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Descriptions and Records of Bees.—XXIII.

T. D. A. Cockerell
University of Colorado

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Descriptions and Records of Bees.—XXIII.

By T. D. A. COCKERELL, University of Colorado.

Prosopis fijiensis, sp. n.

♀.—Length $14\frac{1}{2}$ mm.

With a rather long pointed abdomen; brilliant steel-blue, rather dark, with yellow lateral face-marks, consisting of bands or bars (not in the least triangular) ending very obtusely below level of antennæ. No yellow on clypeus; posterior half of tubercles yellow; legs dark blue without yellow, middle and hind tarsi and apical part of their tibiæ with much light hair; head and thorax above with scanty coarse dark hair; clypeus well punctured; mesothorax strongly punctured, the punctures of two sizes, scutellum the same. Wings clear, second s.m. very long, receiving the recurrent nervures near base and apex. Tongue typical for *Prosopis*, so far as can be seen in the dry state. General appearance of insect not unlike *P. alcyonea*.

Hab. Fiji. Type in British Museum (F. Smith Collection, 79. 22).

A very distinct species; in my MS. table of Australian *Prosopis* it runs to *P. albonitens*, but that is a very small species.

Prosopis amata, sp. n.

♀.—Runs in my table of Australian species to *cognata* and *violacea*, but differs from them as follows:—

Lateral face-marks bow-shaped; clypeus sparsely punctured; mesothorax finely punctured	<i>violacea</i> and <i>cognata</i> .
Lateral face-marks cuneate, deep orange, ending above at about level of antennæ; mesothorax with very large coarse dense punctures; clypeus with dense punctiferous grooves	<i>amata</i> .

Other characters of *amata* are:—Yellow of scutellum and postscutellum not reduced; area of metathorax with a transverse ridge and little vertical ridges. Wings nearly clear; first r. n. entering extreme apex of first s.m.; abdomen deep steel-blue, shining, with fine punctures, uniform on segments 1 to 3.

Hab. Kuranda, Queensland (*F. P. Dodd*). Type in British Museum.

Mr. R. E. Turner tells me that Kuranda is near Cairns, at an altitude of about 1100 feet. It is a region of dense jungle.

Prosopis turneriana kurandensis, subsp. n.

♂.—Length 7 mm.

Runs in my table to *P. versicolor*, from which it differs by its blue colour, and the first two abdominal segments sparsely and feebly punctured. It is really related to *turneriana*, from which it differs by having a metallic purplish dark band at each side of clypeus, not quite reaching the lower corners; supraclypeal mark shorter; lateral face-marks pointed above, with the inner upper margin nearly straight (rounded in *turneriana*); second abdominal segment more sparsely and feebly punctured. Tubercles purplish coppery, with a light spot; anterior tibiæ bright chestnut in front and the other tibiæ with red marks.

Hab. Kuranda, Queensland (*F. P. Dodd*, 1907. 129). Type in British Museum.

This species is not a true *Prosopis*.

Prosopis amiculiformis, sp. n.

♀.—Recorded as *P. amicula*, Sm., in Ann. & Mag. Nat. Hist., Nov. 1905, p. 467. Actual comparison with Smith's type shows that it is distinct. Length nearly 7 mm.; clypeus

much broader (especially above) than in *amicaula*; irregular wrinkles of metathorax stronger.

Near Mackay, Queensland.

In my key it comes in as follows:—

Clypeus wholly black; light markings deep chrome-yellow.

Larger; punctures of mesothorax very distinct;
first r. n. enters first s.m. *amiculiformis*, Ckll.

Smaller; punctures of mesothorax so small as to
be hardly visible separately under a lens;
first r. n. joins first t.-c. *amicaula*, Sm.

Prosopis elegans, Smith.

Comparison of types shows that *P. sydneyana*, Ckll., is the same as *elegans*.

Prosopis diversipuncta, sp. n.

♀.—Length about $8\frac{1}{2}$ mm.

Robust. Runs in my table next to *P. nigrifrons*, having the face entirely black. The two are separated thus:—

Tubercles yellow, and also a contiguous large yellow patch on pleura; front dull and densely punctured; mesothorax quite densely punctured; area of metathorax not ridged *nigrifrons*, Sm.

Tubercles black, but a quadrate yellow patch behind; front shining, with well-separated punctures; mesothorax shining, with strong but scattered punctures, not uniform in size; area of metathorax strongly ridged *diversipuncta*, Ckll.

Other characters of *P. diversipuncta* are:—Wings dilute fuliginous; second r. n. receiving both recurrent nervures; scutellum and postscutellum orange, the anterior margin of orange on scutellum wavy; abdomen shining, first segment with very minute punctures, contrasting with much larger ones on base of second.

Hab. Kuranda, Queensland (*Dodd*). 2 ♀ in British Museum.

Prosopis aureomaculata, sp. n.

♂.—Length about 6 mm.

Black, with almost clear wings; face very narrow, the pale clypeus with a black stripe on each side adjacent to the suture, narrowing above and failing below; a small broad and short supraclypeal mark; lateral marks long and narrow,

but not linear, extending far above antennæ, notched by the antennal sockets, and ending in a point a little away from orbit; scape ivory-colour in front; flagellum bright ferruginous beneath; front, vertex, and mesothorax very densely and minutely punctured; upper edge of prothorax with a very narrow yellow band, interrupted in middle; tubercles orange-yellow, but no spot behind; scutellum and post-scutellum bright orange, very smooth, the anterior edge of orange of scutellum gently convex; area of metathorax shining, with a sericeous surface and a fine transverse line; tegulæ black. Legs black, anterior and middle tibiæ with a whitish spot near apex; anterior tibiæ in front and their tarsi ferruginous; first abdominal segment with very strong punctures, second and third with finer ones; no ventral teeth; first r. n. joins first t.-c.

Runs in table near *P. elongata*, as follows:—

Clypeus and lateral marks ivory-colour	<i>aureomaculata</i> , Ckll.
Clypeus yellow	1.
1. Supraclypeal mark present; mesothorax minutely and densely punctured; anterior tibiæ and tarsi red; a constriction between first and second dorsal abdominal segments	<i>elongata</i> , Sm.
No supraclypeal mark	<i>honesta</i> , Sm., <i>simillima</i> , Sm., and <i>metallica</i> , Sm.

Hab. Kuranda, Queensland (*Dodd*). Type in British Museum.

Prosopis permiranda, sp. n.

♀.—Length about 8 mm.

Rather robust; head and thorax dark green; abdomen purple, with green shades. Wings long, clear, with the apical margin dusky; stigma and nervures sepia-brown; second s.m. considerably broader than high, receiving both recurrent nervures. Head and thorax with pale yellow markings consisting of longitudinal stripes, three on face, one from anterior ocellus to very near clypeal margin, and one on each side along orbits, the latter ending in a fine line at top of eye; a subpyriform light yellow mark on each side of lateral ocelli and a rather broad band along hind margins of eyes; on thorax the upper edge of prothorax is light, a band extends from tubercles backwards across pleura, and another across the lower part of pleura (bent downwards anteriorly); the mesothorax has four narrow bands; rather broad bands extend from axillæ across scutellum and postscutellum, to end in a narrow stripe (detached from rest of band) on each side

of metathoracic enclosure; sides and posterior truncation of metathorax with dense white hair; clypeus and most of front feebly sculptured; vertex strongly punctured; scape black; flagellum dull brown beneath; mesothorax with strong well-separated punctures, as also scutellum, but those on post-scutellum much smaller; area of metathorax sericeous, not punctured, but sides punctured; tegulae black, the edge narrowly pallid; legs black, with silvery hair, anterior tibiae in front and bases of the other tibiae pale yellow; abdomen sparsely punctured and with beautiful white hair-bands (failing in middle) along hind margins of first three segments.

This is the most splendidly ornamented *Prosopis* known to me; whether it is strictly of that genus may be doubted, but I have not been able to see the mouth-parts. It is very easily recognized by its peculiar markings.

Hab. Kuranda, Queensland (*Dold*). Type in British Museum.

Bombus tetrachromus, sp. n.

♀.—Size of *B. rufofasciatus*, Sm., which it resembles in pubescence of head and thorax, but in the abdomen it is quite different, inasmuch as the hair of the basal part, before the red band, which is black in *rufofasciatus*, is bright canary-yellow. The sides of the first segment have long white hair, as in *rufofasciatus*. As in *rufofasciatus*, the median band on the abdomen is bright red and the apical part is white. Superficially this is so exactly a *rufofasciatus* with yellow in place of black on the abdomen, that I thought it might be merely a remarkable variety, but the following structural differences show that this cannot be:—

Malar space about as long as broad; fourth antennal joint longer than wide	<i>rufofasciatus</i> , Sm.
Malar space much shorter; fourth antennal joint shorter, rather wider than long.....	<i>tetrachromus</i> , Ckll.

Hab. Baltistan. Type in British Museum (88. 31).

Colletes rhodaspis, sp. n.

♀.—Length about 9 mm.

Rather stout-bodied, black, with much the general appearance of *C. grisea*, Sm., though smaller, but with the hair of the scutellum entirely bright crimson-red. Head broad; clypeus shining, with a strong median groove; hair of face mostly black at sides and greyish-white with an ochreous tint in middle, mixed on vertex, long and pale on lower part of

cheeks; antennæ black, middle joints of flagellum much longer than broad; mandibles reddish subapically; labrum shining, without pits; thorax (except scutellum) with hair partly greyish white and partly black, about evenly mixed on mesothorax, greyish black on pleura; mesothorax shining, with weak punctures; area of metathorax with a basal series of very small pits, the apical triangle transversely (rather obliquely) plicatulate laterally. Wings dusky hyaline; tegulæ, nervures, and stigma piceous; stigma small. Legs normal, the hair light and dark as on thorax; hair on hind femora long and pale; hind spur ordinary. Abdomen short, shining, bandless, with minute feeble punctures, hair of apical part mainly black, of basal pale, ochreous-tinted.

Closely related to *C. patagonica*, Schrottky, but that species is larger and has the hair all black or fuscous, except that on scutellum, which is orange-red. *C. bicolor*, Sm., has the hair of thorax above entirely very bright apricot-colour, but the abdomen is blue.

Hab. Patagonia, V. del Lago Blanco (*Chubut*). Type in British Museum.

Tetrapedia swainsonæ, sp. n.

A testaceous species, very close to *T. flava* (*Exomalopsis flava*, Smith), and at first sight identical, but the clypeus has only a few very minute punctures, while that of *flava* has very strong punctures; the flagellum is darker than in *flava*. In the male the sides of the face are yellow, but the front below the ocelli is dark brown, with a suffused median yellowish stripe. The stigma and nervures in male are dark reddish brown, in female amber-colour. The wings in both sexes are yellowish. There is a superficial resemblance to *Trigona pallida*, Latr., from Brazil.

Hab. Jamaica; in British Museum. ♀. Bath, St. Thomas, 1892 (*E. M. Swainson*); ♀. Jamaica, 97-166; ♂. P. Cr. River, St. Thomas, June 1892.

The following table separates the testaceous species of *Tetrapedia* and *Exomalopsis* described by Smith:—

Second r. n. precisely meeting third t.-c., the outer sides of the adjacent cells continuous and without any appendiculation at the juncture; outer side of hind basitarsus covered with dark soot-coloured hair. (S. Paulo.)	[Sm. <i>Tetrapedia levifrons</i> ,
Second r. n. joining third s.m. before the end ..	1.
1. Mesothorax shining, evidently punctured ..	2.
Mesothorax dull not evidently punctured ..	3.

2. Larger; punctures of mesothorax very sparse; abdomen light yellow, the hair on apical segments golden. (Santarem.) *T. punctifrons*, Sm.
 Smaller; punctures of mesothorax numerous; thorax quite dark; abdomen pale dull brownish, apical hair white or almost; scopa of hind legs very large and strongly plumose. [Sm.
Exomalopsis testacea,
 3. Expanse about 19 mm.; front brown-black, with a median yellow stripe; hind margins of abdominal segments darkened. [Sm.
 (Ega.) *Tetrapedia flavipennis*,
 Expanse 15 mm. or less 4.
 4. Face broader, colour darker; size a little larger; hind basitarsus longer *T. testacea*, Sm.
 Face narrower, colour lighter, the metathorax quite yellow; size a little smaller; hind basitarsus shorter; apex of abdomen with brilliant reddish-golden hair *T. flava* (Sm.).

T. swainsonæ runs in this table to *flava*, differing as already stated.

Augochlora jamaicana, sp. n.

♀.—Length about 6 mm.

Easily known by the enormous quadrate head, larger than thorax, with very broad face, swollen rounded shining cheeks, and small eyes, which are emarginate within. Head shining brilliant green and purple; thorax bluish green, minutely rugoso-punctate; abdomen short, pyriform, brilliant purple, not vibrissate, with a fine pallid pruinosity; area of metathorax finely but distinctly striolate, some of the striæ curving and meeting in the middle line; legs ferruginous, with pale glittering hair; hind spur simple, bent near the base; mandibles large, suffused with castaneous-red, and with a large inner tooth; antennæ dark, brownish, much nearer together than either to eye; ocelli close together, in a slight depression.

Allied to *A. elegans*, Cresson (specimen from S. Domingo compared), but that has the head narrower and differently shaped, eyes less strongly emarginate, striæ on metathorax different, &c.

Very distinct from the Jamaican *A. regina*, Sm., and *decorata*, Sm.

Hab. Jamaica; type in British Museum, from F. Smith's collection.

Melissa azurea (Lep.).

Syn. *rufipes*, Perty.

Bath, St. Thomas, Jamaica (*E. M. Swainson*).

Perfectly typical; new to Jamaica.

Nomioides muiri, sp. n.

♀.—Length about 5 mm.

Head and thorax a dullish rather variable yellowish green, with bright markings and thin white pubescence; clypeus yellow, its upper edge straight; *yellow lateral face-marks very small, transverse*, not or hardly going above a line drawn horizontally from lower edge of orbit to clypeus; mandibles yellow, black apically; scape yellow, the upper three-fifths black above; flagellum dark above, pallid below; inner orbits conspicuously emarginate; upper edge of prothorax, tubercles (except a black dot), tegulae, a broad band (abruptly truncate laterally, not reaching sides) on hind part of mesothorax, two large (confluent posteriorly) patches on scutellum and most of postscutellum, all *yellow*, as also a line from scutellar patches to hind wings; pleura without yellow. Wings perfectly clear, with very pale yellow venation; stigma large, b. n. strongly bent, second s.m. narrow; legs yellow, coxae, hind femora (except at apex), and much of middle of hind tibiae black. Abdomen yellow with dark brown bands, apical middle of first segment green; base and apex of first segment, narrowly connected in middle line, dark; second and third segments black at anterior basal corners and broadly brown apically, the brown not reaching the lateral margins; on the third segment this is developed medially into a large triangle, the apex of which nearly reaches the base of the segment (in another specimen this triangle is not present); apical segments with rather irregular yellow clouds on a dark ground; venter largely dark, especially on apical half.

Hab. Mozambique (*F. Muir*). Type in Cambridge University Museum.

The genus *Nomioides* was previously known in E. Africa as far south as Somaliland (*N. somalica*, Magr.).

Crocisa caeruleifrons, W. F. Kirby.

An examination of the type in the British Museum shows that this species has been quite misunderstood, and has nothing to do with the Australian insect attributed to it, the

latter being apparently entitled to the name *C. quartinæ*, Gribodo. The following characters are distinctive of *cæruleifrons*:—

Expanse $22\frac{1}{2}$ mm. Size and general appearance of *C. nitidula*; spots a beautiful purple-blue; scutellum **W**-shaped, entirely black, no white hair projecting from notch; anterior wings dark fuscous; face blue, the middle third above antennæ black; pleura with a black transverse band; blue spots on thorax as follows—one on each side of prothorax, contiguous with a cuneate one (pointing laterad) on mesothorax, middle of anterior margin of mesothorax with a cuneate mark pointing caudad, a small round spot on each side of disc, and a hook-shaped mark on each side posteriorly. Abdomen with the first segment blue, except a narrow median line, widening into a subquadrate (hut-shaped) mark, which rests on a dark band along the hind margin, narrowing laterally; segments 2 to 4 with broad bands, narrowly interrupted in the middle, the band on 2 with the two divisions somewhat curved; posterior side of hind tibiæ mainly blue.

Related to *C. basalis*, Friese.

Crocisa verticalis, sp. n.

♀.—Length about 10 mm., expanse 23.


Anterior wings dark fuscous, hardly spotted. Similar to *C. cæruleifrons*, with purple markings, but marks on abdomen greatly reduced, as follows: *first segment with only a vertical blue bar on each side*, not reaching its base or apex; segments 2 to 5 each with a lateral transverse blue bar, short and not at all widened laterad (representing very widely interrupted bands). Scutellum practically as in *cæruleifrons*, but strongly and very distinctly punctured (feebly punctured in *cæruleifrons*); mesothorax with a pair of longitudinally oval discal spots and a small spot near each posterior lateral corner, also a pair of very small bars or spots on anterior edge, but no median band or mark; face ornamented about as in *cæruleifrons*, but the black region above antennæ conspicuously wider than the lateral ones; pleura black with an oblong blue spot; hind tibiæ black with a large blue spot on basal half, middle tibiæ similarly marked; anterior tibiæ mainly blue behind; lower side of third s.m. broader than in *cæruleifrons*.

Related to *C. pulchella*, Guér., and *C. nana*, Friese.

Hab. Amboina; "Paso, 1396" (*H. O. Forbes*). Type in British Museum.

Nomia (*Meganomia*, subg. n.) *binghami*, sp. n.

♀.—Length about 15 mm.; expanse slightly over 30.

Head and thorax black, rather sparsely punctured; a small spot before each lateral ocellus, sides of face broadly (obliquely truncate above, at about half distance between ocelli and antennæ, the *lower* side of the truncation on orbit), a large supraclypeal spot, and clypeus (except a black π above) *pale yellow*; basal half of mandibles testaceous; scape yellow in front; flagellum, except at base, ferruginous beneath; upper margin of prothorax (interrupted in middle), tubercles,  formed marks on anterior margin of mesothorax, most of hind half of scutellum (more in sub-lateral region), postscutellum, area of metathorax (narrowly interrupted in middle), and two spots on hind face of metathorax, *yellow*; tegulæ partly yellow, partly ferruginous. Wings slightly dusky, yellowish; nervures ferruginous; *no stigma*, or a mere vestige. Legs dark reddish, anterior and middle knees yellow; anterior tibiæ broadly yellow at base and apex, the yellow connected by a line; middle tibiæ yellow at apex; abdomen broad, ferruginous, with five very broad bright yellow bands, each broadly subemarginate sublaterally by a dark elongate spot. In build and size it resembles *Stenotritus elegans*, Sm., but the hind spur is minutely ciliate (with long coarse teeth in *S. elegans*), and the venation is entirely different. The middle spur is normal.

The following structural characters will define the new subgenus *Meganomia*:—Tongue short, pointed; maxillary palpi with six short joints; no facial foveæ; mandibles simple; ocelli large, in a low triangle; inner orbits practically parallel, not in the least emarginate; flagellum short and thick, first joint about or nearly as long as next three together, apical joint rounded; tegulæ of moderate size; scutellum with a fine longitudinal ridge; claws very strongly cleft; no pulvillus (at least on front pair); hind trochanters bulging behind; no floccus at base of hind legs; a large scopa on hind tibiæ and tarsus, the white hairs merely spinulose; pygidial plate very broad, broadly rounded (sub-truncate) at apex; marginal cell with rounded apex not on costa, and a slight appendiculation; first s.m. *at least as long as second and third combined*; second s.m. not far from square, receiving first r. n. a little before end of first third; *third s.m. nearly as broad above as second*, and receiving the second r. n. a short distance beyond middle; b. n. going a short distance basad of t.-m.; t.-m. of hind wings vertical,

slightly bent inwards below (practically as in *Andrena*; in *Stenotritus elegans* it is long and very oblique).

♂.—Apical joint of antennæ produced and hooked.

Length about 17 mm.

Face narrow, the eyes large; face up to antennæ cream-colour, except a black stripe down each side of supraclypeal area; thorax with less yellow, that on scutellum reduced to a narrow band on hind margin, and no yellow on metathorax; anterior and middle legs yellow; hind trochanters mainly yellow, pointed behind; *hind femora very greatly swollen*, mostly black above and yellow beneath, the black nearly dividing the yellow by a process on outer side; *hind tibiae more or less flattened, with a hump on middle of inner side*, outer surface yellow, with a black mark in middle and apical outer corner black, inner side with about basal two-fifths yellow; *hind tarsi excavated as though a large piece had been bitten out*; abdomen brown-black, with six bright yellow bands, narrowed (the first interrupted) in middle; venter largely pale yellow, with six conspicuous black spots.

Hab. Damara Land, 2 ♀, 1 ♂ in British Museum, from F. Smith's collection.

One of the females (with an anterior leg of some other bee glued on in place of the proper member) has stood for years in the Museum collection, labelled by Bingham as a new species of *Megacilissa* from the Himalayas. I cannot adopt Bingham's manuscript specific name, as it has reference to the erroneous locality-label, and has, moreover, been used by Nurse for a different *Nomia*. Evidently Col. Bingham came to doubt the Asiatic locality, as the insect is not described in his work on Indian bees.

Xylocopa varians ecuadorica, subsp. n.

♀.—Length about 16½ mm., expanse about 28 mm.

Head dark blue, with black hair mixed with pale, all black on vertex, mostly pale on cheeks; labrum with orange hair; clypeus with large punctures and a smooth line; thorax blue-green, more steel-blue on disc, its hair black, more or less mixed with pale; pleura dark blue. Abdomen dark yellowish green, with short sparse pale golden hairs; last segment and sides of penultimate with black hair, extreme apex with orange. Anterior legs with black hair, middle with hair on outer side of basitarsus pale yellowish; hind legs with pale yellowish hair on outer side of basitarsus and on apical half of tibia; first r. n. reaching base of third s.m.

Differs from genuine *X. varians*, Sm. (S. Brazil), by being less stout, with a narrower abdomen; tegulæ black (red in *variens*); abdomen yellower and with more pale hair. The oblique spine on outer side of hind tibia is practically as in *variens*. Wings orange-tinted as in *variens*.

Differs from *X. ornata*, Sm. (S. Paulo), by being larger, with the abdomen very much darker and less golden, and the face much narrower.

Differs from *X. viridis*, Sm., by the dark hair of thorax, and the abdomen without bands. Easily known from *X. barbata*, Fabr., by the colour, and the absence of the shining silver-white hair which covers the cheeks of *barbata*. Distinguished from *X. electa*, Sm., by the light hair on legs, colour of abdomen, &c.

Hab. Guayaquil, Ecuador (British Museum, 96. 119).

Xylocopa lunulata minensis, subsp. n.

♂. Agrees exactly with Lepeletier's description of his *X. lunulata* from China, except that the clypeus (except its broad lower border) is dull white. Length a little over 30 mm.; anterior wing $25\frac{1}{2}$; face broad, the inner orbits parallel; face-markings greyish-ivory colour, including in addition to the clypeus a semicircular supra-clypeal mark, a lunule on each side of anterior ocellus, and broad lateral marks. The face is thinly clothed with black hairs. The general appearance of the insect is like that of *X. dissimilis*, Lep., which also occurs in China, and in view of what Pérez has written concerning the variability of *dissimilis* it is quite possible that *lunulata* and *minensis* are both local races of that insect.

Hab. Sharp Peak, island at mouth of Min River, June 16, 1909 (*James Percy Grant*).

At the same time and place Mr. Grant took *Anthophora zonata* (L.), and species of *Argynnis* and *Papilio*, the latter of a tropical type.

Boulder, Colorado.

Sept. 11, 1909.

