

## SOME AUSTRALIAN BEES.

BY T. D. A. COCKERELL.

In 1904 there were 222 species of native bees known from Australia. At the present moment (January, 1913) there are 583, if we include the species described below and 24 others sent for publication but not actually published at the time of writing. Even this comparatively large number must represent but a small minority of the species actually existing, as many districts have never been examined for bees, and every new collection contains a considerable percentage of undescribed forms. The best-explored district is the region about Mackay, Queensland, which was for many years the hunting ground of Rowland and Gilbert Turner. The vicinity of Sydney has furnished a large number of species; many also come from Melbourne and the region round about. Mr. S. W. Fulton has recently collected a most remarkable series of minute bees at Purnong and Croydon, all new. These belong to *Prosopid* genera, but simulate our American species of *Perdita*, and probably have similar flower-visiting habits. One (*Euryglossina sulphurella* Ckll.) is light yellow like certain of our *Perdita* species, and presumably visits some flower of that color; possibly, in Australia, it would be some Mimosa-like plant.

Australia (including Tasmania) is known to have 47 genera of bees. This number would be increased if we added some of the recent segregates, proposed principally by Perkins. The genera *Euprosopis* and *Gnathoprosopis* of Perkins seem distinct in their typical members, and I have described species under them; but a perfectly satisfactory dismemberment of Australian *Prosopis* is hardly possible as yet. It cannot be doubted that eventually both *Prosopis* and *Euryglossa*, as represented in Australia, will be divided to form additional new genera.

The Australian genera may be grouped as follows, the number of species being given in each case:

- (1) Endemic (Precinctive) genera: *Binghamiella* (1), *Parasphecodes* (34), *Pachyprosopis* (12), *Stilpnosoma* (1), *Meroglossa* (15), *Callomelitta* (2), *Trichocolletes* (1), *Goniocolletes* (1), *Cladocerapis* (1), *Andrenopsis* (1), *Phenacolletes* (1), *Anthoglossa* (4),



*Turnerella* (2), *Euryglossa* (57), *Euryglossina* (8), *Euryglossella* (1), *Euryglossidia* (2), *Heterapis* (3), *Hylæoides* (4), *Neopasiphaë* (1), *Stenotritus* (2), *Mellitidia* (1), *Gastropsis* (2), *Melittosmithia* (2), *Neoceratina* (1), *Exoneura* (10),<sup>1</sup> *Lestis* (2), *Androgynella* (1). It will be seen that these are mainly Prosopid and Colletid bees.

- (2) Genus common to Australia and New Zealand, but not found elsewhere: *Paracolletes* (70).
- (3) Genus common to Australia and the Austromalay Islands: *Palæorhiza* (12).
- (4) Genera widely distributed over the Eastern Hemisphere, but not American:
  - (a) Genera with very distinct Australian species: *Saropoda* (2).
  - (b) Genera with Australian species closely allied to those of Asia: *Allodape* (4), *Nomioides* (1), *Crocisa* (11),<sup>2</sup> *Thaumatosoma* (1).
- (5) Genera widely distributed in the Eastern and Western Hemispheres:
  - (a) Genera with very distinct Australian species: *Prosopis* (95), *Halictus* (55), in part, *Megachile* (89).
  - (b) Genera with Australian species closely allied to those of Asia: *Sphecodes* (1), *Halictus* (55), in part, *Nomada* (1), *Nomia* (36), *Xylocopa* (1), *Anthophora* (15), *Lithurgus* (3), *Dianthidium* (1), *Cælioxys* (4), *Trigona* (8).

By way of contrast, it is of interest to compare the bees of Formosa. I recently studied a large collection from that island, and did not find a single endemic genus or subgenus.

***Exoneura angophoræ* Cockerell.**

Females collected by H. Hacker at Sunnybank, Brisbane, September 12, 1911, represent extreme variations of this species, as follows:

(a) Var. *hackeri*, nov.; white clypeal band extremely broad, its upper half broadest, and covering the whole width of the clypeus; lateral face marks quite large, triangular; first three abdominal segments with broad dusky bands, gently concave posteriorly, the bands bending more or less cephalad at sides. (Queensl. Mus. 3.)

(b) Var. *obliterata*, nov.; clypeal band dusky, narrow, very obscure; no lateral marks; first abdominal segment nearly all black except the hind margin (broadest in middle) and broad hind corners; band on second segment reduced to three dusky patches; no band on third. (Queensl. Mus. 1.)

<sup>1</sup>The Syrian *E. libanensis* Friese belongs to *Exoneuridia* Ckll., 1911.

<sup>2</sup>*Crocisa pantalon* Dewitz, from Porto Rico, is said by Friese to belong to *Epeolus*.



These look like different species, but are apparently only extreme variations of *E. angophoræ*, or perhaps a closely allied species, which will take the name *E. hackeri*.

***Exoneura hamulata* Cockerell.**

The clypeal mark in the females varies, and the best character to distinguish this species from *E. bicolor* Smith is the broad face. Mr. G. Meade-Waldo has kindly compared my determination of *E. bicolor* with Smith's type, and finds it correct (allowing for a certain amount of variation in the clypeal stripe); he adds, "the type has the face conspicuously narrowed below." I have received *E. hamulata* labelled *bicolor*, and Friese evidently had *hamulata* as *bicolor*, since in his description of *E. froggattii* he remarks that *bicolor* has the inner orbits parallel. Females of *hamulata* before me have the following data: Windsor, Victoria (*French*; Froggatt Coll. 161); no locality (Nat. Mus. Vict. 103); Armidale, N. S. W., Nov. 27, 1900 (*Froggatt* 163); Moss Bay, Dec. 13, 1893 (*Froggatt* 158).

In *Ann. Mag. Nat. Hist.*, Oct., 1910, I described a male *Exoneura*, evidently either *bicolor* or *hamulata*, I thought probably the latter. I now conclude that it was *bicolor*, as I have before me a different male (Stradbroke Island, Oct. 2, 1911, *H. Hacker*; Queensl. Mus. 2), which seems to be *hamulata*. It is 8½ mm. long, with very red wings, and differs from the male now supposed to be *bicolor* by the pale face marking being confined to a large triangular cream-colored clypeal patch, one side of which covers the upper end of the clypeus. The first two abdominal segments and the middle of the third are black. The flagellum is distinctly dark reddish. It would seem from the large size and very red wings that this cannot be the male of *E. angophoræ*; yet it is a rather suspicious circumstance that two female *Exoneura* from Stradbroke Island, Queensland (Sept. 27, 1906, *Froggatt*, 145, 201), belong to a large (7 mm. long) variety of *E. angophoræ*, having the characteristic abdominal markings of the *hackeri* type; one has a narrow ferruginous clypeal stripe, the other has it practically obsolete; there are no lateral marks. The hair on the hind legs is reddish (more or less coppery) rather than black. The inner orbits strongly converge below. These females are certainly not *bicolor*, and of course they are entirely distinct from *hamulata*; they are, however, surely conspecific with the Brisbane forms of *angophoræ*. It is possible that the Brisbane and Stradbroke Island forms represent a distinct new species, which will then take the name *E. hackeri*. It remains for local students to decide this question.



**Exoneura bicolor** Smith.

Females are labelled thus: King I., Tasmania (*J. A. Kershaw*, Nat. Mus. Vict. 207); Wattle Flat, N. S. W. (*Froggatt* 164); no locality (*D. F. Hill*, Nat. Mus. Vict., 183); N. Mells. (*F. P. Spry*, Nat. Mus. Vict. 254); Croydon (*S. W. Fulton*, Nat. Mus. Vict. 175). The last two enumerated have the red of the abdomen very bright and clear.

**Exoneura concinnula** n. sp.

♀. Length  $4\frac{1}{2}$  mm.; like *E. froggattii* Friese, but smaller, the clear reddish wings with the stigma and nervures clear light ferruginous; femora black, red apically, tibiae and tarsi chestnut-red; abdomen red without markings; head small; face wholly black; labrum red; hair of hind tibiae and tarsi light red.

*Habitat*.—New South Wales, Dec. 1, 1910 (*Froggatt* 108). I had taken this for *E. froggattii*, and consequently regarded the true *froggattii* as new; but my specimen of *E. froggattii*, described below, is one of the original lot and undoubtedly genuine. In Friese's account, 27 Nov. should apparently read 27 July.

**Exoneura fultoni** n. sp.

♀. Length  $5\frac{1}{2}$  mm.; head and thorax shining black (including tubercles); none of the ordinary pale face-marks, but lower part of clypeus broadly suffused with red; mandibles red except at base and apex; legs bright chestnut-red, including femora; hair on outer side of hind tibiae and tarsi dark fuscous; wings dilute reddish, stigma clear ferruginous; abdomen red, sometimes dusky at apex, not at all banded.

*Habitat*.—Croydon, Australia (*S. W. Fulton*; Nat. Mus. Vict. 238, and 176 in part). Readily known by the small size, red femora, and absence of a cream-colored clypeal stripe.

**Exoneura froggattii** Friese.

♀. Length 6 mm.; head and thorax shining black; face narrow, wholly without light markings; tubercles black; flagellum thick, reddish beneath; wings hyaline, slightly grayish, stigma and nervures dusky red; femora black, red at apex; tibiae and tarsi bright chestnut-red; abdomen rather slender, dusky apically, without bands; hair on hind tibiae and tarsi entirely light red.

*Habitat*.—Thornleigh, N. S. W., "in cavity of Ethon gall," July 27, 1895 (*Froggatt* 160). A specimen with reddish wings, apparently a slight variety of this species, is from Croydon (*Fulton*; Nat. Mus. Vict. 176 in part).



♀. Scutellum with a yellow spot at each anterior corner; supra-clypeal mark higher.



*Habitat*.—Two specimens in the National Museum of Victoria (168, 169), from the collection of William Kershaw; locality not given. Mr. Kershaw lived in Melbourne.

**Euryglossa carnosa** n. sp.

♀. Length 8 mm., broad and robust; head and thorax black, with the following parts bright chrome-yellow; clypeus (except ferruginous lower edge, and two black spots on upper part), a small mark on lower part of supraclypeal area, lateral face-marks (filling space between clypeus and eye, and continued upward as large broad lobes, bending away from orbit, on upper part of front), tubercles and broad upper border of prothorax (broadly notched by black above in middle), small squarish mark behind tubercles, broad anterior lateral corners of mesothorax, scutellum (except two black marks on anterior margin), and postscutellum. Labrum red; mandibles slender, bidentate, yellow at base, red beyond, black at apex; maxillary palpi long and slender; face broad; scape entirely bright yellow; flagellum short, bright ferruginous beneath; front and mesothorax dullish, sparsely punctured; tegulæ and plate at base of wings bright yellow; wings clear; the dark red-brown stigma not very large; lower side of first s.m. strongly sinuate; recurrent nervures meeting the transversocubitals; the very broad second s.m. with upper side oblique; marginal cell obliquely subtruncate at apex; end of first t.c. to end of second on marginal a slightly greater distance than end of second t.c. to end of marginal; legs black as far as same distance beyond middle of femora, beyond that bright yellow; hind spur with very long spines; abdomen very broad, black, with the hind margins of the segments dark brown, and the bases of segments 2 to 4, except at sides (4 dusky also in middle) broadly dull pale pinkish ferruginous; apex with black hair.

*Habitat*.—Purnong, S. Australia (S. W. Fulton; Nat. Mus. Vict. 150). A species of the group of *E. aurantifera* Ckll. and *E. geminata* Ckll., but entirely distinct by the peculiar abdomen.

**Euryglossa nigrocærulea** n. sp.

♀. Length about 9 mm.; robust, head and thorax pure black, abdomen dark blue, with the hind margins of the segments black; legs black, the tarsi reddish at apex; tegulæ piceous or black; wings hyaline, faintly brownish, stigma dark red-brown, nervures sepia; caudal fimbria black. A species of the group of *E. depressa* Sm. and *E. subsericea* Ckll., to which it is very closely allied. It differs from Smith's description of *depressa* by the narrow facial foveæ.



the fuscous hair on vertex, the flagellum fulvous beneath (except at base and apex), hair on inner side of tarsi creamy-white; abdomen dark blue instead of green. [A female without locality (Vict. Nat. Mus. 104), which I provisionally refer to *E. depressa*, is narrower than our insect and has much darker wings; the dark green abdomen has the same texture and scattered punctures. The space between the facial fovea and the eye is smooth, shining and almost without punctures, contrasting with the adjacent dull and granular front, this apparently being the condition rather indefinitely described by Smith.] Compared with *E. schomburgki* Ckll., *E. nigrocærulea* differs by the entirely black front, blue abdomen, black labrum, much darker flagellum, sides of front without strong punctures, dark tegulæ, wings not reddened, nervures and stigma much darker, apical fimbria black. Compared with *E. subsericea*, the new species is larger, face and thorax considerably broader, mesothorax more closely and strongly punctured, second submarginal cell considerably longer, area of metathorax not so perfectly smooth and shining.

*Habitat*.—Croydon, Australia, 2 ♀ (S. W. Fulton; Nat. Mus. Vict. 89, 99). One is dated "11. 1. 09."

*Euryglossa tenuicornis* n. sp.

♂. Length about 8 mm.; moderately robust, black without light markings, the mandibles red subapically and the hind margins of the abdominal segments dark brown; eyes dark reddish; head and thorax densely and quite coarsely punctured; face and lower half of front with thin, long white hair; clypeus densely punctured, but shining; scape ordinary, black; flagellum very greatly elongated, slender, fulvous except the last two joints and the apex of the one before, which are black, the apical joint shining, more or less flattened, but only very slightly broadened; mesothorax and scutellum shining between the very dense punctures, those on the scutellum larger than on the mesothorax; area of metathorax minutely granular; tegulæ rather large, subtranslucent pale brown; wings dusky, nervures piceous, stigma redder; venation normal for *Euryglossa*; b.n. falling far short of t.m.; lower side of first s.m. strongly curved; second s.m. elongated, receiving first r.n. some distance from its base; second r.n. on inner side making an angle much greater than a right angle where it joins the s.m.; legs black, with thin pale hair, the knees and the ends of joints more or less reddish, anterior tibiæ ferruginous in front; abdomen dullish, minutely roughened; venter flat.

*Habitat*.—Purnong, S. Australia, 3 ♂ (S. W. Fulton; Nat. Mus.



Vict. 134, 135, 137). Entirely unique by the very peculiar antennæ, which approach the condition found in *Thaumatosoma*, a genus of a quite different family. The bee is not much like the ordinary species of *Euryglossa*, and perhaps should form the type of a distinct genus.

*Euryglossa sinapina* n. sp.

♂. Length about  $6\frac{1}{2}$  mm.; black and bright lemon-yellow, the thorax with thin, long pale hair; mesothorax, and the broad abdomen above, black without markings. Very close to *E. sinapipes* Ckll., with the description of which it agrees, except as follows: yellow mark on hind border of scutellum very small and inconspicuous, but a larger, conspicuous one on postscutellum, both marks inclined to be divided into two; abdomen above pure black, the hind margins of the segments smooth and shining (beneath, the abdomen is much maculated with yellow, and this reaches the extreme sides of segments 4 to 6); eyes pale gray; upper end of lateral face-marks very broadly and obtusely rounded; flagellum pale orange-fulvous, more dusky above with a dark mark above at base; mesothorax shining; legs entirely yellow, except the ferruginous small joints of tarsi; tegulæ opaque light-yellow, with pellucid spot and anterior margin; nervures and stigma dilute reddish sepia; first r.n. joining second s.m. a short distance beyond its base. The marginal cell is narrowly truncate.

*Habitat*.—Purnong, S. Australia (S. W. Fulton; Nat. Mus. Vict. 147).

*Euryglossa sanguinosa* n. sp.

♀. Length a little over 8 mm., robust; head and thorax black, with white hair, which is quite abundant on face and front, tubercles and sides of metathorax; face without light markings; clypeus shining, finely punctured; labrum black; mandibles chestnut-red in middle; flagellum bright ferruginous beneath except at base; mesothorax shining, minutely and densely punctured in front and at sides anteriorly, but on the disk with larger, sparse punctures; area of metathorax shining; tegulæ rufotestaceous; wings hyaline, slightly dusky; nervures and stigma dark chestnut; lower side of first s.m. strongly arched; second s.m. long, receiving first r.n. a considerable distance from base; legs dark rufous, the small joints of tarsi light ferruginous; hind spur coarsely pectinate; abdomen broad, dullish, with a sericeous lustre; first three segments dark green, with the hind margins broadly dark reddish; remaining segments clear ferruginous, the fourth with a dusky shade at sides; venter dark to middle of fourth segment.



*Habitat*.—Windsor, Victoria (*French*; Froggatt Coll. 188). Superficially like a miniature *E. hæmatura* Ckll., but the eyes converge below, and the sculpture of the sides of the mesothorax in front is quite different. Also related to *E. terminata* Smith, but distinguished by the green abdomen, with the fourth as well as the fifth segment red. Also related to *E. salaris* Ckll., but differing in color and sculpture.

*Euryglossa ruberrima* n. sp.

♀. Length about 8 mm., very robust; bright terra-cotta red, with the head and pleura black; mandibles black; antennæ ferruginous beneath, dark above; mesothorax large and convex, with strong sparse punctures; metathorax black at sides, posteriorly and extreme base; abdomen with conspicuous but suffused blue-black transverse shades on fourth and fifth segments, and very slight dusky shades on first to third; apex with fuscous hair; legs red, including coxæ and trochanters, but anterior femora piceous except beneath and at extreme apex, middle femora largely darkened, especially behind; hind legs entirely clear red; tegulæ rufous; wings strongly reddened. A species of the *E. rubricata* group; in my table in *Ann. Mag. Nat. Hist.*, Aug., 1910, p. 167, it runs to *E. rubricata* Sm., from which it differs by the dusky, reddened wings, the mandibles black with only a red subapical spot, the metathorax largely red, the tegulæ dark reddish, and the base of the abdomen entirely red. Compared with *E. frenchii* Ckll., it differs by the very strongly, though not very densely, punctured clypeus and supraclypeal area, the suture between them wholly dark, the entirely red hind femora, and the apex of abdomen darkened, the dusky color of the fifth segment leaving a pair of rather poorly defined transversely oval red spots. From *E. leptospermi* Ckll. it differs by the color of the wings, the larger head, the facial foveæ not at all turned mesad at upper end, the more sparsely punctured mesothorax, the second r.n. reaching second s.m. a little more distant from its apex than the first from its base.

*Habitat*.—Victoria, 1910 (*Froggatt*, 149). It also carries a label with number 1418.

*Pachyprosopis hæmatostoma* n. sp.

♀. Length about 6 mm.; rather robust, but head not enlarged; head, thorax, and abdomen shining dark blue; labrum and greater part of mandibles red; flagellum bright ferruginous beneath; cheeks broad; mesothorax with very sparse, excessively feeble and minute punctures; area of metathorax smooth and shining; sides of meta-



thorax with thin pale hair; tegulae black in front, dark red-brown behind; wings rather small, clear; b.n. very strongly arched, not nearly meeting t.m.; first r.n. entering first s.m. some distance before its end; second s.m. very narrow, greatly produced above, to an acute angle; legs piceous, slightly metallic, the anterior femora quite blue; anterior knees, tibiae, and tarsi, and all the other tarsi, bright ferruginous red; abdomen feebly sculptured; pygidial plate very narrow.

*Habitat*.—Croydon, Australia, 2 ♀ (*S. W. Fulton*; Nat. Mus. Vict. 236). Quite unique by the uniform dark blue color of the body.

*Pachyprosopis atromicans* n. sp.

♀. Length about 5 mm.; shining black, with very little hair; tibiae and tarsi bright ferruginous, as also are the knees, extending into a more or less defined stripe on the middle and hind femora; abdomen broad, the lateral hind margins of the segments (especially the second and third) more or less broadly reddish; mandibles with a ferruginous subapical band; clypeus brilliantly shining, with sparse distinct punctures; scape shining black; flagellum short and thick, clear ferruginous beneath; head not enlarged; mesothorax brilliantly shining, sparsely punctured; scutellum shining and punctured, but postscutellum granular and dull; area of metathorax shining, except at extreme base; tegulae rufous; wings hyaline, stigma dilute sepia, nervures paler, basal nervure yellow; second s.m. broad, but the outer upper angle produced as in *Pachyprosopis*; recurrent nervures entering second s.m. near base and apex, the first sometimes meeting the t.c., but the second always away from extreme apex of cell; claws with an inner tooth far from tip; hind spur with long spines; abdomen microscopically transversely lineolate.

♂. Length about  $4\frac{1}{2}$  mm.; like the female, but the thick flagellum is elongated; face wholly black, with thin but conspicuous white hair; red on femora more extended; last two abdominal segments clear red.

*Habitat*.—Purnong, near Murray R., S. Australia, 2 ♀, 1 ♂ (*S. W. Fulton*; Nat. Mus. Vict. 232, 220, 226); Croydon, Australia, 1 ♀ (*S. W. Fulton*; Nat. Mus. Vict. 193). The type is a female from Purnong. Intermediate between *Euryglossa* and *Pachyprosopis*; resembling in many ways *Euryglossa neglectula* Ckll., but especially related to *Pachyprosopis nitidiceps* Ckll., from which it is known by the shining mesothorax, red tibiae, etc.

*Prosopis asinella* n. sp.

♂. Length about 5 mm.; black, with the face (lateral marks



reaching sides of front), broad short mandibles, the thick flattened scape and second antennal joint in front, all pale yellow; upper border of prothorax, tubercles, anterior and middle femora, apices of hind femora, and all the tibiae and tarsi, bright lemon-yellow; scutellum entirely black; face rather narrow, entirely pale up to level of antennae, supraclypeal area oval with a truncate base, lateral face-marks ending above in an oblique-sided lobe, the tip of which is on orbital margin about the level of middle of front; front and thoracic dorsum dull, extremely minutely punctured; tegulae with a light spot; wings clear, stigma and nervures dark brown; first r.n. entering apical corner of first s.m. or meeting first t.c. (these alternatives represented by the opposite wings of the type); abdomen short and broad, dullish, very finely punctured, wholly without ventral tubercles; flagellum pale ferruginous beneath.

*Habitat*.—Purnong, S. Australia (S. W. Fulton; Nat. Mus. Vict., 197). In my table of Australian *Prosopis* (Ann. Mag. Nat. Hist., Feb., 1910) this runs to *P. primulipicta* Ckll., but differs from that by the much narrower and paler face, wholly yellow hind tibiae, etc. From other species it is known by the small size, yellow legs and non-tuberculate abdomen. According to the character of the mandibles and scape, *P. asinella* falls in the genus *Gnathoprosopis* Perkins.

*Prosopis minuscula* n. sp.

♂. Length about  $4\frac{3}{4}$  mm., very slender, especially the abdomen, which has the dorsal suture between the first and second segments constricted; black, with the following parts yellow (reddened by cyanide in type), mandibles, labrum, the long clypeus, lateral face-marks shaped like feet on tiptoe (convex and extremely shiny), tubercles, small marks on upper margin of prothorax, apical part of coxae, trochanters, knees, stripe on anterior femora behind and short one in front, anterior and middle tibiae (latter with a blackish spot behind) and less than basal half of hind tibiae; the supraclypeal area, scutella, etc., are black, and the combination of black femora with yellow trochanters is very peculiar; scape yellow in front, not swollen; flagellum long, light fulvous beneath; wings clear, nervures and the large stigma dark brown; first r.n. meeting first t.c.; second s.m. about as high as long; abdomen subclavate, broadest near the end. The abdomen is rather coarsely transversely lineolate.

*Habitat*.—Croydon, Victoria (S. W. Fulton; Nat. Mus. Vict. 195). Runs in my table nearest to *P. primulipicta*, which has a much broader face, dark trochanters, etc.



**Prosopis vittatifrons** n. sp.

♀. Length about  $4\frac{1}{2}$  mm., rather slender; head and thorax black, with the following parts cream-color: mandibles, labrum, clypeus, a broadly triangular supraclypeal mark, lateral face-marks (extending broadly up to beginning of facial foveæ, then continued for a short distance as a very fine line between fovea and eye), a broad band on each cheek behind eye, and elongate mark on front; tubercles, with extension to upper margin of prothorax, white; tegulæ pellucid; legs pale ferruginous, the hind ones a little stained with dusky; abdomen with the first two segments clear ferruginous, the others dark brown, the hind margins of the third and fourth more or less pallid, or the first two segments may each have a pair of large brown blotches, with the third ferruginous, crossed and largely covered by a large dark cloud; face broad; antennæ light ferruginous beneath; mesothorax dullish, microscopically tessellate and punctured; wings hyaline, faintly dusky, stigma and nervures dark brown; the two recurrent nervures meeting the transversocubitals; second s.m. a little higher than broad.

♂. Length a little over 3 mm.; face light yellow (primrose-color) up to level of antennæ, with an elongate frontal mark as in female, the lateral marks shaped like a hand with the index-finger pointed; first abdominal segment dark brown, pale ferruginous apically, second the same, the broad red band notched on each side in front, the second segment also red basally; remaining segments dark.

*Habitat*.—Purnong, S. Australia, 2 ♀, 2 ♂ (S. W. Fulton; Nat. Mus. Vict. 221, 213, 145). The type is a female. Runs in my table to *P. constricta* Ckll., but is easily known by the elongate frontal mark in both sexes; the male *constricta* has the clypeus, etc., white instead of yellow.

**Prosopis mediovirens** n. sp.

♀. Length  $4\frac{1}{8}$ – $4\frac{1}{2}$  mm.; head and thorax dark green, dullish, very finely sculptured, with the following parts creamy-white or pinkish-white; labrum, mandibles, clypeus (except a rather broad dark band down each side, not reaching lower margin), broadly triangular supraclypeal mark, lateral marks (continued as a band above to beginning of facial foveæ), small mark on lower part of cheeks, tubercles and an interrupted line on upper margin of prothorax; no frontal mark, no light mark on scutellum; antennæ pale ferruginous beneath; tegulæ hyaline, with a white spot; wings clear, the large stigma dark brown, nervures paler; b.n. nearly reaching



t.m.; recurrent nervures meeting transversocubitals; second s.m. a little broader than high; legs very pale yellow or pinkish-white, hind femora dark behind except apically, hind tarsi dark at apex; abdomen piceous, with the hind margin of first segment broadly (notched in front sublaterally), of the second narrowly, and the base of the third, ferruginous; hind margin of third segment more or less pallid.

♂. Length  $3\frac{1}{2}$  mm.; light colors of face, prothorax and legs clear lemon-yellow; face entirely yellow up to level of antennæ; supraclypeal mark larger, but upper extension of lateral marks formed as in female; scape yellow in front, not swollen; flagellum light orange-fulvous beneath; legs bright yellow, but the hind legs peculiarly marked, the femora with the apical two-fifths brown in front, the tibiæ with nearly the apical half (except a minute apical spot) very dark brown, the tarsi dark except at base; abdomen with two very broad fulvous bands, each notched on each side in front; venter fulvous.

*Habitat*.—Purnong, S. Australia, 5 ♀, 2 ♂ (S. W. Fulton; Nat. Mus. Vict. 227, 161, 215, 235, 230). In my table it runs to 5, and there forms a new section, with mesothorax green. In spite of the different coloration, it seems nearer to *P. vittatifrons* than to any other described species. The type is a female.

*Prosopis chlorosoma* n. sp.

♀. Length hardly  $4\frac{1}{2}$  mm.; head and thorax dark green, varying to black with a greenish tint, scutellum and postscutellum black; the following parts are light yellow (reddened by cyanide in types); clypeus except a broad band on each side, not reaching lower margin (hence the light area on clypeus is like a tall hat with the brim turned down); broadly triangular supraclypeal mark; lateral face-marks, forming a band which extends as far as facial foveæ; basal half of mandibles (but not labrum); interrupted line on upper border of prothorax, and tubercles. Tegulæ hyaline with a yellow spot; wings clear, the large stigma and the nervures dark reddish-brown; b.n. nearly reaching t.m.; recurrent nervures meeting transversocubitals, or first r.n. just reaching basal corner of second s.m.; second s.m. about as high as broad; femora black, with the knees broadly yellow; tibiæ and tarsi yellow; abdomen black. Mesothorax dullish, very finely sculptured. Antennæ pale fulvous beneath.

*Habitat*.—Croydon, Australia, 7 ♀ (S. W. Fulton; Nat. Mus. Vict. 192, 191). In my table this runs to *P. albonitens* Ckll., a very different species, with blue abdomen. This cannot well be the female of *P. minuscula*. Both have a minutely cancellate area of metathorax,



but in *minuscula* the sculpture is deeper, giving a finely pitted effect; *P. minuscula* also lacks the green color, and has the b.n. considerably more remote from the t.m.

*Prosopis scintilliformis* n. sp.

♀. Length about  $4\frac{1}{2}$  mm.; black, much less robust than *P. chlorosoma*, the abdomen especially much narrower; head round, the face broad; mandibles pale yellowish, but labrum dark; face-marks confined to a rather narrow yellow band along each inner orbit, reaching a little above level of antennæ; flagellum clear ferruginous beneath; tubercles, and an inconspicuous interrupted line on upper border of prothorax, yellow; legs black, with the knees, anterior tibiæ in front, base of middle tibiæ and nearly half of hind tibiæ, as well as all the basitarsi, yellow; wings practically as in *P. chlorosoma*, except that first r.n. enters extreme apical corner of first s.m.; thorax dullish, the microscopical sculpture peculiar, the mesothorax and scutellum having a fine but deeply cut tessellation and scattered punctures; area of metathorax microscopically coarsely cancellate.

*Habitat*.—Croydon, Australia, 1 ♀, mounted on a card with three *P. chlorosoma* (*S. W. Fulton*; Nat. Mus. Vict. 192). In my table this runs near to *P. amacula* Sm., a much larger and otherwise different species. It is rather to be compared with the minute *P. scintilla* Ckll., from which it is readily known by the light tubercles, etc. I suspect that it may be the female of *P. minuscula*, but without better evidence of this it seems best to regard it as distinct.

*Prosopis xanthosphæra* n. sp.

♀. Length almost 10 mm.; robust, black, the abdomen faintly greenish, especially toward the apex; markings on head and thorax brilliant chrome-yellow, as follows: a large broad patch on each side of face, shaped something like a turtle's head in profile, obliquely truncate above, very obtusely pointed below; tubercles broadly (but no patch behind); a large round patch on scutellum and post-scutellum, crossed by a black (sutural) line. Mandibles broad, tridentate at apex; clypeus flattened and minutely roughened in middle, distinctly but not densely punctured; antennæ entirely black; front and vertex with coarse black hair; mesothorax dullish, strongly and rather closely punctured; area of metathorax with about the basal third very coarsely corrugated, in complete contrast with the rest, which is without evident sculpture; tegulæ black, punctured anteriorly; wings hyaline, very faintly dusky; b.n.



only gently arched, nearly reaching t.m.; first r.n. entering extreme basal corner of second s.m., which is elongate, much broader than high; legs black, partly ornamented with silvery-white hair, last joint of anterior tarsi reddened; abdomen shining with rather small but strong punctures, apex with black hair.

*Habitat*.—King Island, Tasmania (*J. A. Kershaw*; Vict. Nat. Mus. 206). Runs in my table to *P. rotundiceps* Sm., but the head is not round, the flagellum is black, and the abdomen is not minutely and closely punctured.

*Prosopis leucosphæra* n. sp.

♀. Length a little over 9 mm.; robust, black, with the abdomen obscurely dark bluish; clypeus wholly black, dullish, with very shallow punctures; lateral face-marks a sort of dilute orange, large, cuneiform, obtuse below, somewhat obliquely broadly truncate above, antennæ black, the flagellum with a contrasting bright ferruginous stripe beneath; lower part of front. broadly elevated in middle; vertex with coarse black hair; mesothorax strongly and quite densely punctured; tubercles cream-color; a large circular cream-colored patch on scutellum and postscutellum, crossed by a black (sutural) line; area of metathorax coarsely corrugated at base; tegulæ black, punctured in front; wings hyaline, very faintly dusky; first r.n. entering basal corner of the long second s.m.; legs and abdomen essentially as in *P. xanthosphæra*, but punctures of second abdominal segment smaller and closer.

*Habitat*.—Croydon, Australia (*S. W. Fulton*; Nat. Mus. Vict. 167). Closely related to *P. xanthosphæra*, differing not only in color of the markings, but also in the finer punctures of the second abdominal segment. In my table of *Prosopis* it can be run to 12 or to 38, running out at either place because of the cream-colored patch on the scutella.

*Prosopis chromatica* (Cockerell).

Stradbroke Island (*H. Hacker*; Queensl. Mus. 66). One male taken Oct. 2, 1911.

*Prosopis hæmatopoda* n. sp.

♀. Length about 7 mm.; tile-red and black, like *P. lateralis* Smith, of which it may be a subspecies. It differs from *lateralis* by the lateral face-marks, which are orange instead of white; and the femora entirely red, as also the middle and hind trochanters. Tibiæ and tarsi entirely red; metathorax entirely dull black, the area roughened, and shaped like the profile of a cup; first r.n.



entering second s.m. a considerable distance from its base. Antennæ entirely red.

*Habitat*.—S. Australia (*Waterhouse*; Nat. Mus. Vict. 149).

*Prosopis proxima* Smith, var. a.

A female from Purnong, S. Australia (*S. W. Fulton*; Nat. Mus. Vict. 148) differs a little from the type in having the lateral face-marks white without any trace of yellow, and the hind tibiæ with a dull white mark at base. The tubercles have the apical half white, and there are two white marks on the prothorax above. The axillæ are red.

*Prosopis chrysognatha* Cockerell.

A male from Frankston, Victoria (*T. Kershaw*, Dec., 1902; Nat. Mus. Vict. 160) seems to have the faintest possible bluish tint on the abdomen, so faint, that it is difficult to be sure of it. If run in my table among the species with metallic abdomen, it goes straight to *P. cognata* Sm., which is evidently very closely allied. Smith's *cognata* is from Champion Bay and Swan River, and has a dark blue abdomen. The female described by Smith is to be considered the type. I have described the female of *chrysognatha*, and it is not identical with *cognata*.

*Prosopis alcyonea* Erichson.

*Mordialloc* (Nat. Mus. Vict. 186).

*Euprosopis elegans* (Smith).

*Prosopis elegans* Smith. From the National Museum of Victoria come 5 ♀, 2 ♂ (187, 152, 170, 251, 188, 151, 153); the localities are Croydon (*S. W. Fulton*), S. Australia (*W. Kershaw*) and Fern Tree Gully, Victoria (*F. P. Spry*). The males, without locality, collected by C. F. Hill, have the postscutellum with only a small yellow spot or patch.

*Euprosopis nodosicornis* n. sp.

♂. Length 6 mm. or a little over, like *E. elegans* var. *sydneyana* (Ckll.), with the postscutellum broadly yellow, but differing thus: malar space longer; its length 270 microns; the bright ferruginous flagellum with the last four joints thick, with large irregular tubercles above, the three before these subtuberculate. The abdomen has the first two segments and the sides of the third red, the first segment with a diamond-shaped dusky discal mark. The sides of the mesothorax are broadly yellow. Stigma bright ferruginous.

*Habitat*.—Australia, no locality given (*C. F. Hill*; Vict. Nat. Mus. 155).



**Megachile semiluctuosa** Smith.

National Museum, Victoria (*Murray*); 17. W. Australia (*F. Duboulay*; Nat. Mus. Vict. 6).

**M. fumipennis** Smith.

Tennant's Creek, C.-S. Australia (*Field*; Nat. Mus. Vict. 3, 4).

**M. monstrosa** Smith.

Glenrowan (Nat. Mus. Vict. 25). The ventral scopa is white with a slight creamy tint. *M. cornifera* Radoszkowski is larger, but not more than a variety or race, *M. monstrosa cornifera*.

**Saropoda bombiformis** Smith.

New South Wales (Nat. Mus. Victoria 129); Toowms, Queensland (Nat. Mus. Vict. 128); Studley Park, a male with abdomen unusually pale (Nat. Mus. Vict. 122). The Toowms female was received by the Museum from Mr. Annear.

**Anthophora rhodoseymna** Cockerell.

Male, more robust than usual, abdomen 6 mm. wide, New South Wales (Nat. Mus. Vict. 118).

**A. pulchra** Smith.

Kelvin Grove, Brisbane, Nov. 20, 1911 (*Hacker*).

**Nomia australica** Smith.

Brisbane, Queensland, Nov. 27, 1911 (*Hacker*).

**N. flavoviridis** Cockerell.

Sunnybank, Brisbane, Jan. 17, 1912 (*Hacker*). This is a variety, identical with Turner's 999 (Jan., 1898) from Mackay.

**N. muscosa** Cockerell.

Kelvin Grove, Brisbane, Nov. 20, 1911 (*Hacker*); Brisbane, Nov. 2, 1908 (*Hamlyn-Harris*).

**Lestis bombylans** (Fb.).

Grampians (Nat. Mus. Vict. 126). The front is much broader in male *bombylans* than in *L. aerata*; the face-markings in unaltered specimens are bright chrome-yellow, not red. A female from Plenty R. (Nat. Mus. Vict. 127) has dark wings like *L. aerata*, but it belongs with *bombylans*. It possibly represents a distinct race.





Cockerell, Theodore D. A. 1913. "Some Australian bees." *Proceedings of the Academy of Natural Sciences of Philadelphia* 65, 28–44.

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