capite prothoraceque subtilissime, elytris magis fortiter, punctulatis; prosterno medio longi-

tudinaliter depresso, spatio depresso minus lato sat parallelo utrinque longitudinaliter carinato, lamellis abdominalibus haud integris. Long., 1 l. ; $\frac{7}{10}$ l.

This species, in its colour and markings, is more or less like *S. insidiosus* and *Australasiæ*, but at once distinguished from them by the considerably stronger puncturation of its elytra, which associates it with *S. Whittonensis*, a very differently coloured species, with bright fulvous (instead of ashy-white) pubescence.

Victoria ; Alpine district.

S. Whittonensis, sp. nov. Breviter ovalis ; late aureo-vel fulvo-pubescentis ; modice convexus ; minus nitidus ; crebre sat distincte punctulatus ; piceo-niger, capite prothoracis margine antico lateribusque prosterni lateribus pedibus anticis femoribus intermediis et tarsis omnibus rufo-testaceis ; prosterno medio longitudinaliter depresso, spatio depresso lato sat parallelo utrinque leviter longitudinaliter carinato ; lamellis abdominalibus haud integris. Long., 1 l. ; lat., $\frac{9}{10}$ l.

This species resembles *S. tenebricosus*, Bohem., in puncturation, but is very differently coloured, its pubescence particularly being of a bright fulvous colour. The limit of the dark part of the prothorax consists of a curved line commencing on the lateral margins a little in front of the base, and nearly touching the anterior margin at its middle.

N.S. Wales ; taken by Mr. Koebele near Whitton.

S. (?an gen. nov.) *queenslandicus*, sp. nov. Oblongus ; albido-pubescentis ; minus convexus ; minus nitidus ; obscure brunneus, antennis pedibusque dilutioribus, epipleuris testaceis ; capite prothoraceque crebre subtiliter, elytris et corpore subtus fortiter minus crebre, punctulatis ; prosterno medio longitudinaliter depresso, spatio depresso minus lato sat parallelo utrinque leviter longitudinaliter carinato ; lamellis abdominalibus haud integris ; suturis ventralibus æqualiter sat profunde impressis. Long., $\frac{4}{5}$ l. ; lat., $\frac{1}{2}$ l. (vix).

This minute insect is probably not a true *Scymnus* ; the only definite character, however that I can find to distinguish it consists in the first ventral suture not being enfeebled in the middle ; the comparatively narrow elongate flattish form gives it a facies unlike *Scymnus*. Nevertheless, as I have not an example for dissection, and so cannot satisfactorily investigate its characters, it is better to place it provisionally in *Scymnus*, from which I do not think it could be far removed structurally.

An example occurs among Mr. Koebele's *Scymnidæ* which is a little less elongate, less parallel, and more convex (being, therefore, more *Scymnus*-like in form) ; it possibly represents a closely allied distinct species ; the flattened space on its prosternum (as

might be expected from the general form) seems distinctly wider than in the specimen described, but as I can find no other difference I think the variation of form is probably sexual.

Queensland; taken by Mr. Koebele.

S. vagans, sp. nov. Late ovalis; pubescens; modice convexus; minus nitidus; niger, vel nigro-piceus, antennis palpis pedibusque laete testaceis; prothorace subtiliter sat crebre, elytris sat fortiter minus crebre, punctulatis; prosterno medio angusto planato; lamellis abdominalibus integris. long., $\frac{1}{2}$ l.; lat., $\frac{1}{3}$ l.

This minute species seems to be a typical *Scymnus* in all respects except in having its abdominal lamellæ entire (I have not, however, succeeded in counting the joints in its antennæ). It is at once distinguished from its Australian described congeners by its extremely small size.

Victoria and N.S. Wales; taken by Mr. Koebele.

The following tabulation of the hitherto described Australian *Scymni* will probably aid in the identification of the foregoing new species.

- A. Abdominal lamellæ incomplete.
- B. First ventral suture enfeebled in the middle.
- C. Pubescence short and fairly close.
- D. Prosternum not simple.
- E. Puncturation of elytra more or less fine and close (not less so, e.g., than in *S. discoideus*, Ill.).
- F. Prosternal ridge entire.
- G. Form more or less widely oval.
- H. Puncturation of elytra excessively fine (scarcely visible), especially near suture.
- I. Elytra blackish, without sharply defined pale markings (prothorax without sharply defined markings).
- J. Suture finely carinate behind middle ... simplex, Blackb.
- JJ. Suture not at all carinate behind middle ... lubricus, Blackb.
- II. Elytra not as I (or prothorax with sharply defined markings).
- J. Base of prothorax not with an emarginate lobe.
- K. Elytra blackish, at least on a large space around the scutellum.

- L. Punctuation of elytra sparse and scarcely visible Australasiæ, Blackb.
- LL. Punctuation of elytra less fine and sparse
- M. Form very short and wide insidiosus, Blackb.
- MM. Form less short and wide.
- N. Elytra with large conspicuous yellow markings jocosus, Blackb.
- NN. Elytra not bearing large conspicuous yellow markings aspersus, Blackb.
- KK. Elyt. (except suture and some small markings) pale testaceous brown australis, Blackb.
- JJ. Base of proth. with an emarginate lobe.
- K. Markings of elytra yellow cucullifer, Blackb.
- KK. Markings of elytra red sydneyensis, Blackb.
- HH. Punctuation of elytra much better defined (not much less strong than in *S. capitatus*, Fab.).
- I. Elytra evenly punctured, or nearly so.
- J. Large species (exceeding 1 l. in length) with the elytra red, at least in hinder part.
- K. Prothorax almost lævigate poonindiensis, Blackb.
- KK. Prothorax punctured almost uniformly with the elytra Meyricki, Blackb.
- JJ. Small species (at most 1 l. in length).
- K. Pubescence silvery whitish.
- L. Head front of pro-

- thorax and front legs
in male pale yellow flavifrons, Blackb.
LL. Not colored as L ... tenebricosus, Boh.
- KK. Pubescence fulvous
L. Hind legs black ... Whittonensis, Blackb.
LL. All the legs rufo-
testaceous ... inaffectatus, Blackb.
- II. Elytra almost lævigata
towards the lateral mar-
gins ... casuarinæ, Blackb.
- GG. Form very elongate ... aurugineus, Blackb.
- FF. Prosternal ridge not extend-
ing to front margin of
prosternum.
- G. Elytra not marked with a
sharply defined sanguin-
eous pattern.
- H. Head and prothorax not
entirely bright rufous.
- I. Head black.
- J. Size large, sides nearly
parallel ... subelongatulus, Blackb.
- JJ. Size small, sides arcuate
oscillans, Blackb.
- II. Head red ... victoriensis, Blackb.
- HH. Head and prothorax
entirely bright rufous sublatus, Blackb.
- GG. Elytra marked with a
sharply defined sanguin-
eous pattern ... Sedani, Blackb.
- EE. Puncturation of elytra much
more strong and sparse ... pretiosus, Blackb.
- DD. Prosternum quite simple ... inusitatus, Blackb.
- CC. Pubescence long and sparse ... notescens, Blackb.
- BB. First ventral suture normal ... queenslandicus, Blackb.
- AA. Abdominal lamellæ complete.
- B. Elytra with defined markings ... parallelus, Blackb.
- BB. Elytra devoid of markings ... vagans, Blackb.

HYPOCYREMA, gen. nov. (*Coccinellidarum*).

Corpus pubescens; oculi subtiliter granulati; clypeus antice late truncato-emarginatus subreflexus ad latera late dilatatus antennarum basi omnino obtegens; prosternum latum sat æqualiter convexum; scutellum parvum; lamellæ abdominales magnæ integræ, segmenti basalis apicem attingentes; elytrorum epipleuræ sat latæ, ad femora recipienda foveolatæ; femora in sulcos recepta; suturæ ventrales bene impressæ; tibiis in femorum sulcos receptæ.

The species on which I found this genus has much general resemblance to *Cyrema nigellum*, Blackb., but its clypeus being dilated widely (quite as much so as in any *Orcus* or *Chilocorus*) on the sides in front of the eyes seems to forbid placing it in *Cyrema*. It may be distinguished from *Serangium* (which has a somewhat similar clypeal structure) by its finely-granulated eyes and from *Lipernes* by the under-surface of its body being deeply sulcate for the reception of the legs.

H. paucillum, sp. nov. Subhemisphæricum; nitidum; breviter albido-pubescentibus; nigrum; prothorace in medio obsolete, ad latera crebre rugulose punctulato; elytris subtiliter leviter vix crebre punctulatis; segmentis ventralibus basali et apicali crebre rugulose, ceteris vix perspicue, punctulatis. Long., $\frac{4}{5}$ l.; lat., $\frac{3}{8}$ l.

Australia; taken by Mr. Koebele; exact locality not specified.

CYCLOSCYMNUS, gen. nov. (*Coccinellidarum*).

Corpus minus pubescens, capite prothoraceque setis brevibus minus conspicuis sat sparsim vestitis; oculi sat subtiliter granulati fere paralleli; clypeus antice truncatus; antennæ ad basin apertæ, breves, 11-articulatæ; prosternum sat breve, in medio vix planato sed spatio lato mediano carina subtili utrinque marginato; scutellum parvum; lamellæ abdominales segmenti basalis apicem attingentes, hujus cum margine postice confusæ; elytrorum epipleuræ sat horizontales haud integræ, ad femora recipienda foveolatæ; femora in sulcos recepta; suturæ ventrales bene impressæ; unguiculi appendiculati.

The species for which it is necessary to form this genus is very similar in general appearance to *Gymnoscymnus*, *Bucoellus*, and *Serangium*, but a glance at the structural characters will show that it cannot be placed in any of them. In Dr. Chapuis' arrangement of the *Coccinellidæ* its place is in the *Bucolites*. In my tabulation of the Australian *Coccinellidæ* (Trans. Roy. Soc., XI., pp. 1886-7) it falls into the Division "AA" along with *Serangium* and *Cyrema*, from both which the following characters in combination will distinguish it:—Prosternum not abnormally produced in front, nor having the median space abruptly flat.

C. minutus, sp. nov. Fere circularis; nitidus; sat convexus; piceus, elytris brunnescentibus, maculis ternis testaceis ornatis (his longitudinaliter in serie positis); in capite prothoraceque sparsim manifeste (in elytris vix manifeste) setis brevibus vestitus; supra sparsim minus fortiter (latera versus magis fortiter) punctulatus; prothorace fortiter transverso, hujus basi quam elytrorum basis vix angustiori; corpore

subtus sparsim minus subtiliter punctulato; segmento ventrali apicali (?maris) crebre fortiter punctulato. Long., $\frac{3}{5}$ l.; lat., $\frac{3}{5}$ l. (vix).

This species is very easily recognisable by its markings, consisting of a longitudinal series of three pale testaceous spots on each elytron.

N.S. Wales; Blue Mountains; taken by Mr. Koebele.

BUCOLINUS, gen. nov. (*Coccinellidarum*).

Corpus pubescens; oculi minus subtiliter granulati sat paralleli; clypeus antice truncatus; antennæ ad basin apertæ elongatæ robustæ 11-articulatæ; prosternum sat breve, antice transversim leviter convexum vix depressum nec carinatum; scutellum modicum; lamellæ abdominales integræ fortiter transversæ postice segmenti basalis ventralis apicem fere attingentes; elytrorum epipleuræ leviter concavæ longe pone elytrorum medium continuatæ, contra pedes intermedios et posticos foveolatæ; corpus subtus ad femorum receptionem leviter excavatum; unguiculi appendiculati.

The species for which I propose this name has very much the appearance of *Bucolus*, but though it is certainly near that genus structurally, it cannot be placed in it. According to Dr. Chapuis, the essential character of the *Bucolites* is a combination of the following,—antennæ exposed at the base, epipleuræ foveolated, body pubescent. The present genus presents this combination, and agrees with *Bucolus* in the following characters (by which Dr. Chapuis separates *Bucolus* from the other genera of the group)—claws appendiculate, abdomen consisting of five segments, no fossa under the anterior angles of the prothorax. It differs from *Bucolus*, however, in the absence of a chin-piece (mentonnière) in its comparatively long, stout antennæ, which are almost like those of a *Rhizobius*, in its clypeus not being at all expanded laterally, in its simple tibiæ, and in the different shape of its elytral epipleuræ, which are not nearly so wide in front as those of *Bucolus*, and are generally narrowed hindward to near the apex (the evenness of their narrowing being not much disturbed opposite the hind coxæ, whereas in *Bucolus* the epipleuræ are very wide in front, but suddenly become almost vertical,—apparently non-existent, opposite the hind coxæ). The eyes (as in *Bucolus*) are evidently less finely granulated than in *Scymnus*, but very much less coarsely than in *Rhizobius*. The abdominal lamellæ are very much like those of *Bucolus*, but do not quite so nearly reach the hind margin of the basal ventral segment.

B. longicornis, sp. nov. Late ovalis, fere subcircularis; minus depressus; albido-pubescent; piceo-rufus capite prothoracis

lateribus antennis pedibusque dilutioribus, metasterno et segmenti basalis parte mediana nigris; capite prothoraceque subtiliter, elytris paullo magis fortiter, crebre punctulatis. Long., $1\frac{1}{2}$ l.; lat., $1\frac{1}{10}$ l.

Victoria; Alpine District.

RHIZOBIUS.

R. major, Black. This species is very closely allied to *D. Boucardi*, Crotch; but I believe it to be a distinct species. I do not find any difference in the sexual characters. I have before me an example of *R. Boucardi* (female) which differs from *R. major* of the same sex as follows:—The general form is much more ashy-coloured instead of being clear bright fulvous, the general form is much more convex, and not so wide, the elytra are more nitid, and evidently less closely punctured, and the elevated middle space of the prosternum is differently shaped, being dilated immediately behind its front margin, and then distinctly narrowed again hindward, while the same piece in *R. major* is uniformly narrowed from the coxæ to the front margin.

R. nigronotatus, sp. nov. Ovalis, paullo elongatus; convexus; pallide fulvo-pubescentis et setis erectis sparsim vestitus; rufis, elytris insigniter nigro-pictis; prothorace quam longiori vix duplo (postice quam antice haud multo) latiori, lateribus sat rotundatis, angulis anticis rotundatis posticis distinctis obtusis; capite prothoraceque vix perspicue elytris sparsim dupliciter (subtiliter et sat crasse) punctulatis; prosterno medio longitudinaliter anguste depresso, spatio depresso fere parallelo utrinque carinato antice obtuso. Long., 2 l.; lat. $1\frac{1}{5}$ l.

Very distinct by the sharply defined and conspicuous black markings on the elytra, which consist of a number of longitudinal lines forming (in the example before me) a strong vitta on either side the scutellum reaching nearly the middle of the elytra and dilated at its base, and several other vittæ which are dilated and run into each other here and there in such fashion as to form an irregular and very strongly zigzagged fascia near the apex not touching the lateral margin, and on each elytron a discal fragment of a fascia reaching neither the suture nor the lateral margin, and connected at its external side with the hinder fascia.

N.S. Wales; taken by Mr. Koebele.

R. ornatipennis, sp. nov. Sat late ovalis; sat convexus; pallide fulvo-pubescentis et setis erectis sparsim vestitus; niger, capite prothoracis lateribus elytrorum partibus nonnullis [sc. margine laterali suturaque (his anguste), macula magna

humerali (hac postice bifida), macula elongata communi suturali mediana, et macula sat parva postmediana prope suturam] prosterno antennis palpis pedibus et abdominis lateribus apiceque rufo-testaceis; prothorace quam longiori circiter duplo (postice quam antice haud multo) latiori, lateribus modice rotundatis, angulis anticis rotundatis posticis distinctis obtusis; capite prothoraceque subtilissime, elytris sat crebre minus subtiliter, punctulatis; prosterno medio longitudinaliter anguste depresso, spatio depresso elongato-triangulari antice sat acuto. Long., 2 l.; lat., $1\frac{3}{10}$ l.

Distinguished from all the previously-described Australian *Rhizobii*, with a similar prosternal structure (except *R. nigronotatus*) by its elytra having well-defined markings. From *R. nigronotatus* it differs *inter alia* by the puncturation of its elytra.

Queensland; taken by Mr. Koebele near Toowoomba, on *Eugenia*.

R. speculifer, sp. nov. Ovalis; sat convexus, elytris minus longe pone scutellum fere subgibbosis; pallide fulvo-pubescentis et setis erectis sparsim vestitus; rufus, prothorace plus minusve infuscato, elytris aëneo-piceis; prothorace quam longiori vix duplo (postice quam antice circiter tertia parte) latiori, lateribus subrectis, angulis anticis rotundatis, posticis fere rectis; capite prothoraceque sat crebre vix fortiter, elytris sat fortiter vix crebre (quam *R. lituri*, Fab., paullo minus fortiter minus crebre, in spatio communi paullo pone scutellum obsolete) punctulatis; prosterno medio longitudinaliter depresso, spatio depresso triangulari utrinque carinato antice obtuso. Long., $1\frac{2}{3}$ l.; lat., $1\frac{1}{10}$ l.

Easily distinguished by the almost levigate common space on the elytra, a little behind the scutellum.

Queensland; taken by Mr. Koebele on *Eugenia*.

R. Toowoombæ, sp. nov. Ovalis; sat convexus; pallide fulvo-pubescentis et setis erectis sparsim vestitus; rufo-testaceus, elytris aëneis, prothorace nonnullis exemplis plus minusve infuscato; prothorace quam longiori duplo (postice quam antice haud multo) latiori, lateribus vix arcuatis, angulis anticis rotundatis, posticis fere rectis; corpore supra subtiliter minus crebre punctulato; prosterno medio longitudinaliter depresso, spatio depresso elongato-triangulari utrinque carinato antice obtuso. Long., $1\frac{3}{10}$ l.; lat., 1 l.

The elytral puncturation of this species is even finer than that of *R. debilis*, Blackb., from which it also differs (apart from very different colouring) in the sides of its flattened prosternal ridge

converging from base to front. The described species resembling it in color are all strongly punctured.

Queensland (Toowoomba).

R. satelles, sp. nov. Ovalis; sat convexus; pallide argenteo-albo- (nullo modo fulvo) pubescens et setis nigris erectis sparsim vestitus; supra nigricans, corpore subtus piceo, antennis metasterni lateribus abdomine coxis genubus tarsisque rufescentibus; prothorace quam longiori duplo (postice quam antice haud multo) latiori, subtilius punctulato, lateribus leviter arcuatis, angulis anticis rotundatis, posticis fere rectis; elytris sat fortiter minus crebre punctulatis; prosterno medio longitudinaliter depresso, spatio depresso triangulari utrinque carinato antice subacuto. Long., $1\frac{1}{10}$ l.; lat., $\frac{4}{5}$ l. (vix).

Closely allied to *R. Lindi*, Blackb., but at once distinguishable by the short pubescence of the upper surface being silvery white (not at all fulvous), and the long setæ black. From *R. hirtellus*, Crotch, it differs *inter alia* by its smaller size and different colouring.

Queensland; taken by Mr. Koebele.

R. Aurantii, sp. nov. Ovalis, elytris in partibus duabus posterioribus æqualiter arcuatim angustatis; subdepressus; cinereo-fulvo-pubescens et setis pallidis erectis minus perspicuis vestitus; piceo-niger, capite prothorace antice et ad latera elytrorum margine laterali summo antennis pedibus abdomineque rufis; prothorace quam longiori circiter dimidio latiori, antice modice angustato, lateribus sat arcuatis, angulis anticis rotundatis, posticis sat rectis; prothorace sat fortiter, elytris æqualiter valde fortiter, sat crebre (fere ut *R. lituri*, Fab., sed multo magis æqualiter) punctulatis; prosterno medio longitudinaliter depresso, spatio depresso subtriangulari utrinque carinato antice vix acuto. Long., $1\frac{2}{3}$ l.; lat., $\frac{4}{5}$ l.

This species has little of the facies of a *Rhizobius*, owing to its depressed form and the shape of its elytra, which widen gently from the base hindward for only about one-third of their length, and then narrow gently, continuously, and arcuately to the apex. Viewed from the side the insect appears only about half as *high* as most of its congeners (e.g., *discolor*, Er.); in its depressed form *R. cyaneus*, Blackb., approaches it. In colouring and puncturation it approaches *R. discolor*, Er., but with the punctures on the elytra evidently more even (*i.e.*, of more equal size and more equally distributed).

N.S. Wales; Blue Mountains; also taken by Mr. Koebele in Queensland.

R. fasciculatus, sp. nov. Late ovalis; nitidus; sat convexus; niger, abdomine vix rufescenti, elytris violaceis, capite antice antennis palpis geniculis anticis tarsisque rufo-testaceis; setis elongatis erectis nigris et fasciculis niveis brevioribus intermixtis vestitus; capite prothoraceque minus sparsim elytris sparsissime inæqualiter, perspicue punctulatis; prothorace quam longiori circiter duplo (postice quam antice haud multo) latiori; prosterno medio planato, spatio planato lato postice sat parallelo antice acuminato. Long., $1\frac{1}{5}$ l.; lat., $\frac{4}{5}$ l.

A very distinct species on account of the rich violet colour of its elytra, and the fascicles of snowy-white hairs with which they are spotted. The head of the type is so drawn back into the prothorax that I cannot examine the eyes very satisfactorily, but I can see that they are more or less coarsely granulated, and as all the other characters agree well with *Rhizobius*, I have no hesitation in referring the present insect to that genus.

Queensland; taken by Mr. Koebele, near Toowoomba, on *Eugenia*.

R. apicalis, sp. nov. Ovalis; sat convexus; nitidus; argenteo-pubescentis et setis erectis pallidis sparsim vestitus; piceo-niger, labro palpis antennis femoribus anticis tibiis tarsisque omnibus et abdomine plus minusve testaceo-rufis, elytrorum parte apicali (hac bene determinata) sanguinea; prothorace circiter duplo (postice quam antice haud multo) latiori, antice utrinque oblique late obscure impresso, minus perspicue punctulato, lateribus fere rectis, angulis anticis rotundatis posticis sat rectis; elytris sparsim sat fortiter punctulatis; prosterno medio longitudinaliter depresso, spatio depresso triangulari. Long., $1\frac{1}{5}$ l.; lat., $\frac{4}{5}$ l.

The sharply defined bright-red apical part of the elytron readily distinguishes this species from all its near allies yet described.

N.S. Wales; taken by Mr. Koebele in the Richmond River District.

R. cœrulens, sp. nov. Ovalis; sat convexus; nitidus; rufo-piceus, antennis palpis prothoracis lateribus et margine antico tibiis tarsisque dilutioribus, prothoracis disco elytrisque obscure cœruleis; fulvo-pubescentis et setis fulvis sparsim vestitus; prothorace quam longiori fere duplo (postice quam antice haud multo) latiori distincte sat crebre punctulato, lateribus leviter arcuatis, angulis anticis rotundatis posticis fere rectis; elytris crebre minus fortiter punctulatis; prosterno medio longitudinaliter depresso, spatio depresso lato parallelo. Long., $1\frac{1}{5}$ l.; lat., $\frac{4}{5}$ l.

The blue colour of the elytra, together with the very distinct puncturation of the elytra and the unusual width of the longitudinal depressed space on the prosternum, readily distinguish this species.

Australia; taken by Mr. Koebele; the exact locality not known.

R. dorsalis, Blackb. (Tr. Roy. Soc., S.A., 1892, p. 70). For "(the puncturation is strong on the elytra, but) considerably less fine on the prothorax" read ". . . considerably less so on the prothorax."

R. plebeius, sp. nov. Elongato-ovalis; sat convexus; setis fulvis sat brevibus erectis minus sparsim vestitus; rufo-piceus, antennis pedibus et epipleuris dilutioribus; capite prothoraceque vix manifeste, elytris sat crebre sat fortiter punctulatis; prothorace quam longiori fere duplo (postice quam antice haud multo) latiori, lateribus vix arcuatis, angulis anticis rotundatis haud productis posticis rectis; corpore subtus sat crebre minus subtiliter punctulato; prosterno medio æqualiter convexo nec planato nec carinato. Long., $\frac{4}{5}$ l.; lat., $\frac{3}{5}$ l.

Easily distinguished from the other described species having the prosternum similarly formed by its obscure dark-red colour and comparatively coarsely punctured elytra.

N.S. Wales and Queensland; taken by Mr. Koebele.

Since I furnished the Royal Society (in 1888) with a tabular statement of the distinctive characters of the Australian species of *Rhizobius*, so many additional species have been described in the first group of the genus (which I called "A") that a new tabulation seems to be called for, as follows—[In the case of *R. Evansi*, Muls., and *R. discolor*, Er., and also of *R. hirtellus*, Crotch, and *R. ruficollis*, Blackb., I am unable (for want in each case of a reliable type of one of the species) to set down a clearly intelligible record of a distinctive character; but in each case I believe that the species bracketed together are distinct *inter se*.]

RHIZOBIUS.

- A. Median space of prosternum longitudinally flattened, and with a fine carina on either side.
- B. Males distinguished by two large foveæ on the apical ventral segment.
- C. Form oval.
- D. Suture of the general colour.
- E. Lateral margins of general colour, apex of elytra sanguineous.

- F. Form convex, puncturation sparse and fine Boucardi, Crotch.
- FF. Form depressed, puncturation stronger and closer major, Blackb.
- EE. Lateral margin narrowly sanguineous Bakewelli, Crotch.
- DD. Suture narrowly sanguineous carnifex, Muls.
- DDD. Suture with a large sanguineous spot bajulus, Muls.
- CC. Form narrow and elongate proprius, Blackb.
- BB. Sexual characters not as in B.
- C. Elytra uniformly piceous reddish or black, or with these colours indefinitely mingled (as from immaturity) and furnished with long erect hairs.
- D. Colour of ventral segments uniform (or nearly so) with the undersurface.
- E. Species of normally convex form.
- F. Elytra more or less evenly punctured.
- G. Prothorax conspicuously and closely punctured.
- H. Prothorax (or at least its disc) coloured as the elytra.
- I. Legs (especially the femora) more or less infusate.
- J. Size moderate or small (long. $1\frac{1}{2}$ l. or less).
- K. Elytra uniformly shining piceous, slightly metallic-bronzy (less closely punctured) Lindi, Blackb.
- KK. Elytra not at all metallic, usually in part rufescent (more closely punctured) dorsalis, Blackb.
- JJ. Size large (long. 2 l. or nearly so) fugax, Blackb.
- II. Legs entirely bright rufous or testaceous } discolor, Er.
 } Evansi, Muls.
- HH. Prothorax entirely bright rufous, in strong contrast to the elytra } hirtellus, Crotch
 } ruficollis, Blackb.

- GG. Prothorax scarcely distinctly punctulate.
- H. Prothorax and elytra concolorous or nearly so.
- I. Flattened ridge of prosternum elongate-triangular ... cæcus, Blackb.
- II. Flattened ridge of prosternum with parallel sides debilis, Blackb.
- HH. Prothorax red, in conspicuous contrast to the elytra Toowoombæ, Blackb.
- FF. Elytra with a conspicuous common lævigata space a little behind the scutellum specularifer, Blackb.
- EE. Form much more depressed than is usual in *Rhizobius* ... Aurantii, Blackb.
- DD. Ventral segments rufo-testaceous, in strong contrast to the black sterna.
- E. Puncturation of elytra close (as much so as in *R. discolor*, Er.) ventralis, Er.
- EE. Puncturation of elytra much less close satelles, Blackb.
- CC. Elytra not as in the preceding group ("C")
- D. Elytra spotted with fascicles of white hair fasciculatus, Blackb.
- DD. Elytra with a sharply-defined coloured pattern.
- E. Elytra finely punctulate ... ornatipennis, Blackb.
- EE. Elytra coarsely punctulate ... nigro-notatus, Blackb.
- DDD. Elytra blue or metallic.
- E. Elytra pale reddish, with greenish opalescence insipidus, Blackb.
- EE. Elytra dark blue (general form very elongate) cyaneus, Blackb.
- EEE. Elytra bright metallic blue (general form oval) cœruleus, Blackb.
- DDDD. Elytra piceous, with ill-defined reddish blotches læticulus, Blackb.
- DDDDD. Elytra piceous, with the apex brightly sanguineous apicalis, Blackb.

ERITHIONYX (gen. nov.).

Rhizobio affinis differt oculis minus fortiter granulatis unguiculisque anterioribus 4 bifidis posticis appendiculatis.

Typ. *E. (Rhizobius) lanosus*, Blackb.

When I described *R. lanosus* (supra, p. 71) I noted the necessity of regarding it as forming a distinct sub-section of *Rhizobius*. In studying the further supply of material sent by Mr. Koebele, I find that the difference in the pubescence which gives it a facies, different from that of typical *Rhizobii* is accompanied by a very considerably finer granulation of the eyes, and the very peculiar character of the claws of the anterior four legs being strongly bifid while those of the hind legs are appendiculate. I must therefore form a new genus.

MIDUS.

According to Mr. Crotch, in his "Revision of the *Coccinellidæ*," *Scymnus stragulatus*, Er. (from Tasmania), belongs to this genus, which M. Mulsant founded (on an African species) as a subgenus of *Pharus*. Mr. Crotch states that it is a good genus on account of its elongate subdepressed form, complete abdominal plates, coarsely granulated eyes, and long antennæ. In his subsequent remarks Mr. Crotch seems to imply that he has not seen Erichson's species; but also states some of its characters with a preciseness that appears inconsistent with his not having seen it, making no remark on its antennæ beyond what is implied in associating it with the African species.

Among the *Coccinellidæ* taken by Mr. Koebele in N.S. Wales and Queensland are three examples of an insect which, I think, is almost certainly congeneric with *S. stragulatus*, Er., and must be exceedingly close to it as a species. It is certainly not a *Midus*, as Mr. Crotch defines the genus; but it agrees very well with Mulsant's diagnosis of the same, which assigns to it eyes finely granulated. It differs also from the characters Mr. Crotch assigns to *S. stragulatus* in its elytral epipleuræ not being distinctly foveolate (although there is an exceedingly obsolete depression opposite the hind femora).

Unfortunately I have not an example of the African species of *Midus* for comparison, but I think it extremely improbable that this insect is really congeneric with them: as, however, it seems to agree (in respect of the characters its author assigns to the genus) with *Midus* of Mulsant, although differing from the flatly contradictory characters assigned by Mr. Crotch I think it will be best to regard this insect for the present as a *Midus*. It may be noted that it bears a great resemblance superficially (especially in respect of its colour and markings) to *Scymnus parallelus*, Blackb., but differs from that species in important structural characters, especially in the form of its abdominal lamellæ (which are transverse, their outline meeting the front margin of the segment externally quite close to the external

margin of the segment), in its first ventral suture not being enfeebled in the middle, and in the elytral epipleuræ being continued back (gradually narrowing) very much nearer to the apex.

M. pygmæus, sp. nov. Ovalis, paullo elongatus; sat convexus; sparsim fulvo-pubescentis; supra piceo-niger, prothoracis lateribus et in elytris vittis dorsalibus singulis (his ante apicem introrsum flexis et suturam attingentibus) rufescentibus, corpore subtus rufescenti, antennis pedibusque testaceo-rufis; capite prothoraceque sparsim subtilius punctulatis; hoc quam longiori fere duplo (postice quam antice haud multo) latiori, a basi antrorsum angustato, lateribus vix arcuatis, angulis anticis leviter productis subacutis posticis obtusis; elytris confuse dupliciter (subtiliter et magis fortiter) minus crebre punctulatis; segmento ventrali basali in medio sparsim subtiliter, ceteris magis fortiter sat crebre, punctulatis. Long., 1 l.; lat., $\frac{3}{5}$ l.

Nearly allied to *M. stragulatus*, Er., but very much smaller, and with the lateral portions of the elytra entirely blackish, the breast not black, the head less finely punctulate, &c.

N.S. Wales and Queensland; taken by Mr. Koebele.



MISCELLANEA.

List of Plants collected by Dr. Stirling in Central Australia between Frew Ponds (lat. 17°) and Mount Stuart (lat. 22°), on the Transcontinental Telegraph Route. By PROFESSOR RALPH TATE.

- CAPPARIDÆ—*Cleome viscosa*, Mount Stuart.
 VIOLACEÆ—*Hybanthus enneaspermus*, Mount Stuart.
 SAPINDACEÆ—*Dodonaea lanceolata*.
 MALVACEÆ—*Abutilon Fraseri*, between Mounts Stuart and Boothby.
 CHENOPODIACEÆ—*Salsola Kali*, Mount Stuart.
 PHYTOLACCEÆ—*Codonocarpus cotinifolius*, Mount Stuart.
 LEGUMINOSÆ—*Gastrolobium grandifolium*, *Acacia retivenea*, Attack Creek. *Erythina vespertilio*.
 PROTEACEÆ—*Grevillia agrifolia*, Attack Creek. *Hakea macrocarpa*.
 COMBRETACEÆ—*Macropteranthes Kekwickii*, Frew Ponds.
 MYRTACEÆ—*Calycotrix microphylla*, Frew Ponds. *Melaleuca Leucodendron*, a shrub with red flowers in a close spike, Attack Creek.
 COMPOSITE—*Minuria leptophylla*, *Helichrysum apiculatum*, Mount Stuart.
 ASCLEPIADEÆ—*Cynanchum floribundum*, Mount Stuart.
 SOLANACEÆ—*Solanum Sturtianum*, *S. ellipticum*, between Mounts Stuart and Boothby.
 VERBENACEÆ—*Spartothamnus teucrifolius*, between Mounts Stuart and Boothby.
 BIGNONIACEÆ—*Dolichandrone heterophylla*, Frew Ponds.
 MYOPORINEÆ—*Eremophila Latrobei*, Mount Stuart.

BIBLIOGRAPHICAL NOTICES.

NEW SOUTH AUSTRALIAN SUN-DEW.—MR. J. G. O. TEPPER in "Botanisches Centralblatt," Cassel, 1892, describes as a new species *Drosera praefolia*, collected by him at Clarendon. It resembles *D. Whittakerii*, but blossoms before the leaves appear at the end of the autumn.

NEW SOUTH AUSTRALIAN FUNGI—DR F. LUDWIG in "Zeitschrift für Pflanzenkrankheiten," describes as a new *Puccinia Tepperi* a rust-affecting *Arundo Phragmites* at the Grange, near Adelaide. On other specimens of the same grass *P. Magnusiana*, Körnicke, has been detected. A second new species is *Puccinia (Leptopuccinia) munita*, which is parasitic on *Hydrocotyle hirta* inhabiting the Mount Lofty Range. The specimens which served for these determinations were collected by Mr. Tepper and communicated by him to Dr. Ludwig.

ABSTRACT OF PROCEEDINGS
OF THE
Royal Society of South Australia,
FOR 1891-92.

ORDINARY MEETING, NOVEMBER 3, 1891.

Prof. TATE, F.L.S. (Vice-President), in the chair.

EXHIBITS.—Prof. TATE, F.L.S., &c., showed some mammalian remains from the caves of Curramulka, Y.P. J. G. O. TEPPER, F.L.S., exhibited a new coccid, which had been named by Mr. Maskell, *Frenchia Casuarinæ*. S. CLARK showed the red and scarlet varieties of *Ptistes erythropterus*. A. ZIETZ (Assistant Director of the Museum) exhibited a stuffed specimen of a *Dendrolagus*, from New Guinea, which differed in some points from other described species.

PAPERS.—“Cambrian Rocks at Curramulka,” by G. B. PRITCHARD. “New Species of *Fabularia*,” by M. SCHLUMBERGER. “New Species of *Palparia*,” by OSWALD LOWER. “Introduced Plants in the Northern Territory,” by MAURICE HOLTZE.

ORDINARY MEETING, MARCH 1, 1892.

Rev. THOS. BLACKBURN, B.A. (President), in the chair.

MOTION.—It was moved and carried that the Royal Society of Victoria be empowered to officially speak for this Society in any representation that might be made to the Victorian Government remonstrating against the proposed curtailment of assistance to BARON F. VON MUELLER, K.C.M.G., on the ground that it would lessen the scientific and economic value of his work.

PAPERS.—“Remarks on the Volcanic Formation of the South-East,” by WALTER HOWCHIN, F.G.S. “Notes on the Hobart Meeting of the Australian Association for the Advancement of Science,” by W. B. POOLE. “Descriptions of New South Australian *Geometrina*,” by OSWALD LOWER.

ORDINARY MEETING, APRIL 5, 1892.

Prof. TATE, F.L.S. (Vice-President), in the chair.

EXHIBITS.—A. ZIETZ (Assistant Director of the Museum) exhibited from Myponga, a piece of micaceous sandstone in form resembling a Maori flax-beater. It was considered to have been formed by natural causes. J. G. O. TEPPER, F.L.S., showed a collection of plants from Yilgarn, W.A., collected by Miss Rogers; also, a species of gregarious caterpillar spinning a common nest. They appeared to be nocturnal in their habits. The nests infested the *Acacia salicina*, growing between Moonta and Wallaroo, and were forwarded by Mr. Styles in October. The following December the cocoons were spun in the nest, and in February the *imago* emerged, and at once laid eggs, which were covered with the scales of the moth. Prof. TATE, F.L.S., laid on the table specimens of Tasmanian gems; a tooth of *Zeuglodon* from the Eocene of Tasmania, and a similitude of a shoe-last in ironstone.

PAPERS.—“List of S. A. Kangaroos and Wallabies,” by A. ZIETZ. “Description of a New Species of *Stibaroma*,” by OSWALD LOWER. “On the ‘Dodging Tide’ at Port Adelaide,” by R. W. CHAPMAN, M.A., and Capt. INGLIS.

ORDINARY MEETING, MAY 3, 1892.

Rev. THOS. BLACKBURN, B.A. (President), in the chair.

EXHIBITS.—Prof. TATE, F.G.S., exhibited the fossil cast of a gigantic tooth of *Carcharodon megalodon* found in the Eocene beds at Hamilton, Victoria. It measured five inches in length and four inches in breadth. Applying to this tooth the data arrived at by Dr. Bowerbank in 1852 from an investigation of the teeth of a specimen of *Carcharias glaucus* caught in Australian waters during the voyage of H.M.S. “Beagle,” namely, that $10\frac{1}{3}$ times the length gave the vertical gape of jaw $8\frac{1}{2}$ times, the horizontal gape, and $169\frac{1}{7}$ times the length of the animal. The owner of the tooth exhibited must have had a vertical gape of jaw of 51 ins.; a horizontal gape of 41 ins.; and have measured 70 ft. 6 ins. in length. A. ZIETZ (Assistant Director of the Museum) showed stuffed specimens of *Chaeropus*, or the pig-footed bandicoot, and compared them with specimens of *Peragalea lagotis* and *Perameles obesula*, the common bandicoot. J. G. O. TEPPER, F.L.S., laid on the table a specimen of *Drosera præfolia*.

PAPERS.—“The *Phaneropterida* of Australia and Polynesia,” by J. G. O. TEPPER, F.L.S. “On the Origin of Spherical Conglomerations found in Central Australia,” by Prof. TATE. “Descriptions of New Coleoptora,” by Rev. THOS. BLACKBURN,

B.A. "The Energy of the Electro-magnetic Field," by Prof. BRAGG, M.A.

ORDINARY MEETING, JUNE 7, 1892.

REV. THOS. BLACKBURN, B.A. (President), in the chair.

EXHIBITS.—OSWALD LOWER laid on the table a case of the "Morpho" genus of butterflies. J. G. O. TEPPER, F.L.S., exhibited moths bred from the galls of *Acacia pycnantha*, growing at Norwood. Upon these were two parasitic hymenoptera and two moths, identified by Mr. Oswald Lower as *Euzophera subarcuella* (Meyr.) and *Crociosema plebiana*; also, a specimen of *Casuarina quadrivalvis* infected with galls of an uncommon kind; also, a plant of *Drosera pterifolia*, which had developed leaves since last meeting. A. ZIETZ (Assistant Director of the Museum), showed specimens of *Ephthianura albifrons*, *E. aurifrons*, and *E. tricolor*, with their eggs and nests; also, *Cinclosoma castanotium*, with its eggs and nests, the latter being new to science. These were collected during the Elder Exploring Expedition. Also, *Oreoica* sp. (?), supposed to be new to science, collected by Mr. R. Helms, naturalist to the above expedition; also, a species of *Xerophila*, collected near Mount Birrell during the trans-continental trip of His Excellency the Governor, Lord Kintore.

PAPERS.—"Narrative of an Exploring Tour across Melville Island," by MAURICE HOLTZE (Director of the Botanic Gardens). "Descriptions of New Lepidoptera," by OSWALD LOWER. A. ZIETZ (Assistant Director of the Museum) referred to a paper by Mr. D. S. Jordan "On the Effect of Temperature on the Development of Vertebræ amongst Fishes."

ORDINARY MEETING, JULY 5, 1892.

REV. THOS. BLACKBURN, B.A. (President), in the chair.

EXHIBITS.—Prof. TATE, F.G.S., exhibited a series of borings from Croydon Bore No. 2, received from the Conservator of Water. The last material was from a depth of 980 feet, and consisted of calcareous sands, with a few echinoids and a *Terebratulina Davidsoni*, and was probably of Eocene age. A. ZIETZ (Assistant Director of the Museum), showed some species of coots and water-hens, to be seen at present on the Torrens Lake, at Adelaide, namely, *Porphyrio melanotus*, *Tribonyx ventralis*, *Fulica australis*, and *Gallinula tenebrosa*.

PAPERS.—"Notes on some Habits of the Chingalee Tribe, N.T.," by A. G. B. RAVENSCROFT.

ORDINARY MEETING, AUGUST 2, 1892.

Rev. THOS. BLACKBURN, B.A. (President), in the chair.

EXHIBITS.—OSWALD LOWER laid on the table a case of the genus *Thalaina*, a group of beautiful Australian moths. A. ZIETZ (Assistant Director of the Museum) exhibited the following birds from South America, namely, *Rupicola peruviana*, *Casmorhynchus carunculatus*, or bell-bird, *Calurus resplendens*; and from Sumatra, *Calymene viridis* and *Pitta granatina*. J. G. O. TEPPER, F.L.S., showed a collection of *Gryllacridæ* and *Stenopelmatidæ*. T. W. BEDNALL forwarded the land and fresh-water shells collected by the Elder Exploring Expedition.

BALLOT.—J. H. MAIDEN (Curator Technological Museum, Sydney) and LOUIS SCHULZ, Missionary, near Charlotte Waters, were elected Corresponding Members.

PAPERS.—The following papers on the Elder Exploring Expedition collections:—"Lepidoptera," by OSWALD LOWER; "Land and Fresh-water Shells," by T. W. BEDNALL; "Manna, Gums, and Resins," by J. H. MAIDEN; "New Species of Plants," by BARON F. VON MUELLER and Prof. RALPH TATE, F.G.S.

ORDINARY MEETING, SEPTEMBER 6, 1892.

Rev. THOS. BLACKBURN, B.A. (President), in the chair.

The President welcomed Mr. Robert Etheridge (Palæontologist of the Sydney Museum), and Hon. Fellow of the Society, to the meeting.

EXHIBITS.—Prof. TATE, F.G.S., exhibited Cambrian fossils found in South Australia. A. ZIETZ (Assistant Director of the Museum), showed native implements from the Solomon Islands, inlaid with mother-of-pearl. D. J. ADCOCK laid before the meeting specimens of *Voluta Adcocki*, which had been figured and described by Prof. Tate, F.G.S., under that name, in 1888. He explained that a very similar shell from Western Australia had been described (but not figured), by E. A. Smith, in 1886, under the name of *V. Guentheri*. Mr. Smith, on comparing the two, considered them con-specific.

PAPERS.—"Glacial Phenomena in the Mount Gambier District," by P. H. PRIESTLEY. "The *Gryllacridæ* and *Stenopelmatidæ* of Australia and Polynesia," by J. G. O. TEPPER, F.L.S. "Supplement of Recent Bivalves," by Prof. TATE, F.G.S. "Diagnosis of New Mollusea," by Prof. TATE, F.G.S. "Descriptions of New Plants," by Prof. TATE, F.G.S. "Cambrian Fossils of South Australia," by Prof. TATE, F.G.S. "Notes on the Occurrence of *Hyalostelia*," by W. HOWCHIN, F.G.S. "Liverworts of Elder Exploring Expedition," by F. STEPHANI, of Leipsic.

ANNUAL MEETING, OCTOBER 4, 1892.

REV. THOS. BLACKBURN, B.A. (President), in the chair.

AUDITOR.—D. J. ADCOCK was elected to audit the accounts of the past year.

REPORTS.—The Annual Report of the Council and the Balance-sheet were read and adopted. The Annual Reports and Balance sheets of the Field Naturalist and Microscopical Sections were accepted.

ELECTION OF COUNCIL.—The Council for the ensuing year was elected as follows:—President, Prof. Tate, F.G.S.; Vice-Presidents, Rev. Thos. Blackburn, B.A., and Maurice Holtze, F.L.S.; Hon. Treasurer, Walter Rutt, C. E.; Hon. Secretary, W. L. Cleland, M.B.; Members of Council, Prof. Rennie, D.Sc., E. C. Stirling, M.D., Walter Howchin, F.G.S., Samuel Dixon, J. S. Lloyd, and W. B. Poole.

VOTE OF THANKS.—A vote of thanks was carried to Dr. Cleland for his services as Hon. Secretary during the past year.

RETIRING PRESIDENT.—The President, before vacating the chair, made a few remarks on the desirability of increased activity amongst scientific workers, to secure data before the natural conditions of the Province had been altered by the progress of civilisation and the occupation of the land.

GEOLOGICAL CONGRESS.—The attention of the Fellows and Members of the Society was drawn to the notice that the Sixth Session of the Congrès Gèologique International, would be held at Berne, Switzerland, November, 1894.

MOTION.—A requisition, signed by five Fellows of the Society, gave notice of a motion to alter Rules 36, 37, 48 and 49, at the November meeting. The one object was to have two Hon. Secretaries, so that one might act as a Librarian, the other, to enable an Auditor being elected at any meeting prior to the Annual Meeting.

PAPERS.—“Descriptions of New Coleoptera,” by Rev. THOS. BLACKBURN, B.A. “The Coleoptera of the Elder Exploring Expedition,” by Rev. THOS. BLACKBURN, B.A. “Critical Remarks on A. Bittner’s ‘Echinoiden des Tertiaries von Australien,’” by Prof. TATE, F.G.S. “Effects of Grazing on the Indigenous Vegetation,” by S. DIXON.

ANNUAL REPORT.

The Council has to report that the scientific work of the Society has been carried on satisfactorily during the past year. Part I. of the current year's transactions was published in July, and it is anticipated that Part II., completing Vol. XV., will be ready for distribution in December. Vol. XVI. is reserved for the "Scientific Results of the Elder Exploring Expedition," and will appear simultaneously with the above.

During the past year two Corresponding Members have been elected, namely, J. H. Maiden, of the Technological Museum of Sydney, and the Rev. Louis Schulz, a missionary, living at Hermansburg, near Charlotte Waters, Central Australia. Both of these members have contributed valuable papers to the Society.

The following Fellows have resigned:—A. W. Fletcher, H. Foote, Dr. Gardner, A. L. Harrold, and J. W. Tyas.

The following Fellow has had his name removed by the Council for non-payment of arrears of subscriptions, namely, Jas. H. Loughead.

The Council has the melancholy duty of reporting the death of an Hon. Fellow, Sir William Macleay; and of a Corresponding Member, J. Canham.

The ranks of scientific workers, and our list of Honorary Fellows, have suffered a loss by the death of SIR WILLIAM MACLEAY, and though the deceased gentleman did not contribute to our transactions, yet, in other ways, he was directly of great service to the Society. Efforts are now being made to raise a sum of about £400, to be applied to the publication of a Macleay Memorial Volume; and, in a circular issued by the promoters, appeal is made to your liberality on the following grounds:—

(1) Sir W. Macleay was not only a liberal patron of science, but also an indefatigable worker in several of its branches.

(2) He spent large sums of money in forming an extensive collection of objects of natural history and of ethnological interest, and, in order to increase it, he, in the year 1875, purchased and fitted out the ship "Chevert," and at his sole expense conducted an expedition to the then little-known island of New Guinea, the result being that his museum was greatly enriched; the entire collection, valued at £23,000, he afterwards presented to the University of Sydney, together with the sum of £6,000 to enable the Senate to provide a salary for a curator.

(3) In the year 1874 Sir William established the Linnean Society of New South Wales for the cultivation and study of natural history in all its branches, on lines carefully thought out by himself; and as a proof that

the want of such an organisation was much felt, I may point out that all the leading scientific men of the colony at once enrolled themselves as members, that there has since been a constant accession of new members to fill the vacancies created by death or otherwise, and that the Society, while co-operating cordially with most of the leading societies of the same character throughout the civilised world, has greatly enhanced the scientific repute of New South Wales.

(4) In order to ensure the permanence of the Society, its founder at his own expense erected and presented to it a most suitable building, and also presented an extensive collection of valuable scientific works, and ultimately endowed it with the sum of £20,000.

(5) In addition to the very substantial gifts before mentioned, for the promotion of science, Sir William Macleay has by his will bequeathed to the University of Sydney the sum of £12,000 for the foundation of a Chair of Bacteriology, and has set apart the further sum of £35,000 for the foundation and endowment after the death of his widow of four fellowships for the encouragement of scientific research, to be tenable by graduates in science of Sydney University.

It is decided that the proposed memorial shall take the form of a volume of original contributions by Australasian scientific workers, with illustrations of a superior character, preceded by a memoir and portrait of our deceased friend, because it is felt that this will be much more in accordance with his own ideas and with the spirit of his various benefactions than a monument of stone or bronze, and that such a volume will not only widely extend the knowledge of his great liberality, but will be of lasting value to all scientific men interested in studies and pursuits which so greatly interested him.

The membership of the Society consists, at the present time, of 9 Hon. Fellows, 78 Fellows, 14 Corresponding Members, and one Associate.

The Council has made arrangements through the courtesy of the Librarian of the S. A. Institute Circulating Library, to have the key of the Society's room hung in a convenient place, and easily accessible to those members who wish to consult the books in the Society's Library.

Numerous favorable replies have been received from European and American Scientific Societies agreeing to mutually exchange their publications with those of this Society. The titles of these appear at the end of the Society's Annual Volume.

The Council having learned during the past year that the Government of Victoria contemplated reducing the working staff of Baron F. von Muellor, at once wrote to the Royal Society of Victoria, offering to co-operate in any way in any movement that might be taken towards approaching their Government, and pointing out to it the extreme undesirability of curtailing the published results of Baron F. von Muellor's labors; as these were of the greatest scientific and economic value, not only to Victoria, but to Australia generally.

It will be a matter of satisfaction to the Members to know that the Council, with the permission of Sir Thomas Elder, K.G.M.G., has decided to print as a separate memorial volume or volumes,

the scientific results of the Elder Exploring Expedition ; and, that, acting on the authority of the munificent author of the Expedition, a portion of the results is already in type, and that a part will be issued almost at once, the editorial supervision being conducted by Prof. Tate, the Elder Professor of Natural Science at the University of Adelaide. During the past year the members at the monthly meetings have had frequent opportunities of inspecting the choiser portions of the collections of this Expedition.

The Council appointed Mr. Robert W. Chapman, M.A., to act as the Society's delegate at the Hobart Meeting of Australasian Association for the Advancement of Science.

The formation of an Astronomical Section of the Society has been approved, and its rôle already includes some thirty members

The statement of receipts and expenditure by the Hon. Treasurer (W. Rutt, C.E.) shows that a substantial balance still remains to the credit of the Society.

THE TREASURER IN ACCOUNT WITH THE ROYAL SOCIETY OF SOUTH AUSTRALIA.

Dr.		Cr.		£ s. d.		£ s. d.	
October 1st, 1891.	To Balance	...	...	333	17	2	
" Subscriptions—	Royal Society	...	...	77	13	0	
	Field Naturalists' Section	...	...	18	10	0	
	Microscopic Section	...	...	3	10	0	212 6 7
" Grants—	Government	...	...	96	18	0	2 5 0
	Barrier Miners' Association (to-	...	...				9 18 8
	wards Printing Map of Barrier	...	...				7 10 5
	District) ...	...	...	5	0	0	1 7 0
" Interest...	...	...	...	101	18	0	25 0 0
" Sale of Transactions ...	...	...	...	10	8	6	5 10 0
	...	...	...	6	15	0	10 0 0
	...	...	...				2 2 0
	...	...	...				42 12 0
	...	...	...				0 2 6
	...	...	...				30 18 6
	...	...	...				245 11 0
	...	...	...				276 9 6
	...	...	...				£552 11 8

Audited and found correct.

D. J. ADCOCK, Auditor.

October 3, 1892.

WALTER RUTT, Treasurer.

September 30th, 1892.

DONATIONS TO THE LIBRARY

For the Year 1891-92.

TRANSACTIONS, JOURNALS, AND REPORTS.

Presented by the respective Societies, Editors, and Governments.

ARGENTINE STATES.

Buenos Aires—*Revista Argentina de Historia Natural*, tome I., entrega 4, 5, 6.

AUSTRIA AND HUNGARY.

Berlin—*Verhandlungen Gesellschaft für Erdkunde*, band XVIII., Nos. 7 to 10; band XIX., Nos. 1 to 5.

——— *Zeitschrift*, ditto, band XXVI., Nos. 4 to 6; band XXVII., No. 1.

——— *Sitzungsberichte Königlich Preussischen Akademie der Wissenschaften zu Berlin*, Nos. 1 to 53 (1891); Nos. 1 to 25, 1892.

——— *Abhandlungen der Königlich Preussischen Meteorologischen Instituts*, band I., Nos. 4, 5.

——— *Ergebnisse der Meteorologischen Beobachtungen*, heft I., II., 1891; jahrbuch, 1888.

——— *Monatliche Mittheil Gesamtgebiete der Naturwissenschaften*, 4th year (1888-89).

Bonn—*Naturhistorischen Vereins der Preussischen-Rheinlande Westfalens und des Reg. :—Bezirks Osnabruch*, verhandlungen hälpte 1, 2, 1891.

Giessen—*Oberheissischen Gesellschaft für Natur und Heilkunde*, Report 28.

Gottingen—*Nachrichten von der K. Gesellschaft der Wissenschaften u. der Georg-August Universität*, Nos. 1 to 16, 1890.

Halle—*Leopoldine*, heft 26, 1890. *Vorkommen der Natürlichen Kohlenwasserstoff und der anderer Erdgase (Zincken)*.

——— *Nova Acta der K. Leop. Carol. Deutschen Akad. der Naturforscher*, band LIII., Nos. 3 and 5; band LV., Nos. 1, 3, 4; band LVI., No. 1.

Munich—*Abhandlungen der Mathematisch-Physikalischen Classe der K. B. Akad. der Wissenschaften, zu Munich*, band XVII., 2.

- Mnnich—Zitzungsberichte, ditto, heft III., 1889 ; heft I. to IV., 1890.
- Vienna—Verhandlungen der K. K. Geologischen Reichenstalt, Nos. 8 to 18, 1891 ; Nos. 1 to 5, 1892.
- Kaiserliche Akad. der Wissenschaften in Wien, Nos. 22 to 27, 1891 ; Nos. 1 to 5, 9, 10, 13, 14 to 18, 1892.
- K. K. Gradmessungs-Bureau, Astronomische Arbeiten, band III.
- Verhandlungen der K. K. Zoologisch-Botanischen Gesellschaft in Wien, band XL., quart. 3, 4 ; band XLI., quart. 1 to 4.
- Wurzburg—Zitzungsberichte der Physikalisch-Medicinischen Gesellschaft, Nos. 1 to 9, 1891.

BATAVIA.

- Batavia—Naturkundig Tigdschrift von Nederlandsch-Indië, deel 51.

BELGIUM.

- Brussels—Annales Société Royale Malacologique, tome XXV., 1890.

BRAZIL.

- Rio de Janeiro—Revista do Observatorio, anno VI., Nos. 7 to 12 ; anno VII., No. 1.

CANADA.

- Halifax—Proceedings Nova Scotian Institute of Natural Science, vol. VII., part 4.
- Montreal—Canadian Record of Science, vol. IV., Nos. 6 to 8 ; vol V., No. 2.
- Geological and Natural History Survey of Canada, Annual Report, 1888-89 ; Canadian Plants, part 6 ; Contributions Canadian Palæontology, vol. I., part 4.
- Geological Survey of Canada, vol. IV., 1888-89.
- Toronto—Transactions Canadian Institute, vol. II., part 2. Annual Archæological Report, 1891.

CHILE.

- Santiago—Verhandlungen des Deutchen Wissenschaftlichen Vereins, band II., heft 3.

FRANCE.

- Angers—Bulletin de la Société d' Etudes Scientifiques d' Angers, année XVIII., 1888 ; année XIX., 1889.
- Caen—Bulletin de la Société Linnéenne de Normandie, vol. III (fourth series), 1888-89.

Paris—Feuilles des Jeunes Naturalistes, series III., Nos. 252 to 263.

—— Bulletin Entomologique, pp. 129 to 200, 1891; pp. 1 to 112, 145 to 200, 1892.

GREAT BRITAIN AND IRELAND.

Belfast—Report and Proceedings Belfast Natural History and Philosophical Society, session 1890-91.

Dublin—Transactions Royal Irish Academy, vol. XXIX., parts 18, 19.

—— Proceedings ditto, vol. II. (third series), Nos. 1 and 2.

—— Cunningham Memoirs ditto, No. 7.

—— Scientific Proceedings Royal Dublin Society, vol. VI., part 10; vol. VII., parts 1 and 2.

—— Transactions ditto, vols. VI., VII., VIII.

Edinburgh—Royal Physical Society, session 1891.

London—Journal Royal Microscopical Society, part 5, 1891; parts 1 to 4, 1892.

—— Proceedings Royal Society, Nos. 294 to 301, 307 to 312.

—— Catalogue British Museum—Birds, vol. XX.

—— Proceedings Linnean Society, August, 1891.

Manchester—Memoirs and Proceedings Manchester Literary and Philosophical Society, vol. IV. (fourth series), Nos. 4 and 5; vol. V. (ditto), No. 1.

—— Journal Manchester Geographical Society, vol. VI., parts 10 to 12; vol. VII., parts 1 to 9.

—— Report and Proceedings Manchester Field Naturalists' and Archæologists' Society, session 1890; ditto 1891.

HUNGARY.

Trencsén—Jahresheft des Naturwissenschaftlichen Vereins des Trencsiner Comitates, jahrgang XIII., XIV.

INDIA.

Calcutta—Indian Museum—List of Snakes; Economic Entomology, vol. II., Nos. 1 to 5.

ITALY.

Turin—Bolletino dei Musie di Zoologia ed Anatomia Comparata dello R. Università di Torino, vol. VI., Nos. 104 to 111; vol. VII., Nos. 112 to 126.

Pisa—Atti dello Società Toscana de Scienze Naturali, vol. VIII., part 1 to 45.

JAPAN.

Tokio—Journal College of Science, Imperial University, vol. IV., part 2; vol. V., parts 1 and 2.

—— Transactions Seismological Society, vol. XVI.

MEXICO.

Mexico—Memoirs de la Sociedad Cientifica (Antonio Alzate), tomo V., Nos. 1 to 12.

NEW SOUTH WALES.

- Sydney—Records of the Australian Museum, vol. I., Nos. 9, 10 ; vol. II., Nos. 1 to 3.
- Monographs Australian Museum ; Catalogue 15, Marine Shells of Australia and Tasmania, part 1 Cephalopoda, part 2 Pteropoda ; Report of Trustees, 1890 ; Hand-list Australian Mammals.
- Technological Museum, Technical Education Series, No. 9.
- Australian Association Advance. Science, vol. III.
- Department of Agriculture—Bulletin No. 4 ; Report on Conference on Rust in Wheat, 1891 ; Report, 1891.
- Department of Mines—Records Geological Survey, vol. II., part 4, 1892 ; Memoirs ditto, Palæontology, No. 8, Australian and Tasmanian Aborigines, part 2 ; Annual Reports, 1890 and 1891.
- Agricultural Gazette, vol. II., parts 8 to 12 ; vol. III., parts 1 to 9.
- Proceedings Jinnean Society, vol. VI., parts 2 to 4 ; vol. VII., part 1.
- Proceedings Royal Society, N.S.W., vol. XXV.
- Sydney Observatory—Double Star Measures ; Photographic Chart of Heavens ; Star Camera ; Rain and River Observations, 1890 ; Meteorological Observations, 1889 ; Physical Geography and Climate, N.S.W.
- Sydney University—Calendar, 1892.

NEW ZEALAND.

- Auckland—Report Auckland Institute and Museum, 1891-92.
- Wellington—Colonial Museum and Laboratory—Annual Report (twenty-sixth) ; Reports on Geological Explorations, 1890-91.
- Transactions and Proceedings New Zealand Institute, vol. XXIV., 1891.
- Journal Polynesian Society, vol. I., parts 1 and 2.

NORWAY AND SWEDEN.

- Bergen—Bergens Museum Aarsberetning, 1890.
- Christiana—Den Norske Nordhavs Expedition, 1876-78, XXI. Crinoida and Echinida.

- Christiana—Jahrbuch des Norwegischen Meteorologischen Instituts, 1890.
 Stockholm—Geologiska Föreningens, band XIII., hefte 6 to 7 ;
 band XIV., hefte 1 to 5.
 Trondjem—Société Royale Norvégienne des Sciences, skrifter,
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QUEENSLAND.

- Brisbane—Bulletin Department of Agriculture, No. 13 ; Litho-
 grams of Queensland Ferns (F. M. Bailey).
 ——— Annual Report Queensland Museum, 1892.
 ——— Annals ditto, No. 2.
 ——— Reports Geological Survey ; Annual Progress Report,
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 ——— Proceedings Royal Society of Queensland, vol. VII.,
 parts 1 and 2 ; vol. 8, part 1.
 ——— Reports Meteorological Department, Queensland (C.
 L. Wragge).

RUSSIA.

- Kiew—Memoirs de la Société des Naturalistes, tome XI., parts
 1, 2, 3.
 Moscow—Bulletin de la Société Impériale des Naturalistes, Nos.
 1 to 4, 1891 ; No. 1. 1892.
 St. Petersburg—Bulletin du Comité Géologique, vol. X., parts 1
 to 5 ; supplément ; vol. XI., part 2.
 ——— Proceedings Société Impériale Mineralogique,
 vol. XXVIII. (second series).

SOUTH AUSTRALIA.

- Adelaide—Report Board of Governors Public Library, Museum,
 and Art Gallery, 1890-91.
 ——— Meteorological Observations, Adelaide Observatory,
 1889 (Charles Todd, M.A., C.M.G., F.R.S.).
 ——— Weather Reports, ditto, 1891-92.
 ——— Government Geologist's Department—Report on
 Leigh's Creek and Encounter Bay ; on the S.A.
 Lower Silurian and Mesozoic Fossils, by Robert
 Etheridge, jun. ; on the Coal-bearing Area,
 Leigh's Creek, by H. Y. L. Brown.

STRAITS SETTLEMENTS.

- Perak—Government Gazette.

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- Geneva—Compte Rendu des Séances de la Société de Physique et
 d'Histoire Naturelle, Memoirs (Centenaire), No.
 VIII., 1891.

Geneva—Bulletin de l'Institut National Genevois, tome XXXI.
 Lausanne—Bulletin de la Société Vaudoise des Sciences
 Naturelles, vol. XXVII., Nos. 104 to 106.

TASMANIA.

Hobart—Parliamentary Papers.
 ——— Royal Society of Tasmania—Abstract of Proceedings.

UNITED STATES AMERICA.

- Baltimore—John Hopkins' University Studies, series VIII., Nos. 5 to 12; series IX., Nos. 1 to 12; series X, Nos. 1 to 3.
 ——— Circulars ditto, vol. XI., Nos. 92 to 100.
 ——— American Chemical Journal, vol. XII., Nos. 6 to 8; vol. XIII., Nos. 1 to 8; vol. XIV., No. 1.
 Boston—Proceedings American Academy Arts and Sciences, vol. XVII. (new series), 1889-90.
 ——— Proceedings Boston Society Natural History, vol. XXV., parts 1, 2, 1890-91.
 Bridgeport, Conn.—Bridgeport Scientific Society; List of Birds in the Vicinity of Bridgeport, U.S.
 Cambridge—Bulletin Museum Comparative Zoology at Harvard College, vol. XXI., No. 5; vol. XXII., Nos. 1 to 4; vol. XXIII., Nos. 1 to 3. Annual Report Curator, 1890-91.
 ——— Psyche—Journal of Entomology, vol. VI., No. 177 to 197.
 ——— Academy of Science, St. Louis, Report of Total Eclipse of Sun, Jan. 1st, 1889, at Norman, California.
 Cincinnati, Ohio—Journal Comparative Neurology, vol. I. (Oct. number, 1891).
 Grenville, Ohio—Bulletin Scientific Laboratories, Denison University, vol. VI., part 1, 2.
 Minneapolis—Bulletin Minnesota Academy of Natural Sciences. 1887-89.
 Meriden, Conn.—Transactions of the Meriden Scientific Association, vol. IV., 1889-90.
 New York—Transactions New York Academy of Sciences, vol. IX., Nos. 3, 4, 5, 8, 1889-90; vol. X., Nos. 2 to 6, 1890-91.
 ——— Annals ditto, vol. V., Nos. 4 to 8, 1890; Nos. 1 to 3, 1891, extra.
 ——— Journal New York Microscopical Society, vol. VII., No. 4; vol. 8, Nos. 2, 3.
 Philadelphia—Proceedings Academy Natural Sciences, parts 2,

- 3, 1895 ; parts 1, 2, 3, 1891. On Toxic Effect
Tubercle Bacilli. The Nautilus, vol. V.,
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- Rochester—Proceedings Rochester Academy of Science, vol. I.,
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- Sacramento—Californian State Mining Bureau : Annual Report
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- San Francisco—Proceedings Californian Academy of Sciences,
vol. III., part 1 ; occasional papers—(1)
South American Nematognathi, (2) Land
Birds, Pacific District.
- Trenton—Journal New Jersey Natural History Society, vol. II.,
No. 2.
- Washington—Bulletin of the U.S. Geological Survey, Nos. 58 to
81 ; Mineral Resources of the United States,
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- Monographs ditto, vol. I. (Lake Bonneville) ; vol.
II., parts 1, 2 ; vol. VI. (Contributions to
North American Ethnology)
- Annual Report ditto, 1887-88 ; ditto, 1888-89,
parts 1, 2.
- Smithsonian Institution—Proceedings of the United
States National Museum, vol. XIII., 1890 ;
Report ditto, 1888 and 1889 ; Bulletin ditto,
Nos. 41, 42 ; Report Smithsonian Institution,
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Catalogue Prehistoric Works East of the
Rocky Mountains."
- U. S. Department of Agriculture—Bulletin, 1, 4,
7, 9, 13, 27, 32, 34, 97 ; Report of Secretary,
1891 ; Report of Statistician ; North American
Fauna, No. 5 ; Reports, 91 (Crops of the
Year), 92 (Use of Maize in Europe), 93 (Dis-
tribution and Consumption of Wheat), 94, 95
(Winter Grain, &c.), 96 (Acreage of Wheat,
&c.)

VICTORIA.

- Castlemaine—Report Schools of Mines and Industries, 1891.
- Geelong—Report Gordon Technical College, 1891.
- Melbourne—Victorian Naturalist, vol. VIII., No. 6 to 12, vol.
IX., Nos. 1 to 6.

- Melbourne—Transactions Royal Geographical Society of Australasia (Victorian Branch), vol. IX., part 2.
 ———— Proceedings Royal Society of Victoria, vol. IV., part 1 (new series); Transactions ditto, vol. II. part 2.
 ———— Working Men's College Report, 1891.

WESTERN AUSTRALIA.

- Perth—Government Geologist's Office Annual Report, 1890 ;
 Report on Gold Fields, Kimberly, W.A.

MONOGRAPHS AND BOOKS.

Presented by the respective Societies, Museums, Governments, and Authors.

- Abercrombie, Hon. John—Trip through Eastern Caucasus ; and Pamphlets.
 Brüch, L.—Australian Medical Directory.
 Dendy and Lucas—Study of Botany.
 Hamilton, Sir Robert G. L., K.C.B.—Inaugural Address Aust. Assoc. Advanc. of Science, 1892.
 Hayter, H. H., C.M.G., Government Statist, Victoria—Victorian Year Book, vol. II., part 2, 1890-91.
 Liversidge, A., M.A., F.R.S.—Notes on some N.S.W. Minerals, No. 6.
 Missouri Botanical Garden—Annual Report.
 Mueller, Baron F. von—Iconography Australian Salsolaceous Plants, dec. VIII., IX.

LIST OF FELLOWS, MEMBERS, &c.

NOVEMBER, 1892.

Those marked (F) were present at the first meeting when the Society was founded. Those marked (L) are Life Fellows. Those marked with an asterisk have contributed papers published in the Society's Transactions.

Any changes in the addresses should be notified to the Secretary.

Date of
Election.

HONORARY FELLOWS.

1857. BARKELY, SIR HENRY, K.C.M.G., K.C.B., F.R.S., Royal Colonial Institute, London.
1876. ELLERY, R. L. J., F.R.S., F.R.A.S., Government Astronomer, Victoria, The Observatory, Melbourne, Victoria.
1890. *ETHERIDGE, ROBERT, Palæontologist to the Geological Survey of New South Wales, Sydney.
1853. GARRAN, A., LL.D., Sydney, New South Wales.
1855. HULL, H. M., Hobart, Tasmania.
1878. JERVOIS, SIR W. F. D., K.C.M.G., C.B., F.R.S., Ex-Governor of South Australia, London, England.
1855. LITTLE, E.
1879. *MUELLER, BARON F. VON., K.C.M.G., F.R.S., M. and Ph.D., F.G.S., F.R.G.S., F.C.S., C.M.Z.S., &c., &c., Government Botanist, Melbourne, Victoria.
1876. RUSSELL, H. C., B.A., F.R.S., F.R.A.S., Government Astronomer, N.S.W., Sydney, New South Wales.

CORRESPONDING MEMBERS.

1881. BAILEY, F.M., F.L.S., Colonial Botanist, Brisbane, Queensland.
1881. *CLOUD, T. C., F.C.S., Manager Wallaroo Smelting Works, South Australia.
1888. *DENNANT, JOHN, F.G.S., F.C.S., Inspector of Schools, Camberwell, Melbourne, Victoria.
1880. *FOELSCH, PAUL, Inspector of Police, Palmerston, Northern Territory, Australia.
1881. GOLDSTEIN, J. R. Y., Melbourne, Victoria.
1878. *HAYTER, H. H., M.A., C.M.G., F.S.S., Government Statist, Melbourne, Victoria.
1880. *KEMPE, REV J., Hermannsburg, Charlotte Waters, South Australia.
1889. *MACGILLIVRAY, P. H., M.R.C.S., F.L.S., Bendigo, Victoria.
1892. *MAIDEN, J. H., Curator Technological Museum, Sydney, New South Wales.
1888. *MASKELL, W. M., Wellington, New Zealand.
1886. NICOLAY, REV. C. G., Fremantle, Western Australia.
1880. *RICHARDS, MRS. A., Beltana, South Australia.
1892. *SCHULZ, REV. LOUIS, Hermannsburg, Charlotte Waters, South Australia.
1883. *STIRLING, JAMES, F.L.S., Assistant Geological Surveyor, Victoria.

FELLOWS.

1887. ADCOCK, D. J., Adelaide, S.A.
1874. ANGAS, HON. J. H., M.L.C., Adelaide, S.A.

1891. ASHBY, EDWIN, North Adelaide, S.A.
 1887. BAGOT, JOHN, Adelaide, S.A.
 1887. *BLACKBURN, REV. THOMAS, B.A., Woodville, South Australia.
 1890. BOARD, GREGORY, Metallurgist Port Pirie Smelting Works, Port Pirie, S.A.
 1884. BOETTGER, OTTO, Adelaide, S.A.
 1886. *BRAGG, W. H., M.A., Professor of Mathematics University of Adelaide, S.A.
 1882. BROWN, L. G., Adelaide, S.A.
 1883. *BROWN, H. Y. L., F.G.S., Government Geologist South Australia, Adelaide.
 1884. BUSSELL, J. W., F.R.M.S., North Adelaide, S.A.
 1891. CALVERT, A. F., Adelaide, S.A.
 1888. CHAPMAN, R. W., M.A., B.C.E., Lecturer on Mathematics and Physics University of Adelaide, S.A.
 1879. *CLELAND, W. L., M.B., Ch.M., F.R.M.S., J.P., Assistant Colonial Surgeon, Resident Medical Officer Parkside Lunatic Asylum, Lecturer on Materia Medica University of Adelaide, Parkside, S.A.
 1876. (L) COOKE, E., Commissioner of Audit South Australia, Adelaide.
 1880. COX, W. C., Semaphore, S.A.
 1887. *DIXON, SAMUEL, Adelaide, S.A.
 1876. DOBBIE, A. W., Adelaide, S.A.
 1890. *EAST, J. J., F.G.S., Registrar School of Mines, Adelaide, S.A. (Corresponding Member, 1884).
 1871. ELDER, SIR THOMAS, K.C.M.G., Adelaide, S.A.
 1887. EYRES, THOMAS, Adelaide.
 1886. FLEMING, DAVID, Adelaide, S.A.
 1876. FLETCHER, REV. W. ROBY, M.A., Kent Town, S.A.
 1882. FOWLER, WILLIAM, Kulpara, S.A.
 1889. FRASER, J. C., Adelaide, S.A.
 1891. GILL, WALTER, F.L.S., Conservator of Forests South Australia, Adelaide.
 1880. *GOYDER, GEORGE, JUN., Government Analyst South Australia, Adelaide.
 1890. GRAY, REV. WILLIAM, Tanna, New Hebrides.
 1887. GRASBY, W. C., Editor *Garden and Field*, Adelaide, S.A.
 1861. HAY, ALEXANDER, Adelaide, S.A.
 1882. HENRY, ALEXANDER, M.D., Adelaide, S.A.
 1891. *HOLTZE, MAURICE, F.L.S., Director Botanic Gardens, Adelaide (Corresponding Member, 1882), Adelaide, S.A.
 1883. *HOWCHIN, WALTER, F.G.S., Goodwood, S.A.
 1883. HUGHES, H. WHITE, Booyoolie, S.A.
 1891. JOHNSON, J., M.D., F.R.C.S., Medical Officer Mount Gambier Hospital, Assistant Colonial Surgeon, Mount Gambier, S.A.
 1853. (F) KAY, ROBERT, General Director and Secretary S.A. Public Library, Museum, &c., Adelaide, S.A.
 1884. LENDON, A. A., M.D., M.R.C.S., Lecturer on Forensic Medicine and on Clinical Medicine University of Adelaide, Hon. Physician Adelaide Hospital and Children's Hospital, North Adelaide, Adelaide, S.A.
 1856. LLOYD, J. S., Adelaide, S.A.
 1888. *LOWER, O. B., Parkside, Unley, S.A.
 1885. *LUCAS, R. B., Adelaide, S.A.
 1873. MAGAREY, A. T., Adelaide, S.A.
 1874. *MAGAREY, HON. S. J., M.D., M.L.C., Adelaide, S.A.
 1853. MAYO, GEORGE, F.R.C.S., Adelaide, S.A.
 1874. MAYO, G. G., C.E., Adelaide, S.A.

1882. *MEYRICK, E. T., B.A., Ramsbury, Hungerford, Wilts, England.
 1880. MOLINEUX, A., F.L.S., Secretary Central Agricultural Bureau
 South Australia, Kent Town, S.A.
 1859 (L) MURRAY, DAVID, Adelaide, S.A.
 1884. MUNTON, H. S., Brighton, S.A.
 1883. PHILLIPS, W. H., Adelaide, S.A.
 1886. POOLE, W. B., Adelaide, S.A.
 1882. ROBERTSON, R., F.F.P.S., Adelaide, S.A.
 1885. *RENNIE, H. E., M.A., D.Sc., F.C.S., Professor of Chemistry
 University of Adelaide.
 1885. RENNER, F. E., M.D., Petersburg, S.A.
 1891. ROGERS, R. S., M.D., Adelaide, S.A.
 1879. RUSSELL, WILLIAM, Port Adelaide, S.A.
 1876. *RUTT, WALTER, C.E., Adelaide, S.A.
 1866. SALOM, M., Adelaide, S.A.
 1891. SAUNDERS, ERNEST C., Glenelg, S.A.
 1891. SELWAY, W. H., JUN., Adelaide, S.A.
 1886. SCOTT, JAMES L., Hyde Park, S.A.
 1857. SMEATON, THOMAS D., Blakiston, Little Hampton, S.A.
 1871. SMITH, ROBERT BARR, Adelaide, S.A.
 1882. SMYTHE, J. T., B.A., B.E., Inspector of Schools South Australia,
 Glenelg, S.A.
 1881. *STIRLING, EDWARD C., M.A., M.D., F.R.C.S., Lecturer on
 Physiology University of Adelaide, Hon. Director S.A.
 Museum, Hon. Surgeon Adelaide Hospital, Adelaide, S.A.
 1878. STUCKEY, J. J., M.A., Adelaide, S.A.
 1876. *TATE, RALPH, F.L.S., F.G.S., Professor of Natural Science
 University of Adelaide.
 1877. *THOMAS, J. D., M.D., F.R.C.S., Adelaide, S.A.
 1886. *TEPPER, J. G. O., F.L.S., Entomologist S.A. Museum (Corre-
 sponding Member, 1878), Adelaide, S.A.
 1856. *TODD, CHARLES, C.M.G., M.A., F.R.S., F.R.A.S., Government
 Astronomer, Postmaster-General, and Superintendent of
 Telegraphs South Australia, Adelaide, S.A.
 1889. VARDON, JOSEPH, J.P., Adelaide, S.A.
 1878. *VERCO, JOSEPH C., M.D., F.R.C.S., Lecturer on the Principles
 and Practice of Medicine and Therapeutics and on Clinical
 Medicine University of Adelaide, Hon. Physician Adelaide
 Hospital, Adelaide, S.A.
 1883. WAINWRIGHT, E. H., B.Sc., St. Peter's College, S.A.
 1878. WARE, W. L., Adelaide, S.A.
 1879. WAY, EDWARD W., M.B., M.R.C.S., Lecturer on Obstetrics and
 Diseases Peculiar to Women and Children University of
 Adelaide, Hon. Physician Adelaide Hospital, Adelaide, S.A.
 1859. WAY, SAMUEL J., D.C.L., Chief Justice and Lieutenant-Governor
 South Australia, Adelaide, S.A.
 1882. *WHITTELL, HORATIO, M.D., M.R.C.S., F.R.M.S., President
 Central Board of Health and City Coroner Adelaide,
 Adelaide, S.A.
 1886. WILSON, JOHN, F.E.T.S., Goodwood, S.A.
 1886. *ZIETZ, A., Assistant Director S.A. Museum, Adelaide, S.A.

ASSOCIATE.

1884. HODGSON, MRS., North Adelaide, S.A.

APPENDIX.

FIELD NATURALISTS' SECTION

OF THE

Royal Society of South Australia.

ANNUAL REPORT.

The Committee have to report as follows on the work of the Section for the year ending 30th September, 1892, this completing the ninth year of its existence.

Evening Meetings.—Eight evening meetings have been held during the year, the attendance at which showed a gradual improvement towards its close. The annual conversazione (held in November, 1891) was very largely attended, and a new feature of these gatherings was then introduced, viz., the exhibition of natural history objects by means of the oxyhydrogen microscope. The subjects of the papers read at the evening meetings have been of a varied character, and may be classified as follows:—Botany, 3; meteorology, 2; zoology, 1; geology, 1; miscellaneous, 1. Papers have been contributed by the following gentlemen:—J. G. O. Tepper, F.L.S., Maurice W. Holtze, F.L.S., R. W. Chapman, M.A., B.C.E., Captain Inglis, T. U. Scrutton, and E. Guest, whilst short addresses descriptive of exhibits have been given by Messrs. W. B. Poole, J. W. Bussell, A. Zietz, and D. J. Adcock. At these meetings there has usually been a fair number of exhibits, but the Committee would like to see more of the members contributing in this direction.

Excursions.—Towards the close of last year the interest in the excursions seemed to be waning, and consequently fewer have been held this year, the number being five. Those recently held, however, show a marked increase in the attendance, which, it is hoped will continue, as the practical study of Natural history out-of-doors was one of the chief reasons for the formation of the Section. The excursions include a dredging trip (the first after an interval of about two years), which proved a pleasant and successful outing.

Protection of our Native Fauna and Flora.—A separate report from this Committee is presented, in which is recorded the gratifying result of long-continued efforts to secure Government Farm as a National Park, vested in Trustees. Several other matters of general interest are dealt with in this report.

Corresponding Members.—Your Committee regret that the hope expressed in their last annual report as to the increased number of specimens expected from our corresponding members has not been realised. Although the sending of objects of natural History is only one amongst many directions in which the corresponding members are supposed to assist us, such contributions add largely to the interest of our evening meetings, and are eventually placed at the disposal of the Public Museum. Your Committee would urge these distant members not to abate the practical interest which many of them have in the past kindly shown in our work. In their last report the Committee referred to the pleasure derived from the receipt of a paper written by a corresponding member (Mr. J. G. McDougall), and they, therefore, learned with much regret of the recent decease of that gentleman, whose interest in natural history was shown in many ways.

Proposed Amalgamation with the Microscopical Section.—Believing that there is in this city too great a multiplication of Scientific Societies, your Committee have proposed an amalgamation with the Microscopical Section; feeling that such a union would be to the advantage of both Sections, and lead to the economy of time, labor, and expense. A Sub-Committee has been appointed to consider the feasibility of the project.

Membership.—During the year five persons were elected members of the Section, and eleven names have been struck off the list. The number now on the roll (exclusive of corresponding members), is 97.

J. G. O. TEPPER, Chairman.

W. H. SELWAY, JUN., Hon. Secretary.

Adelaide, 20th September, 1892.

FOURTH ANNUAL PROGRESS REPORT OF THE NATIVE FAUNA AND FLORA PROTECTION COMMITTEE.

In presenting their fourth annual report, the Committee have pleasure in directing attention to certain substantial results attained during the year.

National Parks.—After a long-continued struggle, Government Farm has at last been vested in Commissioners in perpetuity as a National Park. The board includes seven official and five

nominated members. Through the exertions of the Committee the President of the Royal Society was chosen as one of the official members, whilst of the five Government nominees three, including our Chairman, were recommended by the Committee. After careful consideration of the whole matter, we have come to the conclusion that it is inadvisable to attempt to secure the reservation of any lands on the Onkaparinga, as suggested by the Hon. T. Playford. Nowhere can a good river frontage on both sides be obtained, owing to the division of the land into small blocks. The character of the country is also so poor that it seems to us to be useless to proceed further in this direction. It is very greatly to be deplored that through the procrastination of the Government, the only tract of land near the city with a good river frontage should have been lost to the public.

Forest Reserves.—The land at Mount Crawford has occupied much of the attention of the Committee, but so far the steps taken have proved practically futile. The need of a forest reserve for supplying the city and neighbourhood with timber will be felt as years go on.

Game Laws.—The Commissioner of Crown Lands has again issued the customary placards notifying the chief provisions of the Game Acts. The Committee acknowledge gratefully the action taken by the Commissioner and the police officials. In 1891 an amending Game Act affording protection to the kangaroo was passed by the Legislature at the instance of Mr. Hancock. Although defective in certain particulars the measure has been the means of accomplishing considerable good. The imperfect character of that measure has induced the Committee to draft an amending and consolidating Bill, which has been submitted to the Government, who have promised to view the matter favorably.

Other action.—At the last meeting of the Australasian Association for the Advancement of Science a paper dealing with the whole subject was read by the Secretary, and was the means of arousing considerable interest in the question. It is to be hoped that at the next gathering of the Association (to be held in Adelaide) concerted action will be taken, and that in the meantime similar movements will be started in the other colonies.

In conclusion the Committee trust that further perseverance will gain further important results.

SAML. DIXON, Chairman.
A. F. ROBIN, Hon. Sec.

Adelaide, 20th September, 1892.

FIELD NATURALISTS' SECTION OF THE ROYAL SOCIETY OF SOUTH AUSTRALIA.

RECEIPTS AND DISBURSEMENTS FOR THE YEAR 1891-2.

DR.	RECEIPTS.		DISBURSEMENTS.		Ct.
	£	s. d.	£	s. d.	
To Balance brought forward	4 4 1	By Printing—Proceedings ...	...	5 1 0
“ Grants from Royal Society	25 0 0	General ...	...	3 17 6
“ Subscriptions	18 10 0	Chairman's Address ...	...	2 0 0
			(S. Dixon, 22.9.91.)	...	—
			“ Postages ...	...	10 18 6
			“ Conversazione ...	...	4 7 0
			“ Advertising ...	...	4 5 6
			“ Attendance ...	...	2 15 6
			“ Sundries ...	...	2 0 0
				...	0 11 9
				...	—
			“ Subscriptions, as per contra, handed over to Royal Society ...	...	24 18 3
			“ Balance in Hand ...	...	18 10 0
				...	4 5 10
				...	—
				...	£47 14 1

Audited and found correct.

J. H. C. LANGDON, }
THOS. EVANS, } Auditors.

Adelaide, 19th September, 1892.

W. H. SELWAY, JUN., Hon. Sec.

MICROSCOPICAL SECTION

OF THE

Royal Society of South Australia.

ANNUAL REPORT, 1891-92.

The Committee beg to submit their seventh annual report as follows:—The meetings of the Section have been very fairly attended considering the small number of active members now on the roll, and much interest has evidently been manifested in the various subjects brought forward.

We regret that several members have resigned during the year, and amongst them our Chairman, Mr. J. Colbourne, who has removed to Sydney. We shall feel the loss very much, as he was one of those who joined on the formation of the Section, in August, 1885, and he has always taken an active part in it as far as his time would allow.

Only two excursions have been held during the year, one of which was a dredging expedition down the Port River, in conjunction with the Field Naturalists' Section. Several others were arranged for but had to be given up in consequence of the bad weather.

We are not able to report any additions to the library since last year, but a large number of Microscopical Magazines, which have passed round to the members, are in the hands of the binder, and will shortly be available for issue. The Council of the Royal Society having lately handed over for the use of members of the Section their bound volumes of the Journal of the Royal Microscopical Society, members are now able to consult this valuable publication. In addition to this the following magazines are subscribed for by the Section, and are issued to members to read at home:—"Journal of the Queckett Club," "The American Microscopical Journal," "The International Journal of the Microscopical Science, &c."

The number of members at present is 24, and the average in attendance at the meetings has been 9.

The following subjects were discussed at the meetings :—
1891.

- Oct. 13. Exhibition of objects, photo-micrographs, &c.
 Nov. 10. Demonstration on measurement of aperture of objectives,
 by Mr. W. B. Poole.
 April 12. Demonstration of photo-micrography, by the Secretary,
 Mr. J. W. Bussell.
 May 10. Remarks on mouth parts of locusts, illustrated by
 mounted specimens, by Dr. Whittell.
 June 14. Gossip meeting and exhibition of objects.
 July 12. Paper on fermentation, by Mr. A. Dale.
 Aug. 9. Remarks on secondary structure of diatoms, illustrated
 by photo-micrographs, shown by lantern, by Mr.
 W. B. Poole.

The balance-sheet submitted herewith shows a balance of £3 9s. 0d. in hand after repayment of subscriptions handed over to the Treasurer of Royal Society.

GENERAL INDEX.

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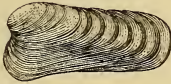
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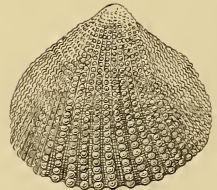
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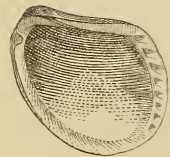
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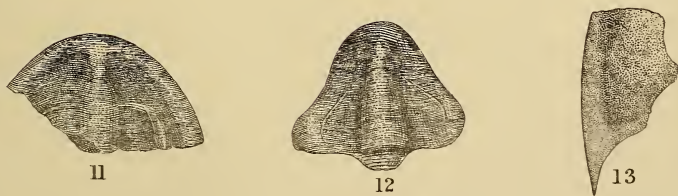
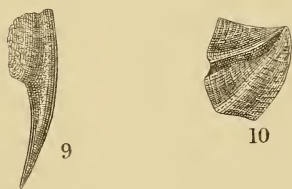
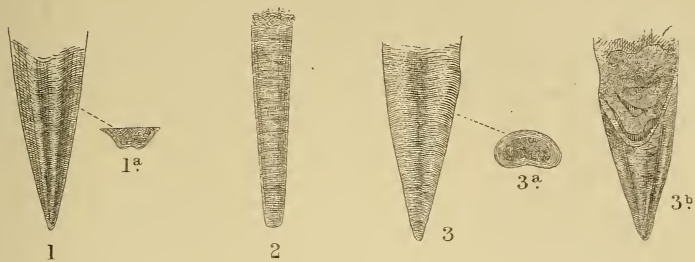
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VOL. XV., Part I.

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EDITED BY PROFESSOR RALPH TATE.

ISSUED JULY, 1892.



Adelaide :

W. C. RIGBY, 74, KING WILLIAM STREET.

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OF THE

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VOL. XV., Part II.,

INCLUDING PROCEEDINGS AND REPORTS.

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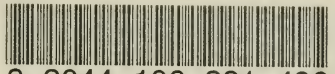
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