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Descriptions and Records of Bees.— XII.

T. D. A. Cockerell
University of Colorado

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Theodore H. Frison

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Descriptions and Records of Bees.—XII.

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

Nomada (Xanthidium) subrutila, Lovell & Ckll., 1905.

Boulder, Colorado, at flowers of *Pulsatilla hirsutissima*, one ♂, May 1, 1906 (*Marie Gill*).

This species was previously known by a single male taken in Maine. The Colorado example has the flagellum duller and distinctly denticulate, and the b. n. passes a short distance basad of the t.-m., but they otherwise agree. In my table of Rocky Mountain species the insect runs to *N. civilis*, from which it is easily known by the denticulate flagellum and other characters. It is nearest to *N. luteoloides*, Robertson, and it is not unlikely that it will prove to be only sub-specifically distinct.

Nomada pulsatilla, sp. n.

♀.—Length about $7\frac{1}{2}$ mm.

Red and black, with no yellow anywhere; mandibles simple; head broad, facial quadrangle conspicuously broader than long; head red, with the cheeks posteriorly, a large patch enclosing the ocelli, the middle of front (enclosing no red spot), the region about antennæ, and a broad mark extending halfway down sides of clypeus all black; the supraclypeal area is black, with a red spot; hair of head and thorax above fuscous, black on scutellum and scape; that on metathorax, pleura, and cheeks pallid; antennæ long, entirely ferruginous, third joint about as long as fourth; mesothorax coarsely rugoso-punctate, red, with a broad median black stripe; scutellum red, flattish, and not bilobed; metathorax nearly all red except a broad median black band; pleura red; tegulæ shining coppery red, rather closely punctured. Wings very dark at apex, stigma ferruginous, nervures dark fuscous; second s.m. not especially broad above; b. n. a moderate distance basad of t.-m. Legs bright red, the coxæ and trochanters marked with red, and the hind femora with two more or less suffused black stripes behind; hind tibiæ and tarsi behind with fine golden tomentum. Abdomen broad, oval in form, very shiny chestnut-red, the hind margins of the first two segments strongly blackened, but not really banded; first segment with a broad black mark (enclosing a red dot) on each side

of base and a linear one in the middle; apical band of tomentum on fifth segment narrow; pygidial plate broadly rounded; venter red, without markings.

Hab. Boulder, Colorado, at flowers of *Pulsatilla hirsutissima*, April 20, 1906 (Cockerell).

In the table of Rocky Mountain species (Bull. 94, Colo. Exp. Sta.) this runs to 68, and runs out because the abdomen has no yellow spots. From *N. Packardiella* it differs by the much broader abdomen, without yellow spots or distinct black bands, the golden pile on the entirely red hind tibiae, &c. From *N. Clarkii* it differs by its smaller size and the details of the coloration of the abdomen, but the two are closely allied. From *N. latifrons* it differs by the broad abdomen &c. It is also related to *N. valida*.

There is quite a strong superficial resemblance (as seen without a lens) to *N. polyacantha*, Perez, from Barbary, but that species has the b. n. meeting t.-m., the mesothorax black, &c.

Nomada undulaticornis, sp. n.

♂.—Length about 8 mm.

Black, lemon-yellow, and ferruginous; mandibles simple; anterior coxæ pointed at apex, but not spined; head coarsely sculptured, black, with the labrum, base of mandibles, clypeus except upper lateral margins, and lateral face-marks (ending very narrowly on orbital margins below level of antennæ); all yellow; facial quadrangle longer than broad; pubescence of head and thorax rather abundant, pallid, with an ochreous tint, face with appressed silky hair; scape not greatly swollen, yellow in front; flagellum yellowish ferruginous beneath, above black about as far as the eighth (antennal) joint; third antennal joint about as long as the fourth, apical joint pointed; joints 6 to 9 strongly undulate beneath, or, one might say, tuberculate; mesothorax entirely black, very coarsely and confluent rugoso-punctate; tubercles red; a small red mark on anterior part of pleura; scutellum strongly bigibbose (mammiiform), the gibbosities red; metathorax entirely black, rugoso-plicate basally; tegulæ red, dullish, closely punctured. Wings strongly dusky at apex, stigma ferruginous, nervures fuscous; second s.m. rather narrow; b. n. going only just basad of the oblique t.-m. Legs red, coxæ largely black, middle femora with the basal two fifths behind black; hind femora mostly suffused with black on both sides. Abdomen broad, convex, dark red,

with the basa half of the first segment black, the apical margins of the first two segments infuscated; the extreme bases of the second to fourth (at least) segments black; the second segment with a large yellow patch on each side, the third to fifth with yellow bands, very narrowly interrupted in the middle, the sixth with a large transverse yellow patch; apical plate deeply notched, only moderately broad; venter with a few small yellow marks.

Hab. Boulder, Colorado, at flowers of *Pulsatilla hirsutissima*, April 20, 1906 (*W. P. Cockerell*).

I thought at first that this was the male of *N. pulsatillæ*, but there are so many differences that it seems best to regard it as distinct. In the table of Rocky Mountain species it runs to 62, but runs out because of the rather small size and red on scutellum. It is known from *N. vicinalis* by its smaller size, total absence of yellow on thorax, &c. There seems to be some affinity with *N. denticulata*, Rob.

Nomada flammigera, sp. n.

♀.—Length just over 8 mm.

Mandibles simple; head and thorax red, with black markings and no yellow; abdomen narrow, light red, with a sericeous surface, and a round cream-coloured spot on each side of second segment, but no other light markings. Head broad, face conspicuously broader above than below; labrum with a small tubercle; front above antennæ broadly black, but no black at sides of clypeus; ocelli on a small transverse black area; cheeks posteriorly black; antennæ long, all red, except that the end of scape is black behind; third joint conspicuously shorter than fourth, but still much over half its length; hair of head and thorax very scanty above, but snow-white patches showing on cheeks beneath, lower part of pleura, metathorax, &c.; mesothorax with a median black band, the red on each side of which is deeply incised by black anteriorly, producing the appearance of flames; scutellum and metathorax red, the latter with a rather weak black band; pleura and tubercles red; tegulæ light red. Wings dusky, especially at apex, with the usual light area; stigma and nervures fuscous; second s.m. broad above, third narrowed almost to a point; b. n. passing far basad of t.-m. Legs red; middle femora blackened at base; hind femora much blackened in front and behind; spurs creamy white; basal joint of hind tarsi black, contrasting with the bright red tibia and the red small joints of tarsi. Abdomen without

black above, except a couple of black spots on each extreme side of first segment; beneath, the first segment has a large black fish-tail mark, the prongs long, and the hind margins of the first two segments are suffused with dusky.

Hab. N. Yakima, Washington State, May 15, 1903 (*Eldred Jenne*).

From Mr. Melander, with his no. 18. In the table of Rocky Mountain species this runs to 70, but is quite distinct from *N. Sayi*. In Robertson's table it runs to 4 (*N. Cressonii* and *Sayi*), but is not identical with the species there indicated. The insect reminds one strongly of some of the species of *Gnathias*.

Also at N. Yakima, but on June 5, Mr. Jenne took *Nomada erythrochroa*, Ckll., of which only one specimen (from Pasco) was previously known.

Centris Morsei marginata (Fox).

The *Centris marginata* of Fox is evidently only a variety of *Morsei*, as Mr. Fox suspected. The original type, which is before me, shows that the abdomen is not bare, as Fox states, but is pruinose-pubescent exactly as in *Morsei*. The lack of pubescence on the middle of the thorax is due to abrasion. The fourth antennal joint is red beneath. A second specimen of this form has been taken by Dr. F. H. Snow at the San Bernardino Ranch, Douglas, Arizona, 3750 feet, August.

Centris atripes, Mocsary.

Renewed study convinces me that *C. Foxi*, Friese, must fall as a synonym of *C. atripes*. The species is to be added to the fauna of Arizona, as Dr. F. H. Snow took two males at the San Bernardino Ranch in August. At the same locality Dr. Snow took *Protoxæa gloriosa* (Fox), also new to Arizona.

Oxæa tristis, Gribodo.

San Bernardino Ranch, Arizona, Aug. (*F. H. Snow*). New to the United States.

Xenoglossodes eriocarpi (Ckll.).

Brownsville, Texas, June (*F. H. Snow*). This record extends the known range about four degrees south.

Anthophorula compactula, Ckll.

Brownsville, Texas, June, 2 ♂, 3 ♀ (*F. H. Snow*). New to Texas.

All of these have only two submarginal cells, apparently indicating that this is, after all, the normal condition of the species. The eyes of the female are of a beautiful deep sea-green (bluish-green) colour.

Exomalopsis Snowi, sp. n.

♂.—Length about $7\frac{1}{2}$ mm.

Black, with coarse pale fulvous pubescence; clypeus black; labrum dull yellowish white; mandibles mainly rufous; antennæ ferruginous, the flagellum subfuscous above, with the sutures darker; tegulæ large, shining, translucent apricot-colour. Wings hyaline, slightly yellowish, the apex broadly dusky; the large stigma and the nervures ferruginous. Abdomen rather pointed for an *Exomalopsis*, having the sides and apex of the first segment and base of the second broadly ferruginous; no distinct hair-bands on abdomen, but much long coarse hair. Legs bright ferruginous, the long plumose hair on hind tarsi behind largely blackened; hair of legs otherwise very pale fulvous. Labial palpi with first joint more than twice length of second; maxillary palpi long and slender. Face densely covered with silky pale fulvous hair; eyes dark sea-green; mesothorax very shiny, with strong punctures except in the middle, where it is impunctate; second submarginal cell variable, narrow and much narrowed above, or comparatively broad, receiving the first r. n. very near the apex, or not much beyond the middle; b. n. meeting t.-m., or passing a short distance basad of it.

Runs in Friese's table (1899) to 6, and runs out because of the red legs &c.

Hab. Brownsville, Texas, June, 3 ♂ (*F. H. Snow*).

Xenoglossa pruinosa limitaris, subsp. n.

♂.—Clypeus without any yellow spot; hair of head cinereous, with black hairs sparsely intermixed on face and vertex; hair of thorax above pale, with only a slight fulvous tint. Legs red, more or less clouded with blackish; abdomen very black and shiny, with the usual bands much reduced.

Looks like a distinct species, but I find no structural differences from *pruinosa*.

Hab. Brownsville, Texas, June (*F. H. Snow*).

Andrena nigrītula, n. n.

Andrena nigrīta, Morawitz, in Fedtschenko, Turkestan Mellifera, ii. 1876, p. 196 (not of Fabricius, 1775).

Dasiapis olivacea (Cresson).

Brownsville, Texas, June, both sexes (*F. H. Snow*). New to Texas.

Tetralonia Edwardsii vagabunda, Ckll.

In my original account of this bee (Trans. Amer. Ent. Soc. xxxii. p. 95) I stated that it was from flowers of *Onosmodium*. During my absence in June 1905 my wife collected a series of bees from the flowers of a plant which she took to be *Phacelia*, and so labelled them. I did not see the plant in flower, but later in the year we found what appeared to be the same, with abundant fruit, and it was *Onosmodium carolinianum*. This year we have found the original plant in flower, and it is *Phacelia heterophylla*, Pursh; but growing in the same places, and almost exactly similar in foliage and manner of growth, is the *Onosmodium*. Such resemblance between two plants growing under the same conditions, but of different families and having quite different flowers, is interesting.

The following bees were taken by my wife from flowers of *Phacelia heterophylla* at Boulder:—*Halictus meliloti*, Ckll., *Dialictus anomalus* (Rob.), *Alcidamea simplex* (Cresson), *Megachile brevis*, Say, *Tetralonia Edwardsii vagabunda*, Ckll., *Ceratina nanula*, Ckll., and *C. neomexicana*, Ckll.

At Ward, Colorado (9000 feet), a *Phacelia* closely allied to *heterophylla* was found in quantity. It was recorded at the time as *P. circinata*, following Coulter's manual; but it is not the true species of that name, and I suppose that it must belong to *P. alpina*, Rydberg, 1900. It proved very attractive to bees, and the following were collected on it at Ward in July by my wife and myself:—*Colletes phaceliæ*, Ckll., *Anthidium emarginatum*, Say, *A. conspicuum*, Cress., *Osmia propinqua*, Cress., *Monumetha argentifrons*, Cress., *Megachile latimanus*, Say, *M. vidua*, Smith, *Bombus Edwardsii*, Cress., var., *B. iridis phaceliæ*, Ckll.

THYGATER, Holmberg.

In Trans. Amer. Ent. Soc. xxxii. p. 115, I called attention to the identity of *Thygater* with *Macroglossapis*, and gave reasons for supposing that the latter had priority. I learn

from Mr. J. C. Crawford, however, that Holmberg, in *Actes Acad. Cordoba*, v. p. 133 (1884), remarked that *Tetralonia terminata*, Smith, had only three joints to the maxillary palpi, and might form a new genus *Thygater*. This slight reference has been overlooked by all subsequent authors, but I think it will hold the name, giving *Thygater* priority.

The genus consists of the following known species:—

Thygater terminata (Sm.), *T. chrysophora*, Holmbg., *T. analis* (Lep.), *T. albilabris* (Cress.), *T. montezuma* (Cress.), *T. modesta* (Sm.), *T. rubricata* (Sm.).

Bombus Kohli, n. n.

Bombus carbonarius, Handlirsch, Ann. naturh. Hofmus. Wien, 1888, p. 242. (S. America.)

The name is changed because of *B. carbonarius*, Menge, 1856, from Prussian amber. As Friese has already named a *Bombus* after Dr. Handlirsch, the present insect may bear the name of another distinguished naturalist of Vienna. I possess the species from Villa Encarnacion, Paraguay, collected by Mr. Schrottky. Dr. Handlirsch, to whom I wrote concerning the preoccupation of *carbonarius*, replied that he did not himself intend to propose a substitute.

Sphecodes hesperellus pulsatilla, subsp. n.

♀.—Like *S. hesperellus*, Ckll., but somewhat larger; the wings longer (about 7 mm.), *blackish*, quite dark, not reddish as they are in *hesperellus*; abdomen darker, deep chestnut-colour; rugæ of metathoracic enclosure more numerous, very distinct. Superficially like *S. pecosensis*, Ckll., but very distinct by the shining mesothorax, with scattered punctures. The first abdominal segment is sparsely punctured.

Hab. Boulder, Colorado, at flowers of *Pulsatilla hirsutissima*, April 20, 1906 (*W. P. Cockerell*).