PAPERS READ.

STUDIES IN AUSTRALIAN ENTOMOLOGY.

No. V.—NOTES ON THE SUBFAMILY BROSCINI (CARABIDÆ), WITH DESCRIPTIONS OF NEW SPECIES.

By Thomas G. Sloane.

In a former paper (P.L.S.N.S.W., 1890 (2), v. p. 189) I divided the Australian Broscini into two main divisions, viz. :—

i. With temporal ridge very indistinct.

ii. With temporal ridge distinct.

Further consideration and study of the subfamily induces me to think this grouping misleading. To arrange the genera of any subfamily into natural groups one requires a knowledge of at least all the important genera constituting such subfamily found in all parts of the world. I have only a knowledge of the Australian genera. These genera have very different values from a classificatory point of view, a circumstance which occurs in all branches of Entomology ; this is a difficulty in the way of drawing up tables of genera, especially partial ones, because the genera must theoretically be considered as of equal value, though practically they may not be so. Taking the Australian Broscini, we find three distinct types, represented by the genera *Promecoderus*, *Eurylychnus*, and *Percosoma* respectively. The genera of the first group, or type, have been arranged by me (l.c. p. 190) in a table that may be taken as useful as far as it goes. These genera, with *Eurylychnus*, are differentiated from the others by the presence of a setigerous puncture in the scrobe of the mandibles. The *Percosoma* group (*Percosoma*, *Lychnus* and

Percolestus) are without a puncture in the scrobe of the mandibles.* This feature also appears to be wanting in the New Zealand forms.

In the present paper I take the genus *Promecoderus* first, because I have already treated of it; the other genera I take in what seems to me the order of their affinity as leading from *Promecoderus*.

PROMECODERUS CASTELNAUI, n.sp.

♂. Shining black (sometimes with a bronzy tint on elytra), legs black, antennæ and palpi piceous black. Head large, smooth; frontal impressions broad, shallow; clypeal suture hardly marked; vertex lightly transversely impressed behind; eyes not very prominent, inclosed behind; post-ocular prominences small. Prothorax cordate, about as broad as long (4 × 4mm.), convex, very slightly declivous behind; sides rounded, not dilatate, shortly narrowed behind; marginal border narrow, hardly sinuate on the sides before the base, not crossing the middle of the base; basal angles sharply defined, but hardly right angles; median line distinct. Elytra oval (8 × 4½mm.), convex, lightly rounded on sides, declivous to peduncle behind the scutellum, striate; the dosal striæ distinct, none on the sides, first four distinct, but only the 1st reaching the apex. Last four ventral segments with a round fovea on each side. In ♂ the four basal joints of anterior tarsi dilatate and spongiose below, and with two basal joints of middle tarsi spongiose below; last joint of tarsi narrow, not flattened.

Length, ♂ 14, ♀ 16; breadth, ♂ 4½, ♀ 5 mm.

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* I would note that the form of the anterior margin of the prosternum may prove of value in dividing the Australian BROSCINI. It is edged with a continuous border in *Promecoderus* (all species), *Cerotalis* (all species), *Adotela* (4 species which I have examined), and *Gnathoxys* (I have only been able to examine a single example of *Gn. tessellatus*, Macl.). In *Eurylychnus* the border is entire in *E. olliffi*, Bates, while *E. blagravii*, Casteln., and *E. victoriæ*, Sl., have only obsolete traces of it at each side. There is no border to the anterior margin of the prosternum in *Percosoma*, *Lychnus*, and *Percolestus*.

Hab.—New South Wales; Narrabri (Musson), Warialda District (Sloane).

I received both ♂ and ♀ from Mr. Musson, who took them at Narrabri, and formerly I had a ♀ taken by myself in the Warialda district. I believe this to be the insect to which de Castelnau refers when he says, under the name *P. striato-punctatus*, he has a specimen from the Darling River*; however, apart from the inappropriateness of the name *striato-punctatus*, I hardly think this species will be found to extend to Victoria. I have already expressed the belief that *P. striato-punctatus*, Casteln., = *P. nigricornis*, Casteln.† This species is allied to *P. comes*, Sl., from which it differs in its narrower form, in the prothorax being proportionately broader in comparison with the elytra, in its larger head, blacker colour, and in the marginal border of the elytra not being entire on the base, &c.

Promecoderus concolor, Germ.

When reviewing the genus *Promecoderus* two years ago I followed de Castelnau, who had been followed with doubt by M. Putzeys in his *Revision des Broscides de l'Australie*, and maintained *P. howitti*, Casteln., as a species distinct from *P. concolor*, Germ. Since then I have obtained a larger series of specimens from different localities, which convinces me that they must be regarded as one species, and that *P. anthracinus*, Macl., and *P. politus*, Sl., must also be placed as synonyms of *P. concolor*. I further sink *P. lucidicollis*, Casteln., to the rank of a variety, and regard *P. oblongus*, Casteln., as a synonym of *P. lucidicollis*. M. Putzeys gives the dimensions of *P. oblongus*, Casteln., as $12 \times 4\frac{1}{2}$ mm.

The synonymy will, therefore, be:—*P. concolor*, Germ., = *P. suturalis*, Casteln.; *P. lucidus*, Putz., (these agree with the typical form of *P. concolor*); *P. howitti*, Casteln.; *P. anthracinus*, Macl.; *P. politus*, Sl. (the last three are identical, but do not seem to me

* Trans. Roy. Soc. Victoria, 1868, viii. p. 168.

† P.L.S.N.S.W. 1890, (2), v. p. 210.

to warrant being regarded as even a variety); var. *P. lucidicollis*, Casteln., = *P. oblongus*, Casteln.

I have specimens of a small *Promecoderus*, from the Namoi River, which is so closely allied to *P. lucidicollis*, Casteln., that I cannot find characters to separate them. Had I been able to maintain *P. lucidicollis* as a good species, I should still have regarded the Namoi form as entitled to rank as a variety ; I now have to include it under *P. concolor*, and propose for it the name var. *namoyensis ;* the following is a description :—

P. namoyensis, ♂. bronzed black, shining, undersurface black with a metallic tinge, legs piceous black, tarsi, palpi and 1st joint of antennæ piceous. Head smooth, with a broad shallow impression across vertex behind the eyes ; eyes prominent, inclosed behind ; post-ocular prominences weak. Prothorax smooth, subconvex, a little flattened on the disc, about as long as broad ($3\frac{1}{2} \times 3\frac{1}{2}$ mm.), truncate in front and behind ; sides rounded, somewhat dilatate in middle, narrowed behind ; marginal border narrow, not crossing middle of base ; median line lightly impressed. Elytra oval ($6\frac{1}{2} \times 4$ mm.), subconvex, a little flattened on the disc, smooth, with the stria next the suture lightly marked.

♀. More parallel ; the prothorax and elytra more convex ; the elytral striæ more distinctly marked.

Length $11\frac{1}{2}$, breadth 4 mm.

Hab.—New South Wales ; Narrabri (Musson), Gunnedah (Sloane).

The ♂ differs from *P. lucidicollis*, Casteln., in having the prothorax and elytra more depressed ; the ♀ has, however, almost exactly the same facies. Both sexes are duller coloured, and have the elytral striæ more noticeable than *P. lucidicollis ;* the marginal border does not cross the middle of the base as it does, with rare exceptions, in that species ; the transverse impression behind the eyes is a noticeable feature in the present variety, but is wanting in *P. lucidicollis*. The tarsi and the foveæ of the ventral segments are similar in both.

PROMECODERUS AMBIGUUS, n.sp.

Lævigate, form comparatively short, elytra much broader than prothorax.

Shining, upper-surface bronzed-black, with a greenish tinge, undersurface rather piceous, legs piceous black, tarsi and palpi brown. Head large, without impression across vertex behind the eyes; clypeus slightly rugulose; clypeal suture distinct, ending in a short foveiform impression on each side; the lateral channel from above eye to base of mandible straight, not oblique; eyes round, prominent, inclosed behind; post-ocular prominences rather inconspicuous, about half the length of eyes; mentum with strong median tooth. Prothorax convex, almost as long as broad ($3\frac{1}{2} \times 3\frac{3}{4}$ mm.), truncate in front and behind, widest about the middle; sides dilatate in middle, shortly narrowed behind; marginal border narrow, not sinuate before basal angles, stronger and entire on base; a broad lightly marked transverse impression a little in front of the base; median line fine, very lightly impressed. Elytra rather convex, short, oval ($8 \times 5\frac{1}{4}$ mm.), rounded on the sides, broadest a little behind the middle; shoulders rounded; suture lightly impressed; lateral border narrow; marginal punctures as usual. Ventral segments smooth, four last with a broad shallow round fovea on each side. Posterior trochanters long and pointed at apex.

Length 13, breadth $5\frac{1}{4}$ mm.

Hab.—Northern Territory of South Australia.

A single specimen in my collection received from the Rev. Thos. Blackburn of Adelaide. The last ventral segment has one puncture on each side of the anus (therefore I believe it to be the ♂), and the anterior tibiæ are without spongiose tissue below. In these respects, and in the form of the posterior trochanters it resembles *P. distinctus*, Sl., which is its nearest ally among previously described species. I have not been able to compare them, but would note the more metallic colour of the undersurface in *P. distinctus*.

In the following notes I have not attempted to give a complete diagnosis of the previously described genera, but the short note on each will be sufficient for their determination.

Genus Eurylychnus, Bates.

This genus has been formed by Mr. H. W. Bates [Ent. Mo. Mag. 1891 (2), II. p. 285], whose lamented death has been reported since these notes were written, for the reception of a small insect belonging to the *Broscini* from Mt. Kosciusko, which he has named *E. olliffi*.

The leading characters of the genus, as I regard it, are the following :—

Head with strong frontal impressions ; a strong transverse impression behind the eyes ; eyes round and prominent, a single supra-orbital puncture above each. Mandibles stout, sharply hooked at apex, a setigerous puncture in the scrobe. Antennæ moniliform. Palpi thick, apical joint truncate. Elytra striate. Anterior thighs short, dilated, but without dentiform projection below in ♂ ; anterior tarsi with three basal joints obliquely produced externally, and in the ♂ either clothed below with spongiose tissue or not.

I know of three species belonging to this genus which may be divided as follows :—

a. Elytra with scutellar striole : size large ..... *E. blagravii*, Casteln.

aa. Elytra without scutellar striole : size small.

Prothorax subcordate, gently narrowed behind. Prosternum without a border along anterior margin ..... *E. victoriæ*, Sloane.

Prothorax orbiculate, very shortly narrowed behind. Prosternum with a complete border along anterior margin ..... *E. olliffi*, Bates.

Eurylychnus blagravii, Casteln.

Mecodema blagravii, Casteln., Trans. Roy. Soc. Victoria, 1868, viii. p. 161 ; *Percosoma blagravii*, Putz., Stett. Ent. Zeit. 1868, p. 323 ; Bates, Ent. Mo. Mag. 1891 (2), ii. p. 286.

In his note on this species, Mr. Bates says :—"If the male prove to have the soles of the dilated joints of the anterior tarsi furnished with a hair-pad, the species will belong to *Eurylychnus*, from which it differs only in the elytra having a scutellar striole." I took a number of specimens of both sexes under logs in the brushes at Burrawang in Nov., 1890, and am able to state with certainty that the male has no "hair-pad" on the lower side of the joints of anterior tarsi. The tarsi are so much alike in both sexes that I cannot determine the sex by their means ; nevertheless, I do not consider a new genus necessary for its reception. So-called genera which rest on a single character of doubtful value, appertaining to only one sex, seem to me too artificial for practical workers in zoology ; though, no doubt, rigid cabinet specialists may find them indispensable.

This species has been very carefully described by M. Putzeys, but to complete my notice of the genus *Eurylychnus*, I append the following description founded on specimens from Burrawang.

Form robust, convex. Black, legs reddish. Head large, with strong transverse impression behind eyes ; frontal impressions strong, curved, diverging backwards, widening internally at clypeal suture,—this well marked,—a raised space between frontal impressions and lateral channel on each side ; eyes round, prominent. Labial palpi subsecuriform (broader in ♂ than in ♀). Prothorax lightly convex, almost as long as broad ($5 \times 5\frac{3}{4}$ mm.), very slightly emarginate in front,—the anterior angles being broadly rounded and a very little advanced ; sides almost parallel on anterior part to behind the middle, lightly rounded to anterior angles, shortly narrowed behind ; lateral border narrow, reflexed, shortly sinuate before base, thickened at the rather prominent basal angles ; base sinuate ; median line lightly marked ; a short strongly marked longitudinal fovea in front of each basal angle ;

a single marginal puncture on each side, placed just before where the sides begin to narrow behind. Elytra convex, oval (11 × 6½ mm.); strongly and regularly striate; interstices convex; scutellar striole very short; lateral border narrow, reflexed, interrupted near the peduncle on each side; about six punctures along each margin, those of the middle part widely placed, round, and foveiform. Prosternum not bordered along anterior margin. Ventral segments impunctate—excepting last with a single setigerous puncture on each side of anus in both sexes.

Length 21, breadth 6½ mm.

Hab.—N. S. Wales; Mt. Kosciusko (Helms), Burrawang: Victoria; Marysville, Otway Ranges (Sloane); Harrietville District (Blackburn).

EURYLYCHNUS VICTORIÆ, n.sp.

Form light. Black, legs and mouth parts reddish. Head large; a strong transverse impression behind the eyes; frontal impressions strongly marked, rugulose; a narrow groove with raised external edge extending from above each eye to base of mandibles; space between this groove and frontal impressions raised; eyes prominent, inclosed behind; post-ocular prominences weak. Prothorax not convex, subcordate, nearly as long as broad (3¼ × 3¾ mm.), truncate in front, lightly sinuate behind; sides lightly rounded on anterior half, lightly narrowed behind; lateral border narrow, sinuate before the base, thickened and forming a small protuberance at the basal angles; median line strongly marked; one marginal puncture on each side, placed slightly before the middle. Elytra lightly convex, oval (7 × 4¾ mm.), truncate at base, striate; striæ entire and well marked; interstices equal, not convex; no scutellar striole; lateral border narrow, reaching from peduncle to apex; a few widely placed punctures along margin. Prosternum with anterior margin not bordered. Joints of anterior tarsi a little obliquely produced externally.

Length 14, breadth 4¾ mm.

Hab.—Victoria.

This species I received from Mr. W. Kershaw, as coming from near Melbourne.

I do not know the sex of the specimen described, but its affinity seems more to *E. blagravii*, Casteln., than to *E. olliffi*, Bates, therefore I think it likely the anterior tarsi are similar in both sexes.

Its smaller size, less dilatate prothorax, and less strongly striate elytra at once distinguish it from *E. blagravii*, while from *E. olliffi* its more elongate form, and less globose prothorax, separate it readily.

Eurylychnus olliffi, Bates.

E. olliffi, Bates, Ent. Mo. Mag. 1891 (2), ii. p. 286.

A single specimen is in my collection, taken at Burrawang on 10th Nov., 1890, on which the following description is founded :—

♂. Form short, robust, head small. Black, legs and parts of mouth reddish. Head small, smooth ; a strong transversal impression behind eyes ; frontal impressions strong, diverging behind ; clypeal suture strongly impressed ; a narrow lateral groove with raised external edge, extending from back of each eye to base of mandibles, space between this groove and frontal impression raised ; eyes round, prominent, without post-ocular prominences. Prothorax short ($3 \times 3\frac{1}{2}$mm), rather depressed on disc, declivous on sides, broadest about middle, lightly emarginate in front,—the anterior angles being broadly rounded, margined, and slightly advanced ; sides lightly rounded on anterior half and a little narrowed to the front, shortly and decidedly rounded behind ; lateral border narrow, reflexed ; a small protuberance extending vertically downwards in the form of a ridge on each side, just before the basal angles,—these obtusely rounded ; median line very strongly impressed, not reaching either margin ; the marginal channel widening inwards on each side a little before the basal angles, thus causing the posterior part of the prothorax to appear sinuate ; three setigerous marginal punctures on each side, the 1st just behind the anterior angles, 2nd about middle, 3rd just after the prothorax begins to narrow behind. Elytra shortly oval ($6\frac{1}{2} \times 4\frac{1}{2}$mm.), rather depressed on disc, declivous on sides and behind, striate ; striæ strongly marked on disc, very

indistinct on declivous part of sides; obsolete towards apex; no scutellar striole; lateral border broad, reflexed, widened and flattened on each side near the peduncle; about six widely placed setigerous punctures along each margin. Prosternum with an entire border along anterior margin. Ventral segments strongly divided, last segment with a single puncture on each side of anus. Anterior tarsi broad, three basal joints obliquely produced on external side and clothed below with spongiose tissue.

Length 12, breadth 4½ mm.

Hab.—New South Wales; Mount Kosciusko (Helms), Burrawang (Sloane).

The three remaining genera form a natural group characterised by having the mandibles without a setigerous puncture in the scrobe, and the prosternum not bordered along its anterior margin.

The following is a brief summary of the features that may be used to separate them from one another :—

Form short; prothorax subquadrate, hardly at all narrowed behind. Head without a transverse impression behind eyes. Antennæ moniliform, short, thick..... .....*Percolestus.*

Head with a transverse impression behind eyes, and deep frontal grooves. Antennæ moniliform.....*Lychnus.*

Form elongate; prothorax subcordate, greatly narrowed behind. Head without transverse impression behind eyes or deep frontal grooves. Antennæ subfiliform, not thick.....*Percosoma.*

Percolestus, n.g.

Head moderate, lightly impressed on each side behind the eyes; eyes spherical, prominent; temporal ridge obsolete; one supra-orbital puncture on each side.

Mandibles short, broad, arcuate, obtusely hooked at apex; inner edge not dentate; scrobe without setigerous puncture.

Maxillæ short, not projecting beyond labrum, hooked at apex.

Labrum short, sexsetose, truncate, anterior angles rounded.

Mentum short, deeply emarginate ; lobes broadly rounded in front ; median tooth strong, bifid at apex.

Palpi : labial thick, penultimate joint bisetose, last joint elongate, longer than penultimate, cylindrical, truncate ; maxillary with penultimate joint short, conical, last elongate, thick, truncate.

Antennæ short, moniliform, 1st and 3rd joints about equal in length, 1st thick, cylindrical, 3rd with apical half globose, then suddenly constricted, the basal half narrow, cylindrical, 2nd joint short, conical.

Prothorax short, the angles rounded ; one marginal puncture on each side, about middle.

Elytra short, broad.

Legs : ♂. Anterior femora short, thick, without a dentiform projection below ; anterior tibiæ short, strongly excavate below, outer edge finely serrate near apex ; anterior tarsi short, the joints short, broad, a little obliquely produced externally, without any spongiose tissue below.

Percolestus blackburni, n.sp.

Form short, robust. Black, shining ; undersurface more polished ; palpi piceous. Head short, broad, convex, smooth, not constricted behind eyes, lightly and broadly impressed on each side behind the eyes, the impressions becoming obsolete on vertex; a light impression on each side of the clypeus, hardly reaching behind clypeal suture ; clypeus subtruncate ; eyes globular, prominent, not inclosed in prominences behind ; prothorax subconvex, subquadrate ($4\frac{1}{4} \times 5$ mm.), a little narrower behind than in front, truncate in front and behind ; sides shortly rounded to anterior angles,—these not advanced,—more gently rounded to basal angles,—these not marked,—lateral border narrow, reaching the base ; median line very fine, not reaching either margin ; a single marginal puncture on each side, placed a little behind the middle. Elytra convex, shortly oval (9×6 mm.), lightly striate; striæ very fine, those near the suture more distinct;

interstices flat, no scutellar striole ; lateral border narrow, reaching from peduncle to apex ; a few punctures along the margin, sparingly placed on anterior half and becoming closer towards apex. Prosternum with anterior margin not bordered. Ventral segments smooth, without punctures, except a single one on each side of the anus.

Length 16½, breadth 6 mm.

Hab.—Victoria (taken by Rev. Thos. Blackburn in the mountains above Harrietville, Upper Ovens River).

This species may be separated at a glance from all the other Australian *Broscini* by its short, broad prothorax, which is broadly rounded, but hardly at all narrowed behind.

Genus Lychnus, Putzeys.

This genus, founded by M. Putzeys (Stett. Ent. Zeit. 1868, p. 324) for the reception of a Tasmanian species which he named *Lychnus ater*, is closely allied to *Percosoma ;* so closely, indeed, as to suggest that it might be regarded with advantage as a section of that genus. However, I have not sufficient material at my command to justify me in uniting it with *Percosoma*, and in deference to previous workers who have considered *Lychnus* a good genus, I still maintain it distinct. The species as yet recorded belong to Tasmania, but their affinity is rather to the Victorian species of *Percosoma* than to those from Tasmania.

Its distinguishing characters are :—Antennæ moniliform; head with strong frontal impressions, and a strong transverse impression across the vertex at the back of the eyes. In the ♂ the anterior thighs are dilatate in the middle, with the lower side forming a strong obtuse projection.

In 1878 Mr. Bates described two species, *L. strangulatus* and *L. striatulus*, as new. He expresses himself as being doubtful if *L. ater*, Putz., could have had the transverse impression across the head that is so conspicuous a feature in his two species, because M. Putzeys does not allude to it either in his diagnosis of the genus or in his description of *L. ater*. This

doubt seems to have been one reason for his thinking neither of his species could be *L. ater*, Putz. It appears to me that M. Putzeys thinking this genus thoroughly specialised by the moniliform antennæ, and the form of the anterior thighs in the ♂, must have regarded this feature of small importance, and so omitted to mention it. I have a specimen from the north of Tasmania which seems undoubtedly to be *L. strangulatus*, Bates ; it agrees thoroughly with M. Putzeys' description of *L. ater* (apart from the transverse impression at back of head). I therefore think the names synonymous, and in this belief have united them.

The puncturation of the elytral striæ mentioned by M. Putzeys in his description of *L. ater*, and referred to by Mr. Bates in his remarks, is to my mind of no value, being, in all probability, caused by long immersion in spirits of wine.

Lychnus ater, Putzeys.

L. ater, Putz., Stett. Ent. Zeit. 1868, p. 325 ; *L. strangulatus*, Bates, Cist. Ent. ii. 1878, p. 317.

♂. Form elongate, not convex. Black. Head not large ; a strong transverse impression behind eyes ; frontal impressions strong, curved, diverging backwards ; a narrow lateral groove from above each eye to base of mandible ; eyes rather prominent ; post-ocular prominences strong, almost equalling eyes in size. Prothorax depressed on disc, cordate, a little wider than long ($4\frac{1}{2} \times 5$ mm), truncate in front and behind ; sides almost parallel on anterior part from behind anterior angles to posterior marginal puncture, decidedly narrowed, but not sinuate, to base ; lateral border narrow, extending from anterior angles to slightly behind basal angles,—these obtuse— ; median line lightly marked ; a marginal puncture on each side about the middle, three other setigerous punctures on the margin just behind each anterior angle. Elytra not convex, oval ($9\frac{1}{2} \times 6$ mm.), striate ; striæ shallow, lightly impressed ; interstices not convex ; shoulders rounded ; base declivous to peduncle ; lateral border narrow, slightly reflexed, extending from peduncle to apex ; a row of setigerous

punctures along margin, very thinly placed on anterior part, much more closely on apical third. Anterior thighs short, dilatate in middle, lower side strongly and obtusely produced.

Length 18, breadth 6 mm.

Hab.—Tasmania.

Lychnus striatulus, Bates.

L. striatulus, Bates, l.c. p. 318.

To render my notes complete I append Mr. Bates's description of this species, which is unknown to me.

"*L. strangulato* simillimo, differt tantum statura minori elytrisque distinctius striatis interstitiis convexis. Niger, minus nitidus; elytris oblongo-ovatis, paullo angustioribus et supra minus planatis. Long. 17 mm. ♂."

"Differs from *L. strangulatus* only in being smaller, proportionately narrower, and in the elytra being more distinctly striated, or rather the feebly or not at all incised striæ are separated by convex interstices. The striæ have no traces of puncturation. In its narrower, more oblong and convex form it resembles the ♀ of *L. strangulatus* more than the ♂; but both the specimens before me are clearly males, having the broad, subdentiform dilatation of the undersurface of the anterior tibiæ [query femora ?]."

"Central Tasmania (Simson). Coll. A. Fry and H. W. Bates. Mr. Janson has a third example."

Genus Percosoma, Schaum.

The type is *P. carenoides*, White, a well-known Tasmanian species. The species I associate in this genus fall naturally into two groups, the Australian and the Tasmanian; the former differ greatly from the latter, though not sufficiently, I think, to warrant the formation of a genus for their reception. Of the two Australian species as yet recorded, I only know both sexes of *P. montanum*, Casteln., and in this species the ♂ has the anterior thighs with a strong dentiform projection on the lower side as in *Lychnus*.

The following is a table of the species.

a. Lateral border of prothorax not interrupted posteriorly, reaching basal angles. A single setigerous puncture above each eye..... Australian species.

Sides of prothorax gently narrowed behind, not emarginate before basal angles..... *P. montanum*, Casteln.

Sides of prothorax sharply narrowed behind, emarginate before basal angles..... ..... *P. concolor*, Sloane.

aa. Lateral border of prothorax interrupted posteriorly, not reaching basal angles. Several setigerous punctures above each eye, placed in an elongate fovea, one or more punctures on vertex outside this fovea..... Tasmanian species.

Elytra very finely striate, interstices flat..... *P. carenoides*, White.

Elytra strongly striate, interstices convex near sides ..... *P. sulcipenne*, Bates.

The two Tasmanian species, *P. carenoides*, White, and *P. sulcipenne*, Bates, resemble each other in the very large head with long jaws, and in the shape of the prothorax, which is broadest towards the front and greatly constricted near the base, with broad lateral margins interrupted before the base. In all these points they differ from the two Victorian species, *P. montanum*, Casteln., and *P. concolor*, Sl., which have the head moderate in size, the jaws not very elongate, and the prothorax more gradually narrowed behind, with the lateral margins narrow and not interrupted before the base.

The Tasmanian species are said to be without the strong triangular projection on the lower side of the tibiæ in the ♂; but in *P. montanum*, Casteln., (the only species of which I am sure I know both sexes), we find this feature more prominent than even in the described species of *Lychnus*, to which genus it was sup-

posed to be confined. In all the species the anterior tarsi are nearly similar in both sexes, and without spongiose tissue on the lower side.

PERCOSOMA MONTANUM, Casteln.

Meocdema montanum, Casteln., l.c. p. 163.

Percosoma montanum, Putz., Ann. Mus. Civ. Genov. 1873, iv. p. 316.

Form narrow, elongate. Black, shining. Head not large, smooth; a broad transverse impression behind the eyes, hardly at all marked across the vertex; frontal impressions light, short; eyes prominent, inclosed behind, projecting beyond post-ocular prominences,—these not strong. Antennæ subfiliform, not tapering. Prothorax not convex, narrow, cordate, about as long as broad ($5 \times 5\frac{1}{4}$ mm.), truncate in front and behind; sides lightly rounded on anterior half, gently narrowed, but not sinuate, towards base, lateral border narrow, extending from anterior to basal angles,—these slightly obtuse; median line lightly marked; a single marginal puncture on each side, placed at about half the length, just before the sides begin to narrow. Elytra convex, oval, narrow ($11\frac{1}{2} \times 6\frac{1}{4}$ mm.), very lightly striate (the striæ hardly visible to the naked eye); shoulders rounded; base declivous to peduncle, apex broadly rounded; lateral border narrow, reaching from peduncle to apex; a row of round punctures a little within the margins, these more closely placed towards apex. A single puncture on each side of anus in both sexes.

Length 21, breadth $6\frac{1}{4}$ mm.

♂.—With anterior thighs not canaliculate below, dilatate in middle, with strong obtusely pointed triangular projection on lower side.

♀.—With anterior thighs lightly canaliculate below, dilatate in middle, the outer edge of the channel on lower side slightly produced.

Hab.—Victoria; Yarragon, Gippsland (Sloane), Dandenong Ranges (French).

I have no doubt this is *P. montanum*, Casteln. M. Putzeys in his remarks on de Castelnau's specimens of this species says of

the eyes, "moins grand que les tubercules post-oculaires," and further on says, "Corselet un peu plus long que large." Neither of these remarks is applicable to my specimens, in which the eyes are larger than the prominences inclosing them behind, these being weakly developed, and the prothorax slightly broader than long. The dentiform projection on the lower side of the anterior thighs in the ♂ is not mentioned either by de Castelnau or M. Putzeys.

PERCOSOMA CONCOLOR, n.sp.

Form elongate. Black, shining. Head not large; a broad transverse impression behind eyes, lightly marked across vertex; frontal impressions feeble, broad, short; eyes rather prominent, inclosed behind; post-ocular prominences not large or protuberant; antennæ subfiliform. Prothorax not convex, cordate, nearly as long as broad ($5 \times 5\frac{1}{4}$ mm.), truncate in front, lightly sinuate behind; sides lightly rounded on anterior half, obliquely narrowed behind, lightly sinuate towards base; lateral border narrow, extending from anterior to basal angle, a little thickened at basal angles, these rather obtuse; median line lightly marked; a transverse impression on each side a little in front of the base; several setigerous punctures along anterior half of margin, the posterior one placed just behind where the sides begin to narrow. Elytra lightly convex, oval, wider than prothorax (12×7 mm.), finely striate; the interstices flat; shoulders rounded; base truncate, lightly declivous to peduncle; apex broadly rounded; lateral border narrow, reaching from peduncle to apex; a few sparsely placed punctures a little within the margin. Ventral segments lightly rugose towards sides, last with one puncture on each side of anus.

Length 22, breadth 7 mm.

Hab.—Victoria; Marysville District (Track to Yarra Falls, Best).

A single specimen in my collection received from Mr. D. Best, of Melbourne. I have not ascertained the sex of my example, but judging from the fact that the anterior thighs are as in the ♀ of *P. montanum*, I believe it to be a ♀. Its broader form and the shape of the prothorax at once distinguish it from *P. montanum*.

Percosoma carenoides, White.

Broscus carenoides, White, Voy. Ereb. and Terr. p. 5, pl. 1, fig. 8.
Mecodema percoides, Casteln., l.c. p. 163.
P. carenoides, Putz., Stett. Ent. Zeit, 1868, p. 321.

This is a well known species; the following description will enable it to be identified :—

Black, shining, thighs and mouth parts reddish. Head very large, smooth ; jaws long, greatly hooked at apex ; clypeus usually with three setigerous punctures on each side ; eyes not very prominent, inclosed behind ; post-ocular prominences small ; several setigerous punctures, placed longitudinally in an elongate fovea, above each eye, and, just outside this fovea, a single large puncture on each side of vertex. Prothorax cordate ($6 \times 7\frac{1}{2}$ mm.), lightly rounded on anterior part of sides, broadest a little behind anterior angles, sharply constricted and transversely impressed a little before the base,—the sides being straightened to meet the base ; lateral margins broad, interrupted at basal constriction ; a row of punctures along each lateral margin from anterior angle to basal constriction ; median line lightly impressed. Elytra not convex, oval ($14 \times 8\frac{1}{4}$ mm.), very finely striate ; the interstices flat ; the 5th stria with about a dozen punctures along its course, these more closely placed near base and apex, smaller towards apex.

Length 26-28, breadth $8\frac{1}{4}$ mm.

Hab.—Tasmania.

Percosoma sulcipenne, Bates.

P. sulcipenne, Bates, Cist. Ent. ii. 1878, p. 317.

I have a single specimen of this fine species which is found in the N.W. parts of Tasmania. The following is a brief description.

Form elongate, robust. Black, opaque, head very large, not narrowed or transversely impressed behind, rugulose in front ; jaws long and hooked at apex ; eyes round ; a rounded prominence behind each eye about as large as the eye and equally prominent ; several setigerous punctures, placed in an elongate foveiform depression, above each eye, and three large punc-

tures, placed in a transverse row, on each side of the vertex about level with post-ocular prominences. Prothorax cordate, very little broader than long (8 × 9 mm.), broadest just behind anterior angles, gradually narrowed to near the base, then constricted, the sides being straightened to meet the base; lateral margins broad, not reflexed, extending from anterior angle to posterior constriction, then obsolete; a row of setigerous punctures along their length; anterior margin longitudinally striolate; median line distinct; disc transversely striolate; basal part rugulose. Elytra oval (17 × 10½ mm.), rather convex, declivous towards apex, striate; striæ fine near the suture, the interstices not convex, those towards the sides strong, the interstices convex, 5th stria with three strong punctures on basal third. Posterior trochanters long, acute.

Length 35, breadth 10½ mm. (Mr. Bates's measurements are 26-30 mm.; so my specimen seems an unusually large one.)

A brief epitome of the facts relating to the distribution of the Australian *Broscini* may prove of interest, though I can make no attempt to draw any conclusions from these facts.

The subfamily *Broscini* is represented in the Australian fauna (excluding New Zealand) by 80 species, divided among 9 genera as follow :—

Promecoderus (36 species) has its metropolis in the dividing ranges of South-eastern Australia.* Twenty-two of the species are from that part of Australia lying south of a line drawn from Brisbane to Port Lincoln; of these only *P. concolor* (from South-western N. S. Wales, Victoria, and South Australia) and *P. blackburni* [from South Australia, Port Lincoln, and York Peninsula] are found far removed from the mountain ranges. Three species, of normal form, are from Tasmania and the islands in Bass Strait. Four species, of normal form, from West Australia (of these *P. clivinoides*, *P. dyschirioides*, and *P. scauroides* are very "close" species). Four other species constitute a group (the *P. brunnicornis* group*) peculiar to Tasmania; two species (*P. distinctus* and *P.*

* For a table grouping the species, see P.L.S.N.S.W. 1890 (2), v. pp. 193, 195.

ambiguus) are of a very distinct type confined to West and North Australia; the remaining species, *P. gracilis*, is an isolated species ranging from Bathurst, N. S. Wales, to South Australia.

Cerotalis (5 species), two are from south-western Australia, of one the exact habitat is unknown; one is said to be from Victoria; the last is from the Dawson River, Queensland, and is very distinct from the others.

Adotela (14 species) seems to be found over most of the Australian continent, except the south-east. On the eastern side of the continent, Gayndah in Queensland is the furthest south that the genus is known to extend; inland a species is found on the Darling River; on the south coast Wallaroo, S.A., is the most easterly point from which a species is recorded.

Gnathoxys (14 species) has no species recorded from Queensland or Victoria. In N. S. Wales two species are found (*G. tessellatus* is found about Sydney); South Australia has four species recorded from it. The other eight species are distributed between King George's Sound, Swan River, and Port Essington.

Brithysternum calcaratum, the only species of the genus, is from Peak Downs, Queensland.

Eurylychnus (3 species) is peculiar to the mountains of south-east Australia, its range extending from the Shoalhaven River, N. S. Wales, to the Otway Ranges, Victoria.

Percolestus blackburni, the only species of the genus, is an isolated form from the mountains at the source of the Ovens River, Victoria.

Percosoma (4 species) has two species in Victoria and two in Tasmania. The species from the mainland are closely related and differ greatly from those of Tasmania, the latter also being nearly related to each other.

Lychnus (2 species) is peculiar to Tasmania.

It may be noted that the last three genera are more nearly related to the New Zealand types of *Broscini* than to the other Australian genera. All the species of *Broscini* found in Australia are apterous.