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Descriptions and Records of Bees.— XIII.

T. D. A. Cockerell
University of Colorado

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XLII.—*Descriptions and Records of Bees.*—XIII.
By T. D. A. COCKERELL, University of Colorado.

Osmia viridior, sp. n.

♂.—Length fully 12 mm.; anterior wing a little over 8; width of abdomen 4.

Head very dark blue-green; mesothorax and scutellum yellow-green; the rest of thorax black with a greenish lustre; legs black, not at all metallic; abdomen shining blue-green, dark but very decidedly green. Head and thorax densely punctured, clothed above with copious long hair, that of face white, but of sides of vertex and cheeks strongly intermixed with black; head normal, mandibles strongly bidentate; anterior edge of clypeus straight, very smooth and shining; clypeus otherwise dull and densely rugoso-punctate; antennae black, third joint with a fine reddish tomentum, only noticed in certain lights; flagellum not at all moniliform; thorax above with long creamy-white hair, not at all mixed with black; pleura with long hair, anteriorly dull white, posteriorly black. Legs with black hair, but shining reddish on outer side of anterior tarsi, long and dull white on anterior femora behind, and some dull white at apex of middle femora behind; spurs and tarsi normal; tegulae shining black. Wings hyaline, the apical margin broadly pale brownish, and a dark streak in marginal cell; first r. n. joining second s.m.

twice as far from its base as second from its apex. Abdomen parallel-sided, first segment with white hair (some black at extreme sides); second with thin white hair and shorter black hairs intermixed, especially at sides, but inconspicuous; remaining segments with black hair, but third with a little silvery white on margin laterally; sixth segment with a broad shallow notch, seventh bidentate; second and third ventral segments shallowly emarginate, with a very little shining reddish hair in the emargination.

Very close to *O. marginipennis*, Cresson, but distinguished by the strongly green mesothorax and scutellum, the paler hair of thorax above, the edge of clypeus not "subsinate," and the apical margin of wings not so dark. It also much resembles *O. cyaneonitens*, Ckll., but differs thus:—

Smaller: hair of pleura all white; middle tibia with conspicuous white hair	<i>cyaneonitens</i> .
Larger: hair of pleura partly black; middle tibia with black hair	<i>viridior</i> .

Hab. Boulder, Colorado, May 20, 1906 (*S. A. Rohwer*).

Osmia olivacea, sp. n.

♂.—Length about or nearly 10 mm.; anterior wing $7\frac{1}{2}$; width of abdomen $3\frac{1}{4}$.

Olive-green, the sides of the thorax dark blue-green; hair of head and thorax long and abundant, white on clypeus, cheeks below, and lower part of pleura, but otherwise tawny, with very long black hairs intermixed on thorax above, vertex, cheeks, and a few at sides of face; head normal, lower edge of clypeus straight, the bidentate mandibles with their teeth strongly divergent; hair of upper part of face strongly tawny; antennæ long, black; flagellum slightly moniliform or crenulate; vertex and mesothorax rough with exceedingly dense punctures; a little shining space bordering anterior ocellus in front. Legs black, the hind coxæ and femora dark green, and a slight green tint on middle ones; anterior and middle femora with long pale hair behind, hind femora with dusky hair; hair of tibiæ (except anterior ones behind) dark; hair on inner side of hind tarsi golden; spurs normal; tegulæ green. Wings dusky, hyaline before the broad apical area; first r. n. joining second s.m. about $1\frac{1}{2}$ times as far from its base as second from its apex. Abdomen shining olive-green, the hind margins of segments concolorous; first two segments with pale hair, the others with black hair, quite long, and a little pale intermixed; sixth

with a good deal of light hair; sixth segment entire or with the faintest suggestion of a notch; seventh bidentate; first ventral segment subemarginate; third emarginate, with a tuft of orange hair in the notch.

In Robertson's table of genera segregated from *Osmia* this runs to 3, and runs out because of the structure of the sixth abdominal segment. Because of its coloration it could be mistaken for *O. inurbana*, Cress., but it is easily known from that by the coarse black hair on the abdomen &c. It is also exceedingly like *O. Latreillei*, Spinola (which I have from Tangier), but is known from that by the same characters which separate it from *inurbana* *.

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

Osmia pulsatillæ, sp. n.

♂.—Length about $7\frac{1}{2}$ mm.; anterior wing about 5; width of abdomen $2\frac{1}{3}$.

Green, the head and thorax above rather yellowish green, the abdomen blue-green (Prussian green). Head normal, eyes prominent, mandibles with two widely divergent teeth; face covered with dull white hair, with some long black hairs at sides and many long black hairs on front and vertex; hair of cheeks white, with black hairs immediately adjacent to the eye. Antennæ rather long, black; flagellum normal; hair of thorax long and dull white, dorsally with black hairs intermixed; mesothorax dull, with exceedingly dense punctures; tegulæ largely green. Wings dusky; first r. n. joining second s.m. about $1\frac{2}{3}$ as far from base as second from apex. Legs dark green, with dull white hair, that on inner side of hind basitarsus dark fuscous; spurs normal. Abdomen with white hair on first three segments, long only on first; the other segments have the hair mixed black and silvery, but short and inconspicuous; sixth segment entire; seventh bidentate; ventral segments normal, second apically with fine white hair.

This is an *Osmia* s. str. in the sense of Robertson. It is very like *O. proxima*, Cresson, but is readily distinguished by the mixture of dark hairs on the thorax above. The abdomen is not so globular as in *proxima*, but is distinctly parallel-sided.

Hab. Boulder, Colorado, prox. 5350 ft., at flowers of *Pulsatilla hirsutissima*, April 20, 1906 (*W. P. Cockerell*).

* An Algerian male of *O. Latreillei*, also before me, has the hair of the thorax much redder.

Osmia aprilina, sp. n.

♂.—Length about 7 mm.; anterior wing about 5; width of abdomen $2\frac{1}{2}$.

Similar to *O. pulsatillæ*, but hair of thorax above pale reddish, without black hairs interspersed. Head larger, much wider above. Abdomen broader, more globose, and yellowish green; sixth segment with a conspicuous rounded notch. The antennæ are entirely dark; hair of face pale, white below, yellowish above, without any black; vertex with an admixture of black hairs; cheeks with long black hairs in front, but the hair otherwise white. Wings dusky. Legs with green tints. Abdomen with pale hair, but a good deal of black from middle of third segment on; seventh segment bidentate.

Known from *O. proxima* by the dark flagellum and dark hairs on cheeks and vertex. Similar characters and the structure of the sixth abdominal segment separate it from *O. pumila*. It is an *Osmia* s. str. in the sense of Robertson.

Hab. Boulder, Colorado, at flowers of *Pulsatilla hirsutissima*, April 20, 1906 (*W. P. & T. D. A. Cockerell*); Boulder, May 1906 (*S. A. Rohwer*). Four specimens.

Osmia phacelice, sp. n.

♀.—Length 8 mm.; width of abdomen 3.

Blue-green, with yellowish-green tints about the head and thorax. Legs black, the hind femora faintly greenish; scopa black, some white hairs at extreme sides. Hair of head and thorax mainly white, but many coarse black hairs on face and vertex and fewer on scutellum and mesothorax; seen from above, the hair of the clypeus appears short and black and that on each side of face longer and nearly all silvery white; head and thorax very densely punctured; head ordinary, clypeus normal, mandibles 3-dentate, antennæ short and black; hair of legs largely black, that on inner side of middle and hind tarsi nigro-fuscous; tegulæ largely green. Wings dusky, first r. n. joining second s.m. at least three times as far from base as second from apex. Abdomen shining blue-green, hind margins of segments concolorous; hair of second segment white but very short and scanty, with longer dark hairs toward sides; following segments with the usual dark hairs, but the apical one, except at apex, with fine silvery tomentum.

Distinguished from *O. faceta*, Cress., by the smaller size, greener abdomen, and colour of hair on clypeus. It looks

just like *O. atriventris*, but is easily separated by the large amount of black hair on head. *O. albolateralis*, Ckll., is much larger and has not the fine appressed white hairs seen on abdominal segments 4 and 5 in *phacelie*. It is an *Osmia* s. str. in the sense of Robertson.

Hab. Ward, Colorado, July 1905, at flowers of *Phacelia* (*W. P. & T. D. A. Ckll.*); also one from Boulder, Colorado, June 17, 1905 (*W. P. Cockerell*).

Osmia Hendersoni, sp. n.

♀.—Length 10 mm.; width of abdomen $4\frac{1}{2}$.

Robust; head and thorax densely punctured, black, with strong blue and green tints at sides of face, and the pleura, scutellum, and metathorax greenish; abdomen very short and broad, very shiny, with sparse punctures, the segments olive-green, with the hind margins broadly purple, their extreme edge more or less reddish. Head rather large, with broad cheeks, but not otherwise remarkable; clypeus normal, the anterior edge gently concave; mandibles with three large but short teeth; antennæ black; hair of face entirely black; the black hair goes as far back as the ocelli, and behind this the hair of the top of the head is all dull white, except at the extreme sides; cheeks nude; hair of thorax above entirely yellowish white, of pleura black; tegulæ rufo-piceous. Wings hyaline with yellow stains; first r. n. joining second s.m. about twice as far from base as second from apex. Legs black, with black hair; anterior tarsi with long pale hair; first abdominal segment with long white hair, the others with rather long black hair; sixth apically with a little reddish appressed hair; scopa black.

A beautiful species, separated from *O. nigrifrons* by the shining abdomen, the second segment with black hair, &c. The 3-dentate mandibles and long hair of pleura readily separate it from *O. brevihirta*.

Hab. Arapahoe Peak, Colorado, Sept. 1, 1906 (*S. A. Rohwer*).

Named after Judge J. Henderson, who was present when it was caught, in recognition of his work on the Arapahoe Glacier and other contributions to the natural history of Colorado. The locality is high alpine.

Osmia brevihirta, sp. n.

♀.—Length about 11 mm.; width of abdomen barely over 4.

Dark blue, with green tints; the abdomen brilliant, more

shining than in *O. nigrifrons*, the hind margins concolorous. Head large; clypeus normal; mandibles 4-dentate, the inner two teeth very short; near the interval between the first and second teeth is a little patch of shining orange hair; antennæ black; hair of face black and dull white, the black coarse and mainly on the clypeus and above, the white principally at sides; black hairs about ocelli, but hair on top of head dull white; cheeks with black hair, but anteriorly bare, with a very little short white hair which glistens in certain lights; thorax above with yellowish-white hair, not mixed with black; hair of pleura short and scanty, dark, a little light above posteriorly. Legs black, with black hair; tegulae black, with a blue spot. Wings broadly dusky on apical margin; first r. n. joining second s.m. about $1\frac{2}{3}$ as far from base as second from apex. Abdomen with light hair on first segment and middle of second; otherwise the hair is black except that the apex of the last segment is covered with chocolate-brown tomentum; scopa black.

This may prove to be the female of *O. cyaneonitens*, Ckll., which (σ) was also found at Boulder by my wife, June 4, 9, and 10, 1905.

Hab. Boulder, Colorado, June 10, 1905 (*W. P. Cockerell*).

Osmia hypochrysea Rohweri, subsp. n.

φ .—Length about 10 mm.

Differs from true *hypochrysea* in being somewhat larger and more robust, the patch of orange hair on the mandibles little developed, the hair on inner side of hind tarsi dark ferruginous (black in type). The clypeus is quadridentate as in the type.

Hab. Boulder, Colorado, May 1906 (*S. A. Rohwer*).

The locality is more than 2500 ft. lower than that of the typical form.

Osmia hypoleuca, sp. n. (*pentstemonis*, subsp.?).

φ .—Length about $7\frac{1}{2}$ mm.; anterior wing $5\frac{1}{3}$; width of abdomen about $2\frac{1}{2}$.

Head and thorax deep blue; abdomen brilliant purple-blue, the hind margins of the segments broadly olive-green; head and thorax very densely punctured, their hair long and coarse, but not dense, black on head except on occiput and a little on hindmost part of cheeks, dull white mixed with black on thorax above, light on tubercles, black on upper, but white on lower part of pleura. Head oblong, clypeus

normal, mandibles 3-dentate, antennæ black; tegulæ piceous, blue in front. Wings dusky; first r. n. joining second s.m. about or hardly $1\frac{1}{2}$ times as far from base as second from apex. Legs black, with black or sooty hair; hind coxæ and femora strongly bluish, hind basitarsus flat and rather broad. Abdomen with inconspicuous black hair on segments 3 to 5; scopa black.

Perhaps only a variety of *O. pentstemonis*, Ckll., but that has the hair of pleura all light, and the last dorsal abdominal segment with fine whitish tomentum.

Hab. Boulder, Colorado, June 9, 1905, at flower no. 10 (*W. P. Cockerell*).

O. pentstemonis occurs at higher altitudes; in Boulder County we have taken it at Ward, about 9000 ft., at flowers of *Pentstemon*, July 1905. In my original account of *O. pentstemonis* I wrote:—"It may prove to be the female of *O. Wheeleri*." It is, perhaps, significant that at Boulder, June 4, 1905, my wife took a male *Osmia* which I have referred to *O. Wheeleri*, Ckll., variety.

Osmia pikei, sp. n.

♀.—Length about 8 mm.; width of abdomen 3.

A short broad species, with abdomen almost exactly circular in outline. Dark greenish blue, the abdomen shining; hair of head and thorax long and coarse, black on clypeus, cheeks, and pleura, dull white with black intermixed on front, vertex, and thorax above; some white hair also on sides of face; head and thorax densely punctured; head rather large; mandibles with four prominent sharp teeth, the apical one long; clypeus normal, the two orange brushes below its anterior edge well developed; antennæ black, flagellum very faintly reddish beneath; scutellum and hind part of mesothorax yellowish green, contrasting with the blue-black metathorax; tegulæ black, greenish in front. Wings dusky; first r. n. joining second s.m. only a little further from base than second from apex. Legs black, with black hair, fine pale tomentum on underside of hind femora and tibiæ; hair on underside of hind tarsi reddish except at sides. Abdomen very sparsely punctured; first segment with pale hair, second with pale and black, the others with black, the last (except apically) with some appressed pale hairs; scopa black.

Distinguished especially by its comparatively small size, broad form, and 4-dentate mandibles. The colour of the abdomen is the same as in *O. propinqua*.

Hab. Halfway House, Pike's Peak, Colorado, at flowers of *Salix*, May 30, 1904 (*Cockerell*).

The locality is 8400 ft. above sea-level.

Osmia senior, sp. n.

♀.—Length about 12 mm.; width of abdomen $3\frac{3}{4}$.

Abdomen approximately parallel-sided, broadest about the apex of the third segment. Head dark blue below, green above; mesothorax and scutellum green, pleura dark blue. Abdomen blue-green, the margins of segments concolorous, but segments 2 and 3 have an indistinct pinkish-purple band across the middle, while 4 and 5 show coppery-red tints. Head and thorax densely punctured, head rather large; antennæ black; clypeus normal; mandibles with four very distinct teeth, the apical one not very long; hair of clypeus black, of sides of face dull white, of front mixed white and black, of vertex black, of occiput pale, of cheeks pale behind and black in front; hair of thorax above scanty, dull white with black intermixed, of pleura black, but of tubercles abundant and light, conspicuously contrasting; tegulae rufopiceous, shaded with green. Wings dusky, first r. n. joining second s.m. about $1\frac{2}{3}$ as far from base as second from apex. Legs black, with black hair, the hind femora and coxæ very faintly metallic; middle femur with a few pale hairs apically beneath. Abdomen with light hair on first segment and short black hair on the others, each with a scarcely noticeable subapical band of shining pale hairs, mostly failing in the middle; sixth with fine pale tomentum; scopa black.

O. gaillardiae, Ckll., is allied, but larger, and without appressed light hair on cheeks. The white hair at sides of face separates *O. senior* from *O. wardiana*. By the colour and shape of the abdomen *O. senior* is like *O. densa*, but that has light hair on pleura.

Hab. Boulder, Colorado, June 12, 1905 (*W. P. Cockerell*).

Osmia wardiana, sp. n.

♀.—Length a little over 12 mm.; width of abdomen 4.

Robust; abdomen oblong. Head and thorax black, the sides of face and supraclypeal area green, the scutellum and hind part of mesothorax greenish; middle of mesothorax purplish black, with an area in which the strong punctures are separated, showing the shining ground; head large, the cheeks very full and rounded; antennæ black; clypeus somewhat produced, with the apex shallowly subemarginate;

mandibles 4-dentate, the apical tooth much the largest, the others subequal; face with coarse black hair, cheeks with quite long black hair; vertex with hair mixed black and dull white; thorax above with dull white hair, with long black hairs intermixed; pleura and tubercles with black hair; tegulæ with a large ferruginous spot. Wings hyaline, with reddish stains; first r. n. joining second s.m. about or scarcely $1\frac{1}{2}$ times as far from base as second from apex. Legs black, with black hair, that on inner side of anterior tarsi reddish. Abdomen quite dark, with tints of purple and green, the hind margins of the segments purple; hair on first segment long and pale, except a tuft of black on each side toward base; hair on remaining segments short and black; scopa black.

Resembles *O. nigrifrons*, Cresson, but that has 3-dentate mandibles, entirely black tegulæ, &c.

Hab. Ward, Colorado, 9200 ft., at flowers of *Senecio*, July (W. P. & T. D. A. Ckll.).

Osmia Titusi, Ckll.

Las Cruces, New Mexico, April 10, at flowers of *Dithyrea Wislizeni*; two females collected by Prof. C. H. T. Townsend.

New to New Mexico.

Andrena Hitei, sp. n.

♀.—Length rather more than 11 mm.; anterior wing about $8\frac{1}{2}$; width of abdomen $3\frac{1}{3}$.

Black, the thorax and first four abdominal segments covered dorsally with bright fox-red hair, exactly as in the European *A. fulva*, of which it looks like a small example. Cheeks and face below antennæ with black hair, front and vertex with dull reddish hair, paler and not so bright as that of thorax; antennæ dark, scape with black hair; facial foveæ very broad, not divergent from eye, dark, but with a pale tint in certain lights; clypeus shining, strongly but not very densely punctured, with a broad smooth median band; process of labrum large, truncate, with sloping sides; third antennal joint conspicuously longer than the next two united; mesothorax dull and granular, minutely punctured; area of metathorax triangular, dull and granular, small, defined only by an impressed line; hair of lower part of pleura black, of metathorax red, but at sides are long, curled, black hairs; tegulæ dark. Wings dusky, stigma ferruginous, nervures

fuscos; second s.m. about as broad as high, receiving first r. n. almost at its end. Legs black, with black hair; spurs clear ferruginous; apical fimbria and hair of underside of abdomen black; abdomen very feebly punctured, second segment without any visibly depressed area.

Hab. Boulder, Colorado, May 21, 1906 (*Glenn Hite*).

A most unexpected find, like nothing I have seen from America, but closely allied to the European *A. fulva*.

Boulder, Colorado, U.S.A.,
Feb. 3, 1907.

XLIII.—*New Mammals from Lake Chad and the Congo, mostly from the Collections made during the Alexander-Gosling Expedition.* By OLDFIELD THOMAS and R. C. WROUGHTON.

It is hoped that a general account of the zoological collections made during the recent Alexander-Gosling expedition from Nigeria by way of Lake Chad to Shari, Oubangui, and Welle to the Upper Nile will be published later, but in the meanwhile such new mammals as we have been able to distinguish are here described.

Both Capt. Gosling, whose death we have to deplore, and Mr. Boyd Alexander took very great interest in the collection of mammals, and considering the difficulties inseparable from such an expedition the number and condition of the specimens obtained afford striking testimony to the pains they took in this direction. As a result they have discovered a remarkable number of new and interesting forms, one of these, *Colomys Goslingi*, representing a new genus.

We have also included descriptions of a few other mammals from the same area, their characteristics having become evident during the work on the Alexander-Gosling specimens.

The whole of the collections obtained by the expedition have been presented to the National Museum by Mr. Boyd Alexander and the executors of Capt. Gosling.

Rhynchocyon Claudi, sp. n.

A white-tailed *Rhynchocyon*, with the usual pattern brightly marked; about the size of *Stuhlmanni*, Mats.

General ground-colour above a rather bright red-brown (darker and less bright in the female), below a bright orange-buff. A patch behind the ears, and the cheeks, a lighter