

2-1-1923

## Descriptions and Records of Bees – XCVII

T. D. A. Cockerell  
*University of Colorado*

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### Recommended Citation

Cockerell, T. D. A., "Descriptions and Records of Bees – XCVII" (1923). *Co*. Paper 657.  
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*Descriptions and Records of Bees.*—XCVII.

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

*Megachile fortis vestali*, Cockerell.

Described from a male collected in Nebraska. Miss Grace Sandhouse has collected a female at Jumbo Reservoir, near Crook, Colorado, Aug. 13, 1921. It has exactly the appearance of the male, except for the sexual characters. The face is covered with bright reddish-fulvous hair, and the ventral scopa is entirely red. The posterior basitarsi are very broad. Among the known females, this is closely related to *M. emoryi*, Ckll., but is smaller, with redder hair. It seems possible that *M. emoryi* is the true female of *M. fortis*, Cresson, and that the present insect should stand as a distinct species, *M. vestali*.

*Hoplitis graceæ*, sp. n.

♀.—Length about 9 mm.

Black, rather narrow, with nearly parallel-sided abdomen; head and thorax shining, but closely punctured; mandibles broad, 3-dentate; clypeus with lower margin strongly but broadly emarginate; disc of clypeus convex, with no smooth

line or ridge; orbits slightly converging below; flagellum ferruginous beneath except basally and at extreme apex; tegulæ with a suffused red spot. Wings strongly clouded, reddish; first r.n. going beyond first intercubitus a distance much more than half length of latter. Tarsi with cream-coloured hair on inner side. Abdomen shining, the thin white hair-bands developed only at sides; ventral scopa pure white.

Sterling, Colorado, July 1, 1921 (*Grace Sandhouse*).

Compared with *H. sambuci*, Titus, it is less robust, with much narrower face, without the well-defined polished area on upper part of clypeus, and the antennæ and tegulæ are differently coloured. Compared with *H. mescalerium*, Ckll., it is smaller, with much less ample wings, the disc of mesothorax is more closely punctured, and the abdominal hair-bands are much less developed. *H. monardæ*, Ckll., is quite different; Crawford suggests that it should be transferred to *Andronicus*.

Miss Sandhouse investigated the mouth-parts of *H. graceæ*. The maxillary palpi are five-jointed, with the third joint longest, much longer than 4 + 5 (equal to 4 + 5 in *sambuci*), second much longer than fourth (2 and 4 subequal in *sambuci*); labial palpi with second joint longer than first; tongue about as long as labial palpi; blade of maxilla very long and slender, as in other species. *H. mescalerium* also differs in the palpi, having the maxillary palpi with the third joint equal to the second, but the fourth much shorter than second.

The bee has a general resemblance to *Andronicus cylindricus*, Cress., but that is larger, with 4-dentate mandibles and different venation.

Miss Sandhouse has also collected the following, new to Colorado: *Xenoglossa strenua*, Cress., Sterling, July 12, ♂ on nasturtium flowers; *Halictus occidentalis*, Cress., Crook, ♀, Aug. 24; *Perdita bigeloviae*, Ckll., Crook, males, Aug. 17-18, larger than usual (length about or nearly 6 mm.), and with less yellow on cheeks, but the latter character varies both in Colorado and New Mexico specimens.

*Andrena murrensis*, sp. n.

♀ (type).—Length 9-11 mm.

Black, with hind margins of first three abdominal segments (third rather obscurely) and base of second and third (or third not evidently) ferruginous; flagellum dull ferruginous beneath, except at base; tegulæ shining rufo-testaceous. Wings dusky hyaline, stigma dull ferruginous, nervures fuscous. Legs black; hair of head and thorax mainly

fulvous above and white below, but front and vertex with much black hair. Abdomen with rather narrow yellowish-white hair-bands on segments 2 to 4; apical fimbria very dark chocolate. Scopa of hind tibiæ shining pale reddish anteriorly, dark fuscous posteriorly; hair on inner side of basitarsi pale red; spurs light ferruginous. Malar space practically obsolete; process of labrum broad and truncate; clypeus shining, with strong punctures, an indistinct smooth line; facial foveæ very narrow, bounded on front by long tufts of black hair; mesothorax polished, with weak inconspicuous punctures; area of metathorax triangular, dull and granular, the margins shining; second s.m. broad, receiving first r.n. well beyond middle; b.n. falling just short of nervulus; stigma well developed. Abdomen thinly hairy, with weak piliferous punctures; second segment depressed about a third.

♂.—Length about 8 mm.

More slender; head large, without pale face-markings; clypeus prominent, with sparse punctures on disc; cheeks very broad, flattened, polished, sparsely punctured, not dentate; mandibles of moderate length; front with black hair; flagellum moderate, bright ferruginous beneath; legs black.

Murree Hills, Punjab, 7500 ft., May 1920, 5 ♀ (*Dutt*); Murree, 7500 ft., June 18, 2 ♀, 1 ♂ (*Dutt*). (*Fletcher*, 50, 51, 52, 53, 57, 156, 162, 165.)

In *Smiedeknecht's* table of European species, the female runs to *lombardica*, Schn., and the male near to *basalis*, Sichel, but these are not closely related. In my table of Oriental species in the British Museum, *A. murrensis* runs to *A. familiaris*, Smith, but is easily separated by the dark tibiæ and tarsi of the male. In my table made from the Rothney collection at Oxford, it runs to *A. morosa*, Cam., but is not the same. I noted of the Rothney collection type of *morosa*: larger than *A. rothneyi* or *maligna*; clypeus shining, with scattered rather weak punctures; mesothorax very feebly punctured; red on abdomen confined to apices of first two segments and bases of second and third; hair at end of abdomen reddish chocolate. Bingham gives the length as 12–13 mm. The British Museum also has a "type" of *morosa*, which lacks the red on abdomen and may be distinct. It runs in my table next to *levilabris*, and is separable thus (♀):—

Clypeus with a large median polished space, grooved down middle.....	<i>morosa</i> , Cam.
Clypeus closely punctured, without such a space	<i>levilabris</i> , Cam. (type).

The *morosa* is labelled Masuri.

The *A. mephistophelica*, Cam., type in the Rothney collection, has the abdomen without red; front and vertex covered with black hair; flagellum red beneath except basally; abdomen dull, with dullish white bands. This species is not in the British Museum. Bingham's description does not agree with the type.

*Andrena rothneyi*, Cameron.

I have this (♀) from Simla, September (Nurse). *A. simlaënsis*, Cam., also from Simla, August (Nurse), is in Col. Nurse's opinion almost certainly the male of *rothneyi*. In *rothneyi* the first two abdominal segments are red, and the mesothorax is dullish and closely minutely punctured; in *simlaënsis* the abdomen is entirely black, and the mesothorax is highly polished.

*Andrena anonyma*, Cameron.

I noted of the ♀ type in Rothney collection: flagellum obscurely reddish beneath; mesothorax dull, with hardly visible very weak punctures; scutellum shining; second s.m. broad; abdomen shining, with brilliant white bands. The male, not previously described, is also in the collection; it has a very broad head, with broad cheeks and long mandibles; scutellum shining as in ♀; second s.m. not unusually broad.

*Andrena incanescens*, sp. n.

♂.—Length about 9 mm.

Black, head and thorax with long dull white hair, faintly yellowish on thorax above, but with no black hair anywhere; head broad, facial quadrangle much broader than long; no light face-markings; process of labrum polished, broadly truncate; mandibles ordinary, with an inner tooth. Malar space linear, with a distinct tubercle at upper end; cheeks rounded, covered with long hair; clypeus ordinary, convex, shining, finely punctured, with no smooth line; flagellum stout, crenulated, very obscurely reddish beneath; third antennal joint a little shorter than 4+5; mesothorax dull, with very long hair; scutellum shining; area of metathorax hardly defined, rugose, the rugæ transverse, the metathorax covered with very long hair; tegulæ piceous. Wings reddish hyaline; stigma well developed, dark reddish; nervures fuscous, second s.m. receiving first r. n. a little before or at middle; b. n. falling just short of nervulus. Legs black,

with pale hair, bright ferruginous on inner side of tarsi ; spurs light ferruginous. Abdomen rather broad, convex, finely and distinctly punctured, the third segment more closely than the second ; surface thinly hairy, and segments 2 to 4 with thin but entire and rather broad white hair-bands, not conspicuous ; sixth segment with long dark hairs, indicating dark hair at apex in female.

Murree Hills, Punjab, 7500 ft., May 1920, 3 ♂ (*Dutt*). (*Fletcher*, 119, 132, 133.)

The sculpture of the metathorax recalls *A. morosa*, but the species is distinct from all described from India in the male sex, and I do not think it can be associated with any of the females. In the European table it runs near *A. simillima*, Smith, but the abdomen is much broader and duller, and there are many other differences. The abdominal bands are not dense and white at the sides as in *A. heteropoda*, Ckll. There is a very close superficial resemblance to *A. afzeliella*, Kirby (*ovatula*, Kirby).

*Nomioides taprobanæ* (Cameron).

The type of *Ceratina taprobanæ*, in the Rothney collection, is a *Nomioides*. It is very small ; clypeus yellow, with two black spots close together ; mesothorax dark green ; anterior and middle tibiae and tarsi wholly yellow. Ceylon.

SUDILA, Cameron.

This genus, based on three forms from Ceylon, could be regarded as a subgenus of *Halictus*, but may perhaps retain generic rank. I made the following notes from the types in the Rothney collection.

*Sudila ceylonica*, Cameron.

♀.—Clypeus produced, but malar space short ; venation ordinary, b. n. falling short of nervulus ; area of metathorax large, hardly defined, not plicate at all ; hind legs with short hair, but the femora with a good curled pollen-collecting scopa ; abdomen fusiform.

*Sudila bidentata*, Cameron.

♂.—Head very large, quadrate, with great flattened cheeks with a great dentiform angle below ; clypeus with two very large long parallel teeth, somewhat curved downward ; mandibles extremely long, crossing, strongly curved, red, with an inner tooth or angle ; anterior border of prothorax very strongly elevated, with red margin. The first



r. n. meets the second intercubitus ; in *ceylonica* it falls a little short of it. In both the third s.m. is short, not very much broader than second, and the outer nervures are quite distinct. Apparently *S. bidentata* is the male of *ceylonica*.

*Sudila fuscipennis*, Cameron.

♂.—Compared with *bidentata*, the head is much smaller, and the clypeal teeth are much shorter ; the mandibles are shorter and much darker ; the wings are dusky, quite reddish (not so in *bidentata*). The second s.m. is narrowed above, and receives first r. n. at extreme end. The abdomen is missing.

A slide mount of the mouth-parts of *S. ceylonica* shows six-jointed, slender maxillary palpi, the first joint short, the others subequal.

*Augochlora floralia*, Smith.

Type in Wilson Saunders collection at Oxford.

♀.—Length about 8 mm.

Very brilliant shining blue-green, but front dull and granular ; face very broad ; area of metathorax with feeble very oblique striæ ; hind spur pectinate ; abdominal segments not vibrissate.

*Augochlora cytherea*, Smith.

Type in Wilson Saunders collection.

♀.—Length about 10 mm.

Brilliant yellowish green ; mandibles broad, reddish in middle, with strong inner tooth ; area of metathorax lunate, with oblique striæ ; hind spur pectinate ; first recurrent nervure meets second intercubitus ; yellowish vibrissæ at sides of first two abdominal segments.

*Augochlora vesta*, Smith.

Described from the female. A male in the Wilson Saunders collection has expanse about 18 mm. Wings suffused with brown ; mesothorax densely and strongly punctured ; abdomen brilliant crimson, tending toward magenta, with orange vibrissæ ; punctures on first segment very strong.

*Nomia opulenta*, Smith.

Described from the male, collected on Morty I. In the Wilson Saunders collection I find also the female with label "M.," doubtless meaning Morty I. The male has on the



abdomen five yellow-green (Smith says blue-green) bands, slightly shot with red, the first being on first segment; postscutellum densely tomentose, unarmed; area of metathorax appearing as a narrow shining band, with a triangular dull apical part abruptly separated from it; second s.m. small, higher than long; hind femora not thickened, but tibiae strongly curved. The female is evidently the same species; it has five abdominal bands, very strongly vermilion.

*Nomia elegans*, Smith.

Type in Wilson Saunders collection.

♀.—Abdomen with four yellow-green bands, first on first segment; punctures of mesothorax very fine and weak; anterior wings with apical dusky cloud; tegulae pale fulvous; area of metathorax channelled, with cross-ridges; tibiae and tarsi light ferruginous.

*Schmiedeknechtia oraniensis*, Friese.

I examined this in Mr. Morice's collection, and noted that it was very like the American genus *Neopasites*, Ashm., with the same hair-spots on abdomen. Head subglobose; second s.m. large and triangular; b. n. meeting nervulus. Ashmead says "labial palpi (?) 5-jointed," but it should be maxillary palpi. The genera are perhaps identical, but in *Neopasites* the mandibles are bidentate, whereas Friese describes *S. oraniensis* as having them simple.

