

## SOME BEES FROM WASHINGTON STATE.

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The State of Washington is remarkable for the possession of two very different faunæ: that of the damp coast region, and that of the inland plains and valleys.\* The bees of the coast region have become fairly well known through the collections of Professor T. Kincaid and others, but the inland bee-fauna has as yet yielded to science only a fraction of its riches. On May 25, 1896, Professor Kincaid collected at Pasco, and obtained a remarkable series of specimens, including new species of *Colletes*, *Andrena* (two), *Nomada* (two), *Calliopsis*, *Osmia*,† *Anthophora* and *Emphoropsis*. The results of this single day's work will ever be memorable in the history of Apidology, and from this and other miscellaneous collections, we may fairly assume that the region contains a whole new fauna. Not long ago Mr. Titus passed through Pasco, and found it a desolate-looking place; the region is not one of luxuriant vegetation, but represents the northern extension of the arid desert or semidesert, carrying with it an essentially southern bee-fauna, as shown by *Calliopsis*, *Dasiapis*, *Nomia*, etc.

When Mr. A. L. Melander went to Washington State, I hoped that he would in due course give us an account of the interior country, and make known its real possibilities in the way of Hymenoptera. This he is beginning to do, for the other day I received from Mr. Viereck a box of bees, transmitted to him by Mr. Melander, with the request that they should be worked up. Although I was more than occupied in other ways, they were so interesting that I could not do otherwise than examine them, and I give here part of the result.

*Emphoropsis cineraria* (Smith).

Yakima, Wash., April 21, 1905. ♀. Previously known only from Vancouver I.

*Anthophora*.

The following were taken by Eldred Jenne at N. Yakima, Wash., in 1903: *A. Crotchii*, Cr. (May 24); *A. simillima*, Cr. (May 9); *A. urbana*, Cr. (June 26); *A. Washingtoni*, Ckll. (May 27); *A. ignava*, Cr. (May 23); *A. sodalis*, Cr., both sexes (May 27); and *A. Edwardsii*, Cr. (May 9).

\*See *American Naturalist*, Jan., 1899, pp. 41-42.

†*Osmia Pascoensis*, Ckll., discovered at Pasco, was taken by me at flowers of *Carduus*, at Boulder, Colorado, July 3, 1905.

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The following are from Yakima, Wash., 1905: *A. Edwardsii*, Cr. (April 20 and 21); *A. Crotchii*, Cr. (April 21).

All these appear to be new to the State, except *Washingtoni* and *Crotchii*. The latter is omitted by Mr. Viereck in CANAD. ENTOM., 1905, p. 313, but it was recorded from Pasco in *Proc. Acad. Nat. Sci., Phila.*, 1898, p. 54.

*Tetralonia Yakimensis*, n. sp.

♂.—Length about  $13\frac{1}{2}$  mm.; black, the clypeus (except a deep rounded incision on each side) rather light lemon-yellow, the labrum yellowish-white; hair of head and thorax dullish pale ochreous; abdomen with the first segment covered with very pale ochreous hair, the remaining segments with coarse black hair, with no light hair in front of the apical plate, nor any bands; tarsi, especially the small joints, rufescent; hair on inner side of basal joint orange; basal joint of middle tarsi twisted, and with an apical projection; hind spurs normal. Runs in my tables (Tr. Amer. Ent. Soc., 1906) to *T. Californica* (Cr.), from which it is easily separated by the black hair of second abdominal segment, and absence of reddish hair on apical part of abdomen. By the coloration of the abdominal hair, it resembles *T. acerba*, but that is smaller, and has not the deformed middle tarsi. The closest affinity is no doubt with *T. fulvitaris* (Cr.), which has just the same leg-structure. *T. Yakimensis* differs from *fulvitaris* by its more robust form; the hair on second abdominal segment black instead of pale; the absence of a light tuft before the apical plate; the piceous instead of ferruginous nervures; the yellowish (instead of white) hair of legs; the dull disc of mesothorax, with less conspicuous punctures. The facial quadrangle is much longer than broad, the yellow of the clypeus almost touches the eye, and the mandibles have no yellow spot. The antennæ are practically as in *fulvitaris*.

*Hab.*—Yakima, Washington State, April 21, 1905 (*Melander*). Received through Mr. Viereck.

*Tetralonia Douglasiana*, n. sp.

♀.—Length about  $14\frac{1}{2}$  mm., the light pubescence gray to white, only very faintly yellowish on thorax above; hair on inner side of basal joint of hind tarsi clear ferruginous; flagellum very faintly reddish beneath; tegulæ ferruginous, fuscous basally; abdomen with very broad bands of white tomentum on segments 2 to 4; the white band on 5 very broadly interrupted in the middle by dark rufo-fuscous; wings dusky, with a yellow tint, the nervures piceous; no dark hair on mesothorax or

scutellum; facial quadrangle somewhat broader than long; hind spurs pale ferruginous, not at all hooked. The scopa of the hind tibiae is slightly plumose only, as in *T. Belfragei*. In my tables this runs (making allowance for the large amount of white at sides of segment 5) to *T. Cordleyi*; if sought in the series with the apical hair reddish, it runs to *T. speciosa* or *Cordleyi*. It differs thus from various species which might be confused with it:

1. From *speciosa* by its smaller size, silvery white (not yellow) hair of hind tibiae, different colour of hair of apex, gray hair of mesothorax, etc. The pale bands on segments 2-4 are as in *speciosa*, except that that on 2 is not appreciably narrowed in the middle, and that on 3 has its upper edge straight (strongly concave laterally in *speciosa*). The bands are also whiter.

2. From *Cordleyi* by the whiter and much broader abdominal bands, the upper lateral corners of the second segment being covered with pubescence; whereas in *Cordleyi* they are broadly black. The hair of the mesothorax is also quite differently coloured.

3. From *Belfragei* by the much broader light bands of abdomen, and the dullish gray aspect of the whole abdomen, instead of the clear black and white of *Belfragei*.

4. From *Fowleri* by the larger size, much broader band on second abdominal segment, etc.

5. From *virgata* by the hair of mesothorax, ornamentation of abdomen, etc.

*Hab.*—Steamboat Rock, Grand Coulee, Douglas County, Washington State, July 10, 1902. Received from Mr. Viereck, who received it from Mr. A. L. Melander.

*Nomia Melandri*, n. sp.

♀.—Length about  $12\frac{1}{2}$  mm.; hind margins of abdominal segments 2 to 4 with very broad light emerald-green tegumentary bands; first segment with a little green at the hind corners. Closely allied to *N. Foxii*, D. T., but larger (though not nearly so large as *N. Nortoni*), and differing as follows: anterior part of mesothorax with very pale grayish-ochreous hair, with black bristles intermixed; posterior part of mesothorax mainly exposed, shining, impunctate, except for a few large punctures near the region of pubescence, and scattered scarcely visible rudiments of

punctures; scutellum smooth and almost impunctate; apical depression of first abdominal segment bounded above by a strong ridge, which is concave toward the depression (in *Foxii* the depression is less conspicuously bounded, and the boundary is straight); first r. n. entering second s. m. a little beyond the beginning of its last third. Otherwise *Foxii* and *Melandri* are about the same, but the difference of thoracic sculpture makes the latter a very easily-separated species.

*Hab.*—N. Yakima, Washington State, July 10, 1903, "Yakima Expedition." Sent by Mr. A. L. Melander to Mr. Viereck, who transmitted it to me.

*Sphecodes Columbiæ*, n. sp.

♀.—Length about 11 mm., of anterior wing just over 7 mm., width of abdomen about  $2\frac{2}{3}$  mm.; head and thorax black, abdomen long, entirely bright yellowish-ferruginous; legs black, only the small joints of tarsi dark reddish; wings strongly brownish in the region of the cells; flagellum stout, the apical half obscure reddish beneath; third antennal joint longer than fourth, and somewhat longer than broad; labrum broad, not emarginate, nor much produced; mandibles stout and blunt, wholly without an inner tooth; clypeus with very large partially-confluent punctures. This was taken, at first sight, for *S. Kincaidii*, but it is not that species. With the large size and simple and dark mandibles of *Drepanium*, it combines the ordinary labrum of *Sphecodes*, etc. It agrees with the description of *S. Kincaidii* except as follows: Size smaller; face with scanty dull white pubescence, but also coarse black bristles; antennæ not wholly dark; first joint of flagellum not so short; mandibles simple; mesothorax with large strong punctures on a shining ground posteriorly, but rugose anteriorly; tegulæ with hyaline margins; stigma ordinary, not especially large; hind tarsi not all red; second abdominal segment with small close punctures basally; third punctured like the second, except that the area of small close punctures is larger. The first segment, and the second and third except basally, have scattered strong punctures on a very shiny ground; apex with dark hair; apical plate small and narrow; second submarginal cell very narrow, much higher than broad, receiving the first r. n. near the beginning of its last third; area of metathorax hemispherical in outline, regularly cancellate, with a very sharp and definite rim. By reason of the area of metathorax, the smooth sparsely-punctured base of abdomen, etc., one is reminded of *S. arroyanus*, which, however, differs from *S. Columbiæ* by the shorter area of

metathorax, with much less definite cancellation, the paler hair of apex of abdomen, the copious pale hair of face, the shining and strongly-punctured anterior part of mesothorax, the smaller and darker tegulæ, etc.

*Hab.*—Grand Coulee, "Columbia River," Washington State, July 12, 1902. Sent by Mr. Melander to Mr. Viereck.

*Dasiapis ochracea*, Ckll.

♂.—N. Yakima, Washington State, June 26, 1903, two (*Eldred Jenne*). Like a *Diadasia*, but the clypeus of the male is cream-coloured. Not previously known north of New Mexico and Arizona; it well illustrates the northward extension of the southern fauna in the interior region west of the Rockies.

*Nomada Jennei*, n. sp.

♂.—Length about 8 mm., anterior wing just over 6; black, with creamy-white markings; thorax and upper part of head coarsely rugoso-punctate; abdomen very finely and closely punctate, giving it a dullish and rough appearance, though the punctures are strong and perfectly distinct, as seen with the compound microscope; head broad; eyes pale gray; middle of face with conspicuous appressed silvery-white hair; labrum, basal part of mandibles, clypeus and lateral face-marks creamy-white; mandibles simple, dark at apex, with bright ferruginous between the dark and the light; no supraclypeal mark, except a faint and suffused reddish spot; a black notch at upper junction of clypeus and lateral marks; lateral marks narrow except at base, ending at level of antennæ, the end broadened and obliquely truncate; scape fairly stout, creamy-white in front; flagellum ferruginous, suffused with black above, its first joint scarcely half the length of second (slightly over half on the long side, but conspicuously less than half on the short); tubercles, a pair of minute and obscure dots on upper part of prothorax, and a pair of large round mammiform elevations on scutellum, creamy white; metathorax all black; pleura with a large transverse ferruginous patch, on which are two large creamy-white patches; tegulæ testaceous, with a large creamy-white mark; wings clear, with the apex dusky; stigma amber-colour, nervures fusco-ferruginous; b. n. meeting t. m. slightly to the basal side; second s. m. broader above than third, and receiving the first r. n. a little beyond its middle; legs ferruginous, marked with black and creamy-white; all the tibiæ have the apex externally broadly white; the hind tibiæ are dark, with the base and apex white; the anterior and middle femora have the lower margin broadly blackened for about the basal two-thirds, but on the

apical third is a white dash; tarsi all red; abdomen black at base, but the other dark parts largely reddish, though never bright; each segment has a broad creamy-white band, those on the first two interrupted by a red line in the middle; the first three bands have a dark notch sublaterally on the posterior edge; the fourth has a dark spot on each side; and the fifth has the notch deep and on the anterior edge; apical plate notched; venter ferruginous, banded with white.

*Hab.*—N. Yakima, Washington State, Sept. 26, 1903 (*Eldred Jenne*). The abdomen is marked and coloured much as in *N. Crotchii*, var. *nigrior*, but the sculpture is different. The closest affinity is probably with *N. Pascoensis*, which is quite differently coloured. Although the anterior coxæ are not spined, they have a minute red tubercle, only distinctly seen with the compound microscope, and I believe the insect is not without real affinity to *Micronomada*.

### THREE NEW SPECIES OF BEES.

BY J. C. CRAWFORD, DALLAS, TEXAS.

*Perdita Cockerelli*, n. sp.—♂. Head and thorax green, finely roughened, metathorax sometimes more bluish; face up to antennæ, including labrum and mandibles, except tips, lateral face-marks running to a point about half way between point of insertion of antennæ and summit of eyes, narrow inferior orbits half way up, scape in front, large spot on tubercles, connected with a spot on prothorax and also with coxal cavity, spot on tegulæ, all of legs except black stripe on rear of anterior and intermediate femora and tibiæ and basal half of all coxæ, yellow; black stripes on front and rear of hind femora connected below, hind tibiæ black, with a yellow stripe in front, flagellum reddish testaceous below; wings milky hyaline, nervures pallid, costa, radius more or less and margin of stigma brownish; tegulæ pallid; pubescence of head and thorax long, white, abundant on pleura and cheeks, tarsi yellowish testaceous, hind tarsi dark; abdomen brownish black, segments 1–5 with yellow bands narrowly interrupted medially; that on 5 sometimes reduced to two spots; venter yellow, tip dark.

Length,  $5\frac{1}{2}$  to 6 mm.

♀.—Similar to ♂ in colour, the markings cream coloured and confined to following: clypeus, except two dots and two longitudinal lines parenthesis shaped, not reaching base of clypeus or these connected with the dots or broken medially, supraclypeal mark two dots, or these

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