

## NEW NORTH AMERICAN BEES OF THE GENUS *ANDRENA*.

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The genus *Andrena* is richly represented in Europe, Asia, northern Africa, and North America, the species differing greatly in size and appearance and having diverse flower-visiting habits. Although very many species have been described, it is evident that many more remain to be discovered. The present paper makes known a series, chiefly from the Rocky Mountain Region.

- a*<sup>1</sup>. Species with only two submarginal cells.  
*a*<sup>2</sup>. Female with yellow face-marks; stigma small.

### *ANDRENA VERBESINAE*, new species.

Cotulla, Texas. May 12, 1906, (F. C. Pratt), on *Verbesina encelioides*.

*Female*.—Length, 11 mm. Robust. Black; all the tarsi and the anterior and middle tibiae ferruginous. A mark occupying most of clypeus, its lower end trilobed, and very large semicircular lateral marks light yellow. Facial quadrangle a very little broader than long. Process of labrum slightly emarginate. Clypeus shining, well punctured, flattened in middle, with a smooth band; facial foveæ seen from above light ochreous, occupying a little more than half distance between eye and antenna,<sup>2</sup> below rapidly narrowing,

<sup>1</sup> A number of years ago Mr. Viereck began a revision of the genus *Andrena* as found in North America, and at different times published part of his results, chiefly in the form of tables. The tables for the separation of the groups and species are nearly completed, but the completion of the whole work is unavoidably delayed. It has therefore seemed advisable to publish descriptions of a number of new species, principally from the Rocky Mountains. These species were all recognized as new and given names by Mr. Viereck, and in working over them I have used Mr. Viereck's tables, giving the characters separating them from species previously described as well as from numerous species not yet published. It has been impossible to credit specifically the matter derived from Mr. Viereck's manuscript, but it will be understood that while I am alone responsible for the form of the present paper, it is based upon Mr. Viereck's work and is in every sense a product of our joint labors. All the species which Mr. Viereck regarded as distinct are separately described, although several appear to me to be varietal forms only and are here given as such. Mr. Viereck, on going over the manuscript, writes that he will provisionally accept my opinions on these matters, being at present unable to reinvestigate the questions involved. It is hoped that the account given is sufficiently full to enable students to determine all the forms, whether regarded as varieties or distinct species. The "key" referred to in this paper is that in Mr. Viereck's manuscript. The comments within brackets are mine alone.—T. D. A. COCKERELL.

<sup>2</sup> This refers, strictly speaking, to the distance between eye and vertical line running through outer edge of antennal socket; hence not necessarily to the breadth of the fovea at transverse level of antenna.

not going below level of antennae. Flagellum bright red beneath, except at base. Third antennal joint much longer than next two together, but not quite so long as next three. Head and thorax abundantly clothed with ochreous hair, becoming ferruginous above. Mesothorax and scutellum dullish, closely punctured; area of metathorax hardly sculptured. Tegulae light reddish. Wings dusky, paler basally. Only two submarginal cells. Stigma very small. Basal nervure meeting transverse median. First recurrent nervure joining second submarginal not far from its beginning. Hair of legs light reddish, dense on tibiae and tarsi. Abdomen shining, well punctured, the broad depressed hind margins of segments pale testaceous, and above this a ferruginous band which is linear on first segment and successively wider on the others, until on the fourth and fifth it forms a patch covering the most of the middle of the segment. All the segments with thin but entire bands of long yellowish hair, and much of same hair at apex, second segment in middle depressed scarcely one-third. The male has clypeus entirely yellow and is without the red bands on abdomen.

(Resembles *Callandrena manifesta*, but is quite distinct according to Mr. Viereck, who had access to the type of *manifesta*.)

*Type*.—Cat. No. 18119, U.S.N.M.

♂<sup>2</sup>. Female without light face-marks; head very broad.

ANDRENA PAPAGORUM, new species.

Tempe, Arizona. March 30, at flowers of *Salix*. (Cockerell.)

*Female*.—Length, 7½ mm. Black, with grayish white hair. Head extremely broad and short. Process of labrum triangular, pointed. Clypeus except at sides brilliantly shining, with very sparse punctures. Facial foveae seen from above brownish white, occupying more than two-thirds space between eye and antenna, ending below at about level of top of clypeus. Flagellum dull brownish beneath, third antennal joint about as long as the next two together. Mesothorax and scutellum brilliantly shining, very sparsely and feebly punctured; area of metathorax granular, scarcely defined. Tegulae dark reddish. Wings hyaline, with only two submarginal cells, the second transverse cubital being absent. Nervures and stigma amber color, first recurrent nervure joining second submarginal at a distance from its base equal to about one-half length of first transverse cubital. Hair on hind tibiae creamy white on outer side and pure white on inner. Abdomen rather narrow, brilliantly shining, without distinct punctures, depressed parts of segments reddish, second segment in middle depressed two-fifths. Hind margins of segments with distinct white hair bands, interrupted in middle on second and reduced to a patch on each side on first, on the under side the bands are also distinct but narrower. Hair at apex cream color. This

falls in the table in a couplet with a species (still undescribed) which differs from it by the dullish, almost impunctate clypeus.

*Type*.—Cat. No. 18120, U.S.N.M.

(The type of *Andrena coloradina*, variety *A*, described below, has only two submarginal cells on one side.)

*b*<sup>1</sup>. Species with three submarginal cells.

*a*<sup>3</sup>. Species of the subgenus *Trachandrena*.

*a*<sup>4</sup>. Large species with the aspect of *Andrena carlini*; modified part of second abdominal segment extending almost to base of segment in middle; hair of thorax above creamy white.

*ANDRENA SWENKI*, new species.

Moscow, Idaho, No. 121.

*Female*.—Length, 13 mm. Robust species, superficially resembling *A. vicina*. Black, with reddish-black hair, but that on mesothorax, scutellum, post-scutellum, tegulae and borders of tubercles creamy white; on underside of anterior femora pallid. Facial quadrangle considerably broader than long. Process of labrum truncate. Clypeus very coarsely and extremely densely punctured, with a median smooth line. Facial foveae seen from above pale grayish brown, occupying a little more than half the space between eye and antenna, below narrowed, and ending about level with top of clypeus or a little lower. Flagellum obscurely reddish beneath. Third antennal joint about as long as the next two combined. Mesothorax and scutellum very coarsely punctured, but the surface largely hidden by hair. Area of metathorax with very strong, rather regular, longitudinal ridges. Tegulae rufo-piceous. Wings dusky hyaline, stigma and nervures dark rufo-fuscous, basal nervure meeting transverse median, second submarginal receiving first recurrent nervure beyond middle. Spurs red. Abdomen shining, the depressed portions of the segments extremely large, that on second in middle occupying at least three-fourths of segment. These depressed parts shining and very sparsely and feebly punctured; the other parts, which broaden laterally, strongly punctured, but first segment slightly punctured all over. No distinct hair bands. In the table it is separated from several allies (*A. striatifrons*, *A. semipunctata*, *A. spireana*) by the distinctly punctured depressed part of second abdominal segment.

*Type*.—Entomological collection of the University of Nebraska.

*b*<sup>4</sup>. Large species (male), with red hair.

*ANDRENA JOCKORUM*, new species.

Peck, Idaho, April 8, 1900.

*Male*.—Length, 12 mm. Black with tarsi reddish apically, pubescence throughout warm reddish ochreous, long and brightly colored on face and thorax above. Malar space very short; process of labrum broad, truncate, shallowly emarginate; clypeus and sides

of face coarsely rugoso-punctate, dullish; facial quadrangle broader than long; cheeks ordinary, not as broad as eyes; vertex dull, with irregular coarse sculpture; antennae stout, black, the flagellum beneath faintly brownish, third antennal joint about as long as fourth but not so long as fifth, apical joint with a smooth shining apical area on inner side. Mesothorax and scutellum dullish, very coarsely and closely punctured; metathorax very coarsely granular, the rather small triangular area with very coarse rugae, the median one reaching its posterior end. Tegulae shining reddish piceous. Wings hyaline, faintly brownish, more distinctly so apically; nervures and the large stigma ferruginous, second submarginal receiving first recurrent nervure in middle.

Abdomen shining, but quite closely punctured except the hind margins and extreme bases of segments; second segment in middle depressed about one-half. No hair bands, but all segments with abundant erect hair, not dense enough to conceal surface.

In the table it is separated from *A. weedi* and *A. radiatula* by the long, dense, nearly erect hair of abdomen.

*Type*.—Entomological collection of the University of Nebraska.

*c*<sup>4</sup>. Smaller species, not at all like *A. carlini* in aspect.

*a*<sup>5</sup>. Abdomen largely ferruginous.

*a*<sup>6</sup>. Female; mesothorax moderately shiny; second abdominal segment in middle depressed much more than half; second submarginal not narrow.

ANDRENA SUBMARIÆ, new species.

Hamilton County, Kansas. 3,350 feet. (F. H. Snow, 326.)

*Female*.—Length, 8 mm. Head and thorax black. Legs dark reddish, the hind tibiae and tarsi clear ferruginous. Abdomen bright chestnut red, the hind margins of the segments golden. Beneath, the segments are largely blackened; above are some irregular blackish stains which evidently did not exist in life. Facial quadrangle broader than long; process of labrum truncate; clypeus shining, strongly and closely punctured. Facial foveae seen from above creamy white, occupying more than two-thirds of distance between antenna and eye, below they end a little below level of antennae, and are not widely separated from eye; flagellum with a light red band beneath quite abruptly contrasting with the dark color of the rest of the flagellum; third antennal joint about as long as 4 and 5 together. Front both striate and punctured. Mesothorax and scutellum with large, strong, not dense punctures. Mesothorax dull, scutellum more shining. Area of metathorax with rather fine longitudinal ridges which send out lateral branches. Tegulae rather light reddish. Wings reddish hyaline, stigma and nervures clear ferruginous, basal nervure meeting transverse median, second submarginal receiving first recurrent nervure well beyond middle. Scopa of hind tibiae

creamy white; hair on inner side of hind tarsi light red brown. Abdomen shining, sparsely punctured, without hair bands, second segment in middle depressed more than half, but feebly. Hair at apex pale, but suffused with golden.

*Female*.—Clear Creek, Colorado. (Baker, 5836.)

Differs from Kansas type as follows: Flagellum without any red band or stripe beneath. Third antennal joint considerably longer and more slender, though not as long as the next three joints combined. Area of metathorax more irregularly wrinkled. Sides of mesothorax posteriorly more sparsely punctured. Basal nervure falling short of transverse median. First abdominal segment more strongly punctured. Hind tibiae and base of tarsi quite dark, not clear ferruginous.

(I believe this Colorado *A. submariae* to be the female of *A. martialis*, and probably specifically distinct from the Kansas type.)

*Paratype*.—Cat. No. 18137, U.S.N.M.

*b*<sup>5</sup>. Males; mesothorax dull; second abdominal segment in middle depressed about half, the edge of the depression little curved. (The difference between this and *A. submariae* in respect to the depression of second segment is sexual, as proved by the sexes of *A. sphecodina* taken together.) Second submarginal cell very narrow.

*A. martialis* is probably a subspecies of *A. sphecodina*. The males concerned may be separated thus:

Head narrow; basal nervure meeting transverse median; first abdominal segment with very small punctures.....*sphecodiniformis*.

Head broad; basal nervure falling short of transverse median; first abdominal segment distinctly punctured.....*martialis*.

Very close to *martialis*, but area of metathorax seems duller and not so heavily ridged.....*sphecodina*

*A. martialis* can not be separated from *sphecodiniformis* on the character of abdominal fasciation.

#### ANDRENA MARTIALIS, new species.

Boulder, Colorado. March 25. (G. M. Hite.)

*Male*.—Length, 7½ mm. Black, with the apical third of the first abdominal segment and nearly all of the second and third bright ferruginous. The second and third with a transverse blackish shade at base and the third more or less blackened apically. Small joints of tarsi brownish. Pubescence grayish white. Facial quadrangle broader than long. Process of labrum truncate. Clypeus finely but closely punctured, with a delicate median ridge. Antennae dark, but joints 3 to 6 more or less red beneath; third joint a little shorter than fourth. Cheeks normal. Mesothorax and scutellum dullish, with strong but not large punctures. Area of metathorax triangular, with strong irregular ridges. Tegulae dark reddish. Wings reddish hyaline. Stigma and nervures ferruginous. Basal nervure almost meeting transverse median. Second submarginal cell very narrow,

receiving first recurrent nervure well beyond middle. Third submarginal very broad. Abdomen with extremely minute punctures. Hair bands not well defined. Second segment in middle depressed nearly one-half, but feebly. Apical plate narrow, broadened at end, truncate.

*ANDRENA SPHECODINIFORMIS*, new species.

Platte Canyon, Colorado. (Baker, 5829.)

*Male*.—Length, about  $6\frac{1}{2}$  mm. Head and thorax black; legs black, tarsi obscure reddish; abdomen brownish ferruginous, the first dorsal segment with more than the basal half black, the margin of the black suffused; second segment with oval black spot on each side; subapical region broadly suffused with black. Pubescence rather dull white, long on head and thorax, dense on clypeus, which is well punctured, but shining between the punctures. Process of labrum broad, truncate. Eyes somewhat converging below, so that the lower side of the facial quadrangle is not greater than its length; vertex dullish; cheeks normal; antennae black, the flagellum with the joints beyond the first brownish beneath, the second to fourth light reddish, third antennal joint about as long as fourth, fifth distinctly longer; malar space short; mesothorax and scutellum dullish, with sparse very feeble punctures; metathorax roughened, the triangular basal area with strong long plicae. Tegulae reddish; wings hyaline, faintly reddish, strongly iridescent; stigma amber color, nervures fuscous. Second submarginal cell very small, third submarginal not much elongated. Abdomen shining, without distinct punctures. Second segment in middle depressed about one-half. Hair of abdomen rather scanty, not forming bands.

*Type*.—Cat. No. 18123, U.S.N.M.

*b*<sup>5</sup>. Abdomen not at all ferruginous.

*a*<sup>7</sup>. Males.

*a*<sup>8</sup>. Second abdominal segment in middle depressed over one-half; pubescence red.

*ANDRENA DAVISIANA*, new species.

Boulder, Colorado. May 8, 1907. (J. M. Davis.)

*Male*.—Length,  $7\frac{1}{2}$  mm. Black with fulvous pubescence, bright on thorax above. Head broad. Process of labrum truncate. Clypeus strongly and densely punctured. Antennae dark, third joint shorter than fourth. Cheeks normal. Mesothorax and scutellum shining, with irregular rather small punctures. Area of metathorax, with irregular rather weak ridges. Tegulae reddish. Wings reddish hyaline; nervures and the very large stigma ferruginous, basal nervure falling short of transverse median, second submarginal receiving first recurrent nervure a little beyond middle. Small joints of tarsi ferruginous. Abdomen very finely punctured, not distinctly banded. Second segment in middle depressed about three-fifths. Apical plate small.

*A. tacitula* has a similar red-haired form (*grossulariae*), but it has a different area of metathorax and different venation.

*b*<sup>3</sup>. Second abdominal segment in middle depressed less than one-half.

*a*<sup>9</sup>. Stigma and nervures clear amber; second submarginal receiving first recurrent nervure near end; hind tarsi clear red. (Area of metathorax much more coarsely sculptured than in *A. claytoniae*.)

*ANDRENA CRATAEGIPHILA*, new species.

Boulder, Colorado. May 10, at flowers of *Crataegus coloradensis* Nelson. (T. D. A. Cockerell.)

*Male*.—Length, 7½ mm. Black, with pale ochreous hair. Facial quadrangle broader than long. Eyes diverging above. Process of labrum truncate. Clypeus very densely punctured. Antennae long. Flagellum dark brown beneath; third antennal joint not quite as long as fourth. Cheeks normal. Mesothorax dullish, with small shallow punctures. Scutellum more shining. Area of metathorax shining, with strong longitudinal ridges. Tegulae rufopiceous. Wings dusky hyaline, nervures and the large stigma ferruginous; basal nervure falling just short of transverse median. Second submarginal small, receiving the first recurrent nervure near its end. Small joints of all the tarsi, and hind tarsi entirely, clear ferruginous. Abdomen convex, shining, without distinct punctures. Narrow hind margins of segments testaceous. Second segment in middle depressed about one-third. Sides of second and following segments with rudimentary hair bands. Apical plate with a rather rounded truncation.

*ANDRENA CRATAEGIPHILA*, variety.

Boulder, Colorado. March 30, at *Salix bebbiana*. (S. A. Rohwer.)

*Male*.—Length, 9 mm. Black, with pale slightly ochreous pubescence. Facial quadrangle broader than long. Process of labrum truncate. Clypeus shining but densely punctured. Facial foveae seen from above white, extremely narrow, hardly as broad as the width of an ocellus. Flagellum thick, bright ferruginous beneath. Third antennal joint about as long as fourth. Cheeks normal. Mesothorax dullish, with small not dense punctures. Scutellum shining, sparsely punctured. Area of metathorax with large irregular wrinkles. Tegulae rufopiceous. Wings reddish hyaline, nervures and the large stigma ferruginous, basal nervure falling a little short of transverse median, second submarginal broad, receiving first recurrent nervure at its end. Small joints of anterior and middle tarsi, hind tarsi entirely and a large part of hind tibiae ferruginous. Abdomen very finely punctured, extreme hind margins of second and following segments red. Second segment in middle depressed about one-third. Rudimentary hair bands at sides of second and

following segments. Apical plate broadly truncate. (This is labeled as a new variety of *A. imitatrix*. It is larger than *A. crataegiphila*, with redder stigma and broader second submarginal, but I believe certainly no more than a variation.)

**ANDRENA PROFUNDIFORMIS, new species.**

Fort Collins, Colorado. (Gillette.) October 5, 1901.

*Male*.—Length 8 mm. Black, small joints of tarsi light reddish; first two abdominal segments ferruginous at the extreme sides, the red area of the second enclosing a black spot; hair very pale ochreous, long on head and thorax; facial quadrangle broader than long; process of labrum broadly truncate; clypeus closely punctured; malar space short; cheeks normal; vertex depressed at sides; antenna black, flagellum faintly brownish beneath. Third antennal joint distinctly shorter than fourth, which is shorter than fifth. Mesothorax and scutellum dullish, rather strongly punctured; mesothorax anteriorly with three well marked longitudinal grooves. Metathorax rather small, roughened, very hairy, the rather poorly defined area with very strong longitudinal rugae, the three middle ones especially prominent. Tegulae testaceous. Wing hyaline, faintly dusky. Stigma reddish amber, nervures more fuscous, basal nervure meeting transverse median. First recurrent nervure joining the rather large second submarginal considerably beyond middle.

Abdomen shining, feebly punctured, second segment in middle depressed a little less than one-half, the depressed portions of the segments obscurely reddish. Hair of abdomen short and sparse, tending to form bands at sides of segments 2 and 4.

*Type*.—Cat. No. 18126, U.S.N.M.

This has darker hind tarsi than *A. crataegiphila*. In the table, the two species are separated thus:

Second abdominal segment depressed decidedly less than one-half. . . . *crataegiphila*.

Second abdominal segment depressed a little less than one-half. . . . *profundiformis*.

*b*<sup>9</sup>. Stigma and nervures chestnut red; second submarginal cell receives first recurrent nervure near middle, or if beyond, not near end; hind tarsi not clear red.

(The basal nervure meets, or almost meets, transverse median; in *davisiana* it falls considerably short of it.) Species related to *A. crataegi*, but quite distinct.

**ANDRENA TACITULA Cockerell.**

Boulder, Colorado. June 4, 1905. (W. P. Cockerell.)

*Male*.—Length about 7 mm. Black, with uniformly pale ochreous hair. Facial quadrangle only a little broader than long. Process of labrum broadly truncate. Clypeus shining, densely and strongly punctured, with a delicate median raised line. Antennae dark, the sutures between the joints deep, third joint short, about as long as fourth. Vertex strongly punctured. Cheeks normal. Mesothorax and scutellum shining, strongly punctured. Area of metathorax with

fine but well marked longitudinal ridges. Tegulae dark reddish. Wings dusky hyaline, nervures and stigma dark ferruginous. Basal nervure meeting transverse median. Second submarginal receiving first recurrent nervure just beyond middle. Abdomen shining, with small but very distinct punctures. Hind margins of third to fifth segments with hair bands and the same at sides of second. Second segment in middle depressed about two-fifths. Hair at apex very pale yellowish. Apical plate truncate.

*ANDRENA TACITULA*, variety.

Topaz Butte, Colorado. June 17. (S. A. Rohwer.)

*Male*.—Length, 8 mm. Black. Pubescence vary pale ochreous. Head very broad. Mandibles red at end. Clypeus shining, strongly and closely punctured. Antennae dark, third joint a little longer than fourth. Cheeks normal. Vertex strongly punctured. Mesothorax and scutellum shining, with strong and only moderately large punctures, well separated on middle of mesothorax, irregularly confluent on scutellum. Area of metathorax with numerous strong ridges. Tegulae rufopiceous. Wings reddish hyaline. Basal nervure almost reaching transverse median. Second submarginal cell broad, receiving first recurrent nervure well beyond middle. Small joints of tarsi ferruginous. Abdomen finely punctured, with short thin hair and distinct bands at sides of segments. Second segment in middle depressed nearly one-half. Apical plate truncate.

(This was given as a distinct species, but I believe it to be conspecific with *A. tacitula*.)

*ANDRENA TACITULA GROSSULARIAE*, new variety.

Topaz Butte, Colorado. June 17. S. A. Rohwer.

*Male*.—Length, 8 mm. Black. Tarsi ferruginous apically, mandibles dark chestnut red at apex. Pubescence throughout warm reddish ochreous, long and bright on scutellum. Head ordinary, facial quadrangle broader than long, process of labrum shallowly emarginate. Clypeus rugosopunctate; vertex dull and granular; cheeks rather broad; antennae black, flagellum obscurely brownish beneath; third antennal joint about as long as fourth; fifth only a trifle longer; mesothorax closely punctured, but shining on disk between the punctures; metathorax dull and roughened, except the rather large triangular basal area, which is well defined, moderately shining, and covered with weak irregular longitudinal wrinkles.

Wing hyaline, faintly dusky apically, nervures and stigma rather dusky ferruginous. Basal nervure meeting transverse median, whereas in *A. jockorum* it goes basal of it. First recurrent nervure joining second submarginal about the middle. Third submarginal not so long as in *A. jockorum*.

Abdomen broad, moderately shining, well punctured, second segment depressed one-half in middle. First segment with median apical, longitudinal groove. Hair of abdomen short and thin, but covering segments, becoming a little thicker at the apices of segment laterally so as to suggest imperfect bands.

(This is a red-haired variety of *A. tacitula*.)

*Type*.—Cat. No. 18124, U.S.N.M.

*b*<sup>7</sup>. Females.

*a*<sup>10</sup>. Scutellum excessively densely and strongly punctured; wings dark.

ANDRENA PERDENSEA Viereck.

Westlake, Colorado. July 7, 1900.

*Female*.—Length, 11½ mm. Black, with short pale ochreous hair on head and thorax above, tubercles, sides of metathorax and anterior femora beneath. Hair on legs mostly sooty, but orange ferruginous on inner side of anterior tarsi, in complete contrast with the black hair of middle tarsi (hind tibiae and tarsi missing). Facial quadrangle rather longer than broad. Process of labrum broadly rounded; clypeus dull, strongly and closely punctured, the lower half with a median smooth line sides of face closely punctured. Facial foveae as seen from above brown-white, occupying rather more than one-half distance between eye and antenna, but rapidly narrowing below, so that at level of antennae they are very narrow, ending little separated from eye, at about level of top of clypeus. Flagellum obscure brownish beneath; third joint hardly as long as next two combined. Mesothorax and scutellum very densely and coarsely punctured. Area of metathorax with very strong and well-defined ridges, some of them zig-zag. Tegulae large, ferruginous, with a large fuscous patch. Wings strongly brownish, nervures and stigma dark reddish. Basal nervure falling just short of transverse median. Second submarginal receiving first recurrent nervure well beyond middle. Spurs pale ferruginous. Abdomen strongly and quite closely punctured, without hair bands. Second segment in middle depressed about three-fifths. Hair at apex dark fuscous.

A specimen from Vernon, British Columbia, labelled *perdensa*, is a different species. It differs from Colorado *A. perdensa* by the shining clypeus, truncate process of labrum, smaller and not quite so coarsely sculptured area of metathorax, basal nervure meeting transverse median, third submarginal cell longer. The hind tibiae and tarsi are present in this specimen and have brown-black hair.

Collected June 21, 1903.

The original *A. perdensa* came from British Columbia, so perhaps the Colorado insect is not truly of that species.

*b*<sup>10</sup>. Scutellum with distinctly separated punctures.

*a*<sup>11</sup>. Hind tibiae and tarsi black or nearly; second abdominal segment depressed in middle more than half; hair at apex of abdomen pale reddish.

*ANDRENA CYANOPHILA* Cockerell.

Florissant, Colorado. July 5, 1907. At flowers of *Argentina anserina*. (S. A. Rohwer.)

*Female*.—Length,  $9\frac{1}{2}$  mm. Black, with pale ochreous pubescence, becoming white beneath. Facial quadrangle a little broader than long. Process of labrum narrowly truncate. Clypeus shining, coarsely and confluent punctured, with a smooth median line. Facial foveae seen from above white, rather broad, below going below level of antennae. Flagellum dark reddish beneath. Third antennal joint about as long as next two combined. Mesothorax and scutellum shining, with extremely large punctures. Area of metathorax with sharp irregular ridges. Tegulea dark reddish. Wings dusky hyaline. Stigma and nervures dark reddish. Basal nervure meeting transverse median. Second submarginal receiving first recurrent nervure beyond the middle. Hair on hind tibiae white, on inner side of hind tarsi light orange. Abdomen shining, the nondepressed portions closely punctured, second segment in middle depressed almost three-fourths. Imperfectly developed hair bands at sides of second and following segments. Hair at apex light ochreous.

This species is close to *A. hippotes*, but distinct.

*ANDRENA CYANOPHILA*, variety.

Fort Collins, Colorado. June 22, 1899. (Gillette.)

*Female*.—Length,  $9\frac{1}{2}$  mm. Black, including the legs. Pubescence grayish white with a slight ochreous tinge. Facial quadrangle about as broad as long. Process of labrum truncate. Clypeus shining, strongly and closely punctured, with a strong median raised line. Facial foveae seen from above snow white, occupying about half the space between eye and antenna; below narrower, reaching about to level of top of clypeus, separated from eye by a narrow shining band. Flagellum stained with bright chestnut red beneath. Third antennal joint hardly as long as the next two combined. Mesothorax and scutellum shining, with large and deep irregularly placed punctures. Metathorax entirely dull, swollen at sides, the area well defined, with very strong irregular wrinkles and sharply cut off behind by a slender transverse ridge. Tegulae reddish, wings reddish hyaline, stigma and nervures dark rufous. Basal nervure meeting transverse median. Second submarginal cell receiving first recurrent nervure well beyond the middle, hair on outer side of hind tibiae white, on inner side of hind tarsi pale reddish. Abdomen shining, very distinctly but rather finely punctured. Second segment depressed in middle more than two-thirds; rudimentary white hair bands at sides of segments 2-5. Apical hair light golden.

(This was given as a distinct species, but I believe it to be conspecific with *cyanophila*.)

$b^{11}$ . Hind tibiae and tarsi red.

$a^{12}$ . Mesopleura granular; mesothorax with small punctures.

## ANDRENA TRUMANI, new species.

Volga, South Dakota.

*Female*.—Length, 10 mm. Black, with grayish-white hair. Hind tibiae and middle and hind tarsi clear ferruginous. Facial quadrangle broader than long. Process of labrum short, emarginate. Clypeus microscopically tessellate, strongly and closely punctured, with a median impunctate line, the lower part of which is smooth and shiny. Facial foveae seen from above grayish-white, occupying about two-thirds space between eye and antenna; below they extend rather broadly, a short distance below level of antennae. Antennae dark; third joint a little longer than the next two combined. Mesothorax dullish, with rather small not very dense punctures; hindpart of mesothorax and scutellum more shining, very sparsely punctured. Sides of mesothorax very densely fringed with hair, the area broad triangular, irregularly wrinkled. Tegulae reddish. Wings quite dusky, with a reddish tint. Stigma and nervures ferruginous, stigma very bright. Basal nervure meeting transverse median. Second submarginal large, receiving first recurrent nervure about middle. Hair on hind tibiae cream color. Abdomen with small but very distinct and numerous punctures. Hind margin of first segment narrowly red. Segments 2-4 with thick white hair bands, that on 2 interrupted in middle. Hair at apex light reddish. Second segment in middle depressed more than one-third, but less than one-half.

*Type*.—Collection of the American Entomological Society.

*b*<sup>12</sup>. Mesopleura with small punctures; mesothorax with very small punctures.

## ANDRENA TITUSI, new species.

Fort Collins, Colorado. May 7, 1901. (Titus.)

*Female*.—Length, 10 mm. Black, rather slender. The small joints of tarsi, middle and hind basitarsi and hind tibiae clear ferruginous. Pubescence grayish white, faintly ochreous. Facial quadrangle broader than long. Process of labrum narrow at apex, not emarginate. Clypeus shining, strongly and quite closely punctured, with a median smooth line. Facial foveae white, occupying about two-thirds distance between eye and antenna, ending narrowly below at about level of top of clypeus. Flagellum obscurely brownish beneath; third joint long, a little longer than next two together, but not so long as next three. Mesothorax somewhat shining, rather closely punctured. Area of metathorax small, coarsely, very irregularly wrinkled, all other parts of metathorax very densely hairy. Tegulae dark brown. Wings reddish hyaline. Stigma and nervures reddish amber. Basal nervure meeting transverse median. The broad second submarginal receiving first recurrent nervure very near its end. Spurs cream color. Hair on hind tibiae very pale clear yellow-

ish. Abdomen shining, with extremely minute punctures, these practically absent on segments beyond middle. Hind margins of segments 2-4 with white hair bands, broadly interrupted in middle on 2 and 3. Hair at apex light reddish. Second segment in middle depressed more than one-third; but much less than half.

*Type*.—In the Titus collection.

*c*<sup>12</sup>. Mesopleura strongly punctured.

*a*<sup>13</sup>. Rugae of area of metathorax rather fine.

ANDRENA LINCOLNI, new species.

Lincoln, Nebraska. April.

*Female*.—Length, about 10½ mm. All the tibiae and the tarsi bright ferruginous, the anterior tibiae somewhat suffused with dusky. Pubescence very pale ochreous, on underparts almost white. Facial quadrangle broader than long. Mandibles, process of labrum (broadly truncate) and lower margin of clypeus entirely dark red. Clypeus shining, with strong rather dense punctures; no smooth median line. Facial foveae seen from above yellowish white, occupying two-thirds distance between eye and antenna; below they end at about level of top of clypeus. Front punctured; flagellum dark reddish; third antennal joint hardly as long as next two combined. Mesothorax and scutellum with very strong rather close punctures. Area of metathorax with strong, rather regular, long wrinkles, and bounded behind by a sharp transverse ridge. Tegulae reddish. Wings dusky hyaline, stigma and nervures chestnut red; basal nervure meeting transverse median; second submarginal cell rather small, receiving first recurrent nervure well beyond middle. Hair on hind tibiae white. Abdomen finely and closely punctured, hind margins of segment dark; second segment in middle depressed a little more than one-half. Segments 2-4 with dense white hair bands, broadly interrupted on 2 and narrowly on 3. Hair at apex pale ferruginous.

*Type*.—Entomological collection of the University of Nebraska.

*b*<sup>13</sup>. Rugae of area of metathoracic large and coarse.

ANDRENA MOSCOVENSIS, new species.

Moscow, Idaho.

*Female*.—Length, 10 mm. Black. Hair dull white. Facial quadrangle broader than long. Process of labrum truncate. Clypeus shining, strongly and closely punctured, without any smooth line. Facial foveae seen from above grayish-white, occupying at least two-thirds distance between eye and antenna, and almost reaching lateral ocelli; beneath they taper to an obtuse point below level of top of clypeus, little separated from eye. Flagellum beneath reddish brown, the color rather bright near the apex. Third antennal joint shorter than the next two combined. Middle of front shining and punctured.

Mesothorax and scutellum with very large sparse punctures. Area of metathorax not defined, with very large coarse wrinkles. Pleura strongly and closely punctured. Tegulae partly piceous and partly light red. Wings reddish hyaline, nervures and the large stigma ferruginous, the stigma very brightly colored. Basal nervure going a little basal of transverse median. Second submarginal receiving first recurrent nervure beyond middle. Legs obscurely reddish, the middle and hind tarsi clear ferruginous. Hair of hind tibiae and tarsi pale, that on inner side of tarsi light ferruginous. Abdomen shining, with distinct small punctures and without distinct hair bands; hair at apex reddish golden; second segment in middle depressed fully one-half.

*Type*.—Entomological collection of the University of Nebraska.

In the table the two last species fall as follows:

Abdomen fasciate:

Hind tibiae and tarsi blackish or dark brown.....	forbesii.
Hind tibiae and tarsi stramineous.....	lincolni.

Abdomen not fasciate:

Hind tibiae and tarsi blackish or dark brown.....	mariae var. concolor.
Hind tibiae and tarsi stramineous.....	moscovensis.

*b*<sup>3</sup>. Not *Trachandrena*.

*a*<sup>14</sup>. Abdomen red, wholly or in part, with pale ochreous hair-bands.

ANDRENA CARRIKERI, new species.

Lincoln, Nebraska. April 25, 1901. On willow. (M. A. Carriker.)

*Male*.—Length, 12 mm. Black, the abdomen from the apical margin of the first segment to the fourth ferruginous, the segments, especially the fourth, more or less stained with blackish. All the tarsi clear red, hind tibiae red stained with blackish. Hair of head and thorax long and abundant, bright ochreous, becoming light ferruginous in scutellum. Head very large and broad, facial quadrangle much broader than long; process of labrum broad and emarginate; mandibles long and curved downward and with a downwardly directed tooth beneath at base. Antennae long and slender. Flagellum obscure brown beneath. Third antennal joint not quite twice as long as fourth and little longer than the fifth. Clypeus entirely hidden by dense hair; sides of front dull and striate; cheeks shining, very broad, triangular, produced to nearly a right angle behind. Mesothorax dull in front, shining behind. Scutellum shiny. Area of metathorax coarsely granular in middle but its lateral margins broadly shining. Tegulae dark brown. Wings brownish hyaline. Stigma dark chestnut, nervures ferruginous. Basal nervure falling far short of transverse median. Second submarginal cell receiving first recurrent nervure near its end. Spurs ferruginous. Abdomen shining, not punctured, with long loose hair, the hind margins of the segments with thin pale yellowish bands, emphasized by the pallid

color of the tegument beneath. Second segment in middle depressed little more than one-fourth. Apical plate rounded.

*Type*.—Entomological collection of the University of Nebraska.

This does not have the finely punctured abdomen of *A. prunorum*.

In the key this runs in a couplet with *A. tridens*, being separated thus:

Abdomen black.....tridens.  
 Abdomen black and reddish.....carrikeri.

These two are separated from several others by the polished scutellum.

b<sup>14</sup>. Abdomen not red.

a<sup>15</sup>. Species with blue or green color, and without light tegumentary face-markings.

a<sup>16</sup>. Relatively large, robust species, suggesting *A. mimetica*.

a<sup>17</sup>. Hair of thorax (female) all black.

**ANDRENA BRUNERI**, new species.

Laramie, Wyoming. "6, 9, 93." Collected by Professor Buffum, as we are informed by Prof. A. Nelson, who believes that the date is to be read June 9.

*Female*.—Length 10 mm., rather robust, with short black hair. Head black, with front and vertex fine dark blue. Thorax black, with the pleura and metathorax very dark bluish. Legs reddish black, small joints of tarsi distinctly red. Abdomen rich blue, the hind margins of the segments purplish. Facial quadrangle a little broader than long. Process of labrum so narrowly truncate as to be almost pointed. Clypeus distinctly but not densely punctured, with a smooth median line. Front striate. Facial foveae very narrow, seen from above purple-black, occupying less than half the distance between eye and antenna, ending just below level of antennae. Third antennal joint about as long as next two combined. Mesothorax closely and finely punctured. Area of metathorax granular, not distinctly defined. Tegulae dark reddish. Wings hyaline, strongly tinged with orange, the broad apical region dilute fuscous, stigma and nervures bright ferruginous. Basal nervure meeting transverse median. Second submarginal cell receiving first recurrent nervure well before the middle. Hind tibial scopa compact. Abdomen shining, without hair bands, very finely but distinctly punctured. Second segment in middle depressed about one-third.

In the key this runs in a couplet with *A. subtilis*, and is separated thus:

Pubescence black.....bruneri.  
 Pubescence ochreous.....subtilis.

b<sup>17</sup>. Hair of thorax (female) light fulvous above, black at sides.

**ANDRENA LAWRENCEI**, new species.

Sioux County, Nebraska. May. (Lawrence Bruner.)

*Female*.—Length, 11 mm. Dark blue, the mesothorax and scutellum green, the abdomen shining greenish blue with the hind margins

of the segments reddish. Legs dark red brown, small joints of the tarsi ferruginous. Pubescence black except on occiput, mesothorax, scutellum, post scutellum, and tubercles, where it is reddish ochreous, and on inner side of tarsi, where it is dark reddish. Facial quadrangle much broader than long. Process of labrum large, dark reddish, broadly rounded, with a small median truncation. Clypeus black, shining, with small sparse punctures, no median line or ridge. Facial foveae seen from above red brown, occupying hardly half the distance between eye and antenna, below not going below antennae. Flagellum dull reddish beneath. Third antennal joint longer than next two together but not so long as next three. Mesothorax and scutellum dull and granular; area of metathorax granular; sides of metathorax with long black hair. Tegulae reddish. Wings strongly reddish; nervures and stigma dark ferruginous. Basal nervure meeting transverse median. Second submarginal cell broad, receiving first recurrent nervure much before middle. Hair of hind tibiae sooty, appearing pallid in some lights. Abdomen shining, without distinct punctures. Hair at apex reddish sooty. Second segment in middle depressed about one-third.

In the key this falls in a special group, along with another, still undescribed, species. The group is characterised especially by its attenuated palpi.

*b*<sup>16</sup>. Female about 10 mm. long; hair of head (except occiput) black; of thorax above red; abdomen purple; no hair bands.

ANDRENA PURPURINA, new species.

Colorado.

*Female*.—Length, 11 mm. Dark purplish blue, the clypeus and face black, thorax very dark obscure blue; abdomen quite brilliantly colored a sort of pearly blue when well lighted, but the hind margins of the segments becoming reddish. Legs and underside of abdomen very dark chestnut red. Facial quadrangle broader than long. Eyes small. Process of labrum rather narrowly truncate. Clypeus very prominent, convex, shining, rather strongly punctured, without any smooth line or ridge. Facial foveae seen from above reddish chocolate, occupying little more than half space between eye and antenna, little narrowed below where they end at about level of antennae. Front striate. Flagellum reddish, beneath pruinose. Third antennal joint nearly as long as next three together. Hair of head black, hair of thorax bright fulvous on mesothorax and scutella, otherwise black. Mesothorax and scutellum dull, finely roughened. Area of metathorax granular. Tegulae rufotestaceous. Wings brownish hyaline, stigma and nervures dull ferruginous. Basal nervure falling a little short of transverse median. Second submarginal cell rather narrow, receiving first recurrent nervure about

middle. Abdomen without hair bands or distinct punctures; hairs at apex sooty. Hair of legs brown black.

*Type*.—Collection of the American Entomological Society.

Superficially like *A. fulvinigra*, agreeing in size and pubescence, but quite distinct by the purple color and strongly projecting clypeus.

c<sup>16</sup>. Small female with light orange stigma and nervures.

*ANDRENA VEGANA*, new species.

Las Vegas, New Mexico. May 4, 1903. On *Salix*. (Cockerell.)

Very much like *A. placitae*, but can not be its female on account of the more shining thorax, quite differently colored venation, etc. (*A. placitae* male agrees with *vegana*, not with *salicinellina*, in the shape of third submarginal cell, but the stigma is chestnut in *placitae*, amber in *vegana*. *A. vegana* (female) has much darker antennae than male *placitae*.)

*Female*.—Length a little over 6 mm. Black, with a faint greenish tinge on front and abdomen. Pubescence white, slightly ochreous on thorax above. Facial quadrangle a little broader than long. Process of labrum obtusely pointed. Clypeus shining, with sparse feeble punctures. Facial foveae seen from above pale ochreous, occupying a little more than half space between antenna and eye, ending below a little below level of antennae. Flagellum dark reddish brown beneath. Third antennal joint about as long as next two together. Mesothorax and scutellum shining, hardly punctured, contrasting with the dull granular vertex. Area of metathorax granular, tegulae pale reddish; wings hyaline, nervures and stigma light amber. Basal nervure meeting transverse median. Second submarginal cell broad, receiving first recurrent nervure in middle. Small joints of tarsi ferruginous. Abdomen shining, not punctured; second and following segments with well defined creamy white hair bands, on second failing in middle; hair at apex pale golden reddish.

*Type*.—Cat. No. 18133, U.S.N.M.

In the table *A. vegana* is separated from *A. fragariana* and *A. illinoensis* by the granular metathoracic inclosure, that of the other two being rugulose.

*A. subtrita* Cockerell, from Nevada, is (female) 9 mm. long, with white hair bands on abdomen. It is easily distinguished from *A. vegana* by its much larger size.

d<sup>16</sup>. Small males with flagellum bright ferruginous beneath.

*ANDRENA SALICINELLINA*, new species.

Clear Creek, Colorado. (No. 5840.)

*Male*.—Length, 6½ mm. Black, with a distinct bluish metallic tint, the scutellum brassy. Pubescence dull white, faintly yellowish

on thorax above. Head ordinary; facial quadrangle about as wide as long, broadening above; process of labrum truncate; clypeus minutely punctured, almost hidden by dense hair; flagellum except first joint bright ferruginous beneath. Third antennal joint short, but considerably longer than the very short fourth and nearly as long as the fourth and fifth combined. Mesothorax dullish, microscopically tessellate; scutellum shining; area of metathorax blue-black, granular, not distinctly defined. Tegulae light rufotestaceous. Wings reddish hyaline; nervures and the large stigma amber color. Basal nervure meeting transverse median. Second submarginal cell narrow, receiving first recurrent nervure beyond the middle; third submarginal long. Tarsi clear ferruginous. Abdomen shining, not punctured; hind margins of segments light reddish, with thin narrow white hair bands, failing in middle on segments 1 to 3. Second segment in middle depressed little more than one-fourth. Apical plate emarginate, a very long fringe of hair extending beyond it.

In the table this falls in a couplet with *A. nigrae*, from which it is separated by the uniformly blackish (not reddish brown) abdomen.

*Type*.—Cat. No. 18134, U.S.N.M.

*♂*<sup>16</sup>. Small males with flagellum dark beneath.

ANDRENA POLYGONI, new species.

Florissant, Colorado. (T. D. A. Cockerell.) Flying around *Ribes*. July 17.

*Male*.—Length, 6 mm. Black, the dull finely striate front blue-black. Pubescence long and white, dark brown on scape and at sides of face. Mandibles bright red at apex, with a prominent inner tooth; process of labrum broad, truncate; clypeus shiny, with distinct but not dense punctures; cheeks broad; flagellum dark brown beneath. Third antennal joint hardly twice as long as fourth; fifth distinctly longer than fourth. Mesothorax dullish, hardly sculptured; area of metathorax dull and granular. Tegulae rufo-piceous. Wings hyaline, slightly brownish; stigma and nervures dark red brown. Basal nervure falling short of transverse median. Second submarginal cell receiving first recurrent nervure well beyond middle. Hair on inner side of tarsi pale yellowish. Spurs cream color. Abdomen shining, with very minute sparse punctures, the surface more or less hoary with pale hair. The hind margins of segments 3 to 5 and the second at sides with well defined hair bands. Apical plate rather narrow, truncate.

*A. polygoni* has longer antennae than *salicinellina*, and long black hair at sides of face (the hair of face in *salicinellina* and *placitae* is all white).

*A. vegana* has light orange stigma and nervures, entirely different from *polygoni*.

*A. paenenigra* might be sought here, but is described below, as the abdomen is hardly metallic; so also *A. antonitonis*, which has three clear white hair bands.

*Type*.—Cat. No. 18135, U.S.N.M.

*b*<sup>15</sup>. Species without blue or green color, or if so, with light face-markings.

*a*<sup>18</sup>. Face-markings light, yellow or white; males.

*a*<sup>19</sup>. Clypeus only light.

*a*<sup>20</sup>. Clypeus white.

*ANDRENA VESTALI DOLICHOCERA*, new variety.

Sioux County, Nebraska. May.

*Male*.—Length, 10 mm. Black, the small joints of tarsi dark reddish. Clypeus, except lower margin and two spots, creamy white, shining, with sparse feeble punctures. Pubescence very pale ochreous white on vertex and mesothorax, but distinctly ochreous on pleura, cheeks, face, and metathorax. Head broad; process of labrum broad and low, truncate; sides of front dull and granular; cheeks normal, rather shining; antennae rather short for a male, flagellum obscure reddish brown beneath. Third antennal joint fully twice as long as fourth; fourth broader than long, fifth about as broad as long. Mesothorax dullish, well punctured; metathorax granular, the area defined by an impressed line. Tegulae dark in front, red behind. Wings hyaline, faintly brownish; stigma and nervures dark reddish. Basal nervure meeting transverse median; first recurrent nervure joining second submarginal beyond the beginning of its last third; third submarginal cell long, spurs dark. Abdomen shining, with only piliferous punctures, hoary with short pale hair, but no bands; hind margins of segments broadly reddish; second segment in middle depressed about one-third. Apical plate inversely heart shaped, strongly emarginate. (This is clearly a variety of *A. vestali* Cockerell, with pale hair and smoother abdomen.)

*b*<sup>20</sup>. Clypeus yellow; basal nervure going a little basad of transverse median; flagellum red beneath.

*a*<sup>21</sup>. Flagellum short like that of a female.

*ANDRENA BERKELEYI*, new species.

Berkeley, Colorado. (Baker, 5833.)

*Male*.—Length, 9 mm. Black, small joints of tarsi dull ferruginous. Clypeus reddish white, doubtless very pale yellow in life, with two triangular black marks, each sending a linear process upward. Pubescence dull white, long on thorax above, scanty on abdomen, not forming bands. Head very broad; process of labrum broadly truncate, with a depression in middle above; malar space short; lower margin of clypeus arched, with projecting lateral angles, and dark colored, the light areas not extending either to the margin or to the sides below; clypeus distinctly, not very densely punctured, no

smooth median line; sides of front dull and depressed; vertex short; cheeks short, shining; antennae short, looking like those of a female, the flagellum bright ferruginous beneath except basally. Third antennal joint very much longer than fourth; fifth very short, much broader than long. Mesothorax moderately shining, with distinct but small and not crowded punctures. Scutellum strongly shining. Metathorax dull and granular, the triangular area merely defined by a depressed line. Tegulae dusky testaceous. Wings clear hyaline, nervures and stigma light reddish. Basal nervure going some distance basad of transverse median, first recurrent nervure joining second submarginal at middle; second transverse cubital wanting on one side. Abdomen shining, but well though not densely punctured; hind margins of segments rather broadly pallid; second segment in middle depressed hardly one-half. Apical plate broadened at end like an ax blade. End of sixth ventral segment turned up and projecting at sides.

*Type*.—Cat. No. 18136, U.S.N.M.

In the key, this falls close to *A. permittis*, but has brownish tarsi, those of *permittis* being stramineous. Its closest ally is a species still undescribed.

*b*<sup>21</sup>. Flagellum very long.

ANDRENA CHEYENNORUM, new species.

War Bonnet Canyon, Sioux County, Nebraska. June 4, 1902. On *Symphoricarpus*. (M. Cary.)

*Male*.—Length, 9½ mm. Black, all the tarsi clear ferruginous. The very long flagellum chesnut red beneath except the first joint. Clypeus, except two triangular spots and lower edge, light yellow, but no lateral marks. Head rather oblong, facial quadrangle longer than broad. Malar space rather large. Mandibles not elongate, process of labrum emarginate. Clypeus, which is high, smooth, and sparsely punctured, with no median line. Cheeks ordinary. Third antennal joint longer than fourth, but fourth longer than broad. Hair of head and thorax very pale ochreous. Mesothorax rather shining, very feebly punctured. Area of metathorax dull and granular. Tegulae dark reddish. Wings reddish hyaline, faintly dusky at apex; stigma and nervures bright amber; basal nervure meeting transverse median; first recurrent nervure joining second submarginal before middle; third submarginal cell very long. Abdomen shining, hardly punctured, hind margins of segments brownish; second and following segments with rather distinct white hair bands, failing in middle on second and third. Apical plate very broad at end, truncate and ciliate.

*Female*.—(With same data as male.) Length, 11 mm. Pubescence more brightly colored, pale orange on hinder part of thorax above,

on hind tibiae and on tarsi, which are ferruginous. Hair on hind knees red. Head oblong, face narrower than in male, facial quadrangle much longer than broad, the wholly black clypeus convex, prominent, shining, with scattered punctures. Third antennal joint nearly twice as long as fourth; fifth no longer than fourth. Facial foveae seen from above pale yellowish, occupying less than half space between antenna and eye; below they narrow, ending a short distance from orbital margin a little below level of antennae. First abdominal segment without hair bands; second to fourth with dense and conspicuous creamy white bands, that on second narrowly interrupted in middle. Fifth segment and apex with light red hair, having a sort of apricot tint.

In the key, this falls in the group of *A. bradleyi*, from which it is separated thus:

Females:

Inclosure of metathorax appearing reticulate owing to the presence of crooked plicæ; caudal fimbria brown.....*bradleyi*.  
 Inclosure granular; fimbria golden.....*cheyennorum*.

Males:

Tarsi blackish.....*bradleyi*.  
 Tarsi stramineous.....*cheyennorum*.

The light tarsi also separate *cheyennorum* at once from *A. saccharina* Cockerell and Rohwer.

*b*<sup>19</sup>. Clypeus and lateral face-marks light.

*a*<sup>22</sup>. Lateral face-marks large, filling space between clypeus and eye.

*a*<sup>23</sup>. Flagellum dull red beneath; the small triangular area of metathorax conspicuous because bounded by pale hair.

ANDRENA MOQUIORUM, new species.

Flagstaff, Arizona. August, 1902. (Snow, No. 339.)

*Male*.—Length, 9 mm. Black, the legs and abdomen very dark rufous; clypeus, a triangular supra-clypeal mark and large, nearly equilateral lateral areas cream color. Head very broad; mandibles long and slender, simple; malar space hardly developed; process of labrum narrow, rounded, prominent. Pubescence rather dull white, very faintly tinged with ochreous on thorax above. Clypeus feebly punctured; cheeks broad, angled below; flagellum dull pale reddish beneath. Third antennal joint about twice as long as fourth, and distinctly longer than fifth. Mesothorax dullish, with very minute inconspicuous punctures. Metathorax small, the triangular basal area defined only by absence of hair, its basal middle with slight rudimentary plicæ. Tegulae shining brown. Wings hyaline, dusky apically; the nervures and rather small stigma dark reddish. Basal nervure falling a considerable distance short of transverse median. Second submarginal cell large, receiving first recurrent nervure well beyond middle. Spurs pallid. Abdomen shining, feebly punctured; hind margins of segments with dense rather

narrow hair bands, that on second interrupted in middle, and that on first only present on sides; second segment depressed hardly one-third in middle. Apical plate broadly rounded at end.

In the key this falls in a couplet with *A. cressoni kansensis*, from which it is separated by the brownish hind tibiae (stramineous in *kansensis*).

*b*<sup>23</sup>. Flagellum dark; area of metathorax not conspicuous as in *A. moquiorum*.

ANDRENA LATISIGNA, new species.

Placita, New Mexico. April 25, 1903. (T. D. A. and W. P. Cockerell.)

*Male*.—Length, 8½ mm. Black, the clypeus except two spots and broad lateral marks filling space between clypeus and eye except a small triangle just below each antennae, primrose yellow; tarsi and greater part of hind tibiae ferruginous. Pubescence pale ochereous. Head large and very broad. Process of labrum truncate. Antennae dark; third joint nearly as long as next two together; the fourth very short. Cheeks broad, hairy, dullish, not angled behind. Mesothorax and scutellum somewhat shiny, hardly punctured. Area of metathorax roughened. Tegulae brown with testaceous margins. Wings dusky hyaline, nervures and stigma clear ferruginous. Basal nervure meeting transverse median. First recurrent nervure received by second submarginal at or a little beyond middle. Abdomen with very small but distinct punctures on the first three segments; hind margins of second and following segments reddish, with rather inconspicuous grayish white hair bands, interrupted in middle of second. Second segment in middle depressed about one-third. Apical plate extremely narrow, slightly emarginate.

This is easily known from *A. bridwelli* by the large lateral face-marks, face-marks all light chrome yellow, and all tarsi red.

In the key it falls next to *A. miserabilis*.

*b*<sup>22</sup>. Lateral face-marks not filling space between clypeus and eye.

*a*<sup>24</sup>. Abdomen blue; first recurrent nervure joining second submarginal cell before middle (not so in *bruneri* and *lawrencei*, which are not females of this group).

*a*<sup>25</sup>. Hair of thorax above light ochreous.

ANDRENA LARAMIENSIS, new species.

Laramie, Wyoming. "6, 9, 93."

From collection of Prof. L. Bruner but collected by Professor Buffum.

*Male*.—Length about 10 mm. Head, thorax, and legs black, the small joints of tarsi dark reddish. Abdomen shining, dark greenish blue, apical margin of segments obscurely reddish. Clypeus except lower edge and two spots and rather large lateral marks not reaching

orbital margin, cream color. Hair of head and thorax long and shaggy, very pale ochereous; facial quadrangle broader than long; mandibles red at apex; process of labrum feebly emarginate. Antennae thick, flagellum obscurely reddish beneath. Third antennal joint about one-third longer than fourth, which is somewhat swollen; fifth a little longer than fourth. Clypeus and sides of face shining, with distinct and well separated punctures; sides of front rather shining, coarsely striate; vertex granular, narrow. Cheeks normal, very hairy. Mesothorax and scutellum shining, with small punctures; area of metathorax coarsely granular. Tegulae shining rufopiceous.

Wings hyaline, broadly dusky at apex; stigma and nervures amber color. Basal nervure falling short of transverse median. Second submarginal cell narrowed above, receiving first recurrent nervure about the end of its first third. Hair on inner side of tarsi bright orange. Abdomen shining, finely punctured; second segment in middle depressed much less than one-third. Dorsal surface of abdomen hoary with short thin pale hair which becomes longer and denser at sides, but does not form any distinct bands. Hairs at sides of abdomen beneath orange tinted. Apical plate very small and narrow.

♂<sup>26</sup>. Hair of thorax above white.

*ANDRENA LARAMIENSIS*, variety A.

War Bonnet Canyon, Sioux County, Nebraska. May 27, 1901. (M. A. Carriker.)

*Male*.—Length, 9 mm. Head black with the front dark blue. Thorax black, legs brown-black, the tarsi red at apex. Abdomen steel blue, the hind margins of the segments purplish red; clypeus, except two black spots and lower edge and subtriangular lateral marks not quite reaching eyes, light yellow. Head broad, eyes diverging above; process of labrum emarginate; mandibles red at apex; clypeus shining, rather sparsely punctured; front striate; cheeks normal, broad above. Third antennal joint not twice as long as fourth. Vertex, cheeks, thorax, and femora with much long dull white hair. Tibiae and tarsi with hair slightly ochereous. Mesothorax shining on disk and hardly punctured. Area of metathorax small, dull, and granular. Tegulae piceous. Wings hyaline, faintly brownish; nervures and the slender stigma amber color. Basal nervure falling short of transverse median. Second submarginal cell receiving first recurrent nervure near end of its first third. Third submarginal very broad above. Abdomen shining, with very fine punctures, covered with short white hair not hiding the surface, denser at sides but not forming distinct bands. Apical plate emarginate.

Related to *A. laramiensis*, with which it agrees in the tegumentary colors and the venation. The lateral face marks do not project

above so much as in *A. laramiensis*, and the hair of the thorax is much paler. (After close study, I can only consider this a variation of *laramiensis*. In the key it is separated on the proportions of the antennal joints.)

*b*<sup>24</sup>. Abdomen black; first recurrent nervure joins second submarginal cell before middle.

ANDRENA TETONORUM, new species.

Sioux County, Nebraska. May. (L. Bruner.)

*Male*.—Length, 9 mm. Black, small joints of the tarsi reddish, clypeus except lower edge and two black spots and narrow lanceolate lateral marks close to sides of clypeus but only touching at lower end, creamy white. Head broad; process of labrum emarginate; clypeus shining, with strong but not dense punctures; front and vertex dull; cheeks normal; flagellum obscurely brownish beneath except at base. Third antennal joint about twice as long as fourth; fifth only about as long as fourth. Head and thorax with abundant long creamy white hair. Mesothorax dull, with small punctures; scutellum shining anteriorly; area of metathorax granular, defined by absence of hair. Tegulae dark red-brown. Wings reddish hyaline, stigma and nervures amber color, the nervures on basal part of the wing becoming fuscous; stigma rather small. Basal nervure meeting transverse median. First recurrent nervure joining second submarginal cell before middle. Third submarginal rather short. Spurs cream color. Abdomen shining, without evident punctures; hind margins of the segments with thin white hair bands, that on first very feeble. Hair on under side of apical half of abdomen yellowish.

(The form next described is in my opinion conspecific with *A. tetonorum*, though it is smaller, and is separated in the key on the proportions of the antennal joints.) *A. tetonorum* falls in the key close to *A. cressoni kansensis*, from which it is separated by the indistinctly punctured abdomen.

ANDRENA TETONORUM, variety A.

Sioux County, Nebraska. (L. Bruner.)

*Male*.—Length, 8½ mm. The rather short antennae and dense orange hair at apex of abdomen make it look like a female. Black, the small joints of tarsi ferruginous. Clypeus, except two spots on lower edge and very small elongate lateral marks close to sides of clypeus, cream color. Pubescence light ochreous. Head ordinary, facial quadrangle broader than long. Process of labrum emarginate. Clypeus sparsely and feebly punctured, more strongly at sides. Flagellum very dark reddish beneath. Third antennal joint long, fully as long as the next two joints together, but the fifth is quite short. Mesothorax dull, feebly punctured; scutellum shining in front; area of metathorax dull and granular. Tegulae piceous with pallid mar-

gins. Wings reddish hyaline, nervures and stigma clear amber. Basal nervure just short of transverse median. Second submarginal cell receiving first recurrent nervure before middle. Third submarginal short. Spurs ferruginous. Abdomen shining, with only weak piliferous punctures. Hind margins of segments with creamy white hair bands. Second segment in middle depressed less than one-third. Abdominal segments beneath fringed with ferruginous hair. Apical plate truncate.

*A. lappulae* is very close to this, but has the head broader and shorter, pubescence paler (not pale orange or fulvous on abdomen beneath, as it is in *tetonorum*), lateral face-marks larger, stigma distinctly margined.

$\delta^{18}$ . No light face-markings (except in *A. colletoides*).

$\alpha^{26}$ . Large robust species, 15 mm. long or over.

$\alpha^{27}$ . Pleura and cheeks with black hair; wings dark.

ANDRENA CARLINIFORMIS, new species.

“Sierra Madre, 8,000 [feet] altitude. California.” (Collector and history unknown.)

*Female*.—Length, 16 mm. Black, the small joints of the tarsi more or less reddish, the flagellum hardly noticeably brownish. Pubescence black, except on thorax above, tubercles and middle of metathorax, where it is yellowish white. Facial quadrangle broader than long. Process of labrum narrowly truncate, conspicuously thickened at end. Clypeus shining, strongly and closely punctured, with a smooth median ridge. Facial foveae seen from above very dark gray, very broad, ending broadly below at about level of top of clypeus. Third antennal joint shorter than next three combined. Mesothorax and scutellum so densely covered with hair that the surface can not be seen, but it is not shining. Area of metathorax dull, feebly transversely wrinkled. Tegulae piceous. Wings dark fuliginous, slightly violaceous. Nervures and the very small stigma piceous. Basal nervure meeting transverse median. Second submarginal cell receiving first recurrent nervure a little beyond middle. Third submarginal greatly narrowed above. Legs with black hair. Hind femora with the tegument red beneath. Abdomen shining, without distinct punctures, and with no hair bands.

This is very like *A. perimelas*, but considerably more slender; stigma smaller and darker (red in *perimelas*), third transverse cubital with a double curve (upper end straight in *perimelas*), tubercles and middle of metathorax with light hair.

$\delta^{27}$ . Pleura and cheeks with reddish or fulvous hair.

$\alpha^{28}$ . Abdomen distinctly punctured; hair of hind tibiae very pale fulvous.

## ANDRENA HELIANTHIFORMIS, new species.

Montana.

*Female*.—Length, 15 mm. Black; small joints of tarsi reddish. Pubescence ochreous, short, brightly colored, and quite dense on thorax above. Upper side of abdomen with thin short erect white hair, but not hiding surface. Facial quadrangle a little broader than long. Process of labrum very broadly truncate, faintly emarginate. Clypeus shining, with sparse distinct punctures and a faint median ridge, its lower margin overlapped by long brownish hairs. Facial foveae seen from above cream color, occupying about half space between eye and antennae; they do not extend below level of antennae. Flagellum beneath ferruginous except at base, and above the apical margins of the joints are red. Third antennal joint as long as next three together. Mesothorax dull, finely punctured, surface almost hidden by hair. Area of metathorax granular. Metathorax distinctly truncate posteriorly. Tegulae ferruginous. Wings dark red brown; nervures fuscous, the small slender stigma darker. Basal nervure meeting transverse median. Transverse median strongly bent near lower end. Second submarginal cell extremely broad, receiving first recurrent nervure beyond middle. Hair on hind tibiae loose, ochreous; abdomen dull, with small, numerous punctures, hair bands very thin; hair at apex light brownish ferruginous; second segment in middle depressed about one-third.

*Type*.—Collection of the American Entomological Society.

Resembles *A. haynesi*, but readily distinguished by the shining clypeus, light tegulae, and distinctly punctured abdomen. Compared with *A. helianthiformis*, *A. sayi* has a much more shiny abdomen and much broader facial foveae.

♂<sup>28</sup>. Abdomen minutely indistinctly punctured; hair of hind tibiae dark brown.

## ANDRENA HAYNESI, new species.

War Bonnet Canyon, Nebraska. June 24, 1901. On *Helianthus*. (J. C. Crawford.)

*Female*.—Length, 16 mm. Robust, black. Head and thorax with rather short dense fulvous hair. Hair of middle and hind tibiae and tarsi brownish black, that of hind femora of the same color except at base, otherwise hair of legs fulvous. Facial quadrangle broader than long; malar space distinct; process of labrum emarginate, the labrum below the process densely fringed with red hair. Clypeus with rather close small punctures. Facial foveae seen from above light reddish, occupying fully two-thirds space between eye and antenna; below they end close to eye, a little below level of antennae. Flagellum with the apical part bright red beneath. Third antennal joint as long as the

following three together. Mesothorax dull, almost entirely concealed by hair. Area of metathorax small, irregularly, transversely, wrinkled, the margins smooth but not shining. Tegulae piceous. Wings strongly brownish, the broad apical margins darker. Stigma slender and small, blackish, but a bright red spot at its base; nervures dusky ferruginous, some lighter than others. Basal nervure meeting transverse median. Second submarginal cell very broad, its lower inner corner produced, the first recurrent nervure joining it before the middle. Abdomen broad and flattish, not punctured; first segment with hind margin red; sides of segments with short reddish hair forming interrupted band on third and complete one on fourth; hair at apex dense, reddish brown.

Distinguished from *A. pecosana* by the darker pubescence and much larger size.

*Type*.—Cat. No. 18139, U.S.N.M.

*b*<sup>26</sup>. Less than 15 mm. long.

*a*<sup>29</sup>. Males.

*a*<sup>30</sup>. Abdomen dull, with dense entire hair bands; legs red; clypeus and lateral face marks yellow.

ANDRENA COLLETOIDES, new species.

Colorado. (Snow, 1030.)

*Male*.—Length, 10 mm. Black; legs ferruginous, blackish at base; clypeus except lower edge, and small lateral face marks receding from eye and following sides of eye, yellow. Pubescence grayish white, very abundant on head and thorax and first abdominal segment, remaining abdominal segments thinly covered with pubescence, and all with thick, shaggy apical hair bands.

Head ordinary; facial quadrangle about square, somewhat broadened above. Process of labrum emarginate. Clypeus shining, with distinct scattered punctures. Vertex moderately shining. Cheeks normal, very hairy. Flagellum red, brighter beneath, blackened at base. Third antennal joint nearly twice as long as fourth and longer than fifth. Mesothorax dullish, very feebly punctured; the small long-triangular area of metathorax dull and granular, only defined by absence of hair; tegulae warm reddish testaceous. Wings clear hyaline, the small narrow stigma and the nervures testaceous. Basal nervure falling a trifle short of transverse median. Second submarginal cell very large, receiving first recurrent nervure beyond middle. Abdomen dull, not evidently punctured. Apical plate narrow, emarginate.

In the key this is separated from *A. vernoni* by the whitish pubescence.

The male of *A. costillensis* resembles this as to bands, but the clypeus is black, and the legs are not red.

*b*<sup>30</sup>. Abdomen with weak bands or none.

*a*<sup>31</sup>. At least the hind tarsi ferruginous (light brown in *navajorum*).

*a*<sup>32</sup>. Abdomen without hair-bands; flagellum bright red beneath; cheeks very broad.

ANDRENA SUBAUSTRALIFORMIS, new species.

Colorado. No. 2112. (Gillette.)

*Male*.—Length, about 9 mm. Black; the tarsi bright ferruginous and the flagellum except the first joint bright ferruginous beneath. Pubescence pale ochreous, long on head and thorax. Head large and broad, facial quadrangle much broader than long. Mandibles long, curved downward, red at tip; process of labrum emarginate; clypeus very finely punctured, almost hidden by long hair; sides of front dull, finely striate; cheeks shining, very broad, obtusely angled behind a little above the middle, but neither toothed nor with a sharp marginal keel. Third antennal joint not much longer than fourth, and only a trifle longer than fifth. Tegulae reddish; wings hyaline, tinged with red, a little dusky apically, stigma and nervures clear amber. Basal nervure meeting transverse median or falling a little short of it. Second submarginal cell receiving first recurrent nervure in middle. Sculpture of thorax essentially as in *A. moesticolor*. Spurs ferruginous. Abdomen shining, without evident punctures, hind margins of segments obscurely reddish in some lights. Second segment in middle depressed less than one-third. A fine soft pubescence all over segments but no hair bands. Apical plate narrow.

This is easily distinguished from *A. occidentialis* by the structure of the cheeks.

*Type*.—Cat. No. 18140, U.S.N.M.

*b*<sup>32</sup>. Abdomen with evident hair bands.

*a*<sup>33</sup>. Flagellum bright ferruginous beneath; cheeks angled behind.

ANDRENA CANADENSIS OSLARELLA, new subspecies.

Denver, Colorado. 5562. (Oslar.)

*Male*.—Length, 8 mm. Black, with ferruginous tarsi and the flagellum light ferruginous beneath except at base. Pubescence grayish white, not at all yellowish. Head very broad. Process of labrum emarginate. Clypeus shining, with numerous minute punctures; no smooth line or ridge. Third antennal joint a little shorter than the next two combined. Cheeks broad, shining, angled behind, the angle about level with middle of eye. Mesothorax and scutellum shining, not evidently punctured. Area of metathorax dull and granular. Tegulae rufotestaceous. Wings clear hyaline, slightly milky; stigma and nervures ferruginous; stigma dusky margined. Basal nervure falling a little short of transverse median. Second submarginal cell receiving first recurrent nervure a little beyond middle or practically

at middle. Spurs white. Abdomen shining, without evident punctures. Hind margins of second and following segments with thin but entire white hair bands. Apical plate truncate.

*Type*.—Cat. No. 18141, U.S.N.M.

The cheeks and top of head are quite different from those of *A. occidentalis*.

In the key this falls in a couplet with *canadensis*, and is distinguished by the "hind metatarsi yellowish stramineous."

$\delta^{33}$ . Flagellum dark.

$\alpha^{34}$ . Head very large, with broad shining cheeks, which have a sharp rim behind; legs reddish brown.

*ANDRENA NAVAJORUM*, new species.

Albuquerque, New Mexico. (Osler.)

*Male*.—Length, 8 mm.

Very close to *A. occidentalis* variety *A*, but smaller. Clypeus without well defined median depression. Cheeks not angled behind but with same sharp raised border. The tarsi and hind tibiae rather light brown.

*Type*.—Cat. No. 18142, U.S.N.M.

$\delta^{34}$ . Head ordinary.

*ANDRENA AGRICOLARUM*, new species.

Fort Collins, Colorado. May 12, 1903. (Colorado Agricultural College.)

*Male*.—Length, nearly 8 mm. Black, with dull white hair, pale ochereous on thorax above. Head broad, but otherwise ordinary. Facial quadrangle considerably broader than long. Mandibles short. Process of labrum small and narrow. Clypeus shining, rather sparsely punctured. Vertex dull and depressed on each side of ocelli, but a shining ridge between vertex and cheeks. Antennae slender, flagellum dark reddish beneath. Third antennal joint little longer than fourth, but not nearly as long as fourth and fifth combined. Mesothorax slightly shining, feebly punctured. Area of metathorax dull and granular. Tegulae rufopiceous. Wings hyaline, faintly reddish, slightly dusky at apex. Stigma and nervures clear amber color, the outer nervures more or less fuscous. Basal nervure meeting transverse median. Second submarginal cell narrow, receiving first recurrent nervure a little beyond middle. All the tarsi clear ferruginous. Abdomen black, not at all metallic, not evidently punctured, the segments dark reddish apically; third and following segments and second at sides with white hair bands; second segment in middle depressed hardly a third. Apical plate very small and narrow, truncate, surrounded by hair, but without long fringe extending beyond.

In the key this falls next to *A. viburnella*, which is considered a subspecies of *A. perplexa*.

*Type*.—Cat. No. 18165, U.S.N.M.

$\delta^{31}$ . Tarsi dark.

$\alpha^{35}$ . Large species, anterior wing 10 mm. long; with fulvous or ferruginous hair. (See *A. jockorum*, under *Trachandrena*, above.)

$\delta^{35}$ . Small, or if approaching size of *A. jockorum*, hair not red. None have flagellum brightly colored beneath.

$\alpha^{36}$ . Sides of front with black hair. (If hair of face all black, see *A. nigrihirta* and *A. micranthophila*.)

$\alpha^{37}$ . Hair of thorax above ferruginous.

$\alpha^{38}$ . Larger; cheeks very broad, shining, angled behind; head very large.

#### ANDRENA HEMILEUCA Viereck.

East of Lake George, Colorado. June 18. (S. A. Rohwer.)

*Male*.—Length, about 10½ mm. Black, the tarsi reddish apically, the hind tarsi entirely dark reddish. Pubescence pale fulvous, black at sides of face and top of cheeks. Head large and broad; facial quadrangle much broader than long. Process of labrum deeply emarginate. Mandibles long, curved downward, red at end. Clypeus brilliantly shining, sparsely punctured. Antennae black; third joint little longer than fourth and about equal to fifth. Cheeks very broad, smooth and shining, produced nearly to a right angle behind. Mesothorax hardly punctured, dull in front, shining behind. Scutellum shining. Area of metathorax dull and granular. Tegulae rather light reddish. Wings hyaline, faintly dusky; stigma and nervures ferruginous; stigma very bright; outer nervures becoming fuscous. Basal nervure falling just short of transverse median. Second submarginal cell very broad, receiving first recurrent nervure very near its end. Abdomen shining, not punctured, with thin reddish hair forming very thin inconspicuous bands; second segment in middle depressed hardly one-fourth. Apical plate narrow, not emarginate.

(This is determined as *A. hemileuca* by Viereck; the original *hemileuca* came from Washington and Oregon, and was based on the female, which is 10 mm. long. Female *A. hemileuca* is shown in the key to have the following characters: Most dorsal abdominal segments impunctate or indistinctly punctured; second dorsal segment with more or less abundant erect or nearly erect hair; hair of scopa pale; dorsal segments with dark hairs; posterior tibiae blackish; pubescence of face concolorous, all black; clypeus coarsely punctured. Male *A. hemileuca* is shown in the key to have the facial tegument all dark; third antennal joint shorter than fourth; cheeks angled, the angle opposite middle of eye. The male falls in a couplet with *A. integra*.)

$\delta^{38}$ . Smaller; cheeks dullish, not very broad.

*ANDRENA WASHINGTONI MANITUOENSIS*, new subspecies.

Manitou, Colorado. April 28. At flowers of *Ribes leptanthum*. (T. D. A. and W. P. Cockerell.)

*Male*.—Length slightly over 8 mm. Black, with pale reddish hair, that on thorax above quite bright. Sides of face and anterior part of cheeks above with black hair. Head broad but otherwise ordinary; facial quadrangle very much broader than long. Process of labrum emarginate. Clypeus shining, rather well punctured; front dull. Head behind and above eyes broad and flattened. Antennae long but rather thick, entirely black; third joint little longer than fourth and about equal to fifth. Mesothorax dull, not evidently punctured; area of metathorax granular. Spurs cream color. Tegulae dark reddish. Wings hyaline, faintly dusky, nervures and the large stigma dull amber. Basal nervure falling short of transverse median. Second submarginal cell small, receiving first recurrent nervure in middle. Abdomen rather slender, shining, without evident punctures, with very thin inconspicuous pale reddish hair bands, absent on first segment and broadly interrupted in middle of next three. Second segment in middle depressed about one-third. Apical plate small, not emarginate, almost hidden in light reddish hair.

In the key this is separated from *A. washingtoni* by the nonfasciate abdomen.

*b*<sup>37</sup>. Hair of thorax above ochreous or white.

*a*<sup>39</sup>. Second submarginal cell receiving first recurrent nervure far beyond middle.

*a*<sup>40</sup>. Pubescence white; cheeks very broad, tuberculate-angled behind above level of middle of eye; scutellum dullish anteriorly.

*ANDRENA MOESTICOLOR*, new species.

South Park, Colorado. July 23, 1898.

*Male*.—Length, 9 mm. Black. The tarsi ferruginous apically, the basitarsi also more or less reddish. Pubescence long and white; black at sides of face above. Head very large and broad. Mandibles long and curved downwards, red at apex. Process of labrum slightly emarginate. Clypeus rather closely punctured, with a narrow median smooth hue. Sides of front and vertex dull and finely striate. Cheeks extremely broad, shining, toothed behind a little above the middle. Flagellum obscure brownish beneath. Third antennal joint about a third longer than fourth, fifth a little longer than fourth. Mesothorax dull and granular, the posterior middle moderately shining; area of metathorax short, dull and granular. Tegulae ferruginous, clouded with darker; wings hyaline, very faintly reddish; nervures and stigma dark reddish. Basal nervure just falling short of transverse median. Second submarginal cell large and square, receiving first recurrent nervure about the beginning of its last third. Spurs cream color. Abdomen rather narrow, brilliantly

shining, without evident punctures; hind margin of first segment narrowly and the following ones broadly dark red; second segment in middle depressed more than one third. No hair bands. Apical plate large, emarginate.

*Type*.—Cat. No. 18143, U.S.N.M.

In the key this falls near *A. mentzeliae*, from which it is separated by its smaller size. Recently (June 25, 1913) both sexes have been found at Longs Peak Inn, Colorado, visiting flowers of *Potentilla* (T. D. A. and W. P. Cockerell). The female is remarkable for the short hair on the hind tibia. It resembles *A. birtwelli* in appearance.

*♂*<sup>40</sup>. Pubescence ochreous; cheeks not angled-tuberculate behind in the type, but this character seems variable; scutellum brilliantly shining anteriorly.

ANDRENA RIBIFLORIS, new species.

Florissant, Colorado. (S. A. Rohwer.) At flowers of *Ribes vallicola*. June 19, 1907.

*Male*.—9 mm. long, slender. Black, with pale pubescence, which is distinctly ochreous on thorax above, more or less fuscous on scape and at sides of face. Head broad, eyes approximately parallel. Facial quadrangle much broader than long. Process of labrum broad, truncate. Mandibles red at apex. Malar space rather large. Clypeus shining, with sparse small punctures. Front minutely striate; cheeks broad, shining, with a distinct angle between cheeks and occiput. Antennae long, flagellum brown beneath. Third antennal joint hardly longer than fourth and not as long as fifth. Mesothorax minutely granular, dullish except posteriorly; scutellum brilliantly shining; area of metathorax dull and granular. Tegulae reddish brown. Wings hyaline, faintly brownish apically; stigma and nervures dark amber color. Basal nervure falling a considerable distance short of transverse median. Second submarginal cell broad, receiving first recurrent nervure near beginning of its last third. Third submarginal long. Tarsi reddish. Abdomen shining, without evident punctures, and with scanty short hair not forming distinct bands. Hind margins of segments dark reddish. Second segment in middle depressed hardly one-fourth. Hair about apex of abdomen with golden tints. Apical plate very small and narrow, truncate.

Readily distinguished from *A. polygoni* by the colors, the venation and the broad head.

*Type*.—Cat. No. 18144, U.S.N.M.

In the key, this falls in a couplet with *A. distans*, and is separated as follows:

Clypeus dull, vertex without blackish hairs.....	<i>distans</i> .
Clypeus shining, vertex with some blackish hairs.....	<i>ribifloris</i> .

(When I examined seven males collected by Mr. S. A. Rohwer at Florissant, June 12-19, six at *Ribes vallicola*, one at *Ribes longiflorum*,

I could not distinctly separate two species, though some were considered to be *ribifloris*, and one was determined as *hemileuca* by Mr. Viereck. In the present paper I give characters to separate the described specimens of *hemileuca* and *ribifloris*, but the matter needs further investigation. In the key, they separate on the character of the antennae, *hemileuca* having the third joint shorter than the fourth, which is not true of *ribifloris*.)

$\delta^{39}$ . Second submarginal cell receiving first recurrent nervure at or near middle.

$a^{41}$ . Cheeks strongly angled behind; abdomen not evidently banded.

*ANDRENA ENIGMATICA*, new species.

Lincoln, Nebraska. April 25, 1901. On willow. (M. A. Carriker.)

*Male*.—Length,  $8\frac{1}{2}$  mm. Black, slender, with long pale hair distinctly tinged with ochreous on scutellum; some fuscous hairs at sides of front. Head large and broad, facial quadrangle very much broader than long. Mandibles long and slender, curved downward, red at apex; process of labrum truncate; clypeus moderately shining, with rather shallow punctures; sides of front dull and finely striate. Antennae long and slender, flagellum obscure brown beneath. Third antennal joint not quite twice as long as fourth; fourth longer than broad; fifth conspicuously longer than fourth. Cheeks shining, very broad, triangular, produced to a right angle behind. Mesothorax dull and granular. Scutellum shining in front. Metathorax granular, the area very small. Wings hyaline, dusky at apex, stigma and nervures dull amber. Basal nervure falling short of transverse median. Second submarginal cell broad, receiving first recurrent nervure beyond middle. Hind legs long and slender. Abdomen narrow, shining, impunctate, with scattered pale hair not forming well-defined bands. Hind margins of segments obscurely reddish. Second segment in middle depressed less than a third. Apical plate rather broad, not emarginate.

*Type*.—Entomological collection of the University of Nebraska.

In the key, this falls close to *A. moesta albivirata*, from which it is known by the absence of black hair on the cheeks.

$b^{41}$ . Cheeks not angled behind; abdomen subfasciate.

$a^{42}$ . Fourth antennal joint conspicuously longer than broad; hair of face creamy white; basal nervure falling short of transverse median.

*ANDRENA CANDIDIFORMIS*, new species.

Colorado. (Gillette, No. 2112.)

*Male*.—Length, 7 mm. Black; small joints of tarsi ferruginous; hair grayish white, pale ochreous on thorax above, black at sides of front. Head broad but otherwise ordinary. Facial quadrangle much longer than broad. Process of labrum broad, truncate; man-

dibles not elongate; clypeus moderately shining, with weak punctures; front dull. Antennae long and slender, flagellum dark brown beneath. Third antennal joint shorter than fourth; fifth about as long as fourth. Mesothorax dull, scutellum shining in front. Area of metathorax granular, rather large. Tegulae dark brown; wings reddish hyaline; nervures and the large stigma rather dark amber. Basal nervure falling short of transverse median. Second submarginal cell receiving first recurrent nervure in middle. Third submarginal short. Hair on inner side of hind tarsi creamy white. Abdomen shining, without evident punctures, thinly hairy, with indications of bands at sides of segments; hind margins of segments dark reddish. Second segment in middle depressed not quite one-third. Apical plate emarginate.

*Type*.—Cat. No. 18146, U.S.N.M.

The following is taken from the key:

Pubescence of head mostly black; abdomen bluish.....	1
Pubescence of head not mostly black.....	3
1. Abdomen seemingly impunctate.....	2
Abdomen distinctly punctate.....	<i>mimetica</i> .
2. Hardly any pale hair on face.....	<i>candida</i> .
Considerable pale hair on face.....	<i>nigrocaerulea</i> .
3. Pubescence of head partly black.....	4
Pubescence of head all pale.....	<i>trizonata</i> , etc.
4. Antennae black or blackish; abdomen bluish to greenish.....	<i>cerasifolii</i> .
Antennae partly pale.....	<i>candidiformis</i> .

*b*<sup>42</sup>. Fourth antennal joint not longer than broad; hair of face ochreous; basal nervure meeting transverse median, or falling a little short of it.

ANDRENA FERNALDIELLA, new species.

Florissant, Colorado. June 2, 1907. At flowers of *Salix brachycarpa*. (S. A. Rohwer.)

*Male*.—Length, 7½ mm. Black, with pale ochreous hair. Head very broad. Process of labrum broadly truncate. Clypeus shining, finely punctured, covered with long hair. Front dull and flattened. Cheeks broad but not angled. Antennae very long; flagellum obscure brown beneath. Third antennal joint a little longer than fourth, but hardly as long as fifth. Mesothorax and scutellum dull and granular. Area of metathorax with very feeble ridges, producing a sort of rugosity. Tegulae rufopiceous. Wings hyaline, nervures and stigma amber color. Basal nervure meeting transverse median. Second submarginal cell receiving first recurrent nervure beyond middle. Tarsi entirely dark. Abdomen shining, not punctured; hind margins of segments somewhat reddish; second segment in middle depressed scarcely one-third; second and following segments with loose weak hair bands. Apical plate truncate.

(*A. fernaldiella* and *candidiformis* are practically the same except as to the fourth antennal joint. By the antennal characters the male

of *A. atala* falls with *fernaldiella*, and is found on comparison to be nearly the same, but the color of the pubescence is different, and the stigma is much darker. I think they are distinct species. *A. fernaldiella* occurs at *Salix*, but *A. atala* at *Polemonium*.)

b<sup>30</sup>. Sides of front without black hair.

a<sup>43</sup>. Comparatively large species, with large heads.

a<sup>44</sup>. Cheeks in lateral outline gently rounded, their surface granular.

*ANDRENA INTERROGATIONIS*, new species.

Colorado. (C. F. Baker, No. 1858.)

*Male*.—Length, 10½ mm. Black, the tarsi red at apex. Hair grayish white, slightly yellowish on thorax above, a little black at sides of front. Head very large and broad, but the swollen cheeks are neither angled nor sharply margined behind, their surface is dullish except just behind the eyes. Facial quadrangle very much broader than long. Mandibles long but moderately stout. Labrum shining, triangular, without an evident process. Clypeus granular, sides of face dull with sparse weak punctures, the punctures stronger below. Long dark hairs at extreme sides of face. Antennae slender, flagellum dark brownish beneath. Third antennal joint relatively short and broad, hardly longer than fourth and distinctly shorter than fifth. Mesothorax dull, feebly punctured. Scutellum shining in front. Area of metathorax slightly irregularly wrinkled at base. Tegulae piceous. Wings brownish hyaline, nervures and stigma ferruginous. Basal nervure falling just short of transverse median. Second submarginal cell large, receiving first recurrent nervure well beyond middle. Third submarginal very broad above. Spurs pallid. Abdomen broad, moderately shining, with minute feeble punctures; the segments pruinose with short pale hair, but without bands; second segment in middle depressed about one-third. Apical plate large, rounded, but with parallel sides.

*Type*.—Cat. No. 18147, U.S.N.M.

In the key this falls near *A. micranthophila*, differing by the mostly pale hair of head.

b<sup>44</sup>. Cheeks in lateral outline angled, and concave just below the angle.

*ANDRENA OCCIDENTALIS* (Cockerell), variety *A*.

Sapello Canyon, New Mexico. July 28, 1902. (Osler.)

*Male*.—Length, 9 mm. Black, small joints of tarsi reddish. Pubescence ochreous, only moderately dense, but long on head and thorax. Head very large and broad, the eyes converging above, facial quadrangle very much longer than broad. Vertex seen from in front elevated, straight, showing in profile an angle above each eye; cheeks swollen, smooth and shining, extremely broad, obtusely angled behind near middle and with posterior edge bounded by a

sharp and prominent keel; mandibles long and slender, dark red apically and with a small inner tooth. Process of labrum broad and rounded. Clypeus very wide, with a broad median smooth very sparsely punctured microscopically tessellate area, sides with small and rather numerous punctures. Front dull, coarsely vertically striate; sides of vertex smooth and shiny. Flagellum obscurely brownish beneath, first joint dull, contrasting with the remaining joints, which are shining. Third antennal joint not twice as long as fourth; fifth not much longer than fourth. Mesothorax dull in front, but posteriorly shining, with scattered extremely minute punctures; scutellum shining; area of metathorax rather shining, without ridges, but with a median impressed line. Wings strongly brownish, stigma and nervures dark red brown, stigma narrow. Basal nervure falling just short of transverse median. Second submarginal cell large, receiving first recurrent nervure beyond the beginning on its last third. Hind legs long and slender. Abdomen broad and convex, shiny, not evidently punctured, hind margins of segments very obscurely brownish. Pubescence scanty, but forming thin bands at sides of first three segments and entire ones on fourth and fifth.

Apical plate broadly truncate.

(This has the exact structure of *occidentalis*, but the type of that species is smaller, with dull ferruginous hind tarsi, and clear ferruginous tegulae. However, an *occidentalis* from Beulah, Sapello Canyon, New Mexico, no larger than the type, has dark reddish-brown tegulae and hind tarsi dull brown.)

c<sup>4</sup>. Cheeks in lateral outline obtusely angled, without a distinct convexity below the angle; cheeks very broad.

ANDRENA DURANGOENSIS, new species.

Durango, Colorado. May 19, 1899. (Oslar.)

*Male*.—Length, 10½ mm. Black, with long grayish white hair, a little black at sides of front above, but this is very inconspicuous and easily overlooked. Head extremely large and broad, facial quadrangle much longer than broad; process of labrum emarginate; mandibles long and slender, curved downward; clypeus shining, sparsely punctured, flattened in middle; sides of front dull, but vertex shining; malar space rather large. Antennae slender, flagellum obscure brown beneath. Third antennal joint not greatly longer than fourth; fourth much longer than wide; fifth a little longer than fourth. Cheeks extremely large, shining, convex, obtusely rectangular behind. Mesothorax small, dull and granular, as also scutellum, postscutellum and metathorax, but sides of prothorax smooth and brilliantly shining. Tegulae dark brown. Wings brownish hyaline, apical margin darker. Stigma and nervures dark reddish. Basal nervure falling short of transverse median, the large second sub-

marginal cell receiving first recurrent nervure not far from its end. Spurs dark. Hair on inner side of hind tarsi chocolate. Abdomen shining, without distinct punctures; hind margins of segments obscurely brownish; second segment in middle depressed about one-third; first segment with long white hair, the others with little hair and no bands. Apical plate small and narrow.

*Type*.—Cat. No. 18148, U.S.N.M.

In the key this falls near *A. moesticolor*.

*b*<sup>43</sup>. Smaller, more ordinary species.

*a*<sup>45</sup>. First recurrent nervure joins second submarginal cell far beyond middle; hair of thorax pale ochreous or fulvous.

*a*<sup>46</sup>. Head extremely broad.

*ANDRENA LAMINIBUCCA*, new species.

Topaz Butte, Colorado. June 17. (S. A. Rohwer.)

*Male*.—Length, 10½ mm. Black, small joints of tarsi reddish. Pubescence pale fulvous, bright on scutellum. Head very broad, malar space rather large. Process of labrum strongly emarginate. Mandibles with a projecting angle at base beneath. Clypeus shining, indistinctly punctured, with a flattened median ridge. Antennae very long; third joint only a little longer than fourth. Flagellum dark reddish beneath. Cheeks very broad, flattened, angled behind at about level of middle of eye. Thorax with long hair. Mesothorax, scutellum and area of metathorax dull and granular. Tegulae dark reddish. Wings reddish hyaline, nervures and stigma ferruginous. Basal nervure falling just short of transverse median. Second submarginal cell receiving first recurrent nervure near its end. Third submarginal very broad above. Abdomen shining, without evident punctures; hind margins of segments dark reddish, no distinct hair bands. Apical plate rounded.

Easily known from *A. tacitula grossulariae*, another red-haired species found at Topaz Butte, by the smooth, impunctate abdomen.

*b*<sup>46</sup>. Head ordinary. (See *A. profundiformis* in *Trachandrena*, above.)

*b*<sup>45</sup>. First recurrent nervure joins second submarginal at or not far beyond middle.

*a*<sup>47</sup>. Pubescence ferruginous.

(See *A. tacitula grossulariae* in *Trachandrena*, above.)

*b*<sup>47</sup>. Pubescence not ferruginous.

*a*<sup>48</sup>. Head very broad.

*a*<sup>49</sup>. Eyes diverging below; cheeks shining, broad, with a rim behind.

(See *A. navajorum*, above.)

*b*<sup>49</sup>. Eyes not diverging below.

*ANDRENA*, species.

Sioux County, Nebraska. May. (L. Bruner.)

*Male*.—Length, 7 mm.; pubescence clear white; wings clear hyaline; basal nervure going far basal of transverse median; second submarginal receiving first recurrent nervure in middle.

(This was marked as the male of *A. trapezoidina*, described below; but in my opinion it is a quite distinct species.)

*b*<sup>48</sup>. Head ordinary.

*a*<sup>50</sup>. Face broader.

ANDRENA PADOUCORUM, new species.

Evergreen, Colorado. July 16, 1897. On *Sedum stenopetalum*. (Dunning, 1308.)

*Male*.—Length, 8 mm. Black, with dull white pubescence. Head broad, facial quadrangle broader than long. Process of labrum broad, truncate. Clypeus convex, shining, with strong well separated punctures. Front and vertex dull. Cheeks normal. Flagellum obscurely brownish beneath. Third antennal joint more than twice as long as fourth, and about one-third longer than fifth. Mesothorax dull, without evident punctures. Metathorax dull and granular, the area scarcely defined. Tegulae dark brown. Wings hyaline, the stigma and nervures dark reddish brown. Basal nervure meeting transverse median. First recurrent nervure joining second submarginal cell about middle. Spurs light ferruginous. Abdomen shining, thinly hairy, the hind margin of the segments brownish, and with thin white hair bands at sides of segments and right across on fourth. Apical plate small and narrow.

(This is very close to *A. campanulae*; possibly only a variety or race.)

In the key, *A. padoucorum* falls in a couplet with *A. harveyi*, separating thus:

Cheeks rectangular in outline, angle of cheeks opposite middle of eye; pubescence on face and thorax partly black.....	<i>harveyi</i>
Cheeks rounded in outline; pubescence whitish.....	<i>padoucorum</i>

ANDRENA CAMPANULAE, new species.

Palmer Lake, Colorado. July 13, 1901.

*Male*.—Length, about 8 mm. Black; pubescence grayish white, not so long as in some other species. Head ordinary. Facial quadrangle about square. Mandibles not especially long, red at tip. Process of labrum broadly truncate. Clypeus shining, with strong, well-separated punctures; front dull. Flagellum obscure reddish beneath. Third antennal joint twice as long as fourth; fifth longer than fourth but still short. Mesothorax dull even posteriorly, scutellum also dull; area of metathorax small, coarsely granular, obscurely plicate at base. Tegulae piceous. Wings brownish, the basal half clear hyaline, nervures and stigma dark reddish. Basal nervure meeting transverse median. First recurrent nervure joining second submarginal cell beyond middle. Spurs amber color. Hair on inner side of hind tarsi light chocolate. Abdomen shining, hardly punctured, hind margins of segments somewhat reddish; second segment

in middle depressed more than one-third; thin shaggy hair bands more or less failing in middle. Apical plate narrow, *not* emarginate.

(For the female, see below.)

*Type*.—Cat. No. 18149, U.S.N.M.

Male *A. campanulae* was also taken in Nebraska.

b<sup>29</sup>. Females.

a<sup>51</sup>. Abdomen with long, loose hair, not forming bands; hair of cheeks black.

a<sup>52</sup>. Hair of thorax and abdomen above cream color.

*ANDRENA PYRRHACITA COLORADENSIS*, new variety.

Berkeley, Colorado. 5837.

*Female*.—Length, 11 mm. Black, with long creamy white hair covering thorax and abdomen above, and also on vertex and between antennae, and on the upper part of the pleura, but hair of other parts of head and underside of thorax black. Anterior and hind femora with the hair mainly pale, as also the long curled hairs in front of hind tibiae; hair of legs otherwise black. Facial quadrangle very much broader than long. Process of labrum truncate. Clypeus closely but finely punctured, with a smooth median line. Ocelli amber color. Facial foveae seen from above dark brown, occupying most of the space between eye and antenna, below they hardly extend below level of antennae. Antennae dark, third joint longer than next two together. Mesothorax and scutellum dull and granular. Area of metathorax without evident sculpture. Tegulae piceous. Wings brownish hyaline, nervures and the slender stigma reddish brown. Basal nervure meeting transverse median. Second submarginal cell receiving first recurrent nervure near its end. Third submarginal long. First abdominal segment granular, but apparently not punctured, the others with fine punctures; second segment in middle depressed more than one-third; all the segments covered with long, shaggy hair; hair at apex sooty.

This is a variety of *A. pyrrhacita*, differing in the color of the hair.

*Type*.—Cat. No. 18150, U.S.N.M.

b<sup>52</sup>. Apical part of abdomen with black hair above.

*ANDRENA BEBBIANA*, new species.

Boulder, Colorado. March 30. (S. A. Rohwer.) At flowers of *Selix bebbiana*.

*Female*.—Length, 10½ mm. Black; the pubescence long, partly black, partly white, and partly pale fulvous. Head very broad, with long black hair, except that on occiput overlapping vertex, which is white. Process of labrum slightly emarginate. Clypeus very hairy, with a dull feebly punctured surface. Facial foveae seen from above black, rather broad, ending below a little below level of antennae. Flagellum obscure brownish beneath. Third antennal joint almost as long as next three together. Cheeks very broad. Mesothorax

and scutellum dull and granular. Area of metathorax poorly defined, granular. Hair of thorax above anteriorly almost white, but on scutellum becoming pale fulvous; grayish white on sides of metathorax, but black on pleura. Tegulae piceous. Wings dusky hyaline, nervures and stigma dark reddish. Basal nervure meeting transverse median. Second submarginal cell receiving first recurrent nervure at beginning of last third. Hair of hind femora and tibiae beneath glistening white, but of hind knees and hind tibiae above gray, on inner side of hind tarsi pale reddish; anterior femora behind with long sooty hair. Abdomen shining, without distinct punctures, the broad hind margins of segments dark reddish; first two abdominal segments with long white hair, the others with long sooty hair, some pale hair on hind margin of third. No distinct bands.

*A. pyrrhacita coloradensis* and *A. bebbiana* are very closely allied, but differ in the process of labrum, and appear to be distinct species. *A. bebbiana* is very close to *A. ribesina* Cockerell, but is distinct by the entirely purplish-black hair of face and cheeks, etc.

*b*<sup>51</sup>. Not as under *a*<sup>51</sup>.

*a*<sup>53</sup>. Rather small species, about 9-10 mm. long, superficially all much alike, without even rudimentary light hair bands on abdomen. Hair of thorax above ochreous or fulvous. Hair of cheeks black.

*a*<sup>54</sup>. Abdomen purple.

(See *A. purpurina*, above.)

*b*<sup>54</sup>. Abdomen black; hair of face black.

*a*<sup>55</sup>. Basal part of abdomen with red or fulvous hair.

*a*<sup>56</sup>. Hair of thorax above bright fox red.

#### ANDRENA RIBIFLORIS, new species.

##### Colorado.

*Female*.—Length, 9 mm. Black; thorax above and tubercles with very bright fox-red hair, vertex with pale reddish hair, otherwise the hair of head and thorax is black, except that at sides of metathorax and a little at upper end of pleura is red. Hair of legs black, pale reddish on anterior tarsi, and whitish with a smoky tinge on hind femora. First abdominal segment and basal half of second with long red hair, rest of abdomen with scanty short black hair. Facial quadrangle broader than long. Process of labrum emarginate. Clypeus with strong not very dense punctures. Facial foveae seen from above dark brownish gray, occupying about three-fourths space between eye and antenna, but narrowing below and ending a little below level of antenna. Antennae dark, rather slender. Third joint a little longer than next two combined. Mesothorax dull, hardly punctured. Area of metathorax with short feeble ridges at base. Tegulae dark reddish. Wings hyaline, faintly dusky, more dusky at apex. Stigma and nervures dull ferruginous. Basal nervure falling short of transverse median. Second submarginal cell receiving first recurrent nervure very near its end. Spurs cream

color. Abdomen shining, not punctured; hind margins of segments broadly dark brown; second segment in middle depressed more than one-third and less than one-half; hair at apex black.

(This is named as a separate species, but I believe it to be the true female of *A. ribifloris*. It is widely separated from female *hemileuca* in the table.)

*Allotype*.—Cat. No. 18144, U.S.N.M.

*b*<sup>56</sup>. Hair of thorax above pale ochreous.

*ANDRENA RIBIFLORIS*, variety.

Florissant, Colorado. June 16, 1907. At flowers of *Ribes villo-cola*. (S. A. Rohwer.)

Is identical with the insect just described, differing only in less brightly colored hair of thorax above.

The label states that it is a paratype, and that the type has fulvous hair.

*Paratype*.—Cat. No. 18144, U.S.N.M.

*b*<sup>56</sup>. Basal part of abdomen without red or fulvous hair.

*a*<sup>57</sup>. Second submarginal cell receives first recurrent nervure near end; clypeus with a median ridge.

*ANDRENA RIBIFLORIS*, new species.

Colorado.

*Female*.—Length, 10 mm., rather slender. Black, with black pubescence on head, pale ferruginous on upper side of thorax but sooty beneath, very dark brownish gray on legs and black at apex of abdomen. Head broad; facial quadrangle much broader than long. Process of labrum truncate. Mandibles red at extreme tip. Clypeus dull at base and sides, but otherwise shining, with sparse punctures and a median ridge. Front striate; facial foveae seen from above chocolate color, occupying at least two-thirds of space between eye and antenna, below they scarcely extend below level of antennae. Antennae very dark, third joint longer than next two combined, but not so long as next three. Mesothorax dull, with very minute feeble punctures. Scutellum dull, shining in front. Area of metathorax narrow, elongated apically with a few short basal ridges, the middle one longer. Tegulae reddish. Wings reddish hyaline, nervures and stigma ferruginous. Basal nervure not reaching transverse median. Second submarginal cell large, receiving first recurrent nervure near its end. Spurs very pale. Abdomen shining, entirely without hair bands; without evident punctures. Segments broadly margined posteriorly with dark brown, second segment in middle depressed more than a third. Hair at apex of abdomen black.

(A close study of this convinces me that it is *A. ribifloris*; it is in bad condition, and has lost part of its hair.)

*Paratype*.—Cat. No. 18144, U.S.N.M.

*b*<sup>57</sup>. Second submarginal cell receiving first recurrent nervure in middle; clypeus with no distinct median ridge; base of abdomen without long hair.

## ANDRENA (MERRIAMI variety?) FULVINIGRA, new species.

Fort Collins, Colorado. April 24, 1903. (Gillette.)

*Female*.—Length, 9 mm. Black, with black hair except that on occiput and thorax above which is bright ferruginous; it is red on tubercles but black on pleura, but on metathorax it is red in middle, but black at sides; on inner side of hind tarsi it is chocolate color. Facial quadrangle very much broader than long. Process of labrum very broadly truncate, clypeus shining, with small punctures, sparse in middle. Facial foveae very narrow, seen from above light reddish, but reddish black at other angles, ending below at about level of antennae. Flagellum dark beneath; third antennal joint about as long as next three together, the fifth very short. Mesothorax dull, with very minute inconspicuous punctures. Surface of scutellum hidden by the very bright red hair. Area of metathorax feebly roughened, somewhat shining. Tegulae rather dark reddish. Wings brownish hyaline, nervures and stigma rather light reddish. Basal nervure meeting transverse median. Second submarginal cell very broad, receiving first recurrent nervure about middle. Long hair on outer side of hind femora dull whitish but that on knees and hind tibiae slaty black. Abdomen shining, without distinct punctures, and with little hair. No bands on hind margins of segments. Hair at apex slaty black.

(I have this also from Florissant, and considered it to be *A. merriami*. Mr. Viereck, who had access to the type of *merriami* associates them closely in the key, separating them thus:

Clypeus coarsely punctured.....	<i>merriami</i> .
Clypeus finely punctured.....	<i>fulvinigra</i> .

*Type*.—Cat. No. 18153, U.S.N.M.

*b*<sup>53</sup>. Abdomen more or less banded; hair of cheeks light (partly dark in topazana).

*a*<sup>58</sup>. Facial quadrangle longer than broad; a curious oblong head. Hair at apex of abdomen light reddish. (*A. campanulae*, with a rather narrow face, has hair at apex of abdomen sooty.)

(*A. cheyennorum*; see above under males.)

*b*<sup>58</sup>. Facial quadrangle broader than long.

*a*<sup>59</sup>. Large species with costoapical region of wings dark.

## ANDRENA ARIZONENSIS, new species.

Oracle, Arizona. June 19, 1903. (Osler.)

Exactly like the black variety of *A. prunorum gillettei*, which occurs rarely at Boulder, Colorado, except that it is more finely punctured. It is probably a race of *A. prunorum*. It is quite distinct from *A. argemonis*.

*Female*.—Length, 12 mm. Black, the tarsi reddish at apex. Pubescence grayish white, pale yellowish on tarsi. Facial quadrangle broader than long. Process of labrum broadly truncate, very feebly emarginate. Clypeus brilliantly shining, sparsely punctured;

front striate. Facial foveae seen from above cream color, occupying two-thirds of distance between eye and antenna, below extending well below level of top of clypeus, little separated from eye. Antennae very dark; third joint longer than next two combined. Mesothorax shining, with small rather close punctures, the posterior middle with few punctures. Area of metathorax dull, with very delicate reticulation, which is mostly transverse, but there is a fine median raised line. Tegulae very dark brown. Wings with the lower half clear hyaline, the upper half orange tinted, the apex suffused with fuscous. Nervures and stigma clear ferruginous. Basal nervure falling short of transverse median. Second submarginal cell narrowed above, receiving first recurrent nervure a little beyond middle. Third submarginal very broad above. Legs with pale hair, very light yellowish on inner side of tarsi. Abdomen with a very obscure greenish tint, dullish, densely and minutely punctured, hind margins of segment narrowly reddish, segments 2-4 with dense white hair bands. Hair at apex pale reddish; second segment in middle depressed about one-third.

*Type*.—Cat. No. 18154, U.S.N.M.

*b*<sup>59</sup>. Not as in *a*<sup>59</sup>.

*a*<sup>60</sup>. End of abdomen with sooty black hair (rather pale gray in autumnalis). Abdomen never conspicuously banded.

*a*<sup>61</sup>. Hair of thorax above dull white.

*a*<sup>62</sup>. Stigma dark; first recurrent nervure joins second submarginal about middle.

ANDRENA CAMPANULAE, new species.

War Bonnet, Sioux County, Nebraska. On *Campanula*. June 28, 1901. (M. A. Carriker.)

*Female*.—Length, 9 mm. Black, with pale gray hair. Facial quadrangle about as broad as long. Process of labrum broadly truncate. Clypeus minutely granular, with sparse rather shallow punctures. Facial foveae seen from above pale grayish, narrow, ending below a little below level of antennae. Flagellum faintly reddish beneath. Third antennal joint almost as long as next three together, but the fourth and fifth are very short. Mesothorax and scutellum dull, without distinct punctures. Area of metathorax granular, its apical margin shining. Tegulae rufopiceous. Wings dusky; nervures and stigma very dark reddish. Basal nervure falling just short of transverse median. Second submarginal cell receiving first recurrent nervure a little beyond middle. Hair of hind tibiae brownish or grayish white; hair on inner side of tarsi pale grayish brown. Abdomen moderately shining, not punctured; second segment in middle depressed hardly one-third; hind margins of second to fourth segments with white hair bands, on second and third interrupted in middle; hair at apex brownish gray.

*Male*.—Sioux County, Nebraska. July.

Length, 7 mm. Resembles female in everything except usual sexual differences. Face entirely black; cheeks normal. Apical plate small, hidden in a tuft of creamy white hair.

For fuller description of male see above.

*b*<sup>62</sup>. Stigma ferruginous; first recurrent nervure joins second submarginal cell beyond middle.

ANDRENA AUTUMNALIS, new species.

Lincoln, Nebraska. September.

*Female*.—Length, 11 mm. Black, the legs very dark reddish. Pubescence grayish white. Facial quadrangle broader than long; process of labrum emarginate; clypeus shining, sparsely and weakly punctured in middle, more closely on sides. Facial foveae as seen from above pale seal brown, almost half as broad as distance from eye to antennae, ending broadly below, a trifle below level of antennae and not diverging from eye. Front striate. Flagellum dark reddish. Third antennal joint about as long as fourth and fifth together. Mesothorax dull, with very sparse weak punctures. Scutellum broad and flat, smooth and shiny. Area of metathorax small, without evident sculpture. Tegulae rather pale brown. Wings reddish hyaline, stigma and nervures amber color. Basal nervure meeting transverse median. Second submarginal cell receiving first recurrent nervure at about beginning of last third. Hair on outer side of tibiae and tarsi sooty. Middle femora very sharply keeled beneath, with a long white fringe. Hair on inner side of hind tarsi very dark brown; spurs cream color. Abdomen impunctate, the hind margins of the segments whitish, with very thin bands, with long white hair. Hair at apex sooty.

Very close to *A. runcinatae* Cockerell, but distinct. *A. runcinatae* is smaller and has a good deal of black hair on thorax above.

*Type*.—Entomological collection of the University of Nebraska.

*b*<sup>61</sup>. Hair of thorax above ochreous; first recurrent nervure joins second submarginal cell much beyond middle, or nearly at end.

ANDRENA TOPAZANA Cockerell,

Grangeville, Idaho.

*Female*.—Length, 10 mm. Black, small joints of the tarsi reddish. Pubescence pale ochreous. Facial quadrangle broader than long. Process of labrum broadly truncate. Clypeus shining, very sparsely but distinctly punctured. Facial foveae seen from above dark, occupying at least two-thirds distance between eye and antenna, below going short distance below level of antennae. Flagellum chestnut red beneath. Third antennal joint a little longer than next two combined. Mesothorax and scutellum dull, hardly punctured. Area of metathorax granular. Tegulae dark reddish. Wings quite strongly brownish; stigma and nervures ferruginous. Basal nervure falling

short of transverse median. Second submarginal rather narrow, receiving first recurrent nervure almost at its end. Third submarginal very broad above. Femora with pale hair, tibiae and tarsi with grayish brown; the creamy white shining hair of the hind femora contrasts abruptly with the dark brown hair of their tibiae, but the tuft on the knees is dark gray brown. Abdomen dullish, not punctured, with scattered rather long pale hair, not forming bands. Hair at apex sooty. Second segment in middle depressed nearly one-half.

(Comparison with the type of *A. topazana* shows that this is strictly identical.)

(The following is also, in my opinion, true *A. topazana*, although there are some small differences, as the descriptions indicate.)

Georgetown, Colorado. (C. F. Baker, 5983.)

*Female*.—Length, 9 mm. Black, tarsi reddish at apex. Pubescence pale ochreous, darker on thorax above, largely sooty on outer side of tibiae, especially hind tibiae. Facial quadrangle much broader than long. Clypeus shining, with sparse strong punctures. Facial foveae grayish, occupying more than half space between eye and antenna, below they end a little below level of antennae. Antennae dark, the flagellum rather dark brownish toward end. Third antennal joint about as long as next two together. Mesothorax dull, without evident punctures. Area of metathorax granular. Tegulae picuous. Wings brownish hyaline, nervures and stigma dull reddish brown. Basal nervure meeting transverse median. Second submarginal cell narrow, receiving first recurrent nervure not far from end. Abdomen impunctate, thinly hairy, without evident bands. First two segments dull, the others shining, as also apical margin of second. Hair at apex sooty.

*b*<sup>60</sup>. End of abdomen with pallid or reddish hair.

*a*<sup>63</sup>. Hind tibiae and tarsi clear red (tarsi red in astragali and medionitens variety a).

All have the abdomen quite distinctly banded except lincolnella.

*a*<sup>64</sup>. Abdomen very distinctly punctured; margins before depression red; stigma small. (The abdomen suggests aureocincta, but the wings are quite different.)

*ANDRENA ASHMEADI*, new species.

Colorado. (C. F. Baker, No. 1591.)

*Female*.—Length, about 10 mm. Black, with the depressed portions of the abdominal segments light testaceous, ferruginous where they join the black. Hind tibiae, and middle and hind tarsi, light ferruginous. Pubescence pale ochreous, becoming white beneath. Facial quadrangle a little broader than long, distinctly broader above than below. Mandibles chestnut red except at base. Process of labrum strongly emarginate. Clypeus dullish, rather strongly but not densely punctured, with a narrow impunctate but not shining line. Facial foveae seen from above very pale brownish, occupying

more than two-thirds distance between eye and antenna; they rapidly narrow below and end in an obtuse point a little below level of antennae. Flagellum very dark reddish beneath. Third antennal joint about as long as next two together. Hair on scutellum clear light fulvous. Mesothorax and scutellum moderately shining, with small not very dense punctures. Area of metathorax granular. Hair of hind tibiae pale reddish, very strongly plumose. Abdomen shining, finely and distinctly punctured. Hind margins of segments, including first, with complete cream-colored hair bands. Hair at apex of abdomen cream color.

*Type*.—Cat. No. 18156, U.S.N.M.

*b*<sup>64</sup>. Not as under *a*<sup>64</sup>.

*a*<sup>65</sup>. Stigma small and narrow; wings rather milky; species flying in October.

ANDRENA LINCOLNELLA, new species.

Lincoln, Nebraska. October.

*Female*.—Length, 12 mm. Head and thorax black; antennae, legs and abdomen dark reddish. Hind tibiae and tarsi honey color. Pubescence pale, slightly ochreous above. Facial quadrangle broader than long. Process of labrum broadly truncate. Clypeus shining, except at sides, and with rather small punctures, which are sparse in the middle. Facial foveae seen from above creamy white; they are very broad above but rapidly narrow below, ending about level of antennae and a little separated from eye. Third antennal joint about as long as the next three together. Mesothorax and scutellum dull, without evident punctures. Area of metathorax dull and granular. Tegulae light testaceous. Wings hyaline, distinctly milky, the narrow small stigma and the nervures ferruginous. Basal nervure falling a little short of transverse median. Second submarginal cell broad, receiving first recurrent nervure far beyond middle; hair of hind tibiae very pale yellowish, spurs light ferruginous. Abdomen dull and granular, without distinct punctures. Hind margins of segments hyaline; the abdomen above is nearly free from hair except the bands of long white hair on hind margins of second and following segments, very broadly interrupted on second and thin or absent on middle of third. Second segment in middle depressed about one-third. Hair at apex light ochereous.

*Type*.—Entomological collection of the University of Nebraska.

*b*<sup>65</sup>. Stigma ordinary; species flying May–July.

*a*<sup>66</sup>. Hair at apex of abdomen bright orange-fulvous; wings very red.

ANDRENA ASTRAGALI, new species.

Bad Lands, Mouth of Monroe Canon, Sioux County, Nebraska. June 6, 1901. On *Astragalus*. (M. A. Carriker, jr.)

*Female*.—Length, 12 mm. Black, the tarsi ferruginous. Pubescence creamy white. Facial quadrangle broader than long. Process

of labrum very peculiar, being very broad with the apical margin concave and the apical corners projecting. Clypeus irregularly punctured, surface almost hidden by hair. Facial foveae seen from above grayish white, occupying about half space between eye and antenna, below scarcely extending below level of antenna. Flagellum short and thick, obscure reddish beneath. Third antennal joint longer than next two together, but the next is extremely short. Mesothorax dull, not punctured. Scutellum slightly shining. Area of metathorax granular, extremely small. Tegulae light rufotestaceous. Wings strongly reddened, dusky at apex. Stigma and nervures ferruginous. Basal nervure meeting transverse median. Second submarginal cell broad, receiving first recurrent nervure in middle, hair on hind tibiae very pale yellowish. Abdomen dullish, not punctured, the hind margins of the segments narrowly white, the junction of the white and black reddish. Segments with long, thin, glittering hair, not hiding the surface. Hind margins with broad white hair bands, scanty on first segment. Hair at apex light ferruginous. Second segment in middle depressed about two-fifths.

In the key this falls in a couplet with *A. davidsoni*, from which it is separated by the dull dorsulum.

*b*<sup>66</sup>. Hair at apex of abdomen not thus bright.

*a*<sup>67</sup>. Larger; anterior tarsi red; head very broad.

*ANDRENA PEREZANA*, new species.

Lincoln, Nebraska. May.

*Female*.—Length, about 12 mm. Black, with the hind tibiae and all the tarsi, as well as the anterior tibiae on inner side except at base, the middle tibiae at apex, and the sides of the abdomen near base beneath, ferruginous, the tarsi very bright and clear. Pubescence grayish white, not at all yellowish dorsally. Head very broad, process of labrum broadly truncate. Clypeus shining, finely and closely punctured, with a slender median smooth line. Facial foveae seen from above cream white, occupying at least two-thirds of space between eye and antenna; below they do not go below level of antennae. Flagellum reddish brown beneath. Third antennal joint slightly longer than the next two combined. Mesothorax and scutellum shining, with extremely minute scattered punctures. Area of metathorax granular. Tegulae reddish. Wings strongly reddened, nervures and the rather small stigma ferruginous. Basal nervure falling short of transverse median. Second submarginal cell receiving first recurrent nervure at beginning of last third. Hair on hind tibiae shining white. Abdomen shining, the hind margins of the segments red; no punctures; very little hair except at base and apex, and on the hind margins of the segments, where there are broad but thin

white hair bands; hair at apex light yellowish. Second segment in middle depressed about two-fifths.

*Type*.—Entomological collection of the University of Nebraska.

*b*<sup>57</sup>. Anterior tarsi not red; species smaller than *A. perezana*.

*a*<sup>58</sup>. Area of metathorax wrinkled.

(See *A. titusi* in *Trachandrena*, above.)

*b*<sup>58</sup>. Area of metathorax not at all wrinkled.

*a*<sup>59</sup>. Facial foveae very narrow; abdominal hair-bands (on segments 2-4) white and entire; first recurrent nervure joins second submarginal cell at middle.

ANDRENA MONTROSENSIS, new species.

Montrose, Colorado. May 5, 1901. (Gillette.)

*Female*.—Length, 9 mm. Black, with white hair. Hind tibiae and tarsi clear ferruginous, with pale yellow hair. Facial quadrangle a little broader than long. Process of labrum very narrowly truncate. Mandibles with the apical half red. Clypeus shining except at sides, well punctured, with no smooth line. Facial foveae seen from above pale reddish, narrow, ending below about level of top of clypeus. Flagellum ferruginous beneath except at base. Third antennal joint not as long as next three combined. Mesothorax sparsely punctured, dull in front, shining in middle and posteriorly. Scutellum shining. Area of metathorax granular. Tegulae dark reddish. Wings dusky hyaline, darker apically; nervures testaceous, the outer ones fuscous; stigma light amber color. Basal nervure falling a little short of transverse median. Second submarginal cell broad, receiving first recurrent nervure about the middle. Hair on inner side of hind tarsi shining pale golden. Abdomen dullish, not punctured; hind margins of second and following segments with broad entire white hair bands. Hair at apex pale reddish.

In the key this is separated from *A. costillensis* and *apacheorum* on the venation, the second submarginal cell receiving the first recurrent nervure beyond the middle in those species. From *A. canadensis* it is separated by the dullish dorsulum, that of *canadensis* being shining. The general appearance is that of *A. canadensis*.

*Type*.—Cat. No. 18157, U.S.N.M.

*b*<sup>59</sup>. Facial foveae not especially narrow; abdominal hair-bands not clear white; first recurrent nervure joining second submarginal cell beyond middle.

ANDRENA MEDIONITENS Cockerell, variety A.

Westlake, Colorado. July 7, 1900. (Gillette.)

*Female*.—Length, 8 mm. Black, with very pale ochereous pubescence. Facial quadrangle broader than long. Process of labrum emarginate. Mandibles bright chestnut red apically. Clypeus shining, rather sparsely punctured, with a smooth median line. Facial foveae seen from above brownish white, rather broad, ending

below at about level of antennae. Flagellum dark red beneath; third antennal joint not as long as next three combined. Mesothorax moderately shining, with weak punctures. Area of metathorax granular. Tegulae rufopiceous. Wings dusky hyaline. Nervures and stigma amber color. Basal nervure meeting transverse median. Second submarginal cell receiving first recurrent nervure well beyond middle. Middle and hind tarsi red. Hair of hind tibiae yellowish white. Abdomen dullish, not punctured. Second segment in middle depressed less than one-third. Second and following segments with thick yellowish white hair bands. Hair at apex very pale reddish brown.

Resembles *A. montrosensis*, but the facial foveae are broader. They are very closely allied.

(This differs from typical *A. medionitens* by the redder, and I think rather narrower, facial foveae, and red middle tarsi, but I can not believe it to be a distinct species. In the key it falls in a couplet with *perezana*, from which it is separated thus:

Scopa appressed and hiding tegument.....*perezana*.  
Scopa not appressed, not hiding tegument; tarsi stramineous..*medionitens*, variety a.)

b<sup>63</sup>. Hind tibiae and tarsi not clear red. (Tarsi red in *astragali* and *medionitens*, variety a.)

a<sup>70</sup>. Large species, considerably over 10 mm. long, with conspicuous white hair-bands; species superficially similar.

a<sup>71</sup>. Wings orange. (See *A. astragali*, above.)

b<sup>71</sup>. Wings not at all orange.

#### ANDRENA TOWNSENDI, new species.

Dripping Spring, Organ Mountains, New Mexico. August 10. (C. H. T. Townsend.)

*Female*.—Length, 13 mm. Black, the tarsi brownish, their small joints becoming ferruginous as well as the anterior knees. Pubescence grayish white, clear ochereous on thorax above. Facial quadrangle broader than long. Process of labrum strongly emarginate. Clypeus shiny, sparsely punctured, with a poorly defined smooth median band. Facial foveae seen from above light ochereous, moderately broad, ending broadly below at about level of top of clypeus. The clypeus is very high and the supraclypeal area very small, so that the antennae are inserted very near to the top of the clypeus. Scape reddish at base; flagellum obscurely reddish beneath. Third antennal joint a little shorter than next three combined. Mesothorax dull and granular, scarcely punctured. Scutellum shining in front. Area of metathorax granular, with a depressed median line. Tegulae rufopiceous. Wings brownish hyaline, the nervures and small stigma reddish, the stigma very dark. Basal nervure falling short of transverse median. Second submarginal very broad, receiving first recurrent nervure slightly beyond middle. Hair of hind

tibiae white; on inner side of hind tarsi pale golden. Abdomen dullish, without punctures, all the segments with broad entire white hair bands. Hair at apex stained with brown.

In the key, this falls in a couplet with *A. complexa*, and is separated thus:

Abdominal segments greenish; pubescence pale, whitish.....*complexa*.

Abdominal segments black; pubescence yellowish.....*townsendi*.

*b*<sup>70</sup>. Much smaller species than under *a*<sup>70</sup>.

*a*<sup>72</sup>. Species like *A. hirticincta*, with long yellow hair; the broad entire abdominal bands as wide as the intervals between them.

ANDRENA COSTILLENIS, new species.

Colorado. No. 2294.

*Female*.—Length, 9 mm. Black, with abundant long hair, which is bright yellowish on thorax above, elsewhere paler, and beneath inclining to grayish white. The caudal fimbria pale, like the very thick and broad abdominal bands. Facial quadrangle broader than long; process of labrum broad, shallowly emarginate; clypeus strongly and rather closely punctured, with rather indistinct median smooth line. Facial foveae seen above pale ochreous, occupying more than half the space between antenna and eye, their lower end level with top of clypeus, and separated only by a shining line from the eye. Flagellum dark reddish beneath. Third antennal joint fully twice as long as fourth; fifth about equal to fourth. Mesothorax dullish, very hairy. Anterior half of scutellum shining; area of metathorax granular, defined only by absence of hair. Tegulae shining piceous, very hairy. Wings hyaline, slightly dusky, stigma light amber, nervures fuscous; basal nervure meeting transverse median; first recurrent nervure joining the nearly square second submarginal very near its end. Third submarginal long. Legs distinctly brownish; spurs cream color. Middle basitarsi remarkably broadened and flattened. Abdomen dullish, hardly punctured, second segment in middle depressed about two-fifths.

Also collected in the Costilla Mountains, New Mexico, August 16, 1899 (Miss Mize), and at Eldora, Colorado, August 18, 1910, at flowers of *Grindelia* and *Erigeron*, by T. D. A. and W. P. Cockerell.

In the key, this falls in a couplet with *A. apacheorum* Cockerell, and is separated thus:

Scutellum dull; fimbria brown.....*apacheorum*.

Scutellum shining, partly polished; fimbria ochreous.....*costillensis*.

*Type*.—Entomological collection of the University of Nebraska.

*b*<sup>72</sup>. Not as under *a*<sup>72</sup>.

*a*<sup>73</sup>. Without distinct light abdominal bands. None of the species very small.

*a*<sup>74</sup>. Hair of thorax short; grayish white; wings unusually short.

*ANDRENA RADMITRICA*, new species.

Lincoln, Nebraska. October

*Female*.—Length, 9½ mm. Black, the legs very dark reddish brown. Pubescence dull white. Facial quadrangle about as broad as long. Process of labrum narrow, emarginate. Apical half of mandibles dark red; clypeus dullish, sparsely and feebly punctured. Facial foveae seen from above grayish white, a little yellowish as seen from upper end, about one-half as broad as distance between eye and antenna, ending in a point at level of antennae and a little away from eye. Front striate, elevated in middle. Flagellum chestnut red beneath; third antennal joint about as long as the following three together. Mesothorax moderately shiny, with very sparse feeble punctures. Scutellum microscopically tessellate, shining like mesothorax, but hardly at all punctured. Area of metathorax granular, scarcely defined. Tegulae reddish, with a dark spot. Wings unusually short, dusky hyaline, nervures and the small stigma dark red brown. Basal nervure meeting transverse median. Second submarginal cell broad, receiving first recurrent nervure well beyond middle. Third submarginal rather short. Spurs creamy white. Hind tibial scopa loose, of pure white branched hairs. Hairs on inner side of hind tarsi shining dark brownish gray. Abdomen dullish, not evidently punctured; hind margins of segments narrowly pallid, with weak indications of hair bands; hair at apex brownish white.

In the key this runs next to *A. solidaginis*, from which it is known by the light caudal fimbria.

*Type*.—Entomological collection of the University of Nebraska.

*b*<sup>74</sup>. Hair of thorax fulvous or ferruginous; first recurrent nervure joins second submarginal cell almost at end.

*a*<sup>75</sup>. Larger; hair of hind tibiae entirely cream color.

*ANDRENA PAENEFULVA*, new species.

Colorado.

*Female*.—Length, 10 mm. Black, with rather light fulvous hair, which is long and loose. Facial quadrangle broader than long. Process of labrum deeply emarginate. Clypeus shining, strongly but not closely punctured, with a smooth median line. Facial foveae seen from above pale seal brown, occupying more than one-half space between eye and antenna, not much narrowed below, where they end a little below level of antennae. Flagellum dull red beneath. Third antennal joint not as long as next three together. Mesothorax granular, somewhat shining, with very feeble obscure punctures. Scutellum shining anteriorly, but its posterior part and the post-scutellum granular and entirely dull, as also the poorly defined area of the metathorax. Tegulae dark reddish, with long hair. Wings reddish hyaline, nervures and stigma rather light reddish. Basal

nervure falling short of transverse median. Second submarginal cell broad, receiving first recurrent nervure almost at its end. Hair on hind tibiae pale ochreous or almost cream colored, shining. Abdomen finely granular, without evident punctures, the thin loose hair hardly forming distinct bands; second segment in middle depressed more than two-thirds but less than one-half; hair at apex light reddish ochreous.

*Type*.—Collection of the American Entomological Society.

*b*<sup>75</sup>. Smaller; hair of hind tibiae longitudinally bicolored, sooty brown and pale fulvous.

ANDRENA SALICICOLA, new species.

Halfway House, Pikes Peak, Colorado. On *Salix*. May 30, 1904. (Cockerell.)

*Female*.—Length nearly 9 mm. Black. Pubescence long, pale ferruginous, very bright on thorax above. Facial quadrangle broader than long. Process of labrum emarginate. Clypeus shining, sparsely punctured. Facial foveae seen from above very dark brown, occupying two-thirds space between eye and antenna, below they end a little below level of antennae. Flagellum dark reddish beneath. Third antennal joint about as long as next two combined. Mesothorax and scutellum dull, without evident punctures, the median and parapsidal lines on mesothorax shining. Area of metathorax scarcely defined, obscurely wrinkled at base. Tegulae dark brown. Wings hyaline, slightly dusky at apex. Stigma and nervures reddish sepia. Basal nervure falling a little short of transverse median. Second submarginal cell receiving first recurrent nervure almost at apex. Third submarginal very long. Hind tarsi reddish. Hair on hind tibiae pale reddish anteriorly and pale sooty posteriorly, the colors abruptly contrasting. Abdomen shining, not punctured, with thin long hair but no bands. Hair at apex pale but slightly sooty. Second segment in middle depressed nearly one-half.

Very closely allied to *A. paenefulva*.

In the key, *A. salicicola* falls near *A. asmi*, and is separated thus:

Foveae black; pleurae with pale pubescence..... *asmi*.  
Foveae dark brown; scopa partly brown and compact..... *salicicola*.

*Type*.—Cat. No. 18161, U.S.N.M.

*b*<sup>73</sup>. With distinct light hair bands on abdomen.

*a*<sup>76</sup>. Wings strongly red-brown; first recurrent nervure joins second submarginal cell about middle; facial foveae light reddish, very narrow.

ANDRENA DAVIDSONI, new species.

Mount Wilson, Southern California. (Davidson.)

*Female*.—Length, 9 mm. Black, with pale ochreous pubescence. Facial quadrangle broader than long. Process of labrum truncate, the truncation slightly concave. Clypeus finely granular, with numerous shallow punctures. Facial foveae seen from above very

light reddish, extremely narrow, ending below just below level of antennae. Antennae dark. Third joint not as long as next three combined; fourth and fifth very short. Mesothorax and scutellum shiny, with very fine punctures. Area of metathorax granular, not distinctly defined. Wings strongly reddish, nervures and stigma dark ferruginous. Basal nervure almost reaching transverse median. First recurrent nervure received by second submarginal cell a little before the middle. Hair of hind tibiae shining pale yellow. Abdomen shining, not distinctly punctured; segments 1 to 4 with conspicuous entire white hair bands. Hair at apex light reddish.

In the key, this falls in a couplet with *A. astragali*, from which it is separated by the shining dorsulum.

*b*<sup>76</sup>. Wings normal.

*a*<sup>77</sup>. Second submarginal cell remarkably broad, broader than high, receiving first recurrent nervure about middle; stigma large; facial foveae light reddish, narrow.

*ANDRENA NIGRITARSIS*, new species.

Boulder, Colorado. May 27, 1906. (S. A. Rohwer.)

*Female*.—Length, 8 mm. Black, with light ochereous pubescence. Facial quadrangle much broader than long. Process of labrum small and broadly rounded. Clypeus shining, not densely punctured, with no smooth line or ridge. Facial foveae seen from above light red, very narrow, ending below at about level of top of clypeus. Flagellum dark red beneath except at base. Third antennal joint scarcely as long as next two combined. Mesothorax dull, with feeble minute punctures. Scutellum shining, with very sparse and small punctures. Area of metathorax rather coarsely roughened. Tegulae ferruginous. Wings reddish hyaline, nervures and the large stigma ferruginous. Basal nervure falling a little short of transverse median. Second submarginal cell very broad, with parallel sides, receiving first recurrent nervure at or a little beyond the middle. Hair of hind tibiae very pale ochereous or almost grayish white; on inner side of hind tarsi golden. Abdomen shining, not punctured; hind margins of second and following segments reddened; second segment in middle depressed about two-fifths, but feebly. Rudimentary hair bands at sides of second and following segments. Hair at apex light reddish.

Falls in key in the vicinity of *A. melanothroa*, *A. apacheorum*, etc.

*b*<sup>77</sup>. Second submarginal cell not formed as under *a*<sup>77</sup>.

*a*<sup>78</sup>. Facial foveae ochreous or reddish.

*a*<sup>79</sup>. Basal nervure falling short of transverse median; hair of thorax grayish white; species about 8 mm. long.

*ANDRENA COLORADINA*, new species.

Colorado. (C. F. Baker, No. 1900.)

*Female*.—Length, 8 mm. Black, with pale grayish hair, that on the scutellum slightly fulvous. Facial quadrangle broader than long.

Process of labrum broadly truncate. Clypeus shining, well punctured, without any smooth line. Facial foveae seen from above very light grayish brown, occupying about two-thirds space between eye and antenna, ending below a little below level of antennae. Flagellum obscure brownish beneath, shorter than usual. Third antennal joint not as long as next three combined. Mesothorax dull in front, but the posterior two-thirds and the scutellum shining, with very feeble punctures. Area of metathorax dull and granular, scarcely defined. Tegulae dark reddish, wings hyaline, nervures rather dark reddish, but the large stigma bright ferruginous. Basal nervure falling just short of transverse median. Second submarginal cell receiving first recurrent nervure beyond middle. Tarsi brownish, clear red at apex. Abdomen broad, shining, without evident punctures; hind margins of segments reddish brown; second segment in middle depressed about one-third or slightly more. Second and following segments with distinct white hair bands, broadly interrupted on second. Hair at apex creamy white.

(There are two specimens, with the same number. Another specimen (Colorado, Gillette, No. 2094) was given a different name, but is the same species. The color of the facial foveae is rather variable, and the insect may be sought in a section below, as is there indicated. In the key this species falls close to *A. subdistans*, from which it is separated by the dark brown hind tibiae.)

*A. phocata* Cockerell is extremely close to *A. coloradina*, but distinct. *A. phocata* differs by being a little larger, with orange-tinted wings; broad smooth band on middle of clypeus; facial foveae seal brown above, white below.

*Type*.—Cat. No. 18162, U.S.N.M.

b<sup>79</sup>. Basal nervure meeting transverse median; thoracic hair ochreous or fulvous; rather larger than *A. coloradina*.

a<sup>80</sup>. Clypeus with a distinct median ridge, and large punctures; hair bands of abdomen pale ochreous.

ANDRENA FULVIHIRTAE, new species.

Colorado. (Gillette, 2091.)

*Female*.—Length, 9 mm. Black, with the pubescence fulvous, including that of the abdominal bands. Facial quadrangle broader than long. Process of labrum truncate, the truncation somewhat concave. Clypeus shining, with large irregular punctures and a fine median ridge. Facial foveae seen from above pale reddish, moderately broad, ending below at about level of top of clypeus. Flagellum very obscurely brownish beneath. Third antennal joint not so long as next three together. Mesothorax dullish, feebly punctured. Area of metathorax granular. Tegulae dark reddish. Wings clear hyaline, faintly dusky at apex. Stigma and nervures amber color, the stigma large and very bright. Basal nervure meeting transverse

median. Second submarginal cell receiving first recurrent nervure far beyond middle. Middle and hind tarsi dark reddish. Abdomen shining, not punctured; second segment depressed in middle about two-fifths; second and following segments with thick pale hair bands, that on second rather broadly and on third very narrowly interrupted in middle. Hair at apex of same color.

*Type*.—Cat. No. 18163, U.S.N.M.

*b*<sup>80</sup>. Clypeus without a distinct median ridge.

*a*<sup>81</sup>. Clypeus dullish; third submarginal cell on upper side not as long as second transverse cubital.

ANDRENA BRACHYCARPAE, new species.

Florissant, Colorado. June 1, 1907. (S. A. Rohwer.) At flowers of *Salix brachycarpa*.

*Female*.—Length, 9 mm. Black, with light ochereous pubescence. Facial quadrangle broader than long. Process of labrum narrowly truncate, but the truncation depressed in middle, so as to give a slight appearance of emargination. Clypeus shining, rather sparsely punctured. Facial foveae seen from above light reddish, quite narrow, ending below at level of antennae. Antennae dark, third joint not as long as next three combined, but a little longer than next two. Mesothorax dull and granular; scutellum more shining. Area of metathorax minutely wrinkled, not defined. Tegulae piceous. Wings reddish hyaline. Stigma and nervures ferruginous. Basal nervure meeting transverse median. Second submarginal cell receiving first recurrent nervure well beyond middle. Hair of hind tibiae pale ochereous, reddish sooty at base; on inner side of hind tarsi light golden. Abdomen shining, without distinct punctures; hind margins of segments brownish; segments 2 to 4 with rather thin hair bands, and the surfaces of segments 3 to 6 thinly hairy all over. Hair at apex light reddish.

In the key this falls in a group, which also includes *A. decussata*, *A. perezana*, *A. astragali*, *A. davidsoni*, and *A. personata*. It is distinguished from all these by the following combination of characters: Scopa appressed and hiding tegument; inclosure of metathorax rugose; abdominal fasciae indistinct, but nevertheless more or less developed.

*b*<sup>81</sup>. Clypeus shining; third submarginal cell on upper side as long (or almost) as second transverse cubital nervure; middle and hind tarsi red.

(See *A. medionitens* variety a, above.)

*b*<sup>78</sup>. Facial foveae white or whitish.

*a*<sup>82</sup>. Small species, 8 mm. long or less; first recurrent nervure joining second submarginal cell at middle or not much beyond.

*a*<sup>83</sup>. Facial foveae a little broader; abdomen seems faintly metallic.

(See *A. coloradina*, described above.)

*b*<sup>83</sup>. Facial foveae a little narrower.

## ANDRENA COLORADINA, variety A.

Fort Collins, Colorado. May 8, 1903. (Gillette.)

*Female*.—Length, 8 mm. Black, small joints of tarsi ferruginous; the hind margins of the abdominal segments dark reddish. Pubescence white, except on thorax above, where it is pale ochreous, and pale reddish at end of abdomen. Facial quadrangle broader than long. Process of labrum narrow and rounded at end. Clypeus shining, with numerous punctures. Facial foveae seen from above white, moderately broad, ending below a little below level of top of clypeus. Flagellum dull reddish beneath. Third antennal joint shorter than next three together, fourth joint very short. Mesothorax and scutellum dullish, without evident punctures. Area of metathorax granular. Tegulae dark reddish. Wings clear hyaline; nervures and stigma amber color. The type-specimen has the second transverse cubital wanting on one side. Basal nervure meeting transverse median. Second submarginal cell receiving first recurrent nervure in middle. Hair on hind tibiae and on inner side of hind tarsi shining white. Abdomen moderately shining, not punctured, interrupted white hair bands rather poorly developed on segments 2 and 3 and an entire one on fourth.

*A. fragiliformis* Cockerell is a little larger, with orange-tinted wings, rough and dull mesothorax, and narrower facial foveae. It is quite distinct.

*Paratype*.—Cat. No. 18162, U.S.N.M.

*b*<sup>82</sup>. Larger species, much more than 8 mm. long.

*a*<sup>84</sup>. Abdomen very finely punctured, with a faint greenish tint; facial foveae rather narrow; second submarginal cell receiving first recurrent nervure at middle.

## ANDRENA ANTONITONIS, new species.

Antonito, Colorado. August 5, 1899. (Gillette.)

*Female*.—Length, 10 mm. Black, rather slender; the front faintly greenish. Pubescence grayish white. Facial quadrangle broader than long. Process of labrum narrowly truncate. Clypeus shining, with sparse small punctures and an indistinct median ridge. Facial foveae seen from above brownish white, occupying about half distance between eye and antenna; seen from the side the foveae appear dark brown; they extend scarcely narrowed just below level of antennae and are very narrowly separated from eye. Flagellum obscure brownish beneath. Third antennal joint as long as next two combined. Mesothorax dull in front, shining posteriorly, with scattered small punctures. Scutellum shining. Area of metathorax granular. Tegulae ferruginous, with a fuscous spot. Wings reddish hyaline, nervures and the rather small stigma ferruginous. Basal nervure just falling short of transverse median. The very broad second sub-

marginal cell receiving first recurrent nervure at or little before middle. Hair on hind tibiae and on inner side of hind tarsi white, faintly yellowish on the tarsi. Spurs cream color. Abdomen dullish, with excessively minute punctures. Segments 2-4, with broad entire white hair bands. Hair at apex very pale yellowish. Second segment in middle depressed less than a third.

This is very like *A. synthyridis* Cockerell; they agree in the foveae, but *antonitonis* has the middle of mesothorax shining and sparsely punctured, while *synthyridis* has it duller and more closely punctured. They also differ in the minute sculpture of abdomen, and are certainly distinct species. In the key, *A. antonitonis* falls in a couplet with *A. perindotata*, from which it is separated by the polished clypeus.

*Type*.—Cat. No. 18164, U.S.N.M.

*b*<sup>84</sup>. Abdomen very finely punctured, shining black. *A. gardineri* Cockerell.

*c*<sup>84</sup>. Abdomen not punctured, and with no greenish tint.

*a*<sup>85</sup>. Abdominal bands broad and gray; hair of hind tibiae longitudinally bicolored, white and fulvous.

ANDRENA LEWISII Cockerell, variety A.

Florissant, Colorado. June 23. On *Salix brachycarpa*. (S. A. Rohwer.)

*Female*.—Length, 9½ mm. Black. Pubescence ocherous, beneath and on face dull white. Facial quadrangle broader than long. Process of labrum emarginate. Clypeus shining, with strong irregular punctures and a smooth median line. Facial foveae seen from above very pale brownish, moderately broad, ending below at about level of top of clypeus. Antennae dark; third joint scarcely longer than next two combined. Mesothorax granular, without distinct punctures. Scutellum shining, with a median groove. Area of metathorax granular, scarcely defined. Tegulae piceous. Wings hyaline, faintly dusky, stigma and nervures amber color. Basal nervure falling short of transverse median. Second submarginal cell receiving first recurrent nervure beyond middle. Hair of hind tibiae brownish fulvous above and white beneath, on inner side of hind tarsi pale golden. Abdomen moderately shining, not punctured; second to fourth segments with broad bands of dull white hair and a somewhat imperfect band on first. Second segment in middle depressed about one-third. Hair at apex light reddish.

(Except for the bicolored hair of hind tarsi, this exactly agrees with *A. lewisii*. It is certainly the same species.)

*b*<sup>88</sup>. Abdominal bands narrow and white; hair on hind tibiae shining white, not bicolored.

## ANDRENA TRAPEZOIDINA, new species.

War Bonnet, Sioux County, Nebraska. May 27, 1901. (M. A. Carriker.)

*Female*.—Length,  $9\frac{1}{2}$  mm. Black, with grayish white hair, very faintly yellowish on thorax above. Facial quadrangle much broader than long. Process of labrum rounded at end, the sides strongly concave. Clypeus minutely granular, with small not dense punctures. Facial foveae seen from above white, quite broad, ending below at about level of top of clypeus. Flagellum except at base rather bright red beneath. Third antennal joint shorter than next three combined. Mesothorax dull, not distinctly punctured, somewhat shining posteriorly. Scutellum shining. Area of metathorax coarsely roughened, scarcely defined, nearly all the metathorax covered with hair. Tegulae reddish. Wings reddish, stigma and nervures ferruginous. Basal nervure meeting transverse median. Second submarginal cell receiving first recurrent nervure near its end. Hair of hind tibiae shining white; hair on inner side of hind tarsi creamy white. Abdomen shining, not punctured, narrow hind margins of segments testaceous. Second segment in middle depressed about one-third. Segments 2 to 4 with white hair bands, that on 2 interrupted in middle. Hair at apex pale grayish brown. Rather like *A. campanulae* from same locality, but easily distinguished by the broad face, color of nervures, etc.

[This appears to be a race or subspecies of *A. sapellonis* Cockerell, from which it differs by the clearer, reddish hair at apex of abdomen, and absence of a smooth keel in middle of clypeus. Superficially, it is just like a specimen of *A. nudiscopa* Viereck (det. Viereck) from Fort Collins, Colorado, June 12, 1900 (Gillette); but the abdomen is brilliantly shining in *trapezoidina*, perfectly dull in *nudiscopa*.]

*Type*.—Entomological collection of the University of Nebraska.