

NAMES APPLIED TO BEES OF THE GENUS OSMIA, FOUND IN NORTH AMERICA.

By T. D. A. COCKERELL,
Of the University of Colorado, Boulder.

This list is prepared in the same manner as the paper on the genus *Nomada*, which appeared in these Proceedings, vol. 41, pp. 225-243. Our knowledge of *Osmia* in America has very greatly increased in recent years, and in the absence of a catalogue it has been difficult to keep the numerous species in mind. Friese's revision of the Megachilidæ of the world, published in *Das Tierreich*, November, 1911, includes the Nearctic *Osmiæ*, but unfortunately the manuscript was prepared ten years ago, and has not been brought up to date; it thus falls very far short of representing our present knowledge, although very valuable as far as it goes.

According to Titus,¹ the type of *Osmia* Panzer is *O. rufa* (Linnæus). The only American species which he considers strictly congeneric with *rufa* are *O. lignaria* and *O. propinqua*. The genus is here interpreted in a broader sense, in accordance with the more usual custom. Robertson divides *Osmia* into a number of genera, but restricts the name *Osmia* to such species as *O. brevis*, *pumila*, *cobaltina*, and *atriventris*, applying the name *Ceratosmia* (Thomson 1872) to the *Osmia*, s. str. of Titus. Ashmead, however, recognized *Amblys* Klug (type, *bicornis*, which = *rufa*) as a genus distinct from *Ceratosmia*; he considered *Helicosmia* (the group of *O. aurulenta*, *bicolor*,² etc.) to be identical with *Amblys*.

The genus *Osmia* is very rich in species throughout the temperate portions of the Northern Hemisphere. The American forms are mostly blue or green, some very brilliant, while those of Europe average much darker, with a much larger proportion of actually black

¹ Journ. N. Y. Ent. Soc., 1904, p. 26.

² *Apis bicolor* Schrank (= *Osmia bicolor*) and *Apis bicolor* Fabricius (= *Megachile bicolor*) were both published in 1781; I do not know which has priority. Should Fabricius have priority, then *Osmia bicolor* would become *Osmia rustica* (*Apis rustica* Fourcroy 1785), which would make *O. rustica* Cresson a homonym.

insects. On the other hand, the pubescence of the Old World *Osmiæ* is often very brightly colored, *O. ferruginea* and *O. pseudoaurulenta* from North Africa being covered with deep-red hair. The European species not rarely have red hair on the abdomen, while in the American, if there is such hair, it is on the thorax, or mainly so (see *O. novomexicana*, *O. cerasi*).

A species of *Osmia*, agreeing with the description of *O. texana* Cresson, was taken by Prof. C. H. T. Townsend on the Rio Nautla, State of Vera Cruz, in the tropical part of Mexico.

SUBGENERA AND SECTIONS.

Centrosmia ROBERTSON.

Type.—*bucephala*. Also includes *tarsata*.

Xanthosmia ROBERTSON.

Type.—*cordata*. Mandibles of female quadridentate.

Gnathosmia ROBERTSON.

Type.—*georgica*. Mandibles of female with a large basal tooth.

Monilosmia ROBERTSON.

Type.—*canadensis*. Also includes *chlorops*. Male flagellum moniliform.

Diceratosmia ROBERTSON.

Type.—*quadridentata*. This and *Nothosmia* have tridentate mandibles in the female.

Leucosmia ROBERTSON.

Type.—*albiventris*. Also includes *nigritula*.

The above six, and also *Ceratosmia*, are defined in Trans. Amer. Ent. Soc., 1903, pp. 165-166.

Nothosmia ASHMEAD.

Type.—*distincta*. Also includes *exigua*, according to Titus.

Acanthosmioides ASHMEAD.

Type.—*odontogaster*.

For the above two see Trans. Amer. Ent. Soc., 1899, pp. 75-76.

Melanosmia SCHMIEDEKNECHT 1884. To this group Titus has referred *O. grandior*.

TABLES.

- (1) Cockerell, University of Colorado Studies, vol. 4, 1907, pp. 250-253.
- (2) Cockerell, Bull. Amer. Mus. Nat. Hist., vol. 22, 1906, pp. 446-447.
- (3) Cockerell, Ann. and Mag. Nat. Hist., Aug. 1907, p. 123. (Bright green males.)
- (4) Robertson, Trans. Amer. Ent. Soc., vol. 29, 1903, pp. 165-166, 170-171. (Species of Illinois.)
- (5) Cockerell, Proc. Acad. Nat. Sci. Phila., 1897, pp. 346-347. (Females resembling *O. densa*.)
- (6) Cockerell, Bull. Sci. Lab. Denison Univ., vol. 11, 1898, p. 63. (Species of New Mexico.)
- (7) Cockerell, Canadian Entomologist, April, 1909, p. 131. (Males with small joints of middle tarsi thickened.)
- (8) Cockerell, Entomological News, June, 1910, p. 273. (Females of medium size, of a deep blue or purplish color, with the hair either all black or black with a slight admixture, easily overlooked, of light.)

LIST OF SPECIES.

[The asterisk (*) indicates that the species is in the collection of the United States National Museum. Certain few specimens sent to the Museum by Professor Cockerell and labeled "cotypes" are considered paratypes, as Professor Cockerell uses the name "cotype" in the sense which the Museum uses "paratype." A good many of the species in the collection are homotypes made by Titus, or were determined by Professor Cockerell. The Museum has a goodly lot of unworked material in this genus, and when this has been determined the number of species in its collection will be greatly increased. Of the 167 names in the following list, 60 are represented by specimens in the collection. Of these 60, 22 are types or paratypes.—S. A. ROHWER.]

In each case the type-locality and collector of the type is given, if known. There are also references to the tables, numbered as in the list above.

* *abjecta* CRESSON, 1878. Colorado (Ridings). Tab. 2.

A black species.

* *abnormis* CRESSON, 1878. Colorado (Ridings, Morrison).

Male with peculiar legs, figured by Cresson. Trans. Amer. Ent. Soc., vol. 7, p. 105.

albiventris CRESSON, 1864. "Conn., New York, Penn." Tab. 4.

Ventral scopa white.

albolateralis COCKERELL, 1906. Florissant, Colorado (Cockerell). Tab. 2.

Possibly the female of *O. cyaneonitens*.

amala COCKERELL, 1907. Florissant, Colorado, June (Rohwer). Tab. 7.

Additional characters; Canadian Entomologist, 1910. p. 312.

* *aprilina* COCKERELL, 1907. Boulder, Colorado, April (W. and T. Cockerell). Tab. 1.

Visits *Pulsatilla*. Mr. S. A. Rohwer took it at Boulder, May 15, 1908, at flowers of *Besseyia plantaginea*.

Paratype.—Cat. No. 11919, U.S.N.M.

* *armaticeps* CRESSON, 1878. Colorado (Ridings, Morrison). Tab. 1, 2.

armaticeps sapellonis COCKERELL, 1901. Hill above Beulah, New Mexico (Cockerell).

Female with cheeks very strongly and quite closely punctured; mesothorax strongly and densely punctured. Length, 12 mm.

* *ashmeadii* TITUS, 1904. Dalles, Oregon.

Allied to *O. odontogaster*, but the male is larger, deeper colored, and has the antennæ with the scape black, the flagellum pale testaceous, excepting a black tip to the flattened last joint.

Type.—Cat. No. 6359, U.S.N.M.

* *atriventris* CRESSON, 1864. Connecticut (E. Norton). Tab. 4.

West to Boulder, Colorado (S. A. Rohwer). Allied to *O. coloradella*, but clearly distinct.

atrocyanea COCKERELL, 1897. Olympia, Washington State, July (Kincaid). Tab. 5, 8.

Female with hair of pleura, sides of metathorax, and scutellum black, that on scutellum with a few pale hairs intermixed; head strongly blue.

Also in Ormsby County, Nevada (Baker).

azteca CRESSON, 1878. Mexico (Sumichrast).

Black; ventral scopa yellow.

basilissa COCKERELL, 1911. Claremont, California (Baker).

Magnificent deep purple; pubescence all black.

bella CRESSON, 1878. Colorado (Morrison). Tab. 3.

Bright green.

bennettæ COCKERELL, 1907. Boulder, Colorado, May (Mrs. C. Bennett). Tab. 3.

Brilliant green. Also in California.

besseyæ COCKERELL, 1910. Boulder, Colorado (S. A. Rohwer).

botitena COCKERELL, 1909. Lee County, Texas, April (Birkmann).

Ventral scopa yellowish-white. Allied to *O. subfasciata*.

- brevihirta* COCKERELL, 1907. Boulder, Colorado, June (W. P. Cockerell). Tab. 1.
Possibly the female of *O. cyaneonitens*.
- * *brevis* CRESSON, 1864. Rocky Mountains, Colorado. Tab. 4.
Supposed male; Proc. Acad. Nat. Sci. Phila., 1897, p. 345. In Tab. 4 the male would run to *pumila*, but is much larger, like *enena*, but cheeks with some black hairs.
- * *bruneri* COCKERELL, 1897. Colorado Springs, Colorado (L. Bruner). Tab. 1.
Brilliant blue-green.
Male; Ann. and Mag. Nat. Hist., Oct., 1908, p. 330. The male has much coarse black hair on the clypeus, etc.
A new locality is Durango, Colorado, May 27, 1899 (Osler).
Type.—Cat. No. 5806, U.S.N.M.
- bucconis* SAY, 1837. Indiana.
Same as *Ashmeadiella bucconis*.
- * *bucephala* CRESSON, 1864. Great Slave Lake, British America. Tab. 4.
- * *californica* CRESSON, 1864. Fort Crook, California (H. Ulke).
Female "shaped like *O. lignaria*, but is at once distinguished from that species by the black pubescence and the shape of the clypeus." The clypeus is rather deeply emarginate.
- * *calla* COCKERELL, 1897. Olympia, Washington (Kincaid).
Bright green; pubescence of male nowhere mixed with black.
Paratype.—Cat. No. 6866, U.S.N.M.
- * *canadensis* CRESSON, 1864. Canada West (Wm. Saunders). Tab. 4.
- cara* COCKERELL, 1910. Claremont, California (Baker). Tab. 8.
- casta* COCKERELL, 1910. Claremont, California (Baker). Tab. 8.
- * *cerasi* COCKERELL, 1897. Mesilla, New Mexico (Jessie E. Casad). Tab. 6.
Female with hair of thorax above bright rust-red; tegulae and ventral scopa black.
Paratype.—Cat. No. 3708, U.S.N.M. This specimen was determined by Cockerell but not designated as a type by him. Titus considers it as a paratype.
- * *chalybea* SMITH, 1854. St. John's Bluff, East Florida.
Steel blue; margin of female clypeus lobed in middle, the apex of the lobe emarginate, margin on each side of lobe crenulated.
Occurs in Texas; see Univ. of Colorado Studies, vol. 5 (1907), p. 37.
- * *chlorops* COCKERELL and TYRUS, 1902. Trout Spring, New Mexico (Cockerell). Tab. 2.
Allied to *O. canadensis*.
New description: Bull. Amer. Mus. Nat. Hist., 1906, p. 448.
Type.—Cat. No. 14480, U.S.N.M.
- clarescens* COCKERELL, 1911. Claremont, California (Baker).
Female with ventral scopa black; hair of pleura and metathorax white; legs metallic.
- * *cobaltina* CRESSON, 1878. "Nevada, California (H. Edwards, Behrens)." Tab. 4.
Brilliant deep blue or purple.
Baker has taken it at Claremont, California.
- * *cognata* CRESSON, 1864. Illinois (E. Norton).
- collinsiae* ROBERTSON, 1905. Illinois (Robertson).
This is the insect earlier described by Robertson as the male of *O. major*.
- * *coloradella* COCKERELL, 1906. Boulder, Colorado, June 4 (W. P. Cockerell). Tab. 1.
Allied to *C. atriventris*.
Recent studies indicate that this is apparently a variety of *O. hesperella*.
- coloradensis* CRESSON, 1878. Colorado (Ridings, Morrison).
"Ventral scopa white or yellow." Apical margin of female clypeus coarsely crenulated. Also found in Ornsby County, Nevada (Baker), and at Peachland, British Columbia, Aug. 2 and 6, 1909 (J. B. Wallis). It is doubtful whether *O. hypochrysea rohweri* can be separated from this; specimens from Flagstaff, Arizona, are intermediate.

conjuncta CRESSON, 1864. Connecticut (E. Norton).

Punctures of female abdomen much stronger and less dense than in *O. albiventris*.

Ventral scopa white.

conjunctoides ROBERTSON, 1893. Citrus County, Florida (Robertson).

Male resembles *conjuncta*, having the same two tubercles, one above the other, on front; but lateral teeth of sixth segment broad and obtuse and produced downwards (acute in *conjuncta*).

copelandica COCKERELL, 1908. Copeland Park, Colorado (Rohwer).

Small black species with white scopa; abdomen slightly metallic. It is not unlike *O. abjecta*, but smaller, and easily separated by the scopa, which in *abjecta* is reddish-black. There is a superficial resemblance to *O. insularis* Schmku. from Mallorca.

cordata ROBERTSON, 1902. Illinois (Robertson). Tab. 4.

"May be the male of *O. brevis*" (Robertson), but later Robertson found the female, which proves it to be quite distinct, the ventral scopa being yellowish. The male has the first ventral segment of abdomen emarginate.

cressonii DALLA TORRE, 1896.

Same as *conjuncta*; the name was proposed by Dalla Torre for *quadridentata* Cresson, not of Duméril, 1860. Duméril's insect was described under *Phyllotoma*, and appears to be of doubtful identity.

* *cyanella* COCKERELL, 1897. Olympia, Washington State, May (Kincaid).

Female about 9 mm. long, very broad, with large subquadrate head.

Type.—Cat. No. 6364, U.S.N.M.

* *cyaneonitens* COCKERELL, 1906. Florissant, Colorado (Rohwer). Tab. 1, 2.

A new locality is Durango, Colorado, June 7, 1898 (Oslar).

* *davidsoniella* COCKERELL, 1905. Los Angeles, California (Davidson).

Male steel-blue, a little over 8 mm. long; antennæ black.

Type.—14479, U.S.N.M.

* *densa* CRESSON, 1864. Pikes Peak, Colorado. Tab. 1, 5.

The color of the female abdomen resembles that of *hendersoni*; but hair of pleura is white (black in *hendersoni*).

Additional details: Univ. of Colorado Studies, vol. 5 (1907), p. 38.

* *distincta* CRESSON, 1864. Connecticut (E. Norton).

Ventral scopa white; female broader and more robust than *albiventris* or *conjuncta*.

* *dubia* CRESSON, 1864. Pikes Peak, Colorado.

Resembles *O. atriventris*. Ventral scopa black.

The fossil "*Osmia*" *dubia* Germar 1849, was described as *Apiaria dubia*, and the reference to *Osmia* by Giebel (1856) is probably erroneous. Hence I think Cresson's name for our species may remain.

ednæ COCKERELL, 1907. Boulder, Colorado, May (Edna Baker). Tab. 3.

enena COCKERELL, 1907. Florissant, Colorado, June 23 (Rohwer).

Male resembles *O. mertensia*, but antennæ longer, legs not metallic, abdomen narrower and less shining, etc.

eutrichosa COCKERELL, 1910. Steamboat Springs, Colorado (Cockerell).

Male with no black hair anywhere.

exigua CRESSON, 1878. California (Henry Edwards).

Very small. "This is our smallest species" (Cresson, 1878).

Titus refers this to *Nothosmia*, and states that *Heriades glaucum* Fowler is a synonym.

* *faceta* CRESSON, 1878. "Can., N. Y., Ga." Tab. 5.

Allied to *O. chalybea*.

Additional details; Proc. Acad. Nat. Sci. Phila., 1897, p. 316.

Ventral scopa black, but white hair on lateral margins of abdomen. Fedor, Texas (Birkmann).

Kerrville, Texas, at flowers of *Marrubium vulgare*, Apr. 12, 1907 (F. C. Pratt).

felti COCKERELL, 1911. Karner, New York (E. P. Felt).

Allied to *O. densa*.

florissanticola COCKERELL, 1906. Florissant, Colorado (Cockerell). Tab. 2.

foxi CAMERON, 1901. "Sta. Fe Mts, New Mexico," but really Mexican.

Male 8 mm., said to be allied to *texana* and *subfasciata*; legs largely metallic.

frigida SMITH, 1854. Hudson Bay.

A black species, the female with a very large head; ventral scopa black.

Notes on type: Trans. Amer. Ent. Society, vol. 31, p. 332.

* *fulgida* CRESSON, 1864. Rocky Mountains, Colorado. Tab. 1.

A bright green species.

Male; Ann. and Mag. Nat. Hist., Nov., 1907, p. 445.

New localities are Ouray, Colorado (H. F. Wickham), Denver, Colorado (Oslar), and South Park, Colorado (Oslar.)

gabrielis COCKERELL, 1910. San Gabriel Mountains, California, 3,000 feet. (Grinnell).

Tab. 8.

gaillardiae COCKERELL, 1906. Boulder, Colorado (W. P. Cockerell). Tab. 1.

Visits *Gaillardia* in July. Ventral scopa black.

* *gaudiosa* COCKERELL, 1907. Boulder, Colorado, April (Edna Baker). Tab. 3

Brilliant golden green. Also at Florissant; see Ann. and Mag. Nat. Hist., Oct., 1908, p. 330. The male type had the vertex, front, and thorax above with a strong suffusion of coppery-red or almost crimson; after four years, although the specimen was kept in the dark, this has faded to golden.

georgica CRESSON, 1878. Georgia (Morrison). Tab. 4.

Female with clypeus carinate and mandibles tuberculate; ventral scopa yellowish.

giliarum COCKERELL, 1906. Florissant, Colorado (Rohwer). Tab. 2.

* *globosa* CRESSON, 1864. Great Slave Lake, British America.

A small robust black species.

globosiformis COCKERELL, 1910. Steamboat Springs, Colorado (Cockerell).

Male entirely black with white pubescence.

* *grandior* COCKERELL, 1897. Olympia, Washington State, May (Kincaid).

Resembles *O. pascoensis*; clypeus dull and roughened (in *pascoensis* shiny, with well-separated punctures).

Paratype.—Cat. No. 6869, U.S.N.M.

granulosa COCKERELL, 1911. Mountains near Claremont, California (Baker).

grindeliæ COCKERELL, 1910. Eldora, Colorado (T. and W. Cockerell).

grinnelli COCKERELL, 1910. Strawberry Valley, San Jacinto Mountains, California (Grinnell).

hendersoni COCKERELL, 1907. Arapahoe Peak, Colorado (Rohwer). Tab. 1.

A high alpine species.

hesperella COCKERELL, 1906. Boulder, Colorado (W. P. Cockerell). Tab. 1.

Ventral scopa yellowish-white. Allied to *O. albiventris*.

I have taken it at flowers of *Cirsium*, June 26.

hudsonica CRESSON, 1864. Hudson Bay Territory.

A black species.

hypochrysea COCKERELL, 1906. Florissant, Colorado (Rohwer). Tab. 2.

Ventral scopa pale orange; anterior margin of clypeus (female) with a median tridentate elevation.

Also at Claremont, California, where it is variable (Baker).

* *hypochrysea rohweri* COCKERELL, 1907. Boulder, Colorado (Rohwer). Tab. 1.

Larger, with the mesothorax more sparsely punctured.

Also at Flagstaff, Arizona, at flowers of *Iris*, June 11, 1909 (F. C. Pratt).

Very close to *O. coloradensis* (which also occurs at Boulder, collected by W. P. Cockerell), but the mesothorax is shining steel blue (blue-black and dull in *coloradensis*), and sparsely punctured about the middle.

The two species are very doubtfully distinct.

- hypocrita** COCKERELL, 1906. Boulder, Colorado (W. P. Cockerell). Tab. 1.
Looks like *Monumetha*. The male, discovered by Osler at Durango, Colorado, shows that this species must be referred to *Aldidamea*.
- hypoleuca** COCKERELL, 1907. Boulder, Colorado, June (W. P. Cockerell). Tab. 1.
Perhaps a subspecies of *O. pentstemonis*, which occurs at higher altitudes.
- illinoensis** ROBERTSON=Male of *cobaltina*, according to Robertson; see Ent. News, 1902, p. 79.
In spite of Robertson's decision, I can hardly believe this is *cobaltina*, which is a species of the Pacific coast region.
Male entirely bright green, 8 mm. long; pubescence "white below, especially on clypeus, where it is also dense, above slightly tinged with ochraceous; on abdomen short and appearing subfuscous."
- inermis** ZETTERSTEDT, 1838. A species of northern and central Europe, said by Friese (1908) to occur in Labrador. Female 9½, male 8 to 9 mm.; black; thorax and first abdominal segment of female with fulvous hair above.
- inspergens** LOVELL and COCKERELL, 1907. Maine (Lovell).
Ventral scopa silvery-white, black at apex; lower part of female clypeus covered with very dark brown pubescence. Also in Massachusetts.
- integra** CRESSON, 1878. Colorado (Morrison).
Male steel-blue. Also in New Mexico.
At Claremont, California, Baker has taken a variety of the male with the hair of cheeks (except above) and of anterior legs black.
- integrella** COCKERELL, 1907. Boulder, Colorado, May (Edna Baker). Tab. 7.
Possibly a variety of *O. universitatis*.
- * **inurbana** CRESSON, 1878. Colorado (Ridings, Morrison).
Dark brassy green (male).
Additional details: Proc. Acad. Nat. Sci. Phila., 1897, p. 338. A variety (or closely allied species?) from New Mexico is described in Psyche, Dec., 1901, p. 283.
- iridis** COCKERELL and TITUS. Trout Spring, New Mexico (Cockerell).
Male with first ventral segment of abdomen emarginate; sixth dorsal entire.
New description: Ent. News, Dec., 1903, p. 233.
- juxta** CRESSON, 1864. Rocky Mountains, Colorado.
Allied to *O. longula*.
- * **kincaidii** COCKERELL, 1897. Olympia, Washington State (Kincaid).
Brilliant peacock-green.
Paratype.—Cat. No. 6867, U.S.N.M.
- * **latitarsis** CRESSON, 1864. "New York, Virginia."
Same as *bucephala*.
- leonis** COCKERELL, 1907. Boulder, Colorado, May (Edna Baker).
- * **lignaria** SAY, 1837. Tab. 4, 6.
Extends southwest to New Mexico.
- lignaria lignariella** COCKERELL, 1906. Romeroville, New Mexico (W. Porter).
Female 9½ mm. long; pale hair on abdomen practically confined to first segment.
Perhaps a distinct species.
- lignicola** PROVANCHER, 1882. Cap Rouge.
Same as *bucephala*.
- lignivora** PACKARD, 1867. "From cells in maple."
Female about 13 mm. long; hair of face below antennæ dark chocolate; ventral scopa largely reddish. See Univ. of Colorado Studies, vol. 5 (1907), p. 37.
- * **longula** CRESSON, 1864. Rocky Mountains, Colorado.
Resembles *O. florissanticola*. Mr. S. A. Johnson took it at Sapinero, Colorado, July 20, 1908.
- * **louisianæ** COCKERELL, 1910. Mound, Louisiana (C. R. Jones). Subgenus *Gnathosmia*.
Type.—Cat. No. 13545, U.S.N.M.

- major ROBERTSON, 1902. Illinois (Robertson). Tab. 4.
Near to *atriventris*, but larger; female 11, male 10 mm.
- malina COCKERELL, 1909. Near Boulder or Loveland, Colorado (C. De Voss).
Superficially like *O. wilmettæ*, but thorax above with much more black hair, ocelli larger, face with tufts of white hair.
- *mandibularis CRESSON, 1878. Colorado (Morrison).
Female with nodose process on mandibles.
- marginipennis CRESSON, 1878. Colorado (Morrison).
"May be the male either of *longula* or *juxta*" (Cresson).
- maura CRESSON, 1878. California (Henry Edwards).
Entirely deep black, with black hair.
- megacephala CRESSON, 1864. Rocky Mountains, Colorado.
Resembles *O. bucephala*.
- melanotricha LOVELL and COCKERELL, 1907. Maine (Lovell). Tab. 1.
Resembles *O. atriventris*. Also in Colorado.
- mertensiae COCKERELL, 1907. Florissant, Colorado, June (Rohwer).
Visits *Mertensia*.
- metitia COCKERELL, 1909. Boulder, Colorado, April 17 (G. M. Hite). Tab. 7.
Visits *Ribes pumilum*.
- *montana CRESSON, 1864. Pike's Peak, Colorado.
Male with wings purely hyaline.
- *nanula COCKERELL, 1897. Seattle, Washington, April and May (Kincaid).
- *nassa COCKERELL, 1910. Claremont, California (Baker). Tab. 8.
Paratype.—Cat. No. 13439, U.S.N.M.
- *nifoata COCKERELL, 1909. Troublesome, Colorado, June (Rohwer).
Abdomen of male with a ventral tooth. Allied to *O. odontogaster* and *O. ashmeadii*, the three forming the subgenus *Acanthosmioides*.
Paratype.—Cat. No. 14432 U.S.N.M.
- *nigrifrons CRESSON, 1878. Colorado (Morrison). Tab. 1. 5.
Hair of pleura black, of scutellum light, with at most a few dark hairs intermixed.
Extends to Washington.
A new locality is Durango, Colorado, May 26, 1899 (Osler).
- nigrifrons subaustralis COCKERELL, 1900. Beulah, New Mexico (W. Porter).
Female 10 mm.; anterior margin of clypeus with a broad shallow emargination.
- nigritula FRIESE, 1902.
Belongs to *Leucosmia*, according to Titus, who redescribes the male; Proc. Ent. Soc. Wash., vol. 7, 1906, p. 157 (as *parvula*).
- *novomexicana COCKERELL, 1903. Arroyo Pecos, Las Vegas, New Mexico (W. P. Cockerell). Tab. 1.
Also in Colorado. Related to *O. grandior*.
Type.—Cat. No. 6362 U.S.N.M.
- oblonga PROVANCHER, 1882. = *Monumetha albifrons*.
First described as a *Megachile*, and name preoccupied.
- *odontogaster COCKERELL, 1897. Olympia, Washington (Kincaid).
Resembles *O. inurbana*; second ventral abdominal segment of male toothed.
Paratype.—Cat. No. 3709, U.S.N.M.
- olivacea COCKERELL, 1907. Boulder, Colorado, April (W. P. Cockerell). Tab. 1.
Female; Ann. and Mag. Nat. Hist., Aug., 1907, p. 127.
Male with hind basitarsus toothed.
A variety of the male (variety *a*) with the thorax above without black hairs, was taken by Mr. S. A. Rohwer at Boulder, April 14, 1907, at flowers of *Ribes pumilum*.
- parva PROVANCHER, 1882. Canada.
Same as *nigritula*.

- parvula* DALLA TORRE, 1896. (Name preoccupied.)
Same as *nigritula*.
- pasadenæ* COCKERELL, 1910. Pasadena, California (Grinnell).
- **pascoensis* COCKERELL, 1897. Pasco, Washington, May (Kincaid). Tab. 1.
Female about 15 mm.; hair of head entirely black, except a yellowish-white fringe on occipital margin.
Paratype.—Cat. No. 6868, U.S.N.M. Not labeled as a paratype by Cockerell, but determined by him.
- pentstemonis* COCKERELL, 1906. Florissant, Colorado (Rohwer). Tab. 1. 2.
Visits *Pentstemon*.
- permorata* COCKERELL, 1910. Steamboat Springs, Colorado (Cockerell).
Also in New Mexico. Female about 14 mm. long, hair of head and thorax above very bright fox red.
- phaceliæ* COCKERELL, 1907. Ward, Colorado, July (W. and T. Cockerell). Tab. 1.
- phenax* COCKERELL, 1897. Mesilla, New Mexico, April (Jessie E. Casad). Tab. 6.
Ventral scopa pale fulvo-ochreous; tegulæ shining rufotestaceous.
- physariæ* COCKERELL, 1907. Florissant, Colorado, June 1 (Rohwer).
Male with sixth dorsal segment entire; flagellum very strongly crenulate beneath.
- pikei* COCKERELL, 1907. Halfway House, Pike's Peak, Colorado (Cockerell). Tab. 1.
Visits *Salix* at end of May.
- platyura* COCKERELL, 1911. Mountains near Claremont, California (Baker).
- pogonigera* COCKERELL, 1910. Strawberry Valley, San Jacinto Mountains, California (Grinnell).
- **propinqua* CRESSON, 1864. Fort Crook, California (H. Ulke). Tab. 1.
Allied to *O. lignaria*. Specimens from Claremont, California, are in the Baker collection.
- **proxima* CRESSON, 1864. "Maine and Fort Good Hope, Mackenzie River." Tab. 1.
Same as *atriventris*.
- **prunorum* COCKERELL, 1897. Mesilla Park, New Mexico, April (Cockerell). Tab. 6.
Ventral scopa black in middle and yellowish-white at sides.
Paratype.—Cat. No. 4344, U.S.N.M.
- pseudamala* COCKERELL, 1910. Steamboat Springs, Colorado (Cockerell).
- pulsatillæ* COCKERELL, 1907. Boulder, Colorado, April (W. P. Cockerell). Tab. 1.
Visits *Pulsatilla*.
- pumila* CRESSON, 1864. Pennsylvania. Tab. 4.
- purpurascens* SMITH, 1849. Mistakenly supposed to be British.
Same as *lignaria*.
- purpurea* CRESSON, 1864. "Conn., Penn., N. Jersey."
Distinguished (female) by the dark purple color and narrow whitish hair-bands of abdomen; ventral scopa black.
- **pusilla* CRESSON, 1864. Pikes Peak, Colorado.
Also in New Mexico.
- putata* COCKERELL, 1910. Mountains near Claremont, California (Baker). Tab. 8.
- quadriceps* CRESSON, 1878. California (Henry Edwards). Tab. 8.
Resembles *O. armaticeps*, but head (female) not armed beneath, and the pubescence is entirely black.
- quadridentata* CRESSON, 1878. New York (Comstock). Tab. 4.
Male abdomen quadridentate, the two outer teeth being on sixth segment; front in both sexes with two tubercles, one above the other; ventral scopa white. This is considered to be the male of *conjuncta*.
- **ramaleyi* COCKERELL, 1907. Boulder, Colorado, May (Edna Baker).
Ventral scopa orange. Appears to be a variety of *O. hesperella*.
- regulina* COCKERELL, 1911. Claremont, California (Baker).

- remotula* COCKERELL, 1911. Claremont, California (Baker). Subgenus *Erythrosmia*.
- * *ribifloris* COCKERELL, 1900. Romeroville, New Mexico, April 29 (W. Porter).
Tab. 8.
Female 11 mm., dark shining blue, pubescence all black, legs blue.
Allied to *O. cobaltina*, but much darker. Specimens in the Baker collection were obtained by Osler at Santa Fe, New Mexico, and Thumb Butte, Phoenix, Prescott, and Copper Basin, in Arizona. A species from Arizona, named by Titus in manuscript after Biedermann, differs in being green, but is probably only a race. It has a broader abdomen than normal *ribifloris*.
Paratype.—Cat. no. 14473 U.S.N.M.
- * *rustica* CRESSON, 1864. Easton, Pennsylvania (E. Norton).
Said to be a variety of *O. albiventris*; the male has the hair of thorax above bright rust-red.
- sancterosæ* COCKERELL, 1910. Santa Rosa Mountains, California, 7,500 feet (Grinnell).
- seneciophila* COCKERELL, 1907. Florissant, Colorado (Rohwer).
Also in New Mexico, at 11,000 feet. Third ventral abdominal segment of male with a semicircle of long pale orange hairs in the median emargination.
- senior* COCKERELL, 1907. Boulder, Colorado, June 12 (W. P. Cockerell). Tab. 1.
- * *sericea* CRESSON, 1864. Rocky Mountains, Colorado.
"Somewhat resembles *O. purpurea* (male), but the punctuation of the abdomen is finer, and the segments have no appearance of an apical whitish fringe" (Cresson).
Abdomen black, faintly tinged with blue and purple.
- * *simillima* SMITH, 1854. "Nova Scotia; United States (Lieut. Redman)."
Closely resembles *O. cærulescens* of Europe and Asia.
See Trans. Amer. Ent. Society, 1905, p. 332, for notes on supposed type, which, however, does not accord well with Smith's description.
- spoliata* PROVANCHER, 1888.
Same as *Andronicus cylindricus*.
- stasima* LOVELL, 1909. Rockport, Massachusetts.
Female in Tab. 4 runs to *O. major*; it is very like *simillima*, but differs by the broader face and absence of black hair on vertex and clypeus. Middle tooth of mandibles is much nearer to the outer than the inner tooth, as in *O. major*.
- * *subfasciata* CRESSON, 1872. Texas (Belfrage).
"Ventral scopa pale ochraceous;" but white in supposed type. See Univ. of Colorado Studies, Dec. 1907, p. 37.
Birkmann has taken it in Lee County, Texas, at flowers of *Phacelia*.
Six females from Terrell, Texas (F. C. Bishopp), are peculiar for their olive-green color, and seem to represent a local race.
Paratype.—Cat. No. 1770, U.S.N.M.
- * *subornata* COCKERELL, 1897. Olympia, Washington, June (Kincaid).
Female 14 mm. long, pure black; hair of thoracic dorsum black on disk with a pale band before and behind.
Paratype.—Cat. No. 6879, U.S.N.M.
- * *subpurpurea* COCKERELL, 1897. Olympia, Washington, May (Kincaid).
Female about 14 mm. long, dark steel blue; hind margins of abdominal segments 2 to 5 each, with a thin and narrow, but evident, white hair-band.
Paratype.—Cat. No. 6873, U.S.N.M.
- subtrevoris* COCKERELL, 1906. Near Lake George, Colorado (Rohwer). Tab. 2.
- tarsata* PROVANCHER, 1888. Cap Rouge.
Belongs to *Centrosmia*, according to Titus, who redescribes the male; Proc. Ent. Soc. Wash., vol. 7, 1906, p. 158. It is 9 mm. long, blue-black, abdomen shining blue, tarsi of middle legs deformed much as in *bucephala*.
- texana* CRESSON, 1872. Texas (Belfrage).
Male dark green or blue-green, with pale pubescence; legs black.

- * *titusi* COCKERELL, 1905. Los Angeles, California (Davidson).
Also in New Mexico. See Ann. and Mag. Nat. Hist., May, 1907, p. 369.
Ventral scopa white. Also at Las Cruces, New Mexico (C. H. T. Townsend).
Type.—Cat. No. 14481, U.S.N.M.
- trevoris* COCKERELL, 1897. Seattle, Washington, May (Kincaid).
Female 8 mm.; hair of face long, all black, of thoracic dorsum orange-fulvous.
- * *tristella* COCKERELL, 1897. Olympia, Washington (Kincaid).
Pubescence of face, vertex, thoracic dorsum, and ventral scopa wholly black.
Type.—Cat. No. 6863, U.S.N.M.
- universitatis* COCKERELL, 1907. Boulder, Colorado, April (Edna Baker). Tab. 7.
- vallicola* COCKERELL, 1907. Florissant, Colorado, June (Rohwer).
Visits *Ribes*. Superficially like *O. mertensiae*; male flagellum wholly dark; legs strongly metallic.
- * *vicina* CRESSON, 1864. Virginia.
Same as *pumila*.
- viridimicans* COCKERELL, 1897. Olympia, Washington (Kincaid).
Female brilliant peacock-green, with the pubescence entirely black; abdomen somewhat elongate and nearly parallel sided.
- viridior* COCKERELL, 1907. Boulder, Colorado, May (Rohwer). Tab. 1.
Allied to *O. marginipennis*.
Also from Chimney Gulch, Colorado, May 9, 1899 (Osler).
- viridis* CRESSON, 1864. Rocky Mountains, Colorado.
Same as *fulgida*, or possibly a distinct but very closely-related form.
- wardiana* COCKERELL, 1907. Ward, Colorado, 9,200 feet (W. and T. Cockerell).
Tab. 1.
Also at Georgetown, Colorado, in the Baker collection.
- watsoni* COCKERELL, 1911. Albuquerque, New Mexico (J. R. Watson).
Male antennæ with last joint flattened, more or less discoid, shining black.
- * *wheeleri* COCKERELL, 1906. Florissant, Colorado (Rohwer). Tab. 1, 2.
The male has the hind basitarsus toothed.
- wilmattæ* COCKERELL, 1906. Boulder, Colorado (W. P. Cockerell). Tab. 1, 2.
Allied to *O. brevis*. Typical *wilmattæ* has a good deal of black hair mixed with the white on scutellum. The two following are regarded as varieties of *wilmattæ* (female), but are possibly distinct:
- Variety *a*. Hair of scutellum white; mesothorax shining green; face rather narrower; hair of face and vertex coarse and black, a little white on occiput; hind margins of abdominal segments shining olive-green. Florissant, Colorado, June 21 (S. A. Rohwer).
- Variety *b*. Hair of scutellum at least nearly all white; mesothorax dull blue-black; hair of face and vertex coarse and black, a little white on occiput; hind margins of abdominal segments dark purple. Copeland Park, Boulder County, Colorado, Sept. 1907 (Hite).
- The following species are only known in the male sex: *Osmia abnormis*, *amala*, *aprilina*, *chlorops*, *collinsiae*, *conjunctoides*, *cyanconitens*, *davidsoniella*, *enena*, *eutrichosa*, *exigua*, *foxi*, *integra*, *integrilla*, *inurbana*, *iridis*, *marginipennis*, *mertensiae*, *metitia*, *montana*, *nigritula*, *pasadena*, *physariae*, *pseudamala*, *pulsatillæ*, *pusilla*, *rustica*, *seneciophila*, *sericca*, *tarsata*, *texana*, *universitatis*, *vallicola*, *viridior*, *watsoni*, and *wheeleri*.
- The following, with black ventral scopa, are only known in the female sex: *armaticeps*, *atrocyanea*, *brevihirta*, *californica*, *cara*, *casta*, *cerasi*, *cyanella*, *florissanticola*, *gabrielis*, *gaillardiae*, *giliarum*, *grandior*, *grindeliæ*, *grinnelli*, *hendersoni*, *hypoleuca*, *juxta*, *lconis*, *lignariella*, *longula*, *malina*, *megaccephala*, *nassa*, *nigrifrons*, *nigrifrons subaustralis*, *novomexicana*, *pascoensis*, *permorata*, *pikoi*, *pogonigera*, *putata*, *quadriceps*, *sanctæ-roxæ*, *senior*, *stasima*, *subtrevoris*, *trevoris*, *tristella*, *wardiana*, and *wilmattæ*.