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## The Bees of the Solomon Islands

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Cockerell.

The Bees of the Solomon Islands.

[*From the Proceedings of the Linnean Society of New South Wales,  
1911, Vol. xxxvi., Part 1, May 31st.*]

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THE BEES OF THE SOLOMON ISLANDS.

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

(*Communicated by W. W. Froggatt, F.L.S.*)

[Issued 17th August, 1911.]

[*From the Proceedings of the Linnean Society of New South Wales,  
1911, Vol. xxxvi., Part 1, May 31st.*]

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THE BEES OF THE SOLOMON ISLANDS.

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

(*Communicated by W. W. Froggatt, F.L.S.*)

Up to the end of 1910, only one species of bee had been recorded from the Solomon Islands, so I was naturally pleased to see the interesting series collected by Mr. Froggatt, in 1909. The recorded species (*Nomada psilocera*) was not in the collection, which consisted entirely of undescribed forms. As is well known, Australia possesses a rich bee-fauna, including many peculiar genera, which belong to the more primitive section of the Apoidea. It has, in addition, especially in the North-east, a series of long-tongued bees of Indo-Malay type, evidently representing a comparatively recent invasion. New Guinea, so far as is known, possesses an Indo-Malay bee-fauna, and this same fauna, variously differentiated as to species, spreads into the islands to the East. The Solomon Islands evidently possess a strong Indo-Malay element, but Mr. Froggatt's Collection brings out the interesting fact that there is also a genuinely Australian element, the most striking representative of which is *Meroglossa*, now for the first time found out of Australia.\* It is certain that this Australian fauna must have reached the Solomon Islands by way of New Guinea, and it may be that further collecting in that island will reveal a number of Australian types; but it is perhaps equally likely that these, or many of them, have succumbed before the Indo-Malay

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\* Some of the green species of *Prosopis* from New Guinea, &c., may prove to belong to *Meroglossa*. This is especially likely in the case of *P. imperialis* Smith.

invasion, leaving relics on the islands to the East and South-east. It is reasonable to suppose a period of elevation, permitting the Australian fauna to reach New Guinea, etc., followed by a period of great elevation to the North, resulting in an influx of Indo-Malay genera, most of them strong fliers, and quite capable of crossing narrow arms of the sea.

I have prepared a list of the bees known from the islands East and South-east of New Guinea, 46 in all. It will be seen that 22 species are recorded from the Bismarck Archipelago, including New Britain (with New Pomerania) and New Ireland; sixteen from the Solomons, one from the New Hebrides, and eight from New Caledonia. Only one (*Megachile australasiae*) is said to be common to any two of these groups. All the species from the Solomons and the one from the New Hebrides are endemic. Of the New Caledonia species, five are endemic; and one of those not so, the honey bee being certainly an introduction. The remaining two may perhaps not be correctly identified, especially the *Halictus*, otherwise known from Australia. In all these islands, the Colletid bees, so conspicuous in Australia and New Zealand, seem to be absent. The Xylocopids seem not to go beyond the Bismarck Archipelago.

It is obvious that additional collecting in these islands will produce a great number of undescribed species.

*Abbreviations*: S.m. = submarginal cell; r.n. = recurrent nervure; t.c. = transversocubital nervure; t.m. = transversomedial nervure.

MEROGLOSSA TETRA-XANTHA n.sp.

♀ Length about  $7\frac{1}{2}$  mm.; head and thorax lemon-yellow, with black markings, the cheeks, prothorax and pleura wholly yellow; mandibles yellow, dark at extreme apex; mouth-parts prosopiform; clypeus with a broad dark brown bar on each side; long yellow supraclypeal mark bottle-shaped, its apex reaching anterior ocellus; lateral face-marks extending as broad bands to the top of the head, where they end abruptly, not connecting with the yellow of the occiput;

vertex otherwise, and interval between supraclypeal and lateral marks black; upper part of black frontal area punctured, lower part smooth; scape honey-colour except at apex; flagellum black, dull pale brownish beneath except at base and extreme apex; mesothorax strongly and closely punctured, black with four broad even yellow stripes, the outer ones marginal; scutellum and postscutellum with a broad median black stripe; area of metathorax smooth and shining, with a median, slightly depressed, ferruginous spot; on each side of the area is a broad ferruginous band, and the truncation has a narrow ferruginous stripe; tegulæ honey-colour; wings moderately dusky; stigma piceous, nervures rufo-fuscous; first r.n. joining second s.m. very near basal corner; femora, and anterior tibiæ in front, yellow; knees, tibiæ otherwise, and tarsi honey-colour; abdomen honey-colour, flushed with yellow at sides of first three segments, first segment with a dark mark at base; last two segments black above and below.

*Hab.*—Solomon Islands, July-August, 1909 (W. W. Froggatt). Near to *M. flavomellea* (Ckll.). It belongs to a little group, hitherto known from Queensland, separable thus:—

- |   |                            |
|---|----------------------------|
| Metathorax fluted; comparatively large species (9 mm.).   | <i>melanura</i> (Ckll.)    |
| Metathorax not fluted.....  | 1                          |
| 1. Apex of abdomen purple.....  | <i>basilura</i> (Ckll.)    |
| Apex of abdomen black.....  | 2                          |
| 2. Female clypeus narrow, without lateral dark bars; width of clypeus not greater than combined widths of lateral spaces between clypeus and eye..... | <i>flavomellea</i> (Ckll.) |
| Female clypeus broader, with lateral dark bars; width of clypeus much greater than combined widths of lateral spaces between clypeus and eye.....     | <i>tetrazantha</i> Ckll.   |

#### HALICTUS FROGGATTI n.sp.

♀ Length about  $6\frac{1}{2}$  mm.; black, with little pubescence, the thorax above with very scanty inconspicuous hair, the abdomen without hair-bands or spots, and the hind margins of the segments dark like the rest; head broad, eyes broadly shal-



lowly emarginate; clypeus broad, not produced; cheeks in lateral view narrower than eye; mandibles dark; clypeus and supraclypeal area shining, front minutely granular; antennæ dark; mesothorax and scutellum dull, very minutely punctured, scutellum slightly bigibbous; area of metathorax large, dull, with an exceedingly minute subcancellate sculpture; legs black, small joints of tarsi reddish, anterior tarsi slender; tegulæ ferruginous; wings hyaline, nervures and stigma dark fuscous; second r.n. and third t.c. much weakened; third s.m. short, combined areas of second and third not so great as that of first; abdomen broad, shining, caudal rims dark ferruginous. Microscopic characters are as follows: frontal punctures much smaller than eye-facets, as dense as possible, running more or less into grooves; mesothorax very minutely granular, with widely scattered small punctures; area of metathorax finely irregularly reticulate; spurs ferruginous.

*Hab.*—Solomon Islands, July-August, 1909(W. W. Froggatt). In Friese's table of New Guinea species, this runs to *H. latitarsis* Friese, but that is easily distinguished by the broadened anterior tarsi. *H. froggatti* is closely allied to *H. sturti* Ckll., from Queensland, and looks just the same superficially, but the sculpture of the metathorax is quite different.

HALICTUS VIRIDISCITUS n.sp.

♀ Length about 8 mm., wings rather short; head and thorax granular, olive-green, the mesothorax and scutellum a stronger, bluer green; head broad; keel between antennæ prominent; front dull and granular, but the dense punctures much larger than the eye-facets; clypeus with large shallow punctures, black, the upper margin green, the border between the green and the black rosy; lower margin of clypeus with orange hairs; mandibles dark; cheeks in lateral view about as broad as eye; antennæ dark; mesothorax and scutellum very densely and finely punctured on a rugose ground; area of metathorax with very fine striæ, crossed by little ridges,



giving a subcancellate effect; legs black; hind spur with four blunt teeth, the first two large; tegulæ piceous; wings strongly dusky; stigma dark reddish, nervures piceous; third t.c. and second r.n. almost obsolete; third s.m. very short, higher than long; abdomen shining dark green, the hind margins of the segments broadly blackened; apical hair dark reddish; large large ventral pollen-collecting hair-fringes.

*Hab.*—Solomon Islands, July-August, 1909 (W. W. Froggatt, No. C 13). Related closely to *H. flindersi* Ckll., from Queensland, but conspicuously differing in colour, and in the sculpture of the metathorax.

HALICTUS EXTERUS n.sp.

♀ Length slightly over 6 mm.; head and thorax shining, dark green, with yellowish hair; head and mesothorax olive green, the other parts a bluer green; head broad, clypeus rather prominent, smooth and sparsely punctured; supra-clypeal area smooth and shining; front finely striate, the striæ in front of the middle ocellus transverse; antennæ dark, the flagellum dusky reddish beneath; cheeks in lateral view as broad as eyes; mesothorax and scutellum smooth and shining, with scattered punctures; mesothorax with a lightly impressed microscopic linear sculpture, and some slight transverse ridges anteriorly; area of metathorax with very irregular ridges; trochanters and femora black, tibiæ and tarsi rich ferruginous; hind spur minutely pectinate; tegulæ shining rufopiceous; wings hyaline, faintly dusky, stigma piceous, nervures fuscous; abdomen shining dark bluish-green, without hair-bands or spots; hind margins of segments slightly reddish; no ventral polleniferous fringes.

*Hab.*—Solomon Islands, July-August, 1909, 2 ♀'s (W. W. Froggatt, No. C. 14). Apparently related to *H. ralunicola* Friese, from the Bismarck Archipelago, but that species has red-yellow mandibles, and the red of the legs includes practically all of the femora. I do not know any very near relative in Australia.

## NOMIA FROGGATTI, n.sp.

♀ Length 11 mm. or slightly over; robust, black, the hind margins of the first four abdominal segments with pale orange tegumentary bands, flushed with emerald-green laterally (one specimen has the bands bright terracotta red, but they have probably been altered by cyanide); head and thorax above with bristly black hair, at sides and beneath with pale yellowish hair, but some black on upper part of pleura, middle of tubercles, and face (especially at sides) down to about the middle; abdomen with pale hair at base, otherwise with black, the black hairs overlapping the bands; venter with light reddish hair; legs with hair partly light reddish, partly black; black on outer side of hind tibiae, reddish on inner side, contrasting; middle femora at base beneath with a stiff brush of orange-red hair (exactly the same in the Indian *N. elliotii*); clypeus rough, with a delicate median keel; mesothorax dull and very densely punctured; scutellum slightly bigibbous; postscutellum armed as in *N. elliotii*, but very much less light tomentum; base of metathorax with evident cross-keels (in *N. elliotii* they are nearly obsolete); abdomen rough, closely punctured (in *N. elliotii* very sparsely); tegulae piceous; wings strongly dusky; first r.n. joining the small second s.m. beyond middle.

*Hab.*—Solomon Islands, July-August, 1909, 2 ♀'s (W. W. Froggatt, No. C 12). An Indo-Malayan type, of the group of *N. elliotii* Smith. It is really known from *N. pulchribalteata* Cameron, by the different postscutellar armature, that, in Cameron's species, consisting of more widely separated, spine-like structures. In *N. pulchribalteata*, the truncation of the metathorax is shiny, with distinct punctures, largely in rows; in *N. froggatti* it is dullish, minutely granular and finely tomentose, with small, scattered punctures. Friese records *N. elliotii* from Key Island, but, as he says the female is without a green band on the first abdominal segment, it is evident that he has a distinct species.

## CROCISA GEMMATA n.sp.

♀ Length about  $13\frac{1}{2}$  mm. ; black, with exceedingly brilliant, shining blue markings ; scutellum — -shaped (hind margin) ; clypeus with dense small punctures ; keel between antennæ very strong ; upper half of clypeus, supraclypeal area, sides of face almost up to ocelli, and narrow posterior orbits, all covered with blue hair ; third antennal joint about as long as fourth ; thorax marked with blue as follows, a large round patch on pleura, two elongate marks on upper part of prothorax, and two almost contiguous with them on mesothorax, median spearhead-shaped mark on mesothorax in front, and four large mesothoracic spots (the anterior discal, the posterior marginal) ; scutellum with small inconspicuous punctures, wholly without spots, and without any pale tuft from beneath margin ; hair of occiput all black ; tegulæ black ; wings very dark fuscous, shining purple ; anterior tibiæ blue on outer side, but on middle and hind tibiæ only the basal part is blue ; abdomen rather elongate, all the blue bands very broadly interrupted ; first segment with large blue quadrate patches, slightly emarginate on inner side ; blue of fifth segment much reduced ; venter black.

♂ Length about  $11\frac{1}{2}$  mm. ; quadrate marks on sides of first abdominal segment strongly incised medially ; hind femora with a large sharp thorn-like tooth beneath.

*Hab.*—Solomon Islands, July-August, 1909(W. W. Froggatt, No. C 1). This is extremely close to *C. emarginata* Lep., from New Ireland. It differs from Lepeletier's description of *C. emarginata* in the larger size, and the total absence of any line of blue hair on each side of the mesothorax next to the wings. It also differs in the absence of any blue markings on the tarsi. According to Friese, the male of *C. emarginata* has no tooth on the hind femur, and Lepeletier mentions no tooth. As, however, Friese says the blue markings are dull, not shining, it is evident that his "*emarginata*" is wrongly identified. In Friese's table, *C. gemmata* runs to

*C. quartinae*, which is readily separated by the abdominal markings.

ANTHOPHORA SAPIENS n.sp.

♂ Length about 15 mm., robust, though not quite so robust as *A. emendata gilberti*, to which it runs in my table (in Ann. Mag. Nat. Hist., Oct., 1905, p.394); hair of head and thorax about as in *A. gilberti*, except that the hair of clypeus is all very dark fuscous; that of thorax above is rust-red mixed with black; clypeus densely punctured, black, except for three very obscure yellowish spots near the lower margin; supraclypeal mark almost entirely obsolete; lateral face-marks consisting of short whitish bands running close to clypeal margin; labrum with a very broad dull yellowish-white band, occupying nearly half its surface; mandibles with a large pale yellow patch; scape wholly dark; flagellum red at extreme apex; tegulae ferruginous; wings strongly brownish, shorter than in *A. gilberti*; venation normal; hair on outer side of hind tibiae light red, without any dark streak, on inner side black; abdominal bands brilliant pale greenish-golden, flushed with pink at sides, that on first segment narrow; ventral hair-bands black or dark fuscous in middle, pale yellowish at sides; apical hair of fifth segment dark rufous (in *A. gilberti* black, with white at sides); apical plate broader at end than in *A. gilberti*.

♀ Var. *α*. Clypeus with a light reversed T; abdominal bands coloured as in *A. gilberti*, though somewhat narrower; hair of clypeus dark as in type; hair of labrum dark fuscous (white in *A. gilberti*); fifth abdominal segment with hair coloured nearly as in *A. gilberti*; apical plate narrow, about as in *A. gilberti*.

*Hab.*—Solomon Islands, July-August, 1909 (W. W. Froggatt, No. C 2; var. *α*, No. C 3). A member of the *A. zonata* group, related to the Australian *A. gilberti*, and to *A. ternatensis* from Ternate. The variety, represented by a single

specimen, rather badly worn, approaches *A. gilberti* quite closely. It is, however, certainly conspecific with *A. sapiens*.

*CÆLIOXYS DISPERSA* n.sp.

♂ Length about 11 mm.; black, shining, the pubescence creamy-white, more decidedly ochreous-tinted on face; eyes dark reddish; clypeus not keeled, although there is a fine shining line on its upper part; front coarsely rugoso-punctate; vertex with a line of punctures along orbital margin, a curved depression next to each outer ocellus, and some very large irregularly placed punctures between; cheeks not wholly covered with hair; a narrow hair-lined sulcus along lower part of posterior orbits; mesothorax with strong scattered punctures on a shining ground; scutellum well-punctured at sides, little punctured in middle, the hind margin elevated, with a small shallow median notch, the lateral teeth sharp, only moderately long; area of metathorax dullish and granular, plicatulate basally; scutellum with two oblique basal pencils of light hair; tegulae shining black; wings dark fuscous, except the basal region, which is broadly paler; legs with short white hair, tarsi dark rufous, with pale orange hair on inner side; abdomen with strong scattered punctures, much shorter than those of thorax; hair-bands white, lateral only, very narrow; apical segment rather short, six-toothed, lateral teeth long and spine-like, lower apical longer than upper.

*Hab.*—Solomon Islands, July-August, 1909(W. W. Froggatt, No. C 11). Belongs to a little group with *C. albolineata* Ckll., from Queensland and *C. biroi* Friese, from New Guinea. *C. dispersa* differs from *C. biroi* by the colour of its pubescence, larger size, and apparently other details; it is very distinct from *C. albolineata* by the darker wings, reduced abdominal markings, larger punctures of mesothorax, etc. The New Guinea *C. weinlandi* Schlz., (*albiceps* Friese) is not related.

*CÆLIOXYS PEREGRINATA* n.sp.

♀ Length about 12 mm.; black, head and thorax densely punctured, pubescence dull pale rust-red; clypeus and supraclypeal area coarsely roughened, convex, not at all keeled; antennæ black; eyes reddish; cheeks narrow, with no distinct groove; mesothorax and scutellum extremely densely punctured, the latter slightly angled in the middle behind, not at all emarginate, the lateral teeth rather short; sides of mesothorax and two spots at base of scutellum conspicuously covered with red hair; tegulæ shining black; wings strongly fuscous, the basal part hyaline; legs black, with reddish hair; abdomen long, shining, with strong irregular well-separated punctures, and entire ferruginous hair-bands; last dorsal segment pointed, with a median keel, becoming a mere smooth line on the basal half; last ventral extending beyond dorsal, pointed, not notched at the sides; fifth ventral segment with very small punctures, the segments before with large punctures. The last ventral is formed as in *C. brevis* Eversm., though rather broader; the last dorsal is more elongate than in *C. brevis*.

*Hab.*—Solomon Islands, July-August, 1909(W. W. Froggatt, No. C 10).

The following table shows the relationship of this species to those of Australia and New Guinea.

Face with a prominent longitudinal ridge, which extends from the anterior ocellus to the apical margin of the clypeus (New Guinea) ...  
.....*smithii* Dalla Torre.

Face without such a ridge.....1.

1. Apical margin of scutellum emarginate in the middle.....  
.....*albolineata*-group (see above).

Apical margin of scutellum not emarginate.....2.

2. Wings extremely dark, brilliantly violaceous; head with much white hair; lateral teeth of apical segment of male abdomen rudimentary...  
.....*weinlandi* Schulz (*albiceps* Friese).\*

\* This is a comparatively large species, the males 12 mm. or a little over, the females about 16 mm.; but a single male collected by Mr. Froggatt at Cape York, Queensland, is only a little over 10 mm. long.

- Wings dark in some, but not so violaceous; head if white-haired, less conspicuously so; lateral teeth of apical segment of male abdomen well-developed (unknown in *C. peregrinata*, but it has the hair of the head ferruginous)..... 3.
3. Pubescence ferruginous; last ventral segment of female abdomen without lateral notches.....*peregrinata* Ckll.  
Pubescence white.....4.
4. Larger; wings darker; last ventral segment of female abdomen deeply notched on each side; abdominal hair-bands lateral only (Queensland).....*reginae* Ckll.
- Smaller, length of ♀ hardly 10 mm., of ♂  $7\frac{1}{2}$ ; last ventral segment of female abdomen barely notched; white abdominal bands entire or very slightly interrupted; eyes pale green; scutellum with two large white hair-spots, sometimes absent (rubbed off?); wings with the apical field pale brownish [Victoria (Froggatt, 57.)].....  
.....*froggatti* Ckll., n.sp.†

#### MEGACHILE MENDANÆ n.sp.

♀ Length about 16 mm., width of abdomen 5; shape about as in *M. lucidiventris* Smith, the abdomen large and thick, but of the parallel-sided type; hair of head and thorax bright fox-red, paler below, red also on sides of first abdominal segment; rest of abdomen with very short black hair, ventral scopa black; hair of legs scanty, ferruginous on femora, otherwise mainly black or dark fuscous, but red on inner side of hind tarsi, and largely so on inner side of middle ones; head large, inner orbits with a double curve, the eyes diverging below; mandibles with two teeth, and a broad cutting edge within; clypeus short, transverse, coarsely rugose, slightly keeled, the lower margin gently convex, with a pair of small widely separated tubercles; hair of clypeus red, but inconspicuous; antennæ black; cheeks densely punctured; mesothorax minutely and densely rugoso-punctate, with scattered larger punctures; scutellum densely covered with short bright red hair, its surface hidden; hind basitarsus not greatly broadened; tegulæ dullish black; wings dark fuli-

† Additional particulars concerning *C. froggatti* will be given in a paper dealing with Australian bees.



ginous; abdomen with scattered punctures, and the first three segments minutely rugoso-punctate, the fourth and fifth smoother; second joint of labial palpi a little longer than first; tongue extending far beyond palpi.

*Hab.*—Solomon Islands, July-August, 1909(W. W. Froggatt, No. C 4). This and the following species are named after explorers connected with the Solomon Islands. This is a very fine species, of Austro-Malay, not Australian, type. Superficially, it looks much like *Chalicodoma sicula* Rossi. It appears to be related to the Hawaiian *M. schauinslandi* Alfken, but the latter is smaller, with the ventral scopa mainly pale, the first dorsal segment densely red-haired right across, and otherwise different.

**MEGACHILE BOUGAINVILLEI n.sp.**

♂ Length about  $9\frac{1}{2}$  mm., narrow, with parallel-sided abdomen; black, with the legs, except the coxæ, entirely bright ferruginous red, with pale orange hair; anterior coxæ spineless, black with an obscure red spot; head quite large, eyes red, quite strongly converging below; antennæ black, long and slender, the flagellum crenulated; mandibles thick, the broad outer face rugose; clypeus with large dense punctures, middle of lower margin broadly excavated; hair of middle of face black, but of lower part of clypeus golden; vertex, mesothorax and scutellum with black hair, but a fringe of pale yellowish hair in front of thorax, and one behind scutellum; metathorax and pleura with light yellowish or orange hair; mesothorax and scutellum dullish, very densely punctured; area of metathorax minutely granular; spurs light red; tegulæ black; wings dusky; abdomen densely rugoso-punctate, with scanty ferruginous hair, which forms obscure bands; sixth segment rounder, shallowly emarginate in middle; no subapical ventral teeth.

*Hab.*—Solomon Islands, July-August, 1909(W. W. Froggatt, No. C 9). Related to *M. austeni* Ckll., from Queensland, but the latter has black legs, white hair on face, etc.

## MEGACHILE SHORTLANDI n.sp.

♀ Length about 14 mm., broad, shaped as in *M. chrysopyga* Smith; black, including legs, mandibles, antennæ and tegulæ; head and thorax with fox-red hair, that on mesothorax thin and mixed with fuscous; head large; eyes dark reddish; mandibles massive, quadridentate, the third tooth very broad and low; clypeus and supraclypeal area strongly, very densely punctured, the former with a broad median smooth band; lower edge of clypeus straight, but flaring; mesothorax and scutellum very densely punctured; hind basitarsus broadened; hair of legs white, reddish and black; on hind tibiæ and basitarsi the hair in front and on outside is white or yellowish-white, and quite long, posteriorly it is shorter and black, it is also black on inner side of basitarsus, but the inner side of the tibiæ is covered with fine white tomentum; wings strongly dusky; marginal cell not at all appendiculate; abdomen above shining black, well punctured, with short black hair; first segment with thin fulvous hair, and a patch on each side; segments 2 to 5 with inconspicuous linear fulvous hair-bands, failing in the middle; ventral scopa pale fulvous on second segment, on third and fourth bright red, black at sides, on fifth and sixth black. (Froggatt, C 5; type).

♂ Length slightly over 12 mm.; mandibles tridentate; face covered with light orange hair, but upper part of clypeus with a good deal of fuscous; thorax above with rufous hair, strongly mixed with black on scutellum and disc of mesothorax; anterior coxæ with very short spines or tubercles; anterior tarsi simple; hair-bands of abdomen dull white, none on fourth segment; sixth segment descending, the margin with two widely separated broad triangular teeth; no subapical ventral teeth; pale tomentum on inner face of hind tibiæ very conspicuous. (Froggatt, C 8.)

*Hab.*—Solomon Islands, July-August, 1909 (Froggatt, C 5, and C 8). This has a rather strong superficial resemblance to

the Indian *M. griseopicta* Rad., though very different in detail.

*MEGACHILE CARTERETI* n.sp.

♂ Length about 13 mm.; shape much as in *M. lanata* (Fabr.), but head larger; and abdomen broader in middle; coloration much as in *M. rotundipennis* W. F. Kirby, the quite long and abundant pubescence rust-red; eyes black, converging below; face covered with red hair; no admixture of black or fuscous hair on head or thorax, except a little at sides of vertex; mandibles with three strong teeth; mandibles and antennæ black; tegulæ reddish-black; legs black, with anterior femora, tibiæ and tarsi red in front, middle tibiæ mainly red in front; hair of legs mainly red, inner side of hind tibiæ with greyish-white hair; anterior coxæ with large spines; anterior tarsi slightly flattened, with a large oval black spot on inner face; vertex, mesothorax and scutellum closely punctured; wings dusky, reddish; abdomen with long red hair, not wholly covering the surface, leaving a banded effect; sixth segment retracted, with a strong median keel-like prominence; the margin turned outwards, irregularly denticulate, with a shallow median emargination; no evident subapical ventral teeth; spurs red.

*Hab.*—Solomon Islands, July-August, 1909 (Froggatt, No. C 7). Related to *M. ustulatiformis* Ckll., from Queensland, but distinguished by the red hair of face, keel-like prominence on sixth abdominal segment, etc.

*MEGACHILE WOODFORDI* n.sp.

♀ Length about 10 mm.; black, including mandibles, antennæ, tegulæ and legs; form broad, abdomen shovel-shaped, general appearance almost exactly like *M. chrysophila* Ckll., from Mexico; face broad, eyes moderately converging below; mandibles quadridentate; clypeus extremely densely punctured, and with a very broad and shallow median apical

emargination; a smooth shining patch occupies the lower part of the supraclypeal area and the upper margin of the clypeus; hair of face below antennæ, and of vertex, black, but a sort of broad V-shaped band on front pale yellowish; cheeks with hair black in front and pale behind; front densely punctured, but rather shining; mesothorax and scutellum dull, minutely and very densely rugoso-punctate; hair of mesothorax and scutellum black, but cream-coloured tomentum in the suture between them; other parts of thorax with pale yellowish hair, but a good deal of black on upper part of pleura; legs with reddish hair, that on tarsi bright fox-red; hind basitarsus much broadened and flattened; spurs red; wings dusky; abdomen black, with short black hair, the hind margins of the segments with conspicuous entire orange-fulvous hair-bands; ventral scopa bright red. (Froggatt, C 6; type.)

♂ Length about 10 mm.; hair of face light golden, with some dark hairs intermixed on upper part of clypeus; hair of vertex black, of cheeks long and pale yellowish; antennæ long, black; hair of thorax ferruginous, pale yellowish below, disc of mesothorax and scutellum with black hair; abdomen with red bands as in female; anterior coxæ with short sharp spines; anterior tarsi simple, dark reddish; sixth abdominal segment with outstanding margin bilobate, the lobes rounded; no ventral spines.

*Hab.*—Solomon Islands, July-August, 1909 (Froggatt, No. C 6). Related to *M. diligens* Sm., from the Hawaiian Islands, and *M. doanei* Ckll., from Tahiti. The male *M. doanei* has the sixth abdominal segment bidentate instead of bilobed, and the fifth is covered with red hair. *M. diligens* is easily separated by the colour of the thoracic pubescence.

The following key separates the species of *Megachile* of the Solomon Islands, New Caledonia, New Britain, etc.

- Males .....I.  
Females .....ii.
1. Legs, except coxæ, red; small narrow species.....*bougainvillei* Ckll.  
Legs at least largely black.....2.
2. Abdomen black without markings; face with much creamy-white hair,  
but upper part of clypeus with black; wings dark fuliginous .....  
.....*lachesis* Smith.
- Abdomen otherwise, or face not so marked.... 3.
3. Black, with black hair, abdomen pale rufo-testaceous beneath; wings  
subhyaline.....*ventralis* Smith.  
With at least some conspicuous light hair.....4.
4. All the tarsi reddish-testaceous; length 9½ mm.....*quodi* Vachal.  
At least some of the tarsi dark .....5.
5. Anterior coxæ not toothed; wings nigro-violaceous; length 13 mm.;  
species resembling *M. lachesis*, but abdomen with some rufous.....  
.....*megistia* Cameron.
- Anterior coxæ toothed (teeth rudimentary in *M. shortlandi*), but wings  
not nearly so dark as in *M. megistia*.....6.
6. Abdominal segments 5-7 entirely covered with fulvous or red hair...7.  
Abdominal segments 5-7 not, or not entirely, so covered.....8.
7. Wings fuscous; thorax with black hair.....*placida* Smith, var.  
.....*nigrohirta* Friese.  
Like *M. placida*, but apparently larger; perhaps not distinct.....  
.....*othona* Cameron.
8. Wings fuscous; two apical segments of abdomen with ferruginous hair,  
but abdomen not banded.....*mortyana* D.T.  
Wings subhyaline; abdomen banded.....9.
9. Hair of thorax above without black; anterior coxæ with large spines...  
.....*cartereti* Ckll.  
Hair of thorax above with much black.....10.
10. Hair-bands of abdomen white.....*shortlandi* Ckll.  
Hair-bands of abdomen red.....*woodfordi* Ckll.
11. Large, entirely black; wings nigro-fuscous.....*lachesis* Smith.  
Not entirely black.....12.
12. Ventral scopa silvery white (*australasie*) or reddish-white (*australis*)..13.  
Ventral scopa fuscous or black .....14.  
Ventral scopa red, or largely so.....15.
13. Thorax above with six white hair-spots.....*australis* Lucas.  
Thorax not so marked; abdomen with pale yellow hair-bands .....  
.....*australasie* D.T.
14. Abdominal segments 2 to 4 orange-banded.....*aurantiaca* Friese.  
Abdomen with two orange bands.....*quodi* Vachal.  
Abdomen without bands.....*mendanae* Ckll.

15. *Scopa* red and black ..... 16.  
*Scopa* all red; face with black hair..... 17.
16. *Scopa* bright red, black on last two segments; four conspicuous white spots forming a curved line between the wings...*albomarginata* Smith.  
*Scopa* black at sides of third and fourth segments; no white spots between the wings.....*shortlandi* Ckll.
17. Thorax with hair largely pale, especially at sides.... *woodfordi* Ckll.  
Thorax with black hair..... 18.
18. Larger, 15 mm. long; first or first two abdominal segments black-haired, abdomen beyond this red-haired.... *placida* Sm., var. *nigrohirta* Friese.  
Smaller; abdomen above black without red..... 19.
19. Larger.....*ventralis* Smith.  
Smaller, but hardly separable from the description.....*similis* Smith.

#### TRIGONA SAPIENS n.sp.

Worker: about  $4\frac{1}{2}$  mm. long; black, head and thorax shining, without light markings; head large; labrum pale ferruginous; mandibles chestnut-red; antennæ light ferruginous, the flagellar joints stained with dusky above; face and front thinly, nearly uniformly clothed all over with dull white hair; hair of thorax and legs scanty, pallid; abdomen shining, dark rufo-piceous; stigma and nervures very dark reddish-brown.

*Hab.*—Solomon Islands, July-August, 1909 (Froggatt, No. C 18). Related to the Australian *T. carbonaria* Smith, but readily known by the pale reddish antennæ and mandibles, and the evidently hairy upper part of front. Also related to *T. canifrons* Smith, which it resembles in the colour of antennæ and mandibles, but in *T. canifrons* the face is covered with fine white tomentum, while the front is naked and shining. The abdomen of *T. canifrons* is considerably paler than that of *T. sapiens*.

I give a check-list of the bees known from the Bismarck Archipelago, New Caledonia, and all the groups between them. Type-localities are marked with an asterisk.

#### PROSOPIDIDÆ.

*Meroglossa tetrazantha* Ckll. Solomon Is.\*

## ANDRENIDÆ.

*Callosphæcodes ralunensis* Friese. Ralun, Bismarck Arch.\*  
Abdomen blue.

*Halictus ralunicola* Friese. Ralun, Bismarck Arch.\*  
Green; 5 mm. long.

*H. froggatti* Ckll. Solomon Is.\*

*H. viridiscitus* Ckll. Solomon Is.\*

*H. exterus* Ckll. Solomon Is.\*

*H. urbanus baudinensis* Ckll. New Caledonia, *fide* Vachal.

*Nomia froggatti* Ckll. Solomon Is.\*

*N. elliotii* Smith. French Is.; New Ireland; New Pomerania; all det. Friese.

*N. luteiventris* Friese. New Pomerania\*; Ralun, Bismarck Arch. Abdomen red.

*N. variabilis triangulifera* Friese. New Pomerania.

*N. variabilis zebra* Friese. New Pomerania.\*

*N. fulviventris* Cameron. Gazelle Peninsula (New Pomerania).\*

*N. willeyi* Cameron (*N. metallica* Cam., *N. gazellæ* Friese).  
Gazelle Peninsula.\*

*N. pulchribalteata* Cameron. Gazelle Peninsula.\*

*N. sicheli* Vachal. New Caledonia.\* (Vachal, in 1907,  
says ? ♀ of *N. argentifrons* Smith.)

## NOMADIDÆ.

*Nomada psilocera* Kohl. Bougainville I., Solomon group.\*

## MELECTIDÆ.

*Crocisa gemmata* Ckll. Solomon Is.\*

*C. emarginata* Lep. New Ireland; \* New Britain.

*C. quartina* Gribodo. Gazelle Peninsula, *fide* Kohl.

*C. pulchella* Guér. New Ireland.\* Described as a variety  
of *C. nitidula* Fabr.

## ANTHOPHORIDÆ.

*Anthophora sapiens* Ckll. Solomon Is.\*

*A. zonata* L. New Britain, *fide* Cameron.



## MEGACHILIDÆ.

- Cælioxyys dispersa* Ckll. Solomon Is.\*  
*C. peregrinata* Ckll. Solomon Is.\*  
*Lithurgus dentipes* Smith. New Pomerania, *fide* Friese.  
*Megachile mendanæ* Ckll. Solomon Is.\*  
*M. bougainvillei* Ckll. Solomon Is.\*  
*M. shortlandi* Ckll. Solomon Is.\*  
*M. cartereti* Ckll. Solomon Is.\*  
*M. woodfordi* Ckll. Solomon Is.\*  
*M. albomarginata* Smith. New Caledonia.\*  
*M. aurantiaca* Friese. New Caledonia.\*  
*M. australasie* D.T. (*M. imitata* Sm.). New Caledonia and New Ireland, *fide* Friese.  
*M. australis* Lucas. Nouméa, New Caledonia.\*  
*M. lachesis* Smith. New Ireland and New Pomerania, *fide* Friese. I have a male collected by Dahl at Ralun, Bismarck Archipelago.  
*M. mortyana* D.T. (*apicata* Sm.). New Britain, *fide* Friese.  
*M. placida nigrohirta* Friese. New Britain.\*  
*M. similis* Smith. Aneiteum, New Hebrides.\*  
*M. megistia* Cameron. New Britain.\* ♂ 13 mm.  
*M. othona* Cameron. New Britain.\* ♂ 12 mm.  
*M. quodi* Vachal. New Caledonia.\*

## XYLOCOPIDÆ.

- Xylocopa provida* Smith. New Pomerania, *fide* Friese.  
 Hair of head whitish.  
*X. perkinsi* Cameron. New Britain.\* Hair of head black.  
 The record of *X. cærulea* Fabr., from New Caledonia is erroneous.

## APIDÆ.

- Apis mellifera* L. New Caledonia, *fide* Vachal. Doubtless introduced.  
*Trigona sapiens* Ckll. Solomon Is.\*

