

NOTES ON THE AUSTRALIAN SPECIES OF THE FAMILY PAUSSIDAE  
[COLEOPTERA].

By the late T. G. SLOANE.

(Prepared for publication by H. J. CARTER, B.A., F.E.S.)

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The late T. G. Sloane was greatly interested in the Paussidae and, intermittently, gave much close study to it, at least from 1920 to 1927. Among papers left by him were four note-books (together with a photo of Westwood's plate) containing detailed results of this study, though the notes had not been collected into a coherent whole. Up to the year 1924 two authors, Westwood and Macleay, had described the great majority of recorded Australian species. Unfortunately, two publications by these authors on the subject clashed<sup>1</sup> and no entomologist has, so far, tried to disentangle their probable overlapping. Sloane had clearly arrived at determinations of the greater number of these species, had classified them into groups, and, further, had tabulated the species in these groups, when a new author, Professor Hermann Kolbe, in 1924, published four papers on Australian Paussidae<sup>2</sup>.

In these papers he described some 29 species as new and arranged the genus *Arthropterus* in two main groups which he again subdivided into eight subgenera. The greater part of the subsequent notes by Sloane was devoted to an attempted elucidation of Kolbe's work, and a determination of the species described by him. A complete set of these four papers by Kolbe formed one of the four note-books mentioned above. Sloane's note-books are now lodged in the library of the Linnean Society of New South Wales. Certain of his conclusions seem worth publishing, so that future students of the family may benefit by the work of one of the most careful and accurate of Australian Coleopterists.

The family Paussidae is strikingly different from other Coleoptera. Sluggish in movement, in general with greatly widened appendages, they are, in other parts of the world, usually associated with ants or termites. In a few instances they have been thus observed in Australia. Thus Sloane quotes a letter from C. Oke: "One from Eltham taken in nest of *Iridomyrmex rufoniger*. The pair from Bendigo were obtained under a fairly large stone, well imbedded, in a nest of *Campanotus clavipes*, being the only ones I have found in association with ants." Lea reports *A. brevis* in nest of *Ectatomma metallicum*, and *A. angulatus* Macl. taken at Bowen by A. Simson in ant's nest. Mjöberg found *A. piceus* West. on trunks of trees at night. Westwood records *A. hopei* as found at Port Phillip under bark and dried cowdung. Sloane says: "I have only found *Arthropterus*

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<sup>1</sup> Westwood in *Thesaurus Ent. Oxon.*, 1874, and Macleay in *Trans. Ent. Soc. N.S.W.*, 1873.

<sup>2</sup> (a) Die Australischen Paussiden der Wassmann'schen Sammlung (*Tijd. v. Ent.*, 1924); (b) Über einige Paussiden Arten Australiens (*l.c.*); (c) Australische Paussiden-Arten in deutschen Museen (*Ent. Mitteil.*, 1924); (d) Zur Kenntnis der Paussiden Australiens: untergattungen von *Arthropterus* (*Deutsch. Ent. Zeit.*, 1924).

under logs or at light in the evening." In my own (H.J.C.) experience all the species captured have been found under bark, logs or stones, without apparent association with ants or termites. They are often concealed by their colour likeness to the background or by the inequalities of the surface of logs. I have found the commoner Sydney species, *A. brevis*, in small colonies under bark of Eucalyptus. The rarity of these insects constitutes a difficulty. Sloane notes a number of species in which only one sex was known to him, although he had probably more material for study than any former Australian student of the family, since many collectors, including myself, had either given or lent their specimens, and he had studied closely the collections in the chief museums of Australia—especially the Macleay types. He also, through the courtesy of Mr. H. E. Andrewes, who compared specimens sent with Westwood's types, obtained much essential information and copious notes on these.

*Structure.*—Sloane redescribed the genus *Arthropterus*, also several of the older species, including the genotype *A. Macleayi* Don. In *Arthropterus* the antennae, apparently—and hitherto considered as—10-segmented, are shown to be 11-segmented in all recorded species, the 2nd segment being a nodule hidden in the swollen scape. The presence of this very small 2nd segment was noted by Dalman for the genus *Hylotorus* (as described by Westwood). Sloane says: "I have clearly seen it in *Platyrhopalus* and *Ceratoderus*."

The structure of the underwings is of interest in view of the accepted idea that throughout the family the underwings are always well developed (cf. Desneux in Wytzman's Gen. Ins., 1905).

The species are found to be (a) fully winged in both sexes, (b) winged in ♂, flightless in ♀, or (c) flightless in both sexes, as follows:

(a) ♂ winged, ♀ wings large, though reduced: *A. wilsoni*, *A. piceus*.

(b) ♂ winged, ♀ wings rudimentary: *A. denudatus*, *A. waterhousei*, *A. ovicollis*, *A. mastersi*, *A. rockhamptonensis*.

(c) ♂ and ♀ wings rudimentary: *A. hopei*, *A. brevis*, *A. westwoodi*.

Many other structures are noted in great detail, no single anatomical feature being omitted from a meticulous study that includes many measurements.

*Classification.*—Except for the single species of *Paussus* (*P. australis* Blkb.) from North Queensland, which Sloane had not seen, the Australian Paussidae are all contained in the two genera *Megalopaussus* and *Arthropterus*, differentiated thus:

Antennae evidently 11-segmented ..... *Megalopaussus*  
Antennae apparently 10-segmented ..... *Arthropterus*

*Megalopaussus amplipennis* Lea.—Sloane writes: "I examined the type and could fix on no point of difference between it and *Arthropterus* except the visibility of the small 2nd segment of the antennae. I do not think it has as much relationship to *Protopaussus* as to *Arthropterus*."

The following is Sloane's list of Australian Paussidae with synonyms (excluding Kolbe's species) and with known localities.

*List of Australian Paussidae (apud Sloane 22/12/23).*

ARTHROPTERUS

- angulatus* Macl. Rockhampton, Q.  
*angulicornis* Macl. Ipswich, Q.  
*articularis* Elst. S. Aust.  
*brevicollis* Macl. N.S.W.  
*brevis* West. N.S.W.

- cylindricus* Mast. (= *subcylindricus* West.; *attenuatus* Gestro). Aust.  
*darlingensis* Macl. N.S.W.  
*denudatus* West. (= *angusticornis* Macl.; *kingi* Macl.; *politus* Macl.; *latipennis* Macl. ♀). Q., N.S.W., S. Aust.  
*depressus* Macl. Tweed River, N.S.W.  
*elongatulus* Macl. Gayndah, Q.  
*foveicollis* Macl. Sydney.  
*foveipennis* Blkb. N. Terr.  
*hirtus* Macl. N.S.W.  
*hopei* West. (= *picipes* Macl.; *subampliatulus* Macl.; *montanus* Macl.). S. Aust., N.S.W.  
*howitti* Macl. Vict.  
*howittensis* Mast. (= *howitti* West.; *dohrni* Kolbe). Vict.  
*macleayi* Don. (= *bisinuatus* Macl.). N.S.W.  
*mastersi* Macl. (= *cylindricollis* Macl.). Gayndah, Q.  
*nigricornis* Macl. (= *humeralis* Macl.). Q., N.S.W.  
*occidentalis* Blkb. W. Aust.  
*ovicollis* Macl. S. Aust.  
*parallelocerus* West. (= *turneri* Macl.). Lane Cove, N.S.W.  
*piceus* West. (*Phymatopterus*). (= *latus* Lea; *macleayi* West.; *distinctus* Thoms.; *ceraptoides* Mjob.). N.S.W., S.Q.  
*punctatissimus* West. S. Aust.  
*riverinae* Macl. N.S.W.  
*rockhamptonensis* Macl. Q.  
*subsulcatus* West. Aust.  
*waterhousei* Macl. S. Aust.  
*westwoodi* Macl. (= *adelaidae* Macl.; *odewahni* Macl.; *puncticollis* Macl.; *scutellaris* Macl.; *subcylindricus* Macl.; *wyanamattae* Macl.; *melbournei* West.). Q., N.S.W., S. Aust., Vict.  
*wilsoni* West. (= *neglectus* Lea ♀; *quadricollis* West.). S. Aust., Vict., N.S.W.
- MEGALOPAUSSUS Lea.  
*amplipennis* Lea. Kuranda, Q.
- PAUSSUS L.  
*australis* Blkb. N.Q.

*Australian Paussidae described (or noted) by Kolbe.*

*Arthropterus*: *ambitiosus* Kolbe (Aust.), *brunni* Kolbe (Aust.), *daemelianus* Kolbe (Peak Downs, Q.), *discrepans* Kolbe (Moreton Bay), *dissidens* Kolbe (Aust.), *donovani* Kolbe (West. MS.) (Port Denison, N. Q'land), *eruditulus* Kolbe (Gayndah, Q.), *fraternus* ? Kolbe (Aust.), *geminus* Kolbe (Q'land), *horni* Kolbe (Port Darwin, N. Aust.), *insidiosus* Kolbe (Aust.), *limitans* Kolbe (Aust.), *moretoni* Kolbe (Moreton Bay, Q.), *negligens* Kolbe (Peak Downs, Q.), *novellus* Kolbe (Aust.), *ominosus* Kolbe (Aust.), *pellax* Kolbe (Aust.), *pervicax* Kolbe (Q.), *petax* Kolbe (Gayndah, Q.), *refectus* Dohrn (Aust.), *schismaticus* Kolbe (N. Aust.), *schroederi* Kolbe (Moreton Bay, Q.), *simiolus* Kolbe (Aust.), *socius* Kolbe (Aust.), *spadiceus* Kolbe (Aust.), *sphinx* Kolbe (Dohrn MS.) (Peak Downs, Q.), *subangulatus* Kolbe (Aust.), *suspectus* Kolbe (Rockhampton, Q.), *wasmanni* Kolbe (Peak Downs, Q.).

From the above it will be apparent, as noted by Sloane, that some of the species have a very wide distribution.

The species of *Arthropterus* were arranged into seven groups, denoted by type species (1) *articularis* Elst., (2) *denudatus*, (3) *parallelocerus*, (4) *hopei*, (5) *wilsoni*, (6) *macleayi* (to include *westwoodi*), (7) *piceus* (to include *brevis*).

"In arranging the species of the genus *Arthropterus sensu lato*", Sloane writes, "I have preferred to use species groups rather than the subgeneric names suggested by Westwood and Kolbe." These were tabulated as follows:

*Group tabulation.*

- 1 (4) Antennae narrow, 4-9 less than  $2\frac{1}{4}$  times broader than long; segment 3 equal, legs narrow.
- 2 (3) Antennae, 3-10 moniliform, turbinate, each segment not widely applied to preceding; apical segment oval ..... *articularis* group

- 3 (2) Antennae with flagellum flat, strap-like; 3-10 applied to preceding by full width; apical segment oblong ..... *denudatus* group
- 4 (1) Antennae wide, 3-10 not less than 3 times broader than long, segment 3 subequal or unequal.
- 5 (6) Antennal basal segment of flagellum subequal (scape not transverse, rarely with post-angles prominent, post-femora evenly rounded on anterior margin ..... *parallelocerus* group
- 6 (5) Antennal basal segment of flagellum unequal, angles of posterior side triangularly prominent.
- 7 (10) Post-femora evenly rounded on anterior margin.
- 8 (9) Prothorax narrower than head ..... *hopei* group
- 9 (8) Prothorax wide (subquadrate, strongly, roundly narrowed to apex), basal angles distant from pedicel and strongly reflexed, tarsi elongate, segment 2 about twice as long as broad, scape of antennae columnar (longer than breadth at apex) ..... *wilsoni* group
- 10 (7) Post-femora wide, anterior margin strongly bent about basal fourth, thence oblique to base.
- 11 (14) Prothorax and elytra strongly punctate (also head).
- 12 (13) Form elongate, prothorax evidently longer than broad ..... *macleayi* group
- 13 (12) Form stout, prothorax usually broader than long, sometimes length and breadth subequal.
- 14 (11) Prothorax and elytra laevigate (only microscopically punctate) ..... *piceus* group

Of these groups, *articularis* Elst. stands alone; the *piceus* group contains only *brevis* Westw., besides the group type, from which it is readily distinguished. Of the other groups I can only find three completely tabulated, as follows:

*parallelocerus* group.

- 1 (4) Elytra more than twice longer than head and prothorax together ..... *planicornis*, n. sp.
- 2 (3) Antennae narrow and parallel, segments 5-10 three times broader than long, flagellum seen from side thin, apical flat beneath ..... *brevicollis*
- 3 (2) Antennae wide and parallel, segments 5-10 four times broader than long, flagellum seen from side moderately thick, apical convex beneath .. *howitti*
- 4 (1) Elytra not twice as long as head and prothorax together.
- 5 (6) Prothorax depressed on disk (subquad.) ..... *rockhamptonensis*
- 6 (5) Prothorax convex.
- 7 (8) Antennae thin, segments of flagellum four or five times broader than long, flat beneath ..... Newnes species
- 8 (7) Antennae stouter, segments of flagellum four or five times broader than long, convex beneath.
- 9 (10) Head coarsely punctate, antennae with segments of flagellum four times broader than long ..... *parallelocerus*
- 10 (9) Head finely punctate, antennae with segments of flagellum five times broader than long ..... Mudgee species

The species from Newnes and Mudgee were species proposed as new, but are not described.

*hopei* group.

- 1 (10) Hirsute species. Setosity long and erect.
- 2 (3) Orbital tubercle thick and prominent, post-tarsi elongate, segment 2 twice as long as broad (♀), post-trochanters pointed. Length 14 mm. .... *ovicollis*
- 3 (2) Orbital tubercle not very prominent, post-tarsi stout, segment 2 little longer than broad (♀), post-trochanter obtuse or truncate.
- 4 (7) Post-tibiae narrow, not or scarcely wider than post-femora.
- 5 (6) Antennae elongate—segments of flagellum three times as wide as long, apical segment large, broader than long, not narrower to base, head punctate but neck smooth, prothorax with large separate punctures, post-trochanters truncate at apex. Length, 11.5-13 mm. .... *waterhousei*
- 6 (5) Antennae short—segments of flagellum four times as wide as long, apical segment roundly narrowed to base, head and neck densely punctate, prothorax closely punctate, post-trochanters cordate, obtuse at apex. Length, 11 mm. .... Victorian species

- 7 (4) Post-tibiae wider than femora ..... New species\*
- 8 (9) Antennae with segments of flagellum three and a half times as wide as long, scape subtransverse. Length, 9.5 mm. .... *hopei*
- 9 (8) Antennae with segments of flagellum four times as wide as long, scape wide, inner apical angle prominent, obtuse. Length, 12 mm. .... *nigricornis*
- 10 (1) Setosity short (post-trochanters cordate).
- 11 (12) Prothorax bordered at middle of sides. Length, 12 mm. ....  
..... *cylindricus* Mast.
- 12 (11) Prothorax without lateral border ..... *mastersi*  
*macleayi* group, *westwoodi* subgroup.
- 1 (2) Outer angle of scape of antennae not prominent, post-femora with anterior side evenly arcuate, prothorax bifoveate behind apex ..... *foveicollis*
- 2 (1) Outer angle of scape prominent, post-femora with anterior side uneven, broad and strongly oblique to base.
- 3 (4) Metasternum large (♂ winged) ..... *occidentalis*
- 4 (3) Metasternum small.
- 5 (6) Prothorax not short, of variable width, broader than long, lateral border narrow, not explanate at basal angle, these marked ..... *westwoodi*
- 6 (5) Prothorax transverse, lateral border explanate at basal angles, these obtuse ..... *cribrosus*, n. sp.

In a later table Sloane included *angulatus* Macl. as allied to 6 above, but distinguished by "prothorax decidedly narrowed to base".

Kolbe divided *Arthropterus* into two main divisions on the form of the prothorax.

Div. I.—Prothorax scutiform, its lateral border visible from above and sharply bordered.

Div. II.—Prothorax pulviniform (pillow-shaped), lateral borders in front generally not visible from above.

Div. I was subdivided into five subgenera: *Archarthropterus* (= Sloane's *wilsoni* group), *Arthropterus* (= (?) Sloane's *parallelocerus* group), *Peltarthropterus*, *Phymatopterus* Westw. (= Sloane's *piceus* group), *Telarthropterus* (= Sloane's *macleayi* group).

Div. II was subdivided into three subgenera: *Euarthropterus* (= Sloane's *denudatus* group), *Sticharthropterus*, *Panarthropterus* (= Sloane's *hopei* group).

He was apparently unaware of *A. articularis* Elst., described in 1919, while much of his classification was founded on erroneous identifications. Thus he considered *A. macleayi* (the type of *Arthropterus* W. S. Macl.) as identical with *parallelocerus* Westw., these two species being taken as types of distinct groups by Sloane, who writes: "There seems no objection to Kolbe's two main divisions, though his idea sometimes gives a false impression of relationship, e.g., *A. denudatus* has 'scutiform', *A. kingi* 'pulviniform' thorax. I think he knew *A. parallelocerus* Westw., but was wrong in his identification of *A. macleayi* Don. He does not describe his *macleayi*—Westwood says (*Arcana Ent.*, ii, p. 8), 'Mr. Francillon's unique specimen of this species is now in Mr. Macleay's possession, from whose figure in the work above quoted mine is copied'. The 'work above quoted' is *Annulosa of South Africa* (W. S. Macleay), therefore Kolbe makes an error when he says that Westwood's figure was a copy from Donovan's work. I have seen the original type in the Macleay Collection and regard *bisinuatus* Macl. as a synonym." Sloane notes the comparative dimensions of the prothorax of the two species in question from the figures: *A. macleayi* Don. 6 × 6½ mm.; *A. parallelocerus* Westw. 7 × 8½ mm. This prevents the acceptance of the name *Arthropterus* for the other species placed here. My query as to the identity of

\* An example (?) in Sloane Collection, Canberra, not described in Sloane MSS.

Sloane's group with *Arthropterus* (Kolbe) is from Sloane's uncertainty as to Kolbe's determination of *parallelocerus* with his own idea of that species.

Of *Peltarthropterus* and *Arthropterus* (Kolbe), Sloane writes: "I do not know how to distinguish these from one another, chiefly because I cannot be sure of any one of Kolbe's species here, though am prepared to accept *A. foveicollis* as right—I look upon *Arthropterus* Kolbe as equal to my *parallelocerus* group." Later (1/1/1928) is a note, "I cannot now consider his *A. parallelocerus* as equal to the species I think it, by long ciliae of sides. He attributes no new species here and I do not suppose that I know in nature one of the 3 species referred here."

Of Kolbe's Division ii he writes: "I doubt whether there is anything more than a mere analogical resemblance between the subgenera *Sticharthropterus* and *Panarthropterus* in form of thorax."

*A. turneri* Kolbe (*nec* Macl.)—"not *turneri* Macl., seems likely to be the common Victorian species *westwoodi* Macl."

*A. angulatus* Kolbe (*nec* Macl.)—"Macleay's species is smaller than his and is a *Telarthropterus* not a *Peltarthropterus*."

*A. humeralis* Kolbe (*nec* Macl.) is given as a synonym of *subcylindricus* Westw., without mention of Masters' correction of the confusion with Macleay's species; but, according to Sloane, *A. humeralis* Macl. = *nigricornis* Macl.

Kolbe indicates four "gruppe" (*Tijd. voor Ent.*, p. 12)—"*wyanamattae*, *turneri*, *westwoodi* and *melbournei*", on which Sloane comments: "Considering that in nature one can hardly differentiate *wyanamattae*, *westwoodi*, and *melbournei*, it seems impossible to accept these groups."

*A. waterhousei* Macl.—"placed by Kolbe in *Euarthropterus* belongs to *Panarthropterus*."

*A. mastersi* Macl.—"He is wrong about *A. cylindricollis* Macl. being the ♂ of *A. mastersi*: the type is a ♀ and is synonymous with *mastersi*."

Kolbe also published a redundant name, *A. dohrni*, for *A. howitti* Westw., already replaced by *howittensis* Masters.

Of Kolbe's species I find the following notes: *A. secedens* Kolbe.—"For me this is so near *waterhousei* Macl. that I cannot differentiate it by description."

*A. moretoni* Kolbe.—"I do not think this differs from my *westwoodi*."

*A. ominosus* Kolbe.—"goes near *westwoodi*".

*A. sphinx* Kolbe.—"must greatly resemble, and be closely allied to, *A. nigricornis* Macl. The prothorax in my specimen is longer than broad (2.5 × 2.3 mm.). I hesitate to think they are different."

*A. ambitiosus* Kolbe.—"seems allied to *rockhamptonensis* Macl."

*A. daemelianus* Kolbe.—"very closely allied to *rockhamptonensis* Macl."

*A. geminus* Kolbe.—"This seems as if it might be ♀ of *A. Simson's* Bowen species."

*A. pervicax* Kolbe.—"I identify for a Mackay species (Carter Coll.)."

*A. suspectus* Kolbe.—"Type with only one fore leg and no abdomen, I suspect it of being ♂ of *pervicax*."

The above notes show the desirability of a revision of Kolbe's species and of their correlation with the others before any further work on the family is undertaken.

The following new species described by Sloane are all of which I can find the types. Others are referred to in the above notes, but these have either perished, or are merged in other collections, at present unknown to me (H.J.C.).

## ARTHROPTERUS OCCIDENTALIS var. ORIENTALIS, n. var. (or sp.).

*Head* convex, punctate; front tumid, neck wide, not contracted behind eyes, antennae wide, basal joint transverse, inner angle prominent, 2nd unequal, triangularly pointed on inner edge, 3-9 about 4 times as broad as long, apical joint hardly longer than 8-9 together. *Prothorax* slightly broader than long (2.1 × 2.3 mm.), subdepressed on disc, widest at anterior fourth, strongly and roundly narrowed to apex, lightly narrowed to base, base angles obtuse, lateral border well developed, stronger posteriorly, obsolete on anterior curve, punctures strong and close, setae of pronotum very short. *Elytra* parallel (6.7 × 3.6 mm.), lateral row of fixed setae distinct. *Dim.*—11-11.5 × 3.6 mm.

*Hab.*—Vict.: Mulwala (Sloane); N.S.W.: Tullamore, Narromine, Warren, Spring Ridge; Queensland: Roma (Fischer).

Resembles *A. westwoodi* Macl., but is at once distinguished by its fully developed wings and much greater length of metasternum. I consider it the eastern form of *A. occidentalis* Blkb., with the following differences: (1) Head not at all depressed between eyes, (2) Prothorax not one-fourth longer than wide, (3) Apex of anterior tibiae lightly emarginate—not triangularly excised.

## ARTHROPTERUS LONGICOLLIS, n. sp.

♂. Flightless, elongate. *Head* a shade wider than prothorax, punctate, front convex, orbits not prominent, neck scarcely constricted behind eyes, antennae wide, rather long, basal joint transverse, outer angle hardly prominent, 3-9 short, about three times as broad as long, narrower than *hopei*, apical joint about two and a half times the penultimate, evenly rounded in front. *Prothorax* (2 × 1.7 mm.) narrow, subparallel, widest at anterior fourth, arcuately narrowed to apex, base wider than apex, lightly arcuate-truncate, setae very short and decumbent, lateral border well developed and recurved. *Elytra* (5.25 × 2.8 mm.) much wider than prothorax, densely setigerous punctate, setae short and decumbent. *Metasternum* rather long, transverse impression distinct. *Legs* wide, all femora and tibiae more than twice as long as wide, anterior tibiae with front angles obtusely pointed, post-femora slightly wider than tibiae, post-tibiae wide, exterior angle produced backward in a truncate triangle, post-coxae cordate, apex obtuse. Tarsi short, posterior with 2nd joint widely dilated, spongiose on inner side, 3rd broader than long, a tuft of squamae on inner side, 4th small, broader than long, 5th longer than 2nd and 3rd together. *Dim.*—9 × 2.8 mm.

*Hab.*—New South Wales: Howell (Inverell district), from H. J. Carter.

Compared with type of *A. elongatulus* Macl., the size is larger and more robust, antennae wider, less depressed above and below, more coarsely punctate, post-tibiae not truncate at apex, but obliquely produced to outer angle. Allied to *A. macleayi* Don., but differs by size larger, proportionally longer, punctures of head, prothorax and elytra stronger. I do not think it is *A. sphinx* Kolbe, since the posterior angles of prothorax are not "obtuse subrectis", it is not setose enough, also too small. Type in Collection of Division of Economic Entomology, Canberra.

## ARTHROPTERUS PLANICORNIS, n. sp.

♂. Winged. Reddish castaneous. *Head* (2 mm. wide) lightly strangulate behind eyes, strongly punctate, punctures minute on neck, front hardly convex, eyes large, not very prominent, antennae wide, basal joint quadrate, 3-4 successively widening, 5-10 equal, about three times as broad as long, apical broader than long, parallel on sides, rounded at apex, about as long as 2½ preceding joints, flat on

lower, convex on upper side. *Prothorax* subquadrate ( $1.8 \times 2.15$  mm.), widest before middle, lightly narrowed to base, base wide, with truncate angles distant from pedicel marked but obtuse, disc punctate, a little rugulose, setae minute on disc, few and short on side. *Elytra* greatly wider than prothorax ( $7 \times 4$  mm.), rather nitid, punctures fine and rather dense, setae short and sparse. *Legs* of moderate width, femora evenly arcuate on anterior side, post-tibiae hardly wider than femora, apex oblique, outer angle obtuse, post-tarsi ordinary, joints 2 and 3 with spongiose tissue beneath, 2nd large, but not twice as long as broad. *Dim.*— $11 \times 2$  mm.

*Hab.*—New South Wales: Rydal (from H. J. Carter).

Allied to *A. brevicollis* Macl., from which it differs by antennae much wider, apical joint equally rounded (in *brevicollis* the posterior side of this joint is longer than the anterior, so that the apex is obliquely rounded). From *A. howitti* Macl. it differs at once by the great reduction of setosity of antennae, prothorax and elytra. It is the only species I know with the antennae widening towards apex, described for *A. subsulcatus* Westw., but it has not "angulis posticis" (orbital tubercles) "pone oculos valde porrecti". Type in Collection of Division of Economic Entomology, Canberra.

#### ARTHROPTERUS CONSTRICTICEPS, n. sp.

♂. Alate. *Head* wide, setigero-punctate, front convex, vertex subdepressed, neck constricted behind eyes, antennae with joints 3–10 equal, less than twice as broad as long, densely and finely setigero-punctate, apical joint subquadrate, rather longer than broad, parallel on sides, lightly rounded at apex. *Prothorax* subconvex, a little broader than head, widest at anterior third ( $2 \times 2.5$  mm.), roundly ampliate on each side of neck, lightly and widely impressed near base, disc a little depressed, median line well marked, lateral border narrowly reflexed, obsolete towards apex and behind basal impression, punctures strong, separate setae of moderate length, sloping backwards, sides rounded on anterior three-fourths, lightly sinuate at basal fourth, base truncate. *Elytra* parallel ( $7 \times 4.2$  mm.), shoulders rounded, a little prominent, punctation fine, setae short, sub-recumbent. *Metasternum* large. Post-coxae elongate-cordate. Femora narrow, not dilated at base, tibiae narrow, anterior more than twice as long as wide, apex deeply emarginate, outer angle acute, post-tibiae narrower than femora, outer angle triangular, rather prominent. *Dim.*— $12 \times 4.2$  mm.

*Hab.*—Victoria: Mallee district (C. French, junior).

A single specimen in my collection, kindly given to me by Mr. F. P. Spry, of Melbourne, ticketed "Mallee, 10–14".

A distinct species allied to *A. latipennis* Macl., from which it differs decidedly by head less transverse, neck narrower and more evenly strangulate behind eyes, antennae more slender, prothorax less quadrate, sides more rounded at widest part, more sinuate to base, surface more setose. Looked at from the front the prothorax is cupuliform, the anterior later slope of the sides continues on to the neck, thus causing it to be constricted. As in *latipennis*, there is on each side of the neck a deep transverse fossulet. Type in Collection of Division of Economic Entomology, Canberra.

#### ARTHROPTERUS CRIBROSUS, n. sp.

*Head* convex (2.6 mm. wide), vertex subdepressed between eyes, neck wide, lightly transversely impressed, but not constricted behind eyes, punctures strong, dense, extending on to neck. Antennae very wide, joints 3–9 about five times as broad as long, 1 transverse, outer angle scarcely prominent, 3 unequal, inside

angle triangular, apical joint subhemispherical, seen from side rather thick, upper side moderately convex. *Prothorax* short, much wider than head ( $2.4 \times 3.2$  mm.), widest before middle, rounded on sides, decidedly narrowed to base, basal angles distant from peduncle, sides a little explanate towards basal angles, border strongly reflexed, wider behind than in front, obsolete on apical curve, punctation strong, dense, setae very short on pronotum, forming short, but strong bristles on inflexed margins. *Elytra* truncate, oval ( $7.3 \times 4.3$  mm.), punctures strong, dense, lateral row present. Legs wide, post-trochanters cordate, post-femora very wide, dilatate on inner side near base, upper side arcuate, the curvature bent at basal third and sloping strongly to base. Anterior tibiae not twice as long as wide, apex truncate on inner side, external angle triangular, not prominent, not reaching as far forward as inner apical part, post-tibiae wide, short, setose-punctate, outer angle wide, very obtuse. Metasternum short, very little longer between coxae than length of post-coxae. *Dim.*— $12.4 \times 4.3$  mm.

*Hab.*—N. Queensland: Kuranda (National Museum), Cooktown (Olive).

Flightless. Type in National Museum, Melbourne.

At my request, Mr. H. E. Andrewes was good enough to compare this species with *A. foveipennis* Blkb. and to send me the following note on it: "Belongs to the *westwoodi* group and allied to *westwoodi* Macl., but the following differences are apparent: form wider, antennae wider, basal joint with inside angle less prominent, 3rd joint more sharply triangular on inner side, prothorax more transverse, border wider and more reflexed towards base, basal angle obtuse, not marked, elytra more densely punctate." As is usual in the genus, joints 3-10 of antennae of ♂ are more closely punctate towards sides, and have shorter setae.

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