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Descriptions and Records of Bees.—I.

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

EXCEPT where the contrary is stated, it is to be understood that all the Australian species discussed in this series of papers are in the collection of the British Museum, and all others in my own collection.

Melissodes kallstræmia, sp. n.

♂.—Length about $11\frac{1}{2}$ mm.

Black, with the abundant pubescence of the vertex and thorax above orange-fulvous, without any black; that of cheeks, face, and pleura whitish; facial quadrangle not so broad as long; eyes (dry) silvery grey; clypeus (except

a black spot on each side) and a large patch on base of mandibles bright lemon-yellow; labrum yellowish white. Antennæ long (about $8\frac{1}{2}$ mm.); third joint hardly longer than second; flagellum entirely very bright fulvous beneath; fourth joint (first long joint of flagellum) long, much longer than fifth; joints entirely without longitudinal keels. Mesothorax densely punctured; tegulæ fulvous, with fulvous hair; hair of legs pale ochraceous (no black), that of hind tibiæ and tarsi strongly but briefly plumose; hair on inner side of tarsi ferruginous; apices of middle and hind femora, apices of all the tibiæ, and the tarsi entirely, ferruginous; hind tibiæ and basal joint of tarsi with black specks. Wings strongly smoky, yellowish basally, nervures and stigma rather dark ferruginous; second submarginal cell very large, very nearly as large as the first, receiving the recurrent nervure near the end; third submarginal cell narrowed much more than half to marginal. Abdomen rather narrow, with abundant coarse hair, erect and fulvo-ochraceous on first segment; ochraceous on second to fourth, but these segments have also black hair on the apical middle, and the fourth has black hair at base; fifth and sixth segments, and apex, entirely black, with black hair, but pale hair from the venter showing as a tuft on each side; apical plate dark red; hair of venter pale, with a good deal of black on middle of fourth and fifth segments, the apical segment dark reddish, fringed with black. Easily known from *M. aurigenia* by the colour of the abdominal pubescence; from *M. grindeliæ* by the longer antennæ, colour of pubescence, &c.

Hab. Mesilla Park, New Mexico, at flowers of *Kallstræmia*; July 27 (*Cockerell*).

It had previously visited an asclepiad, as shown by pollen-masses adherent to two of the legs.

Melissodes kallstræmiæ, var. *phenacoides*, nov.

♂.—Abdomen broader, with the ochreous pubescence replaced by white, except that the first segment has the hair faintly yellowish; the fifth segment has, in addition to the black, a few long white hairs; the hair of the vertex and thorax above is pallid, faintly tinged with ochraceous; the third antennal joint is a little longer; the nervures are clear ferruginous; the claws are larger, those on the hind legs being very large.

Hab. Las Cruces, New Mexico, Aug. 25, 1894 (*Cockerell*, 2027).

This is the insect which has gone in the New Mexico list

as *M. communis*, Cresson, having been so determined by Mr. Fox. The total absence of black hair on the thorax, the very large second submarginal cell, and the entirely ferruginous tarsi, separate it sufficiently from *M. communis* of the Eastern States. The variety differs from the type much as *M. agilis* differs from *M. aurigena*.

Xenoglossodes gutierreziae, sp. n.

♀.—Agrees with *X. eriocarpi* (Ckll.), except in the following characters:—

Larger (length 10 mm. or rather more); flagellum black, and rather longer; mandibles with no yellow spot or patch; upper margin of yellow on clypeus straight; labrum black; hind margin of first abdominal segment much more narrowly pallid.

Hab. Fillmore Cañon, Organ Mts., New Mexico, at flowers of *Gutierrezia* (the hind legs are loaded with the bright orange pollen), Aug. 29 (*C. H. T. Townsend*).

Diadasia enavata, Cresson.

At Mesilla, New Mexico, July 18, I took three females at flowers of *Helianthus annuus*.

Crocisa Wallacei, sp. n.

♂.—Length 9 mm. (but abdomen much retracted in specimen measured); wing $9\frac{1}{2}$ mm.

Belongs to the group of *C. histrio* (scutellum with **W**-like margin, abdomen with lateral marks not divided), and has the blue patches consisting of very bright and shining scales, in the manner of *C. cæruleifrons*. Differs from *C. nitidula* by having two blue spots on the scutellum, and the first abdominal segment with very large quadrangular lateral blue patches, leaving a black median band and the hind margin, like a reversed **T**. The entirely black tarsi, without any blue scales, and the smaller size separate it from *C. abdominalis*, Friese (from Java). The abundant blue spotting on the thorax and other characters separate it from *C. nana*, Friese. Apical half of labrum ferruginous; clypeus except anterior margin (which is broadly black and densely punctate) and sides of face up to level of ocelli covered with very brilliant silvery blue-green scales; middle of front black and punctured, the punctures of two sizes, not dense; antennæ black, the flagellum greyish; third antennal joint a little shorter than fourth; front and vertex

with black hair; thorax with blue or greenish-blue patches as follows: a very large one on upper and a small transverse one on lower part of pleura; a transverse one on each side of prothorax above, joining one on contiguous part of mesothorax; an elongate one on anterior middle, a round one on each side, and an axe-shaped one at each hind corner of mesothorax; a speck on each axilla; two spots on scutellum; interrupted bright blue bands on abdominal segments 1 to 5, that on 1 as already indicated; venter of abdomen entirely black, strongly punctate; apex truncate, faintly subemarginate; tibiae largely blue on outer side; tegulae black, very densely punctured; wings fuliginous, with a violet lustre.

Hab. Ternate; with numbers 6263 and 92-44.

Named after Dr. A. R. Wallace. In British Museum Collection. It has a strong superficial resemblance to *C. cæruleifrons*.

Crocisa lamprosoma, Boisd.

Queensland (*E. Saunders*); three.

Crocisa cæruleifrons, W. F. Kirby.

Friese makes this a synonym of *C. quartinae*, Gribodo, but Mr. Kirby's name appears to have priority. It is recorded from Timor Laut and Celebes; the Australian specimens before me appear to be certainly the same species, but they offer varietal or racial characters:—

Var. *α*.—A little larger; thoracic spots well-defined; hair of middle of occiput black, with white on each side; apex of male abdomen more narrowly truncate. Queensland (*E. Saunders*), 2 ♀, 1 ♂.

Var. *β. Darwini*.—Smaller, not over 9 mm. long; thoracic spots greenish and less defined, confluent on anterior part of mesothorax in ♂; occiput with a complete conspicuous fringe of white hair; apex of male abdomen more broadly truncate, the truncation concave; wings rather paler. The scutellum and tarsi are without blue. Port Darwin, N. Australia, no. 90-126; one of each sex.

Crocisa tincta, sp. n.

♀.—Length about 15 mm.

With the abdomen rather long and acuminate; upper wings dark fuscous, lower hyaline; light spots consisting of

hair or elongated scales, which are not shiny; those on head, thorax, and legs white or practically so, on abdomen pale blue; margin of scutellum **W**-like; lateral abdominal patches not divided. A species of the *C. histrio* group, easily known by its large size, and the absence of light marks on scutellum or tarsi. Mandibles with a blunt tooth within; eyes straw-yellow; face, cheeks, and occiput with much white hair; front strongly and densely punctured; third antennal joint conspicuously longer than fourth; upper part of pleura covered with white hair, lower part nude, strongly and closely punctured, with a small spot of white hair; mesothorax with anterior margin except in middle, and extending on to prothorax, covered with white hair; lateral margins, and posterior ones except in middle, a median stripe anteriorly, and a spot on each side, also marked with hair; tibiae with large light patches; tegument of abdomen slightly purplish on middle of first two segments; abdominal bands all very broadly interrupted in middle, that on first segment forming a large **U**-like mark on each side, that on fifth reduced to a pair of large round spots; venter without light markings.

Hab. Toowoomba, Australia, no. 93. 189.

Two specimens. The locality is in S.E. Queensland.

Trigona canifrons, Smith.

Adelaide River, Australia, no. 92-4. New to Australia.

The specimen differs from Bingham's description of *canifrons* in having the hair of the pleura pale cinereous, and the stigma and nervures fuscous; but a series of *T. canifrons* from Ceylon, received from Mr. Green, shows these characters, just as in the Australian insect. Judging from the description, I suspect that *T. biroï*, Friese, is a synonym.

Trigona essingtoni, sp. n.

Worker; length 4 mm.

Black (the abdomen brown-black), smooth and shining, with pale yellow markings as follows: mandibles (except ferruginous tips), labrum, clypeus (except narrow, black, anterior and posterior margins, and two large red-brown spots on disc), wedge-shaped lateral face-marks extending to level of antennæ, tubercles, narrow stripe on each side of mesothorax, extending to axillæ, all of scutellum, and apex of abdomen, the last being thinly pubescent with white hair. Antennæ reddish brown, the flagellum ferruginous beneath;

anterior knees with a yellow spot; small joints of tarsi fulvous; face with a scanty pale pruinose pubescence; thorax with very scanty pale hair; wings hyaline, nervures and stigma flavous. Mandibles at apex with a concave truncation, or minutely bidentate.

Hab. Port Essington, N. Australia, with no. 42. 1.

Two specimens. Easily known from *T. australis*, Friese, by the entirely yellow scutellum, pale apex of abdomen, markings of clypeus, &c.

Nomioides perditellus, sp. n.

♀.—Length about 5 mm.

Head and thorax bluish green, shining; pubescence scanty, white, more abundant on apex and underside of abdomen; eyes strongly emarginate; clypeus light yellow with two broad black bars (sometimes practically obsolete); mandibles yellowish with ferruginous tips; tubercles and adjacent upper border of prothorax, and tegulae, light yellow; wings clear, nervures pale testaceous, first recurrent nervure joining second transverso-cubital; antennae dark above and light beneath; femora black, with the knees yellow; tibiae and tarsi yellow, the middle and hind tibiae largely clouded with black or brown; abdomen broad, piceous, with a large transverse yellow mark on each side of segments 2 to 5, those on 5 nearly meeting to form a continuous band; venter brown.

Hab. Queensland, marked "Seaf. 1/90," 438, and 92-16, two specimens. A third is marked Queensland, 2200, 75. 39.

Very distinct by the marking of the abdomen; the genus is new to Australia. It is extraordinarily like some of the species of the American genus *Perdita*, agreeing even in the details of the marking on the clypeus and abdomen; but the venation agrees with *Halictus*.

Thaumatoma Duboulayi, Smith.

Port Darwin, N. Australia, 92-44; Bandin I., 91-82.

The latter specimen has the fourth and fifth abdominal segments broadly margined with red.

Celioxys reginae, sp. n.

♀.—Length a little over 11 mm.; expanse $19\frac{1}{2}$ mm.

Black, even to the tarsi; pubescence on eyes very short; clypeus shining, with extremely large close punctures; face covered with white hair; vertex, mesothorax, and

scutellum with extremely large punctures, as close as possible on scutellum, but well separated on middle of mesothorax; lateral teeth of scutellum well-developed, broad and pointed, not or hardly curved; sides of metathorax, tubercles, and margins of pleura with snow-white hair; cheeks and occiput also with white hair, but vertex bare; a small white hair-spot on each side of thorax above and behind tegulæ, and two short white stripes in scutello-mesothoracic suture; tegulæ black; wings strongly infuscated on apical half, the basal part nearly clear; hair on inner side of hind tarsi fulvous. Abdomen shining, with strong punctures, quite close at the sides, but widely separated above; lateral hind margins of the segments with white hair-bands, which are not continued across the disk, though on the ventral surface the bands are entire; last dorsal segment with close minute punctures, strongly keeled for rather more than two thirds of its length, the keel abruptly failing anteriorly, outline of the segment conical, the apex not turned upwards, and falling far short of the apex of the last ventral segment; last ventral segment acuminate-conical in outline, not greatly narrowed or produced, but conspicuously notched on each side, slightly concave beneath; penultimate ventral segment with the anterior part strongly and closely punctured, the posterior part finely rugose.

Hab. Queensland; with nos. 320 and 92-16.

Smith long ago remarked that it was singular that *Cælioxyys* should be absent from Australia, while *Megachile* is so abundant. It is therefore of special interest to record two species from that country. W. A. Schulz has recently described a species (*C. Weinlandi*) from New Guinea; it is considerably larger than *C. reginæ*, and the last ventral segment is very slender, hairy at the sides, and not notched.

Cælioxyys albolineata, sp. n.

♀.—Length a little over 9 mm.

Similar to *C. reginæ* in appearance, but smaller, and differing as follows: middle of mesothorax shining, with sparse *small* punctures, much smaller than those at the sides; scutellum flattened and somewhat *concave*, shining, and with *very sparse punctures*, the disk nearly impunctate, and the middle hind margin with a *deep rounded notch*; on each side of disk of scutellum, anteriorly, is a rather large oblique patch of white hair; legs with conspicuous white hair; wings not so dark; abdomen with five entire, though narrow, white hair-

bands; dorsal punctures sparser; last dorsal segment narrower, with the keel shorter and less distinct; last ventral segment *not notched at the sides*; penultimate ventral segment with rather sparse, rather elongated punctures all over, or they may be dense posteriorly.

Hab. Queensland (*E. Saunders*), with nos. 93-49 and 320. Another bears no locality-label, but simply the number 1904-27.

Megachile cleomis, var. *lippiae*, Ckll.

Mr. Wilmon Newell kindly sends me a female collected by Mr. F. Beltran at Monterey, Mexico, where the species is very destructive to rose-bushes. This extends the known range about 600 miles S.E. The specimen is peculiar in having the punctures of the middle of the mesothorax larger and less dense than normal, and the ventral scopa lacks the yellowish tinge. Possibly a series would prove that the Monterey insect should be subspecifically separated.

Bombus gilgitensis, sp. n.

♀.—Length about 23 mm.; wing about 16; abdomen nearly parallel-sided, about 9 mm. (or a little over) wide and almost 15 long.

Black, with black, dull white, and bright fulvo-ferruginous hair; hair of head all black, except that on occiput it has a purplish-brown tint; hair of legs black, the apices of the tarsal joints with short deep red spine-like bristles, hair on inner side of basal joint of hind tarsi a very dark reddish; thorax in front with abundant dull white hair, a very broad band of purplish-black hair between the wings; scutellum with dull white hair mixed with black; base of abdomen with dull white hair, covering first segment and basal half of second, except at sides, the rest, including apex, black, except the fourth and fifth segments, which are covered with long fulvo-ferruginous hair, the base of the fourth being overlapped by the black of the third; ventral segments with very thin fringes of long hair, black on the first three segments, fulvo-ferruginous on the fourth and fifth. Wings strongly clouded, with a warm red tint. Head not elongated; malar space broader than long. Middle of mesothorax with a large nude shining impunctate area, the region surrounding it strongly and closely punctured.

Hab. Gilgit, Kashmir; collector unknown to me. (British Museum Collection.)

Allied to *B. tunicatus*, Smith, but the black bands on thorax and abdomen are broader, and the last abdominal segment has black hair instead of red. The upper level of the black of the abdomen, which in *tunicatus* is straight, in *gilgitensis* is strongly concave. The apical segment in *gilgitensis* is bare above, minutely roughened but not noticeably punctate, not carinate; at the sides the segment is densely covered with brown-black tomentum. The wings are not so dark as those of *B. orientalis*, Smith.

Xylocopa varipuncta, Patton.

Texas, no. 1977, ♂. (Colorado Agricultural College Collection.) New to Texas.

Xylocopa bryorum (Fabr.), subsp. *dimidiata* (Lep.).

Six ♀s, Queensland (*E. Saunders*); Condillac I., W. Australia; Port Darwin. One ♂, Queensland (*E. Saunders*). The male is a little over 21 mm. long, and the middle tibiae and tarsi are without dark hair. The female is of the same size; the yellow pubescence spreads on to the occiput and the upper part of the pleura, but not at all on to the basal segment of the abdomen. This insect appears to be intermediate between *X. bryorum* and *X. aestuans*, as defined by Bingham; it is probable that it should be recognized as a subspecies, in which case the name *dimidiata*, Lep., is apparently available.

Lestis ærata, Smith.

3 ♂s, Queensland (*E. Saunders*); Sydney. 7 ♀s, Queensland (*E. Saunders*); N. S. Wales.

Synhalonia lippiae (Ckll.).

Synhalonia crenulaticornis, subsp. *lippiae*, Ckll., Ann. & Mag. Nat. Hist., July 1904, p. 25.

A female collected by Prof. Townsend at the same time and place as the original males shows that *lippiae* is a distinct species. Compared with ♀ *crenulaticornis* it is larger (about 12 mm. long), with much longer and ampler wings, which are not quite so dark, and the pubescence of the thorax above is white with a very faint yellowish tinge, becoming pronounced on scutellum, but with no fuscous or black, whereas *crenulaticornis* shows much dark fuscous hair on mesothorax and scutellum. The abdomen also has more white tomentum, covering the base of the second and third segments, while