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36 + 37

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SOME BEES FROM ELDORA, COLORADO

By T. D. A. COCKERELL

[Reprinted from PSYCHE, Vol. XVII, No. 6, 1910.]

Records of *B. pectorator*
flavifrons
infundibulus astragali

p. 247

SOME BEES FROM ELDORA, COLORADO.

By T. D. A. COCKERELL.

The University of Colorado, Boulder, Colo.

My wife and I spent the afternoon of August 18 and morning of August 19, 1910, at Eldora, in the mountains of Boulder County, Colorado. The locality is in the Canadian Zone, at an altitude of about 8,550 ft., and has a bee-fauna rather widely different from that of Boulder. So many interesting species were collected that it seems worth while to put the whole on record. At this season of the year, the best bee-plant at Eldora is *Grindelia subalpina* Greene, a very fine species which makes the valleys gay with its orange-yellow flowers. Less abundant, and much less conspicuous is *Phacelia leucophylla* Torrey, with white flowers. These two are referred to by their generic names alone in the following list:

Andrena n. sp. Much like *A. hirticincta*, but hair at end of female abdomen pale. Females rather common at *Grindelia*; one male on *Erigeron*. This species was named in MS. by Viereck, from specimens collected in New Mexico; it will be published in his revision.

Halictus lerouxii Lep. Both sexes common at *Grindelia*.

Halictus ruidosensis Ckll. Both sexes at *Phacelia*, the males abundant.

Agapostemon texanus subtilior Ckll. One male at *Grindelia*. This sex is undescribed; it differs from true *texanus* by its smaller size, the metathorax more delicately sculptured, black on legs reduced, and flagellum paler.

Sphecodes (*Sphecodium*) **fragariæ** Ckll., var. a. Female smaller, about 5 mm. long, face more narrowed below, middle of abdomen much suffused with black. One at *Phacelia*. This may be a distinct species, but I have only a single specimen, and *fragariæ*, as represented by numerous specimens collected at Florissant, is very variable.

Perdita snowii Ckll. Common at *Grindelia*. This species was described from a single specimen collected by Snow in 1892 in Estes Park, Colorado. Later, I took a specimen at Santa Fé, New Mexico, but the species has escaped rediscovery in Colorado until the present time. The male, which was not known, runs in my table in Proc. Phila. Acad. Sci., 1896, to 28, except that there is a small black mark or band along each side of the upper part of the clypeus, not on the clypeus itself. It runs on to 30, but face is bare, while mesothorax is hairy. The following characters are distinctive: Face below antennæ bright chrome yellow; yellow in median line extending above antennæ as a small spear-head shaped mark; at sides

extending upwards broadly, then abruptly ending, except for a line along the eye, the whole like a closed hand with index finger pointed; a narrow yellow stripe along lower half of posterior orbits; scape yellow; flagellum yellow beneath; anterior knees yellow and their tibiae broadly yellow in front; tubercles and two marks on upper border of prothorax yellow; middle legs with much yellow, but hind legs with only knees yellow; abdominal bands yellow, broad, entire, except the first, which is narrowly interrupted. A marked character of the species is the dull hairy mesothorax.

Panurginus didirupa Ckll. Both sexes taken; the females at *Grindelia*.

Panurginus bakeri Ckll. Both sexes at *Phacelia*. The female is new; it is about $5\frac{1}{2}$ mm. long, with the legs black, including tarsi; face all black, shining; wings smoky; nervures and stigma dark. It resembles the female of *P. pauper*, but is easily separated by the dark tegulae and more distinctly punctured mesothorax.

Nomada accepta Cress. One female at *Grindelia*.

Triepeolus subalpinus n. sp. One at *Grindelia*.

♀. Length about $11\frac{1}{2}$ mm.; a species with "false pygidium" relatively small, related to *T. micropygius* Rob., but anterior legs black, with tarsi reddish; middle femora black above, red beneath; hind femora and middle and hind tibiae and tarsi red; spurs black; upper part of pleura covered with dull pale yellowish hair, thin in middle posteriorly, lower half bare, coarsely and closely punctured, but some of the shining surface visible on the lower part; labrum black, densely punctured; mandibles black, faintly reddish toward apex; clypeus closely, very minutely punctured, with scattered large punctures; antennae black, third joint reddish apically; mesothorax very densely punctured, with a light hair-margin at sides and behind, and a pair of short and broad, not dense, anterior longitudinal bands; teeth at sides of scutellum hardly produced; tubercles black; tegulae reddish-brown, closely punctured; second submarginal cell narrowed almost to a point above; black area of first abdominal segment a broad transverse band, truncate laterally; apical and basal light bands of first segment narrowly interrupted, the others entire, fifth with a large, light patch on each side; band on second segment with anterior lateral extensions broadly triangular, the angle formed very obtuse. Superficially like *T. pectoralis* Rob., but easily separated by the reduced axillar teeth, form of band on second abdominal segment, much denser punctures on lower part of pleura, etc.

Epeolus eldoradensis n. sp. Two at *Grindelia*.

♂. Length about 8 to 9 mm.; very close to *E. argyreus* Ckll., but wings brownish, middle and hind legs more or less red, and third antennal joint without red. The metathoracic area is larger than in *argyreus*, the cheeks are broader, and the femora are not so hairy.

Eyes sage green; hair of face pure shining white; clypeus densely minutely punctured, without large punctures; antennae black; mesothorax with rather thin pale creamy hair, rather evenly distributed, so that there are no definite markings; axillar teeth very short and blunt; tubercles black; tegulae dark reddish-brown;

second s. m. narrow, narrowed about one-half above; pleura very densely covered with shining white hair; middle and hind spurs black; anterior legs black; middle red, the femora black above; hind legs red; abdominal segments 1 to 6 covered with pale ochreous-tinted hair, no definite light patch on first, but a small discal area where the hair is thinner, and there are a few reddish scales; second segment with a broad basal band of reddish hair, not reaching the sides, third with a narrower band of the same kind.

Var. a. Smaller; Middle femora black, as also outer side of their tibiae; hind femora black except at apex, and their tibiae suffused with blackish on outer side; first abdominal segment with a transverse, rather poorly defined black (bare) band; second with the basal half black except at sides. This looks distinct, but is probably only a variety, as *Argyroselenis minima* Rob. varies in much the same manner as to the abdomen. It is the var. a. which most resembles *E. argyreus*.

Clisodon terminalis Cress. One female at *Chamaenerion angustifolium*.

Melissodes hymenoxidis Ckll. Females at *Grindelia*, also nesting in ground. Two were observed to enter the same nest.

M. confusa Cress. Both sexes at *Grindelia*.

M. confusiformis Ckll. One female at *Grindelia*.

M. menuacha Cress. One male at *Grindelia*. This is the same as the New Mexico insect I have identified as *menuacha*, but differs from a Colorado example (not the type) from the Cresson collection. I believe it is the real *menuacha*, and that Cresson confused two or more species in his collection.

Coelioxys porterae Ckll. One female on sand.

Megachile wootoni calogaster Ckll. One female at *Campanula petiolata*.

Megachile pugnata Say. Females at *Grindelia*.

Megachile perihirta Ckll. One male at *Grindelia*.

Megachile relativa Cress. Females at *Grindelia*.

Alcidamea simplex Cress. Females at *Phacelia*.

Osmia copelandica Ckll. Female at *Phacelia*. The second known specimen.

Osmia pentstemonis Ckll. One female at *Grindelia*.

Osmia wardiana Ckll. One female at *Grindelia*. This is narrower than usual, but apparently not a distinct species.

Osmia fulgida Cress. Two females at *Phacelia*. These are green, and agree with the form named *viridis* by Cresson, except that the hair of the thorax above, instead of being black, is reddish with a few black hairs intermixed.

Osmia densa Cress. Two females, one at *Grindelia*. A variable species.

Osmia grindeliae n. sp. One at *Grindelia*. Var. a. at *Phacelia*.

♀. Length about 9 mm.; the abdomen subglobose; head about as wide as thorax, dark greenish and purplish, densely punctured; clypeus mainly dark purplish; cheeks olive green; face, front and vertex with long coarse black hair, occiput with some white hair; mandibles tridentate; flagellum faintly reddish beneath except at base; mesothorax black on disc, green at sides; scutellum and postscutellum olive-green, but metathorax dark bluish; hair of thorax above white, with long black hairs sparsely intermixed; of pleura black, comparatively short, of sides of metathorax white; tegulae piceous; wings stained with brown; legs black, not metallic; abdomen dark green, the hind margins of the segments

bluer; first segment with white hair, the others with it thin, short and black, a little glittering white principally along hind margins of segments and on apical segment; scopa black.

In my table in Univ. of Colo. Studies, 1907, p. 250, this runs to *O. wilmattæ*, from which it differs by its darker, green, coloration, and the smaller subglobose abdomen. The hair on the pleura is only about half as long as in *O. pikei*.

Var. a. Similar, but hair of pleura somewhat pallid. This is much darker than *O. phacelia*, and the tegulae are not conspicuously green in front as in that species.

Anthidium tenuifloræ Ckll. Both sexes at *Grindelia*.

Dianthidium pudicum Cress. Both sexes at *Grindelia*.

Apis mellifera ligustica Spin. Only one seen; at *Grindelia* a. *subalpina* Greene

Bombus flavifrons Cress. At *Grindelia*.

Bombus juxtus Cress. At *Phacelia*.

Bombus rufocinctus astragali Ckll. One male at *Grindelia*. *leucophylla* Torrey "

For other records of Bombidae from Eldora, see Univ. of Colo. Studies, IV, pp. 257-258, and VII, p. 186.

SOME BEES FROM ECUADOR.

I am indebted to Mrs. L. H. Dyke for some bees which she recently collected at Portobelo (pronounced Porto Bello), Ecuador, at an altitude of about 4,000 ft.

(1) *Euglossa cordata* (L.)

(2) *Xylocopa varians ecuadorica* Ckll. This was described only last year, from material in the British Museum.

(3) *Mesocheira bicolor elizabethae* subsp. nov.

♀. Length 12 mm., in most respects similar to *M. bicolor*. Face, cheeks, and occiput with dull white (not reddish) hair, vertex with black; antennae black, the first three joints and extreme base of fourth broadly red beneath; thorax above dark green, the scanty hair dull white and black; abdomen a fine greenish blue, almost steel-color, but greener, the basal part of the first segment dark red. Extraordinarily like *Melissa decorata* Smith, but the scutellum quite different. Named after Mrs. Dyke's little daughter Elizabeth.

These bees illustrate the fact, already indicated by other collections, that the Brazilian bee-fauna passes over into the mountains of Ecuador, the species becoming in most cases distinctly modified.

T. D. A. COCKERELL.

