

NOTES ON THE GENUS *CARDIOTHORAX*: WITH
DESCRIPTIONS OF NEW SPECIES OF AUSTRALIAN
COLEOPTERA. PART II.

BY H. J. CARTER, B.A.

(Plate xx.)

The genus *Cardiothorax* has gone through considerable evolution. Starting from the type *Adelium Walckenaerii* Hope, it became successively *Thoracophorus* Hope, *Atryphodes* Pasc., and finally *Cardiothorax* Motschulsky.* The genus is widely distributed throughout the highland and coastal regions of Queensland, New South Wales and Victoria, but there is at present no evidence of its existence in the other States. The furthest western limits from which I have received specimens is (excepting one species, described below, from Victoria) Condobolin on the Lachlan. The very able revision of this genus by Mr. Bates in the Ent. Month. Mag. 1879 has made the work of his successors comparatively light, but in so variable a family of the Heteronera it is, I think, a mistake to describe a species from a single specimen, or from ♀ specimens only, the variations in size, shape, colour, and sexual distinctions being very great, *e.g.*, I have *C. grandis* Bates, varying in length from 12 mm., to 23.5 mm. with proportional variation in other respects. Again, I have a specimen of *C. cordicollis* Pasc., which is distinctly blue, the normal specimens being black. Again, the strong sexual features shown in the toothed femora, curved tibiae of the ♂ of certain species make identification impossible when species are described from ♀ specimens only. Yet four species, *C. æneus* Bates, *C. fraternalis* Bates, *C. chalceus* Bates,

* Pascoe, Ann. Mag. Nat. Hist. 1869, p. 37. Motsch., Etudes Ent. 67, nota, Helsingfors. [I regret being denied access to Motschulsky's paper, of which apparently no copy exists in Sydney.]

and *C. distinctus* Bates, have been described from females only, while *C. valgipes* Bates, and *C. politicollis* Bates, were apparently described from a single male. In Mr. Bates' table he classifies 35 species, including *O. Behri* Germ., since referred to the genus *Otrintus*. Mr. Masters' Catalogue contains the names of 39 species, of which six are probably synonymous—*C. Kirbyi* Sol. = *C. dilaticollis* Guér. = *C. Walckenaerii* Hope; *C. licinoides* Redt. = *C. Macleayi* Pasc.; *C. simulans* H. Rut. = *C. Mastersi* Macl.; (?) *C. fraternalis* Bates = (?) *C. valgipes* Bates = *C. pithecius* Pasc. = *C. errans* Pasc.

The identity of *C. Kirbyi* with *C. dilaticollis* and *C. Walckenaerii* was pointed out by Pascoe;* the former two were consequently omitted in Bates' tabulation, but reappear in Masters' Catalogue. The synonymy of *C. simulans* and *C. Mastersi* is proposed by Bates, as also of *C. pithecius* with *C. errans*. The last name holds the prior date in each case. Of the identity of *C. licinoides* with *C. Macleayi*, proposed by Bates, with a query, there can be little doubt. Mr. Pascoe's specimens were described from insects sent by Mr. Masters, whose co-types I have examined. Redtenbacher's excellent plate of *C. licinoides* and description in the 'Reise der Novara' exactly point to the identity, but there seems some doubt as to the priority of publication. Pascoe's *C. Macleayi* appears in the Journ. of Ent. 1866, while the 'Reise der Novara' came out in parts between 1866-8. The evidence is therefore in favour of Pascoe's name. There is nothing in Bates' description of *C. fraternalis* and of *C. valgipes* that sufficiently differentiates them from *C. errans* except the spines on the inner edge of the anterior tibiæ of the latter. Bearing in mind the variations in size, etc., noted above and the fact that only a ♂ specimen was available, a slight variation in convexity noted by Bates could be well accounted for sexually.

Excluding these synonyms we have 32 species. Of these, four, as pointed out above, have been described from a single ♀, and are, as Bates says, "of doubtful specific value" until the other sexes are known. *C. politicollis*, however, is readily identified by

* Journ. of Ent. 1866, p.37.

locality and description, and I have taken it commonly in the Newcastle district. *C. brevicollis* is figured so well in the 'Reise der Novara' that I have little doubt in identifying a black species in Mr. F. Taylor's collection from Shoalhaven as corresponding to the type, while a species from Oberon in the W. Blue Mountains differs very slightly in colour (dark bronze) and in rather more marked hind angles to prothorax.* Two specimens marked *C. brevicollis* in the Macleay Museum are of the latter type. I have two specimens from Ourimbah, N.S.W., which correspond very well with the description of *C. chaldeus*. Of *C. æneus* there are specimens both in the Australian Museum and the Macleay Museum which bear the distinct bicoloration noted by Mr. Bates as well as the other features which point to its identification. These specimens are in both cases labelled Hunter R. I have lately taken four specimens of what I consider to be *C. æneus* at Bulladelah in the Upper Hunter district. I have not been able to identify the following seven species—*C. æricollis* Pasc., *C. angulatus* Bates, *C. captiosus* Bates, *C. connexus* H. Rut., *C. distinctus* Bates, *C. humeralis* Bates, *C. quadridentatus* C. O. Waterh.

C. acutangulus Bates.—This seems to be merely a slight variation of *C. Walckenaerii*. I have specimens from the Blue Mountains which correspond very well with the description. As Mr. Bates points out, *C. æricollis* Pasc., is probably only a bronze variety of the same species. The remaining twenty species I have identified with some certainty as follows:—

C. aratus Pasc.—Co-types from Pine Mountain, Q., in the Macleay Museum.

C. armipes Bates.—I have one specimen from Rockhampton which exactly corresponds to the description.

C. caperatus Pasc., is found commonly on the highlands and coast districts of New South Wales and S. Queensland. I took a large number near Glen Innes, N.S.W.

* Redtenbacher describes it as *black*, while Bates in his tabulation says, "black, with a greenish tinge."

C. Castelnaudi Pasc., is common in the Illawarra district from Bulli to Wollongong, and the highlands adjacent. At Mittagong is found also a var. of this having equal elytral interstices. I have taken both forms in the above districts respectively.

C. cordicollis Pasc., is common in the Clarence River and Tweed River districts, as also in S.E. Queensland, whence I have received a beautiful blue variety of this species.

C. crassicornis Bates.—I have identified this in the Macleay collection from Wide Bay, Q.

C. crenulicollis Bates.—In the Australian Museum, also the Macleay Museum, from the Endeavour River, Q.

C. curvipes Bates.—After much difficulty I have, I think, identified this as a species taken by myself near Jindabyne in the Monaro district of N. S. Wales.

C. eucephalus Pasc.—Co-types in the Macleay Museum, from Rockhampton, Q.

C. egerius Pasc.—Fairly common in the "Big Scrub" of the northern rivers district of N. S. Wales.

C. errans Pasc.—In the Australian and Macleay Museums from Pine Mountain, Q.

C. femoratus Bates.—I have taken this commonly near Glen Innes, N.S.W., and have specimens from the Macleay and Richmond Rivers, though described originally from Wide Bay, Q.

C. grandis Bates, is very common on the Blue Mountains near Medlow. I have also taken a specimen at Canterbury near Sydney.

C. Haagi Bates, has been given me from the Macleay River, N.S.W., and kindly identified by Mr. Blackburn.

C. Howitti Pasc., occurs commonly in the Illawarra region, N. S. Wales, from Lilyvale to Bulli.

C. longipes Bates, is the commonest form in the Richmond River district, N. S. Wales.

C. Macleayi Pasc.—A denizen of the "Big Scrub" of the northern rivers of N. S. Wales.

C. Mastersi Macl.—Co-types in the Macleay and Australian Museums, from Gayndah, Q.

C. opacicollis MacI.—Co-types in the Macleay and Australian Museums, from Gayndah, Q.

C. Walckenaerii Hope (mis-spelt in Mr. Masters' Catalogue) is the common species found near Sydney. Its range seems to be from the Hawkesbury River to Botany and westward to the Kurrajong, where it is very plentiful.

Since the publication of Mr. Masters' Catalogue, one species only has so far been added, *C. æripennis* Blackburn, which I have taken in some numbers at Mt. Wilson, and sparingly round Blackheath (kindly identified for me by Mr. Blackburn). I have seen one specimen, captured by Mr. Taylor, from North Sydney, and there are two specimens in the Macleay Museum, from Newcastle. To these I propose to add the names of *nine* new species, described below, so that if *C. fraternalis*, *C. valgipes*, *C. acutangulus* and *C. æricollis* are to be considered as good species, we have recorded forty-three members of this genus; or if the first two of these be considered as synonyms of *C. errans*, we shall have forty-one; and there is little doubt but that more forms will come to light.

CARDIOTHORAX ANGUSTICOLLIS, n.sp. (Plate xx., fig.8).

Elongate-oval, narrow, coppery-bronze, shining. Legs and abdomen black. *Head* scarcely depressed on front; palpi large and prominent; antennæ stout and pilose; third joint about one and a half times the fourth; joints nine to thirteenth increasingly bigger, thirteenth much the largest and ovate.

Prothorax longer than wide, widest before the middle, apex scarcely emarginate, front angles widely obtuse and rounded; base sinuate, feebly emarginate, narrower than apex; hind angles obtuse without dentation. Sides slightly rounded, foliaceous margins almost obsolete and without any separating sulcus. Very narrow reflexed border, disc flat, medial channel faintly impressed at base and apex, on each side of this a strongly impressed irregularly interrupted line. *Scutellum* large, transverse, curvilinear triangular, not depressed below elytra. *Elytra* narrowly ovate, broader than prothorax; humeral angles obtusely rounded,

sides slightly rounded to the greatest width (behind half their length), whence they narrow sharply towards apex; apical declivity rather steep. Strongly striate, with eight striæ on each elytron, irregularly confluent towards apex, the first two continued, without meeting the others, to the apex. Interstices subequal and moderately convex, one or more striæ on sides without punctures. *Epipleuræ* very narrow on sides, abruptly expanded towards the shoulder, this widened portion with strong scattered punctures. *Legs*, especially femora, short and unarmed, tibiæ nearly straight. *Dimensions* 11×4 (vix) mm.

Hab.—Clarence River, N.S.W. (Mr. McGillivray).

Types in the Macleay Museum. There are three specimens in the collection, apparently one ♂ and two ♀. The ♂ is smaller, with sides of elytra narrower and more parallel, front femora much thickened towards apex, while the hind femora and tibiæ are very thin. The ♂ specimen is without a head. The small size combined with its very narrow and nearly straight pronotum and margin, pronotum without any basal dentation, its marked epipleural formation, sufficiently differentiate this species from all its congeners.

CARDIOTHORAX AUREUS, n.sp. (Plate xx., fig.1).

Ovate, bronze-shining, antennæ fuscous, body beneath darker.

Head: epistomal ridge round and prominent, with two setiferous punctures thereon. Front with circular prominence with central impression like that of cloven hoof. Antennæ long and moderately slender (7 mm.). Third joint little longer than fourth, eleventh little larger than tenth. Joints four to ten equal. *Prothorax* cordate (4×5 mm.), widest at middle. Disc slightly convex. Lateral foliation reflexed, with well defined margins on sides, narrower at base and apex. Anterior angles prominent, raised and subrectangular. Posterior angles sharply dentate, teeth pointing outwards. Much narrower at base (2.2 mm.) than at apex between angles (3 mm.). Sides rounded and widening to about half their length, abruptly narrowed near posterior tooth without sinuation, lateral foliation suddenly narrowing on this hinder curve and separated from disc by deep curved furrow.

Median channel deep and wide except on centre of disc, where it is narrower. Two shallow longitudinal sulci near the base. On foliaceous sides are two or more setiferous punctures near the centre. *Elytra* (9×5 mm.) ovate, shoulders not angular, but somewhat squarely rounded, widest at middle and narrowing to apex. Striate, with six deeply cut striæ on each elytron, excluding the two shallow striæ on epipluræ. Intervals between striæ flat and glabrous; 3rd and 5th conjoined near apex, 5th rather broader than others. *Legs* thin, femora unarmed, anterior tibiæ slightly thicker towards apex and a little curved on outer edge, median and hind tibiæ straight. What I take to be the ♂ differs only in narrower form and thinner hind tibiæ. *Dimensions* 15×5 mm.

Hab.—Grose Valley, Blue Mountains (H. J. Carter and E. W. Ferguson).

The brilliant brassy sheen and the curiously shaped prothorax mark this species as very distinct from any known to me. In some respects like a small *C. Howitti* Pasc., it differs from that species in its longer and more slender antennæ, its more brilliant colour, and in its distinct foliaceous prothorax, with its characteristic setæ on folia and epistoma. Apparently differs from *C. chaldeus* Bates, which is described from a single ♀, in form of prothorax, which is widest before middle and whose hind angles are not produced or prominent.

CARDIOTHORAX AUSTRALIS, n.sp.

Very near preceding (*C. aureus*) in colour and general facies, so that at first I was inclined to consider it as a var. of *C. aureus*. Having lately acquired a large number of specimens, I can now confidently describe this as a distinct species. Confusion will be best avoided by the following contrasts:—

C. australis.

Colour dark bronze, shining, varying rarely to light bronze. (Of 17 specimens before me two only are as bright as the typical *C. aureus*).

C. aureus.

Golden bronze, shining.

Prothorax—Foliaceous margins narrower and less recurved. Sides regularly rounded. Widest in front of middle. Narrower and more convex.

**In general*—Discal impression consisting of a single irregular deep fovea near base of each lobe.

Elytra—Shoulders obsolete, or very widely rounded. Narrower and more convex. All interstices equal.

Dimensions—Average of 17 specimens—13.5 mm. long.
4.5 mm. broad.

Hab.—Moruya (Mr. G. Cheesman), Bombala (Mr. W. W. Froggatt), Victorian Alps (Mr. C. French), Mt. Kosciusko (H. J. Carter).

The other characters are very much as in *C. aureus*. I have called it *C. australis* from the fact of its wide distribution over the most southern habitat so far recorded for this genus.

CARDIOTHORAX BATESI, n.sp. (Plate xx., fig. 2).

Elongate-ovate, dark bronze, moderately shining; underside, legs, and antennæ black.

Head with epistomal ridge convex and prominent. Usual frontal impression well marked and sometimes foveate; antennæ stout, reaching to base of prothorax, 3rd joint a little longer than the 4th, 10th larger than preceding joints, 11th much the largest and ovate. *Prothorax* nearly flat, transverse and cordate, widest before middle, foliaceous margins wide except at base, separated by sulcus, less distinct than in *C. Walckenaerii*; strongly

Foliaceous margins wider and more recurved. Sides gradually widening to about half way, then more abruptly narrowed. Widest at, or a little behind, middle. Broader and flatter.

Discal impression subobsolete.

Shoulders much more squarely rounded. Wider and flatter. Fifth interstice wider than the others.

Average of 5 specimens—
15.4 mm. long., 5.6 mm. broad.

* This character is not a constant one. The single fovea being sometimes elongate and sometimes subobsolete.

bordered throughout; lateral margin raised with border reflected, widest at middle (where they are one-fourth the width of disc); front angles roundly acute and prominent, apical border arcuate and interrupted by medial channel; base subtruncate, hind angles subrectangular, distinct but not prominent; sides regularly rounded to near base, slightly constricted near hind angle, base narrower than apex. Disc with medial channel strongly marked throughout but widest at base; irregular basal impressions sometimes extending by faint interrupted foveæ to half-way up disc, which is otherwise smooth. *Scutellum* transverse, subcordate, rounded behind, with small triangular depression on elytra behind this region. Scutellum on the same level as elytra. *Elytra* a little wider than prothorax at widest, shoulders broadly rounded without epipleural fold, even and finely sulcated, with six sulci on each elytron, of which the inner two are continued to apex, 4th and 5th unite near apex. Interstices smooth, equal and slightly convex. Three variable striæ on sides and epipleuræ, sometimes obsolete. *Abdomen* smooth, shining; intermediate and hind tibiæ straight, fore tibiæ slightly arcuate, especially on their outer edge; femora unarmed, but in ♂ slightly thickened near apex. *Dimensions* 15 × 5 mm.

Hab.—Ourimbah and Wyong, N.S.W. (H. J. Carter).

This species has some affinity with *C. Walckenaerii* Hope. It differs in lighter colour, smaller size, less transverse prothorax, which is also more constricted and narrower at base; in its much smaller hind angles to prothorax, less flat foliaceous margins, less distinct separating sulcus, and much thinner legs. There seems to be very slight sexual differentiation in this species; the only distinction I can find is the slightly enlarged front femora of the ♂, and the wider body of the ♀. It is very common within a limited area, but so far I have not met with it outside the above localities.

CARDIOTHORAX LACHLANENSIS, n.sp.

Elongate, black, very shiny, subcylindrical; antennæ piceous, tarsi and fore tibiæ at apex clothed with castaneous hair beneath.

Head like that of *C. caperatus* Pasc., but wider, with frontal impression proportionately larger. ♀. *Prothorax* rather convex, rather broader than long (6×6.5 mm.), widest before middle, anterior angles acute and reflexed, sides scarcely rounded and narrower towards base, then rather abruptly constricted, base narrower than apex. Posterior angles acute, prominent and directed outwards; foliaceous margins narrow, marginal border thick on sides, obsolete on apex and narrow at base. Disc with medial channel not generally reaching apex, deepest at base. Between medial channel and margin two irregular sulci near base. *Scutellum* almost semicircular and smooth. *Elytra* (13.5×6.5 mm.) convex, somewhat cylindrical, as wide as prothorax at widest. Strongly striate, with six equal furrows on each elytron and two well marked striæ on sides, and one strongly punctured, on each epipleura. Interstices strongly convex, and equal up to the apex, the 8th (on sides) not reaching the basal border of epipleuræ. Sides subparallel till near apex, apical declivity steep, shoulders nearly square, this accented by well marked border of elytra somewhat reflexed at anterior angles. *Femora* unarmed in both sexes. *Tibiæ* nearly straight, fore tibiæ strongly dilated at apex. *Abdomen* black and shining. ♂. Smaller, narrower, with intermediate and hind tibiæ strongly compressed. *Dimensions*—♀ 22×6.5 mm.; ♂ 20×5.5 mm.

Hab.—Condobolin, N.S.W. (Mr. G. H. Halligan).

I am indebted to Mr. Gerald Halligan for this interesting addition to the genus. There is also a pair in the Macleay Museum from the same locality. It is evidently allied to *C. caperatus* Pasc., but the following differences seem sufficient for considering it as distinct, apart from its widely remote habitat, from a denizen of the northern tablelands and coastal district of N. S. Wales.

C. lachlanensis.

C. caperatus Pasc.

Size—20-22 mm. *Colour* very shiny black. 17-19 mm. Moderately shiny black.

Prothorax—Convex, widest before middle. Sides nearly straight, strongly contracted near base, posterior angles acute and prominent. Flat, widest at middle, sides evenly rounded, posterior angles subrectangular and not so prominent.

Elytra—More convex, intervals at apex equal. Less convex, intervals unequal at apex.

CARDIOTHORAX PUNCTO-STRIATUS, n.sp.

Elongate-oval, shining bronze with violet reflections, antennæ fuscous-brown, tarsi pale brown.

Head densely rugosely punctate, especially on the vertex, where the usual frontal impression is subobsolete; antennæ reaching to base of prothorax, 3rd joint thinner than but one and a half times the length of the 4th, succeeding joints successively thicker than the preceding, 11th nearly twice the length of the 10th and ovate. *Pronotum* narrow, with greatest width in front of middle; about as long as wide, narrower at base than at apex; apex slightly arcuate towards the anterior angles; these widely acute but not prominently advanced; foliaceous margin subobsolete, bordered throughout by narrow reflexed edge. Sides very slightly rounded and feebly narrowed towards base, where the angles are abruptly obtuse but scarcely dentate. Base truncate. Disc finely and regularly punctate; medial furrow deep and uniformly channelled throughout; on each lobe of disc is a deep longitudinal impression, formed by two long and deep foveæ which are nearly continuous. Of these the more forward one extends nearly to the anterior angles; the hinder one is curved inwards so as to nearly meet the medial channel. *Scutellum* small, smooth, and curvilinear triangular. *Elytra* oval, moderately convex, shoulders narrowly rounded, but rendered more prominent by the almost rectangular reflexed epipleuræ, gradually widening towards apical two-thirds, then sharply narrowing to a somewhat pointed apex; finely regularly punctate-striate, with ten striæ on each elytron, alternate pairs meeting at apex. Intervals smooth, narrow and convex (especially towards apex); the punctures in the striæ

regular and close, giving a finely crenate appearance to the interstices. *Femora* unarmed in both specimens, front tibiæ slightly curved inwards, middle and hind tibiæ straight. *Abdomen* shiny bronze-black. *Dimensions*—♂ 14×4 mm.; ♀ 14×4.5 mm.

Hab.—Ourimbah, N.S.W. (Mr. R. Helms).

This beautiful species was discovered by Mr. Helms, to whose courtesy I am indebted for the specimen which I believe to be the ♀. The ♂ type specimen has been returned to Mr. Helms. The apparent ♀ is wider, stouter, with wider femora and slightly less convex than the ♂, while the latter has more finely attenuated hind tibiæ.

This species is easily distinguished from any other *Cardiothorax* by the unique sculpture of the elytra, being the only member of that genus having distinctly punctate striæ; while from the other *Cardiothorax* with narrow margins to the pronotum (*C. politicollis* Bates, *C. errans* Pasc.) it also differs in having less convex pronotum, combined with brilliant violet-bronze colouring, crinkled disc, and narrowed and little curved sides.

CARDIOTHORAX PYGMÆUS, n.sp. (Plate xx., fig.9).

Elongate-oval, flat; pale bronze; under side and legs darker; very nitid above and beneath.

Head of conventional form, smooth, frontal impression subobsolete. *Antennæ* short, fine, joints 4-13 of same thickness, 1st joint much stouter than the rest, 3rd a little longer than 4th. *Prothorax* subcordate, nearly as long as wide, widest at middle. Apex deeply emarginate, front angles acute. Sides moderately foliaceous and evenly rounded, with narrow reflexed border; base almost straight, narrower than apex, hind angles strongly dentate; tooth pointing outwards and downwards. This dentation accentuated by a large and deep triangular discal impression at base, the base of which is the space between tooth and median line. Shallow sulcus at middle between foliaceous sides and disc; shallow depression on centre of each lobe of disc; medial channel deep, especially at base. *Scutellum* on same level as elytra, curvilinear triangular, smooth. *Elytra*: shoulders rounded but

definite, deeply striated, with six striæ on each elytron, all except the sixth well marked to the apex and not confluent. Interstices convex, straight and equal. On sides and epipleuræ are three lines of punctures. Two punctures much larger than the rest on side, about equal distances apart, and the same distance respectively from the base and apex. *Legs* thin, tarsi nearly straight, femora unarmed. *Dimensions* 10×3.5 mm.

Hab.—Clyde River, N.S.W. (Mr. Masters).

Through the courtesy of Mr. Masters I am able to describe this species, of which the two type specimens are in the Macleay collection, captured by Mr. Masters himself. I am unable to speak definitely as to the sexes of these, the abdomen of one specimen being absent, nor are there any marked sexual characters in the tibiæ and femora. The small size, light colour, the triangular depression on prothorax, and the two large punctures on sides of elytra are sufficient to point out the identity of this species.

CARDIOTHORAX RUGOSUS, n.sp.

Elongate-ovate, black, opaque. Legs, abdomen, and basal half of antennæ shining black.

Head: epistoma rather flat and longitudinally rugose; frontal impression large with front and sides rectangular, base rounded; with two large shallow foveæ on its centre. Antennæ about the length of head and prothorax combined, rather slender at base, thickening towards apex. Joints 1-7 shining, 8-11 dull black, 3rd joint much longer than 4th. *Prothorax* very little convex, transverse, widest at middle, finely bordered throughout, apex emarginate, front angles wide, obtusely pointed, reaching nearly to the eyes; foliaceous margins wide, flat and of nearly equal width to the base, separated from disc by a broad and deep sulcus; sides gently rounded anteriorly, more abruptly posteriorly, where they are suddenly constricted towards the wide, subrectangular, dentate hind angle; this angle sometimes more acutely produced outwards by the thickened border. Base much narrower than apex and widely angular. Disc with medial channel evenly and strongly marked throughout, but not interrupting front or

hind border. On each side of this, about the middle of each lobe, is a strongly marked interrupted line, sometimes only indicated by long shallow foveæ. The disc is faintly, the hind part of margin more strongly, rugose; the former generally longitudinal, the latter transverse. *Scutellum* very large, oval, channelled or impressed in the middle; on the same level as elytra; sometimes with small, wide triangular depression behind this region. *Elytra* roughly and unevenly crenulate-striate, with eight striæ on elytra, and three equally or more strongly marked striæ on the sides and epipleuræ, these last strongly punctate, the punctures large and widely separated. The 1st, 3rd, and 5th interstices form rounded ridges crenulated on the sides, the 2nd, 4th and 6th smaller. Humeral angles strongly reflexed by epipleural fold and widely rounded, increasing in width rather suddenly behind the shoulders, then gradually widening to near the apex, where they are rather abruptly narrowed and broadly curved at the apex. The surface of elytra is unevenly convex, with a distinct depression about midway between the sulci and the sides, so that the sides, viewed from behind, appear raised. Front and intermediate tibiæ slightly curved, hind tibiæ straight; all the tibiæ somewhat serrated on their inner edge; femora unarmed in both sexes. *Dimensions*—♂ 16×5.5 mm.; ♀ 16.5×6.5 mm.

Hab.—Terrigal and Wyong, N.S.W. (Mr. Cox).

Mr. Cox, who discovered this species, has kindly given me three specimens (one ♂, two ♀). It is strongly differentiated from all the other opaque species known to me by the sculpture of the elytra, in which it is nearest to *C. aratus* Pasc., from which it differs widely in the shape of its prothorax *inter alia*.

The sexual differences I note are the following:—

♂. Narrower form, humeral angles of elytra more prominent, narrower and more reflexed, femora stouter, hind tibiæ thinner.

♀. More robust, elytra flatter (with the uneven surface, as above described, less marked), shoulders of elytra more rounded and less reflexed. Hind angles of prothorax more produced outwards and acute.

CARDIOTHORAX CÆRULEO-NIGER, n.sp.

Elongate-ovate, upper surface shining metallic blue-black, beneath black; antennæ and tarsi brown.

Head with frontal impression deeply marked and having thereon a cluster of foveæ, varying in number from two to six, between the eyes. *Antennæ* stout and long, *i.e.*, extending beyond the base of prothorax when set back. *Prothorax* convex, apex feebly emarginate, front angles short and obtuse, sides gently rounded anteriorly, more abruptly posteriorly, with regular reflexed border; foliaceous sides narrow, obsolete behind, and bearing two or more setæ. *Disc* smooth, median line strongly impressed throughout; base much narrower than apex, nearly truncate at base and apex; hind angles small but distinct and directed outwards. *Scutellum* triangular, smooth and on same level as elytra. *Elytra* not depressed behind scutellum; shoulders narrow, very obliquely rounded; on each elytron are six narrow sulci, which tend to become obsolete towards the sides and apex. *Intervals* flat and equal. *Femora* unarmed in both sexes; front tibiæ strongly thickened towards apex; intermediate tibiæ of ♀ slightly bowed, in ♂ straight; hind tibiæ straight in both sexes. *Dimensions* 13-15 × 4-5 mm.

Loc.—Buladelah, N.S.W. (brush country inland from Port Stephens; H. J. Carter).

This species is readily distinguished from all other *Cardiothorax* by its glossy blue-black colour combined with its *smooth prothorax*.* In structure it is somewhat allied to *C. æneus* Bates, and *C. politicollis* Bates, but differs from both in its more explanate margin of *pronotum*.

In the ♂ the elytra are about of the same width as the prothorax at widest; in the ♀ the elytra are rather broader than the prothorax.

* Only the very faintest impressions of any discal foveæ are to be discerned on some specimens, near the base.

TRACHYSCELIS NIGRA, n.sp. (Plate xx., fig.11).

Short, ovate, convex, very shiny, black, the antennæ and legs testaceous, a lighter-coloured border at the under edge of elytra and epipleuræ; the marginal cilia dense. *Head* and prothorax impunctate, the latter without medial channel.

Elytra scarcely rounded at sides, widest behind the middle, punctate-striate, the three inner striæ well marked and deeply impressed towards the base; the punctures fine and close, becoming finer laterally; the interstices impunctate, two nearest the medial channel somewhat convex, especially towards the apex, flat at the sides. Femora, front tibiæ and abdomen densely punctate. Length $3\frac{1}{4}$ to $3\frac{1}{2}$ mm.

Hab.—Sydney; found on sandy beaches from Gosford to Stanwell Park, at the roots of grass, or under seaweed.

Allied to *T. ciliaris* Champ., but differs from that species in the following details, *inter alia* :—

<i>T. ciliaris.</i>	<i>T. nigra.</i>
* <i>Colour</i> castaneous.	Black.
<i>Prothorax</i> obsoletely canaliculate.	Without canaliculation.
<i>Elytra</i> almost rounded at sides, widest at middle. Striæ faint except on disc.	Scarcely rounded at sides, widest behind middle. Striæ more deeply impressed.
<i>Venter</i> testaceous.	Black.

ACTHOSUS BRUNNEUS, n.sp.

I have before me eight specimens of an *Acthosus* (seven from the Blue Mountains and one from North Sydney) that is perhaps best described by comparison with the well-known *A. laticornis* Pasc.

Colour castaneous, in shape flatter, in size smaller. *Head* less deeply concave in front, punctures much finer. *Prothorax* less

* Occasional castaneous specimens are found, but they are probably immature specimens.

convex, punctures finer and closer; two only of the eight specimens have a slight indent at the apex, three have a small fovea at the middle of the base, but *all* have a considerable depression near the anterior angles, not present in *A. laticornis*. *Elytra* are more faintly striate-punctate, the punctures smaller, the striae finer, and the intervals much flatter; the scutellum is less transverse. *Legs* of a lighter colour; anterior tibiae less thickened at apex, with much finer seriation on outside edge. Beneath, entirely castaneous (in *A. laticornis* it is black) with a different structure to the prosternum; that of *A. laticornis* has a narrow arched keel, the flanks on each side being hollowed out. In *A. brunneus* this keel is widened out anteriorly, while the flanks are very slightly concave. The longitudinal rugosity on the first two segments of the abdomen is much finer and closer. *Dimensions* 8 × 3 mm.

Hab.—Blue Mountains and Sydney (H. J. Carter).

I do not think that the colour is due to immaturity, having taken this insect persistently of the same colour, at widely different seasons of the year, in the Blue Mountains, both at Kurrajong and Medlow.

ACTHOSUS MINUTUS, n.sp.

Oblong-ovate, parallel, dark copper-brown, shining. Legs and antennae light castaneous.

Head small, finely punctate and imbedded in the thorax up to the eyes, which are large. Antennae broad, especially the four last joints. *Prothorax* convex, densely punctate, base and apex truncate, rather sinuate anteriorly, closely fitting the elytra at base. *Elytra* punctate-striate, punctures very minute, intervals quite flat. *Abdomen* black, shiny and punctate. *Femora* and tibiae wide, hind tibiae curved. *Dimensions* 2·8 mm. long.

Hab.—Booyong, Richmond River (Mr. R. Helms).

I am indebted to Mr. Helms for the possession of four specimens of this insect, whose minute size alone distinguishes it from any of its allies. I can see few structural differences between

this and *A. laticornis* Pasc., but all four specimens are without any depression on the pronotum.

OTRINTUS STRIATUS, n.sp. (Plate xx., fig.4).

Elongate-elliptical, slightly convex. Opaque brownish-black except palpi, knees which are castaneous, and antennæ which are piceous. Tarsi and tibiæ clothed beneath with castaneous tomentum.

Head wider than long, densely and coarsely punctate above and beneath, epistoma convex with apex semicircular, labrum prominent. Shallow lunate frontal impression. Antennal orbits forming round shining knobs of lighter colour. Eyes large, widely separated and oblique. Antennæ long, gradually thickening to apex; 1st and 2nd joints short, castaneous and shining; 3rd joint about one and a half times the length of the 4th, 7th to 11th becoming more spherical, 11th much the largest. *Prothorax*: ♀ flat, ♂ more convex and narrow, wider than long, widest at front, much narrower at base; apex with narrow reflexed border, and subtruncate except for slight sinuation formed by the widely acute front angles, and at the middle by the increased convexity of disc. Anterior angles slightly advanced, sides gently rounded and narrowing towards base, then shortly sinuate so that the posterior angles are subrectangular; base truncate. Disc densely and finely rugose, this rugosity transverse on sides and base. Median channel distinct throughout, deepest in front, wider towards base; on each side of this a shallow longitudinal depression. *Scutellum* almost circular and finely punctate. *Elytra* slightly convex in ♀, narrower and more convex in ♂; wider than prothorax at base, widest behind middle. Shoulders sharply rounded and made prominent by reflexed border. This border extends the whole way round, becoming more prominent again at apex, which is acuminate. Striate, with nine deep striæ on each elytron. Interstices sharply ridged, the 5th and 7th extending beyond the rest front and behind. Sternum and epipleuræ very minutely and lightly punctate. *Abdomen* black, shining and glabrous. *Legs* black except at joints, which are castaneous.

Tibiae straight, hind tarsi with 1st joint much longer than the 4th. *Dimensions*—♂ 12×3.5 mm.; ♀ 14×4 mm.

Hab.—Byron Bay, N.S.W.

The ♂ is smaller, narrower, and more convex, especially as to the pronotum. Antennae are relatively longer, hind tarsi shorter. I have examined three specimens of this insect (one ♂, two ♀). In colour and shape it is most like *O. Jacksoni* (mihi), from which it may be easily distinguished by size, shape of prothorax (much more cordate than in *O. Jacksoni*) and by the widely different sculpture of the elytra, *e.g.*, the sharp edge of the interstices, the number of striae *inter alia*. The ♂ and one ♀ have been returned to Mr. R. Helms, to whom I am indebted for the third specimen, and who called my attention to this species.

Possibly a new genus may hereafter be required for this insect. The complete absence of any foliaceous margin to prothorax prevents its inclusion in Cardiothorax, while it differs structurally from the typical *O. Behri* Germ., in its truncate base to pronotum and in its less elevated mesosternum.

DAEDROSIS HIRSUTA, n.sp. (Plate xx., fig. 14).

Elongate-ovate, hirsute; head, pronotum, elytra and legs dark bronze; tarsi and antennae dark castaneous; underside bronze-black.

Head very similar to that of *D. crenato-striata* Bates, but the division between front and epistoma more strongly marked; in other words, the irregular frontal depression is deeper, and the punctures thereon are deeper and more widely separated. *Prothorax* more widely rounded than in *D. crenato-striata*, as wide as long, widest about the middle and nearly equally obtusely rounded before and behind, the angles in both cases obsolete. The disc is even more deeply punctate, the punctures with less tendency to coalesce (to become rugose) than in the above. Medial line indicated by a slight depression, with fewer punctures than the rest of disc, widest towards base. On the disc, which is more convex than *D. crenato-striata*, are two irregular depressions on each lobe, the larger about the centre, the smaller one directly in front of this. *Elytra* punctate-striate, striae

shallow and somewhat irregular, these becoming obsolete towards the apex. The punctures in the striae are deep and close, the intervals almost flat and varying in width, with little, if any, crenulation; 1st, 3rd and 5th having large punctures irregularly placed at some distance apart. Towards the epipleural region the striae are obsolete, but punctures are dense. The whole upper surface of the body, and femora, clothed with black upright hairs, thickest on the head and pronotum. *Tibiae* and *tarsi* clothed, especially beneath, with light castaneous hair, front tarsi very transverse and much larger than in *D. crenato-striata*, while the mesosternum is rounder and less declivous, abdomen less concave; the whole underneath part of the body is less shining and of a darker colour. *Dimensions*—♂ 8×2.5 mm.; ♀ 10.5×3.5 mm.

Hab.—Mount Kosciusko; 13 specimens (H. J. Carter).

This species differs from its other allies (except *D. pygmæa*) in its having clothing. I have above shown its distinction from *D. crenato-striata*; from *D. pygmæa* it differs in size, elytral sculpture, etc.; from *D. victoriæ* Blackb., in its darker legs and antennæ, hirsute covering, small abdominal cavity, &c.

ADELIMUM CÆRULEUM, n.sp.

Antennæ, legs and abdomen black. Head and prothorax dark blue; elytra greenish-blue, metallic shining.

Head: frontal impression as usual in *Adelium*; upper surface of head coarsely and densely punctate, with a row of large shallow punctures beneath the eyes; lightly clothed with short upright hairs, especially round the eyes. Antennæ (6 mm. long), 3rd joint the length of 4th and 5th combined, 11th slightly longer but not wider than the 10th, finely pilose. *Prothorax* (4×5 mm.) convex, widest near, not at, base; sides widely rounded and abruptly sinuate at base, apex emarginate; anterior angles subrectangular and prominent, width between anterior angles and of base equal (3.5 mm.). Posterior angles short and rectangular, base truncate. Whole surface rugosely punctate, without distinct separation of disc and margin. *Scutellum* transverse-elliptical; elytral suture wide in this region. *Elytra* (8×5.8 mm.)

punctate-striate, striæ consisting of ten rows of broad deep furrows, 9th and 10th on sides wider than the rest. The punctures in the striæ large and sometimes coalescing, especially in striæ nearest the suture. Intervals acutely ridged and irregularly interrupted near apex; subovate, convex, widest behind middle; shoulders round, sides slightly widening towards apex. Epipleural fold with lines of coarse punctures, of which there are five rows on anterior part. *Abdomen* finely punctate on last two segments. *Legs* thin, tibiæ straight, tarsi long and slightly pilose. *Dimensions* 13.5×5.8 mm.

Hab.—Cairns, N.Q. (Mr. H. Hacker).

I am indebted to Mr. Hacker for this beautiful Helopid. Its striking feature is its colour and metallic sheen, so that in the sunlight its faceted pronotum and metallic elytra scintillate like those of the most beautiful Chrysomelidæ or Buprestidæ. It is entirely distinct from any other *Adelium* in this respect.

ADELIUM NITIDUM, n.sp.

Bright copper colour, shining; legs and abdomen darker; antennæ dark brown.

Head rather narrow, closely and regularly punctate. Usual frontal impression definite. Antennæ long, reaching to base of pronotum, 3rd joint shorter than 4th and 5th combined, 11th much larger than 10th. *Prothorax* (2.5×4 mm.) widest at middle. Sides regularly rounded and deflexed; scarcely or obtusely angulate anteriorly and posteriorly; lightly rounded at apex, truncate at base; strongly convex, closely and minutely punctate, with a few larger punctures on disc, and shallow longitudinal sulci near the lateral slopes. *Elytra* (5.5×4 mm.) convex, ovate. Shoulders rounded and widely separated from the pronotum. Feebly striate-punctate, striæ consisting of lines of long shallow punctures, irregular in size and continuity; scarcely perceptible at apex and sides. Intervals flat and minutely punctate. *Abdomen* and

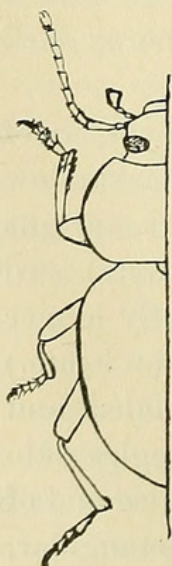


Fig. 1.—*Adelium nitidum*.

epipleuræ glabrous. Anterior tibiæ very slightly curved. *Dimensions* 9.11 × 4.4.7 mm.

Hab.—Tenterfield, N.S.W. (H. J. Carter).

This insect has its closest congener in *A. ellipticum* Blackb., in general appearance. It differs from that sp. in smaller size and pronounced sculpture of elytra. Its prothorax is more circular, and the colour of antennæ and legs is much darker than in *A. ellipticum*.

ADELIUM PUNCTUM, n.sp. (Plate xx., fig.3).

Dark copper colour, moderately shining. Tarsi with light brown pubescence.

Head densely and coarsely punctate on clypeus; punctures more widely scattered on front. Frontal impression slight, well marked punctate fovea on forehead. Antennæ stout, 3rd joint the length of 4th and 5th combined. *Prothorax* (3 × 4.1 mm.) widest behind the middle, sides strongly rounded and sinuous posteriorly. Anterior angles prominent and acute; posterior angles rectangular and definite. Moderately convex, the disc covered with unequal punctures; sides transversely rugose, medial line evident. *Scutellum* curvilinear triangular, minutely punctate. *Elytra* (8.5 × 5 mm.) very slightly convex. Shoulders strongly rounded, sides subparallel to near apex; striate-punctate, ten lines of long and widely separated punctures on each elytron, the 10th on lateral border. Interstices flat and without punctures. *Epipleuræ* punctate. *Abdomen* shining, glabrous and slightly crinkled on sides. Tibiæ curved. *Legs* beneath minutely punctate. *Dimensions* 12 × 5 mm.

Hab.—Richmond and Bellinger Rivers, and Tenterfield (Mr. Jackson).

A rather flat insect whose nearest congeners are *A. scutellare* Pasc., and *A. reticulatum* Carter. From the former it differs in smaller size, more rectangular form, flatter elytral interstices, &c. From *A. reticulatum* it is easily distinguished by absence of punctures on the elytral interstices while the pronotum is very different, the sides of reticulation being reflexed, while those of *A. punctum* are nearly flat, while its disc is much less densely punctured.

BRYCOPIA TAYLORI, n.sp. (Plate xx., fig.6).

Shortly ovate, very convex. The whole a shining metallic black except the antennæ, which are a dull brown, and the underside of tarsi and joints of legs, which are slightly castaneous.

This insect is very closely allied to *B. globulosa* Carter,* from which it differs markedly in colour and in the following particulars :—

Head wider, front more convex and widely rounded at the sides, more constricted towards base, with lateral foveæ larger and longitudinally prolonged, not quite meeting a second shallower fovea near hind angles. *Elytra* with shoulders more strongly indicated; the striæ are deeper and somewhat crenulate, the punctures therein are much smaller and closer, while the intervals are much less flat, 3rd and 5th wider than the rest. *Legs*, especially femora, much stouter, and tarsi much more transverse. *Abdomen* black, shining, sternum and abdomen densely punctate. *Dimensions* 6 × 3 mm.

Hab.—Oberon, N.S.W. (F. Taylor). —

I am indebted to Mr. Taylor for this species, of which four specimens are before me, and in which I cannot detect any sexual differences. I have dedicated it to Mr. Taylor, senr. In general facies is very similar to *B. globulosa*; but whereas that species is of a brilliant copper with paler legs and antennæ, and yellow tarsi, *B. Taylora* is a nitid black, with legs and tarsi dark brown. It is altogether a more stoutly built insect, with width a shade over 3 mm., while *B. globulosa* is slightly under 3 mm.

LEPISPILUS STYGIANUS Pasc.

As there seems some doubt as to the distinction between this insect and *Lepispilus sulcicollis* Boisd., a doubt which is emphasised by Mr. Champion,† I should like to note that on Mt. Kosciusko, Jan. 1906, I took six specimens (3♂, 3♀), of a *Lepispilus* that corresponds with Mr. Pascoe's description. Mr. Lea also has one

* These Proceedings, 1905, p.184.

† Trans. Ent. Soc. Lond. 1894, p.393.

specimen, and his description* holds true of mine. The specimens were quite fresh when captured, and show no signs of abrasion. The whole insect is a nitid black, without any pubescence, except on the prosternum. The puncturation of the elytra is entirely different from that of *L. sulcicollis*, being finer and without the large reticulated foveæ. It is apparently not rare in this district, which again corresponds to that of Mr. Pascoe's insect (Mts. of Vic.). I have had the same insect sent to me for identification by Mr. C. French.

Adelium minor Carter, *A. globulosum* Carter.—Having lately drawn these insects under a dissecting lens, the rounded eyes were brought prominently under my notice. This fact brings them into the genus *Brycopia*. Having examined *A. minutum* Lea, the same is true of that species. All three should therefore be classified as *Brycopia*.

STIGMODERA HELMSI, n.sp. (Plate xx., fig.10).

Elongate-oblong, rather narrow and flat. Head and pronotum dark bronze-green, except clypeus which is blue, with sides, sternum, legs and antennæ dark blue. Abdomen with first two segments metallic peacock-green, shading into blue on the apical segments. Elytra blue with three interrupted fasciæ red.

Head slightly excavate in front, densely punctate; width 2mm. between eyes. *Pronotum* (3.5 × 4.5 mm.) strongly narrowed anteriorly, at base meeting elytra without constriction. *Scutellum* large, triangular, blue, minutely punctate. *Elytra* (12 × 6 mm.) deeply striate, 3rd and 5th intervals costate towards base; dark blue ground with irregular bands interrupted widely at suture. On each elytron an oblique shoulder band extending from second striæ to the humeral angle; a second about midway roughly parallel to the former and joining it on the sides, also reaching from the second striæ to sides. A third band nearly straight nearer apex. The whole apical fourth part of elytra blue. Body slightly wider than thorax, widest about half way, then strongly narrowed towards apex, which is shortly spinose, the teeth

* Proc. Linn. Soc. N.S.W. 1896, p.293.



Carter, H. J. 1906. "Notes on the genus *Cardiothorax*: with descriptions of new species of Australian Coleoptera." *Proceedings of the Linnean Society of New South Wales* 31, 236–260.

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