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NEW AND LITTLE-KNOWN BEES OF THE FAMILY  
ANDRENIDAE FROM CALIFORNIA<sup>1</sup>

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The andrenid fauna of California is extremely rich in species, and many of these are new to science. In the present contribution, 22 species or subspecies of *Andrena* and two species of *Megandrena* are described as new, and several old species are redefined, all in the family Andrenidae.<sup>2</sup> The species here considered are nearly all represented in a collection of Andrenidae belonging to the United States National Museum and sent to me for study in the fall of 1945. Included in this collection were the types of numerous manuscript species of Viereck, and a few of his names have been adopted in the present paper.

Genus *ANDRENA* Fabricius

*ANDRENA* (*TRACHANDRENA*) *CALIFORNICA*, new species

This species belongs in a small group of *Trachandrena* having the hair on outer side of the hind basitarsus more or less blackened, or at least appreciably darker than the scopal hair of tibia. It differs from *A. limarea* Viereck in the duller mesoscutum and in the more broadly depressed and more densely punctured second tergite. From *A. quintiliformis* Viereck it differs in the dull mesoscutum, with the hair much finer and entirely light, and in the less

<sup>1</sup> Paper No. 644, University of California Citrus Experiment Station, Riverside, Calif.

<sup>2</sup> Hymenoptera: Apoidea.

densely punctured abdomen. It also differs from most other species of *Trachandrena*, including the two mentioned above, in having the pygidial plate gently convex, without a median embossed area.

*Female*.—Black, the apex of mandibles and small joints of tarsi reddened. Tegulae testaceous-brown. Wings subfuliginous, with stigma and subcosta piceous and the other nervures more reddened. Pubescence of head dirty white, becoming brownish on apical margin of clypeus and on labrum, and fulvous on lower edge of mandibles. Facial foveae brownish ochreous. Hair of thorax fulvous-red, changing to ochreous on propodeum and underparts, but the red covering tubercles and area just below base of forewings. This hair rather fine and moderately dense on notum and longer and sparser on the pleura. Abdomen without hair bands, the first four tergites with thin, pale-ochreous or whitish hair at the sides. Apical fimbria dusky fulvous-red, more or less darker than hair of notum, or sometimes brownish, especially in worn specimens. Hair of legs ochreous, the flocculus of hind trochanters more whitish, and the scopa of hind tibiae clear fulvo-ochreous. Hair of front and middle tibiae and tarsi, of apex of hind femora above, of base of hind tibiae on outer side, and of hind basitarsi more or less dark brown to fuscous. Process of labrum broader at base than long and narrowed to the rounded apex. Clypeus with strong, very close punctures and provided with a more or less distinct, smooth median ridge. Frons densely, substriately punctured. Facial foveae broad above and gradually narrowed almost to a point below, where they are separated from the eye margin by a narrow shining space. Mesonotum dull, closely and moderately coarsely punctured. Basal area of propodeum with irregular, more or less wavy rugae. Abdomen polished, moderately densely punctured, with the punctures of the apical depression of tergites 2 to 4 a little finer and more separated than those of the basal elevation. Punctures of tergite 1 well separated on the disk and absent on basal declivity. Tergite 2 depressed about three-fifths in the middle. Tergites 2 and 3 provided with a rather strong, groove-like basal transverse impression. Pygidial plate narrowly subtruncate at apex and gently convex on the disk. Length 10–11 mm.; anterior wing 8–8.3 mm.

*Male*.—Black, with tarsi dull ferruginous and apex of ventrite 6 clear ferruginous. Pubescence ochreous or fulvo-ochreous, nearly uniformly colored throughout, and rather long and dense on head and thorax. Hair of abdomen rather short and erect on disk of tergite 2 to 5, becoming a little dense and depressed at sides of apical margin of 2 to 4, and longer and brighter colored on tergites 6 and 7 and usually also across apical margin of tergite 5 (but

older and worn specimens show little or no evidence of this subfasciate condition). Face, including clypeus, closely punctured. Frons finely, substriately rugose. Thorax dull, the mesonotum with small, close punctures. Sides and posterior face of propodeum finely rugose, the sculpture finer than that of basal area. Abdomen finely, moderately closely, and rather weakly punctured. Tergite 2 depressed a little less than one-half. Basal process of labrum much broader than long and broadly concavo-truncate at apex. Third antennal joint as long as thick at apex and about one-half as long as following joint. Flagellum dull. Length 8-9 mm.; anterior wing 6.8-7.8 mm.

The male of this species is similar to that of *A. quintiliformis* Viereck, but has the antennae slightly longer, mesoscutum duller, with finer, less separated punctures, and abdomen hardly fasciate and less strongly and less densely punctured.

*Types*.—U. S. N. M. No. 59272. Holotype (female), Mill Creek, 4,400 feet, San Bernardino Mountains, Calif., on *Cryptantha intermedia*, May 30, 1938; allotype, Mill Creek, 6,000 feet, on *Arctostaphylos patula*, April 28, 1946 (Timberlake).

Paratypes, in the collection of the University of California at Riverside and Berkeley: 2 females, Mill Creek, 4,800 feet, at flowers of *Quercus dumosa*, May 13, 1940; 5 males, Mill Creek, 6,000 feet, on *Ceanothus cordulatus*, May 30, 1939, and May 21-22, 1940; 3 females, Tetley Park, 4,500 feet, San Bernardino Mountains, on *Horkelia parryi*, July 7, 1935; 5 males, Tetley Park, on *Salix laevigata* and at flowers of apple, May 15, 1937; 1 male, Tetley Park, on *Nemophila rotata* var. *integrifolia*, May 19, 1941; 1 female, Skyforest, San Bernardino Mountains, on *Horkelia parryi*, July 14, 1935 (Timberlake); 1 female, Miami Ranger Station, Mariposa County, on *Arctostaphylos*, May 18, 1942 (A. J. Walz); 1 female, same locality, June 4, 1942 (E. G. Linsley); 2 females, Oakhurst, Madera County, June 1, 1942 (Linsley) and on *Ceanothus*, June 5 (Walz); 3 females, Bass Lake, Madera County, May 30 and June 3, 1942 (Linsley); and 1 female, Herman Mountains, 500 feet, Santa Cruz County, June 13, 1912 (G. A. Coleman).

ANDRENA (TRACHANDRENA) CALIFORNICA WICKHAMI, new subspecies

At first glance the hair on the hind basitarsus of *wickhami* appears to be light colored, but careful scrutiny shows that it is actually darker than the scopal hair of the tibia. This subspecies, therefore, shows some similarity to *A. grandior* Cockerell but differs in having the mesonotum duller and densely punctured, the abdomen less densely punctured, with the basal impression of tergites 2 and 3 less strong and the basal elevation of each

segment less ridgelike. The manuscript name given by Viereck has been adopted for this subspecies.

*Female*.—Agreeing with *A. californica californica* in most characters, but hair of front and middle tibiae and tarsi and of hind basitarsi more or less pale brownish, and having only a trace of darker hairs near the knee plate at base of hind tibiae; stigma and nervures also dark ferruginous, with only the subcosta piceous. Length 8.5–9 mm.; anterior wing 7.5–7.8 mm.

*Types*.—Holotype, female (U.S.N.M. No. 28534), Dunsmuir, Siskiyou County, Calif., early June (Wickham); paratype (female) Mendocino County (E. R. Leach).

ANDRENA (PTERANDRENA) PLUMISCOPA, new species

A *Pterandrena* of a dark-green color and a very dull sculpture. Other green or blue-green *Andrena* of the Pacific coast, with a plumose scopa, such as *complexa* Viereck, *suavis* Timberlake, and *francisca* Viereck, have narrow facial foveae, a looser tibial scopa, and no light face marks in the male. These are referred more properly to *Ptilandrena*.

*Female*.—Dark green, this color being most distinct on frons, vertex, mesonotum, and tergum of abdomen. Clypeus and labrum black. Legs and venter dark brown to nearly black, the second ventrite with a greenish tinge. Tibial spurs pale testaceous. Mandibles dark red on apical half, piceous at base. Flagellum broadly ferruginous beneath beyond its second joint. Tegulae testaceous-brown at apex and dark toward base. Wings strongly dusky, the stigma and nervures dark ferruginous, the subcosta blackish. Pubescence pale ochreous or pale brownish, becoming more whitish on face, cheeks, and underparts of thorax; that on the mesonotum moderately dense and somewhat shorter. Floccus of propodeum long, curled, plumose, strongly descending along anterior margin of the pleuron; surface of propodeal pleura otherwise with a few scattered long erect hairs. Hair of abdomen whitish, moderately dense, short and erect on tergites 3 and 4, thence gradually lengthened toward the base. Hair at apex of tergites 2 to 4 depressed, forming narrow pale fasciae. Apical fimbria and tuft of hair at apex of hind femora above dark seal brown. Hair of femora white, the flocculus of hind trochanters pure white, very long, and ample. Hair on outer side of front and middle tibiae tinged with brown. Scopa of hind tibiae short and compact, with fine, soft, distinctly plumose hair, that along dorsal margin less than half as long as width of tibia. Scopal hairs white, becoming dark chocolate brown above, then blackish at base. Facial foveae whitish, but seal brown at upper end. Head

distinctly wider than long, with inner orbits of eyes slightly converging below. Facial foveae covering about three-fourths of space between eye and lateral ocellus, somewhat narrowed below, where they reach a little below level of antennae. Basal process of labrum with strongly diverging sides, the truncate or truncate-emarginate apex about two-fifths as wide as the base. Mandibles not emarginate within, the explanate margin on outer side near base very narrow. Third antennal joint barely longer than the next two together. Middle basitarsi dilated and considerably wider than the hind pair. Basal nervure before the nervulus. Stigma narrow. Second submarginal cell quadrate, less than half as long as third, and receiving the recurrent nervure a little beyond the middle. Head and thorax very finely granular-tessellate, the frons minutely indistinctly striate. Face below antennae with fine, close, indistinct punctures, but those on middle of clypeus much coarser and somewhat separated. Clypeus with a median ridge. Mesoscutum closely and indistinctly punctured. Basal area of propodeum small, minutely tessellate, and slightly roughened at base. Abdomen a little more shining than thorax, finely and very obscurely punctate. Length 9-10 mm.; anterior wing 6-6.4 mm.

*Male*.—Much like the female except in the creamy-white or pale-yellow face marks, which cover the clypeus and broad space between clypeus and eye. Anterior margin of clypeus and two dots on disk, black. Flagellum broadly ferruginous beneath except at base. Inner orbits distinctly convergent below. Cheeks moderately wide and strongly receding behind. Mandibles short, slightly curved, and dentate within near apex. Third antennal joint somewhat shorter than the next two together. Flagellum rather stout, with the middle joints nearly  $1\frac{1}{2}$  times longer than thick. Sculpture similar to that of female, but clypeus without a median ridge, a little shiny on anterior middle, and the punctures of face small, a little separated on middle of clypeus, and elsewhere indistinct. Pubescence a little thinner than in female, and not much shortened on mesonotum. Hair of abdomen about the same, except that the apical fasciae are very narrow. Venter with short, erect hair and a distinct fringe on the apex of segments 2 to 5. Hair at apex of abdomen a little brownish. Hair of legs rather short and whitish, that on inner side of tarsi pale ochreous. Sixth ventrite with a broad, rounded emargination at apex, the margin not reflexed. Latero-apical lobes (or parameres) of stipites with a broad triangular dilation on a little less than the apical half. Medio-apical lobes of stipites well developed and a little divergent. Sagittae short, moderately dilated and subangulate subbasally on each side, then gradually narrowed to a broad, blunt point and strongly

curved downward to end opposite the base of the expansion of the parameres. Length 8–10 mm.; anterior wing 5.8–6.4 mm.

*Types*.—U.S.N.M. No. 28533. Holotype (female) and allotype, Riverside, Calif., on *Cryptantha intermedia*, the female March 6, 1929, and the male March 26, 1934.

Paratypes in the collection of the Citrus Experiment Station: 2 males, Riverside, on same flower, March 15 and 26, 1934; 2 females, 3 miles west of Perris, on same flower, April 20, 1939; 3 females, 4 miles west of Perris, on same flower, March 27 and April 10, 1946; 1 female, The Gavilan, Riverside County, on same flower, April 10, 1946; 2 males, 4 females, Temecula, on same flower, except one female on *Platystemon californicus* and a pair taken in copula on ground, April 7, 1944 (all Timberlake). Paratypes in U. S. National Museum: U.S.N.M. No. 28533, 3 males, 15 females, San Francisco (J. C. Bridwell), which are undated except 3 taken April 13, 1913, and one at Lake Merced, May 5, 1912; 1 female, with abdomen missing, Los Angeles County (Coquillett); and 1 male, San Diego.

This is one of the species bearing a manuscript name given by Viereck. I have not observed the pollen-collecting habits of this bee. Only one female of those recorded above (one taken at San Francisco, April 13) had collected pollen. This pollen consists of very fine spherical grains of a dark-orange color.

ANDRENA (PTERANDRENA) ISOCOMAE, new species

Allied to *A. gardineri* Cockerell, but differs in the larger and broader facial foveae, in the slender teeth of basal process of labrum, the more shining mesoscutum, more strongly plumose tibial scopa, etc. The male differs from the Colorado species in having large lateral face marks, which are very small or absent in *gardineri*.

*Female*.—Black, the flagellum hardly reddened beneath. Claws ferruginous, the spurs testaceous yellow. Tegulae shining dark brown. Wings strongly dusky, the nervures and stigma dark ferruginous, the subcosta and inner margin of stigma blackish. Pubescence fulvo-ochreous, varying to whitish, rather dense on the notum of thorax and short on mesoscutum. Base and lateral margins of tergite 1 with thin hair, its apex and that of three following segments with a dense broad band of light pubescence. Disk of these tergites appearing nude, but bearing fine, short, erect hair. Scope of hind tibiae strongly plumose. Flocculus of hind trochanters ample, strongly curled. In specimens with whitish pubescence, the scopa of hind tibiae and apical fimbria of abdomen remain distinctly tinged with fulvo-ochreous. Facial

foveae pale ochreous, or whitish, broad and extending a little below antennae. Head distinctly broader than long. Anterior edge of mandible with a testaceous explanate margin near base. Process of labrum bidentate, the teeth subacute, generally longer than wide. Third antennal joint longer than the next two together. Clypeus more or less polished, with strong, close punctures, which sometimes leave a narrow impunctate line in middle. Frons dullish, densely punctured, and obscurely striate. Mesoscutum and scutellum polished, with fine, almost dense punctures, becoming sparser on scutellum and posterior middle of scutum. Mesopleura shining, but roughened by fine, shallow, close punctures. Basal area rather small, tessellate, and finely rugulose at base. Rest of propodeum like the mesopleura, except that the sides are polished, with scattered punctures and erect hairs on anterior halves. Abdomen polished, with minute, moderately close punctures, which become sparse on disk of tergite 1. Middle basitarsi distinctly broader than the hind pair. Stigma about one-half as wide as marginal cell. Second submarginal cell quadrate, receiving the recurrent nervure a little before or behind the middle. Length 8.5–12 mm.; anterior wing 7–8 mm.

*Male*.—Similar to female in color, pubescence, and sculpture. Clypeus, except two dark dots, and lateral face marks more or less filling space between clypeus and eyes, yellow. Hair of mesonotum not much shorter than that of mesopleura. Tergites 1 to 5 each with an apical hair band, the disk of each in front of band with fairly long, erect light hair. Venter very hairy, with erect hair on disk of segments and a dense apical fringe on segments 2 to 5. Process of labrum deeply emarginate, the tooth on each side triangular and acute. Clypeus shining, with fine, moderately close punctures. Third antennal joint barely longer than the next two together. Legs rather robust, the hind tibiae with rather long, loose hair that is somewhat plumose. Apical margin of sixth ventrite strongly reflexed and more or less ferruginous. Latero-apical lobes (parameres) of stipites rather elongate, with a semioval dilation, about four times as long as wide, straight on outer margin, arcuate within, and also with a narrow arcuate expansion on the inner surface of the short basal part. Sagittae subdepressed, broadly fusiform in basal part, then tapering to bluntly rounded apex beneath the slightly overlapping tips of the parameres. Fusiform part of sagittae convex above, and acutely margined on the sides. Length 7–9 mm.; anterior wing, 6.5–7.4 mm.

*Types*.—U.S.N.M. No. 59273. Holotype (female) and allotype, Riverside, Calif., at flowers of *Isocoma* (or *Aplopappus*) *veneta* var. *vernonioides*, October 13, 1929, and October 9, 1927.

Paratypes in the collection of the Citrus Experiment Station: 11 males, 28 females, Riverside, on same flower and on *Gutierrezia californica*, the males taken from September 27 to October 20, the females from October 9 to November 8, in different years; 2 males, 3 females, Morongo Valley, San Bernardino County, on *Gutierrezia lucida*, October 5, 1934, and September 26-27, 1944; 3 males, 18 females, Yucca Valley, on same flower, September 28 and 30, 1944; 2 males, 5 females, at summit of ridge (on highway) dividing Morongo and Yucca Valleys, on same flower, September 28, 1944 (all Timberlake); in the collection of the University of California: 1 female, Fort Tejon, October 20, 1938 (F. T. Scott); 5 males, San Diego, August 25, 1927 (J. C. von Boeker); 2 males, 9 females, Antioch, Contra Costa County, on unidentified Compositae, September 8, 1948 (P. D. Hurd and J. W. MacSwain); 1 male, 1 female, same locality, on *Gutierrezia*, September 13, 1936; and 1 female, Naples, Santa Barbara County, August 15, 1935 (E. G. Linsley).

ANDRENA (PTERANDRENA) TREVORIS Cockerell

*Andrena trevoris* COCKERELL, Entomologist, vol. 30, p. 306 (male), 1897.

This species was described from Olympia, Wash. I have a male from Corvallis, Oreg. (Scullen), taken, as was the type, on June 12, although 30 years later. Cockerell compared his species with *A. bipunctata* Cresson (*flavoclypeata* Smith), and the males of the two species are indeed very similar, although belonging to different groups. The female, which I believe belongs here, is new. It is remarkable for having the hypostomal carinae extremely high, and nothing even approaching this condition has been seen in any other species. The carinae are present also in the male but are not so high.

*Male*.—Black, the clypeus yellow, with exception of the anterior margin and two dots on the disk. Tarsi ferruginous, the flagellum dark ferruginous beneath. Cheeks very broad and rounded behind. Antennae rather long, with joint 3 distinctly longer than the following joint, but shorter than 4 and 5. Wings reddish smoky, the stigma and nervures ferruginous. Clypeus shining, minutely and closely punctured. Frons finely striato-rugulose. Mesoscutum finely and strongly punctured, the surface tessellate, rather shining, and becoming almost polished on the posterior middle and scutellum. Abdomen shining, with minute, close, setigerous punctures. Pubescence pale ochreous or grayish, moderately sparse on head and thorax, and short and suberect on the abdomen, becoming depressed on apical margin of the tergites to form narrow, fringelike apical bands on segments 2 to 5. Length 8 mm.; anterior wing 6.5 mm.



*Female*.—Black, the flagellum beneath, and usually the legs, nearly uniformly reddened. Wings as in the male. Head as broad as long, the hypostomal carinae very high and even. Clypeus large, strongly projecting, the apical margin flaring and prominent. Facial foveae rather narrow, a little wider than half the distance between eye and lateral ocellus and extending slightly below antennae. Antennal joint 3 barely longer than joints 4 plus 5. Process of labrum much broader than long, the sides sloping, the apex foveato-emarginate. Clypeus tessellate, a little dullish, and rather closely punctured. Frons beneath the foveae closely and finely striate. Mesoscutum shining, closely and finely punctured and tessellate on the anterior part, its posterior middle and the scutellum polished and more sparsely punctured than the remainder of mesoscutum. Propodeum dull and finely rugulose, the enclosure similarly sculptured. Abdomen almost polished and provided with minute, close, setigerous punctures. Pubescence ochreous or fulvo-ochreous, moderately dense on the thorax. Apical hair bands present on tergites 2 to 4, covering the apical depressions and more or less interrupted on middle of tergite 2. Tergite 1 with similar hair on each side of apical margin. Disk of tergites 2 to 4 with extremely short, fine, appressed dusky hair in front of the bands. Apical fimbria usually more tawny or more fulvous than pubescence of body. Hair of legs concolorous with body, the apical tuft of hind femora pale chocolate color, and hair next to the knee plate more or less blackened. Scopal hair of hind tibiae moderately, but rather obscurely, plumose. Length, about 10 mm.; anterior wing, 7.5 mm.

*Collecting records*.—One male, Corvallis, Oreg., June 12, 1925 (Scullen); 2 females, Corvallis, collecting pollen from wild rose, June 9, 1909 (Bridwell); 2 females, Corvallis, June 19, 1921 (collector unknown); 1 female, Union, Oreg., 2,716 feet, June 11, 1926 (Scullen).

Two females from Tahquitz Valley, San Jacinto Mountains, Riverside County, Calif., July 17 and 23, 1912 (Bridwell), seem to be the same species but have the clypeus more sparsely punctured, the pubescence uniformly dull fulvous, and hind tarsi and small joint of the other tarsi clear ferruginous. The pollen collected by these females appears to be identical with that carried by the females, from Corvallis, taken on wild rose.

ANDRENA (PTILANDRENA) LAYIAE, *new species*

This differs from other similar species with a metallic color in having the green color confined to the abdomen. The tibial scopa is moderately plumose.

*Female*.—Black, with tergum of abdomen dark blue-green. Mandibles slightly reddened at apex. Flagellum slightly brownish beneath. Tarsi more or less reddened, the claws ferruginous. Tibial spurs pale testaceous, or rufotestaceous. Tegulae piceous, becoming redder at apex. Wings strongly and uniformly dusky, the stigma and nervures dark ferruginous. Head much broader than long, with the malar space nearly obsolete. Facial foveae rather narrow, extending slightly below antennae, covering about half the space between eye and lateral ocellus, and separated throughout from eye by a shining, minutely punctate space that is about one-third as wide as the fovea itself. Mandibles nearly normal, the explanate expansion on lower margin short and narrow. Labrum rounded at apex, the basal process about as long as width of its apical truncation, the sides diverging toward base. (In the Walnut Creek specimens the process is rounded at apex.) Antennal joint 3 about as long as joints 4 to 6 combined. Middle basitarsi moderately dilated and a little wider than the hind basitarsi. Basal nervure meeting the nervulus, the stigma moderately narrow. Second submarginal cell a little less than half as long as the third and receiving the recurrent nervure at or a little beyond the middle. Head and thorax granular-tessellate and dull. Clypeus with fine, very close punctures, the frons strongly striate. Mesoscutum with close, minute sharp punctures. Basal area of propodeum small, with more or less radiating rugae at the base. Pleura of propodeum delicately tessellate and shining. Abdomen finely tessellate, rather shining, and with minute, rather close punctures. Pubescence reddish fulvous, or ochreous, paler on the face and beneath, and moderately dense on face and thorax. A little black hair present at apex of scapes and on vertex behind summit of eyes. Facial foveae dark seal brown, becoming ochreous below in holotype when viewed from above. Floccus of propodeum long and but little curled, the pleuron below the floccus with a few scattered erect hairs. Abdomen sericeous with fine, appressed light pubescence, becoming denser at the sides of tergites 2 to 4, but not forming hair bands. Tergite 1 with short, erect hair on lateral margins, its disk and disk of tergite 2, except apical part, nude. Apical fimbria pale fulvous brown. Hair of legs pale ochreous, tinged with brown on outer side of front and middle tibiae, on front tarsi, at apex of hind femora, and on dorsal margin at base of hind tibiae. Flocculus of hind trochanters long and rather thin. Scopa of hind tibiae moderately compact, the hairs on dorsal margin plumose and about two-thirds as long as greatest width of tibia, and the hairs of remainder of scopa rather weakly plumose. Length 10–12.5 mm.; anterior wing 8–9.2 mm.

*Types*.—Holotype (female), Ensenada, Baja California, Mexico, at flowers of *Layia*, April 24, 1941 (Cockerell) and one paratype (female) 10 miles north of Salis, Calif., on *Layia glandulosa*, May 18, 1936 (E. G. Linsley), in the collection of the Citrus Experiment Station.

Two paratypes (females) with same data as above paratype, in the collection of the University of California at Berkeley. Three paratypes (females), Walnut Creek, Contra Costa County, April 19, 1913 (J. C. Bridwell), in the U. S. National Museum, U.S.N.M. No. 59274.

ANDRENA (STENANDRENA) PALLIDIFOVEA (Viereck)

*Pterandrena pallidifovea* VIERECK, Can. Ent., vol. 36, pp. 222, 228, 1904 (female; excluding male, p. 195).

*Andrena plumifera* COCKERELL, Can. Ent., vol. 48, p. 393, 1916 (female).

This is a common species on the Pacific coast, extending from southern California to Washington, and inland to Salt Lake City, Utah. It is a late vernal species and collects pollen from Compositae. In southern California it collects pollen from *Ericameria cooperi*, *Helianthus gracilentus*, and from species of *Layia*, *Eriophyllum*, and *Chaenactis*.

In the United States National Museum it is represented by specimens from Pasadena, Calif., April 30, 1909; Arroyo Seco, Pasadena, June 17, 1909; and near Pasadena, 1,200 feet, April 15, 1911 (F. Grinnell, Jr.).

The male, associated with *pallidifovea* by Viereck, presumably had light face marks, as it was included in the table of males of *Opandrena* and *Pterandrena*. The true male of *pallidifovea* has the face entirely dark and may be briefly characterized as follows:

*Male*.—Dull black. Flagellum a little shining beyond the first joint, brownish beneath. Antennal joints 3 to 5 subequal, 4 being slightly shorter than the others and 3 slightly longer. Face and mesonotum opaque, the clypeus roughened by close, shallow punctures, the mesonotum impunctate. Vertex substriate between ocelli and eyes. Abdomen dullish, with extremely fine, dense setigerous punctures. Pubescence ochreous to fulvo-ochreous, lighter on the vertex and mesonotum. Hair of head and thorax long, erect, rather dense on face below antennae and on cheeks. First tergite and sides of the second with moderately long, erect light hair. Tergites 2 to 4 rather narrowly fasciate at apex with whitish hair, the band on 2 interrupted medially. The light hair at apex of tergite 5 longer and thinner than that forming the bands of preceding segments. Disk of tergites 2 to 5 densely covered with fine, very short, subdepressed hair, which is blackish except at base of tergite 2. Apical fimbria a little tinged with brown. Legs

slender, with hair entirely light and the tarsi very long. Length 8-12 mm.

ANDRENA (STENANDRENA) ESSIGI, new species

Similar to *A. pallidifovea* (Viereck), but smaller, the abdomen duller and with distinct but minute dense punctures on the basal segments.

*Female*.—Black, the mandibles usually dark red on apical half, the flagellum strongly reddened beneath except at base. Small joints of tarsi more or less ferruginous. Tegulae ferruginous, darker at base. Wings uniformly dusky hyaline, the nervures and stigma dark ferruginous, with subcosta and margins of stigma darker. Head distinctly broader than long. Facial foveae rather broad, not much narrowed below, where they reach the level of top of clypeus, and covering above hardly more than half the space between eye and lateral ocellus. Labrum broadly rounded in front, the basal process more than twice as broad as long, with sloping sides and broadly truncate apex. Middle basitarsi slightly broader than the hind pair. Head and thorax dull, minutely granular-tessellate. Clypeus and anterior sides of face with small, shallow, moderately close punctures, becoming a little coarser on middle of clypeus. Frons rugulose, obscurely striate. Mesoscutum opaque, obscurely punctured. Pleura of thorax more shining than the notum, a little roughened on anterior part of each mesopleuron. Pleuron of propodeum delicately tessellate and shining, without punctures or hairs except along the anterior margin. Dorsum of propodeum dull, rugulosely roughened, the sculpture of basal area still rougher, with fine rugae. Abdomen dullish, minutely and very closely punctate, the punctures more distinct on the two basal tergites and a little sparser on the first than on the second. Pygidial plate planate, dull, densely and minutely punctured except at apex. Pubescence ochreous, moderately dense on face and thorax, becoming more or less fulvo-ochreous on vertex and notum of thorax. Mesoscutum with rather dense, short, erect hair, interspersed with numerous longer, erect hairs. Hair at apex of hind femora, apex of middle tibiae, and at base of hind tibiae above, brown. Tergites 2 to 4 each with a dense, apical, pale-ochreous or whitish hair band, usually broadly interrupted on 2. Extreme sides of apical margin of first tergite with similar appressed hair. Base and lateral margins of first tergite with erect, not very long, pale hair. The disks of tergites 1 and 2 otherwise nude, but disks of tergites 3 and 4 and base of tergite 5 with very short appressed black hair. Apical fimbria brown but long hairs at sides of tergite 5 and at base of the fimbria more or less pallid. Length 7.5-10 mm.; anterior wing 6.3-7.1 mm.

*Male*.—Similar to the female and difficult to distinguish from the male of *A. pallidifovea*. Differs from the latter in smaller average size and in the very narrow hair bands of the abdomen, interrupted on tergite 2 and usually also on tergite 3. The subdepressed hair on disk of tergite 2 mainly light, but that on disk of tergites 3 to 5 black. The genitalia of the two species virtually identical. Length 6.5–9 mm.; anterior wing 5.5–7 mm.

*Types*.—Holotype (female), allotype, and 51 paratypes, from The Gavilan, Riverside County, Calif., April 1 to 30, 1 on *Layia elegans*, the rest on *Baeria*; 4 males, 1 female, Riverside, on *Baeria*, except 2 of the males taken on *Cryptantha* and *Sisymbrium*, respectively, March 3 to April 6; 1 female, Railroad Canyon, near Elsinore, on *Baeria*, April 7 (Timberlake); and 2 females, Claremont (E. O. Essig), in the collection of the Citrus Experiment Station. The holotype and allotype were taken on *Baeria*, April 10, 1940.

Paratype, 1 female, 1 male, Mount Hamilton Range, Santa Clara County, Calif., April 26, 1913 (J. C. Bridwell), in the United States National Museum, U.S.N.M. No. 59275.

This species is dedicated to Prof. E. O. Essig, who collected specimens at Claremont, presumably while a student at Pomona College.

ANDRENA (STENANDRENA) VEXABILIS, new species

Similar to *A. pallidifovea* (Viereck), but the female distinguishable by having the abdomen virtually impunctate, and the male by having antennal joint 4 hardly longer than thick and distinctly shorter than joint 3.

*Female*.—Black, the apical joints of tarsi more or less ferruginous. Flagellum only slightly reddened beneath. Tegulae dark. Wings uniformly dusky hyaline, the stigma dark red, the nervures more ferruginous, except subcosta and margins of stigma, which are blackish. Structural characters and sculpture mostly as in *pallidifovea* and *essigi*. Clypeus opaque, generally with the punctures very obscure, sometimes with a very fine transverse striation on the upper half of disk. Basal area of propodeum dull, finely granular-tessellate, the sculpture finer than that of remainder of dorsal surface of propodeum. (In *pallidifovea* the sculpture of basal area usually distinctly coarser than that of remainder of dorsal surface.) Abdomen minutely tessellate, moderately shining, virtually impunctate, although very minute, mostly remote punctures become discernible on close inspection. (In *pallidifovea* the tergites have a close, very minute puncturation, which in *essigi* becomes much more obvious.) Process of labrum a little larger

than in *pallidifovea*, much broader than long, broadly rounded or truncate at apex, or sometimes slightly emarginate at the middle of the apex. Pubescence much as in *pallidifovea*, varying from ochreous to fulvous on vertex and notum of thorax. Hair of mesoscutum long, erect, without short hair. (In *pallidifovea* hair of mesoscutum rather short and interspersed with longer hairs.) Usually some inconspicuous blackish hairs present on vertex, especially behind the summit of eyes. Facial foveae darker than in *pallidifovea*, seal brown above and whitish or ochreous at lower end. Tergites 2 to 4 each with a broad, dense apical hair band, interrupted medially on tergite 2. Disk of tergites 1 and 2 nude, that of 3 and 4, and base of tergite 5, with very short, subappressed black hair. Apical fimbria brown. Length 9–12 mm.; anterior wing 7.5–8 mm.

*Male*.—Very similar to the male of *A. pallidifovea*, but antennal joint 3 distinctly longer than 4 and slightly longer than 5, joint 4 being barely longer than thick. Pubescence pale ochreous to whitish, with some long black hairs on sides of face and behind summit of eyes. Hair bands on tergites 2 to 5 weak, those on segments 2 and 3 broadly interrupted at the middle. Genitalia virtually the same as in *pallidifovea*. Length 7.5–10 mm.; anterior wing 7 mm.

*Types*.—U.S.N.M. No. 59276. Holotype (female), allotype, and 14 paratypes (7 males, 7 females), San Francisco, Calif., April 13, 1913; 8 females (paratypes), San Geronimo, Marin County, April 23, 1913; 11 females (paratypes), Mount Hamilton Range, Santa Clara County, April 26, 1913 (J. C. Bridwell).

*Other records*.—Four females Russelman Park, Contra Costa County, on *Baeria*, April 26, 1942 (E. G. Linsley); 1 female, Kern County, April 1939 (F. T. Scott); and 1 female, Mendocino County (E. R. Leach), in the collection of the Citrus Experiment Station.

#### ANDRENA (HESPERANDRENA) ESCONDIDA Cockerell

*Andrena escondida* COCKERELL, Ann. Mag. Nat. Hist., ser. 11, vol. 2, p. 146, 1938 (male).

This was described from Santa Catalina Island. The female has been recorded by Cockerell but not described. For purpose of comparison with the following new species, it is now briefly characterized as follows:

*Female*.—Black, without any distinct metallic tinge. Head and thorax dull, the lower part of mesopleura, metapleura, and pleura of propodeum more shining. Clypeus with sparse, minute, indistinct punctures. Frons striate. Mesonotum tessellate, becoming more shiny on posterior middle of the scutum and base of scutellum, and finely, strongly, and closely punctured. Basal area

broadly triangular, sculptured almost like remainder of dorsal surface of propodeum, although minutely striate on basal margin. Abdomen strongly tessellate, dullish, and minutely punctate, the punctures sparse on tergite 1 and rather close on 2. Process of labrum low and broadly truncate at apex. Facial foveae extremely broad, each about as broad above as the space between them, ochreous in color, becoming slightly brownish above. Pubescence of head and thorax brownish ochreous, moderately sparse. Tergites 2 to 4 of abdomen each with a distinct whitish apical fascia, that on 2 broadly interrupted at the middle. Apical fimbria pale brown. Tibial scopa moderately loose and long, the hairs on dorsal margin a little longer than width of tibia. Wings dusky hyaline, with dark-ferruginous stigma and nervures. Length about 9 mm.; anterior wing 7 mm. (or about 6.6 in the Ensenada female).

The female is now known from Rancho Santa Ana, Orange County, Calif., and Ensenada, Baja California, having been taken in both places at flowers of *Layia*.

ANDRENA (HESPERANDRENA) LIMNANTHIS, new species

Like *A. escondida* Cockerell, but more opaque black, almost without puncturation, the facial foveae brown, moderately broad, and the abdomen hardly fasciate.

*Female*.—Black, the mandibles a little reddish at apex. Flagellum dark. Legs black, although sometimes tinged with red. Tegulae piceous, more reddish at apex. Wings dusky hyaline, the stigma and nervures dark reddish, the subcosta blackish. Head and thorax opaque, becoming less dull on lower sides of thorax, the pleura of propodeum shining. Clypeus and mesonotum, especially the anterior part of scutum, with very fine faint punctures. Frons striate. Enclosure of propodeum large, forming nearly a right angle, tessellate, becoming a little duller at base. Abdomen tessellate, slightly shiny, virtually impunctate. Process of labrum triangular, rounded to subacute at apex. Facial foveae moderately broad, reaching level of top of clypeus. Antennal joint 3 slightly longer than the next two joints together. Pubescence rather scanty, pale ochreous, becoming pale brownish fuscous on face and vertex. Hair of mesoscutum rather short and erect, with finer and shorter hairs interspersed. Abdomen with fine, short, appressed light pubescence, becoming slightly denser and longer at apex of tergites 3 and 4 and at sides of the apex of tergite 2, but forming very narrow, indistinct hair bands. Tergite 1 with short, erect hair, especially laterally. Apical fimbria brown. Hair of legs pale, becoming somewhat brownish on outer side of front

and middle tibiae. The dense tuft of hair at apex of hind femora, above, brownish fuscous. Tibial scopa pale brown above, more whitish beneath, moderately short and compact, with the hair on dorsal margin about half as long as width of tibia. Second submarginal cell usually considerably narrowed above and receiving recurrent nervure at, or a little behind, the middle. Third submarginal cell rather short and less than twice as long as the second. Basal nervure slightly postfurcal. Length 8-10 mm.; anterior wing 6.8-7 mm.

*Male*.—Similar to the female in most respects. Face without a light clypeal mark. Apex of mandibles dark red. Flagellum dull, slightly brownish beneath. The little ridge marking the base of apical depression of tergites 2 and 3 reddish on each side, forming a transverse streak. Apical margin of tergites very narrowly smooth and shiny. Basal process of labrum rounded at apex, and finely foveate beneath at the middle. Antennae short, only moderately longer than in the female. Antennal joint 3 equaling 4 plus 5. Pubescence whitish to pale ochreous, longer than in the female, especially on the thorax. Hair of face and clypeus moderately dense. Hair of abdomen rather short, depressed, and thin, not at all forming bands; that of tergite 1 much longer and erect. Hair of venter similar to that of tergum, with longer, erect hair on each side of the subapical segments. Medio-apical lobes of stipites virtually obsolete, making the dorso-apical margin almost transverse. Latero-apical lobes of stipites elongate, as usual in this group, slightly angulate on inner margin before the middle and convergent at their tips. Sagittae as in other species of this group, the apex slightly surpassing apex of the stipital lobes. Length 6.5-8 mm.; anterior wing 5.8-6.2 mm.

*Types*.—U.S.N.M. No. 59277. Holotype (female), allotype, and 37 paratypes (8 males, 29 females), San Geronimo, Marin County, Calif., April 23, 1913 (J. C. Bridwell).

Paratypes, 2 males, 7 females, Santa Rosa, Sonoma County, on *Limnanthes douglasii*, April 17, 1938 (Embury), and 1 male, Agua Caliente, Sonoma County, on same flower, April 14, 1938 (Frazier), in the collection of the Citrus Experiment Station.

ANDRENA (HESPERANDRENA) LATIVENTRIS, new species

The female of *lativentris* differs from other species of *Hesperandrena*, except *A. limnanthis*, in having the mesoscutum black, dull, and strongly tessellate, with the punctures obscure. From *limnanthis* it differs in the less opaque sculpture; longer, less compact, more plumose tibial scopa; and in having the abdomen more definitely fasciate. The male differs from *limnanthis* in having the clypeus mainly pale yellow.



*Female*.—Black, the mandibles strongly reddened except on the basal third. Flagellum brownish beneath. Small joints of tarsi ferruginous, the basitarsi more dusky. Tegulae reddened at apex. Wings as in *limnanthis* as to color and neuration, except that the second submarginal cell is less narrowed above. Apical margin of tergites, especially of the second, subhyaline and then reddened. Head and thorax very finely tessellate, dullish, although a little shining in some aspects. Clypeus subopaque, impunctate. Frons finely striate. Mesoscutum with fine, close, but indistinct punctures. Enclosure of propodeum and abdomen nearly as in *limnanthis*. Process of labrum small, very short, a little emarginato-truncate on middle of apex. Facial foveae whitish, broad above, each covering slightly more than one-fourth of space between the eyes. Antennal joint 3 about equaling the next three joints together. Pubescence whitish to pale ochreous, most conspicuous on the face and cheeks, the hair of clypeus subdepressed and partially concealing the surface. Hair of mesonotum short and erect, becoming longer on anterior part of scutum and on apical margin of scutellum. Pubescence of abdomen fine and appressed, forming white apical hair bands on tergites 2 to 4, these bands being broadly interrupted on tergites 2 and 3. Apical fimbria tinged with brown. Hair of legs mostly whitish, but brownish on outer side of middle tibiae at apex, with tuft at apex of hind femora, and the tips of scopal hairs on dorsal side of hind tibiae, brown. Scopa of hind tibiae rather long and moderately dense, the hairs on dorsal margin obviously plumose and slightly longer than greatest width of tibia, the hairs on the outer surface obscurely plumose. Labial palpi short, the basal joint strongly bowed; the two middle joints short, thickened, and oblique, hardly longer than wide; the apical joint slender and nearly twice as long as preceding joint. Length 7-9 mm.; anterior wing 6-6.6 mm.

*Male*.—Similar to female. Clypeus, except outer corners and narrow apical margin, pale yellow. Tergites narrowly reddened contiguously to the subhyaline apical margins, these reddened areas on tergites 2 and 3 definitely much widened on each side to form more or less conspicuous spots. Process of labrum small, more thickened and more prominent than in female, rounded and arched apically, and, at most, weakly foveate medially below the margin. Antennae short, with joint 3 equaling 4 plus 5, which are quadrate. Pubescence white, much longer than in female, with the hair of face and cheeks rather dense and almost concealing the yellow clypeal mark. Hair of mesonotum long and thin, that of first tergite similar, and that of following segments short and appressed, forming weak apical hair bands on tergites 3 to 5.

Sternites 2 to 5 each with a strong apical fringe. Medio-apical lobes of stipites slightly produced. The latero-apical lobes bowed inward, so that they are nearly opposed to each other on their apical halves, and not angulate on inner margin. Sagittae nearly as in *limnanthis*. Length 6.5–9 mm.; anterior wing 6–6.5 mm.

*Types*.—U.S.N.M. No. 59278. Holotype (female) and allotype, near Strathmore, Tulare County, Calif., on *Baeria tenella*, March 29, 1937. Paratypes, 2 females, Mount Hamilton Range, Santa Clara County, April 26, 1913 (J. C. Bridwell); 1 male, Elsinore, Riverside County (Baker).

Paratypes, in the collection of the University of California at Riverside and Berkeley: 32 males, 9 females, from Strathmore, March 28–29, 1937, and April 1, 1933 (Timberlake); 51 males, 24 females, Earlimart, Tulare County, on *Baeria tenella*, March 9, 1937 (Timberlake and Linsley); 1 female, Earlimart, on *Baeria gracilis*, March 30, 1937 (Timberlake); 3 females, Kern County, April 1939 (F. T. Scott); 2 males, 2 females, Davis, May 12, 1937 (J. J. DuBois); 4 females, Russelman Park, Contra Costa County, on *Baeria*, April 26, 1942 (E. G. Linsley); 73 females, near Hemet Lake, San Jacinto Mountains, Riverside County, on *Layia platyglossa*, May 24, 1939 (Linsley); 1 female, Herkey Creek, San Jacinto Mountains, on *Layia platyglossa*, June 3, 1939 (Timberlake).

*Other records*.—A series from Hemet Lake is in the collection of the U. S. National Museum.

ANDRENA (HESPERANDRENA) DUBOISI, new species

This species is allied to *A. baeriae* Timberlake, but it differs from that and other species of the group in having the integument much more definitely tinged with green. The male differs from *baeriae* also in having a large pale-yellow mark on the clypeus.

*Female*.—Integument tinged with dark green, which is more pronounced on abdomen than on head or thorax. Mandibles dark red at apex. Antennae black, the flagellum brownish beneath. Legs black, or more or less reddish brown, with the tarsi more rufescent. Tegulae shining rufopiceous, redder at apex. Wings a little dusky fulvescent, the stigma and nervures pale ferruginous; the subcosta blackish. Facial foveae moderately broad, extending below level of antennae, and pale brownish ochreous as seen from above. Subgenal coronet dark red. Explanate expansion of outer margin of mandible narrow, ferruginous, and extending beyond the middle. Antennal joint 3 barely longer than the next two joints together. Head and thorax minutely

tessellate, moderately dull. Frons distinctly striate. Clypeus, sides of face below antennae, and mesoscutum with fine, shallow, moderately close punctures. Scutellum impunctate. Upper part of mesopleuron subopaque. Basal area broadly triangular, its sculpture minute and a little less rough than that of remainder of dorsal surface of propodeum. Abdomen minutely tessellate, rather shining and impunctate. Pubescence ochreous, rather short and moderately sparse, being densest on the face and cheeks. Abdomen with fine, short, appressed light pubescence, very thin on middle of disk of tergite 2, and becoming longer and denser at apex of tergites 2 to 4 to form bands. Band on tergite 2 thinner or interrupted at the middle. Apical fimbria, hair at apex of hind femora, at apex of middle tibiae, and at base of hind tibiae on dorsal margin, slightly tinged with brown. Basal nervure distinctly postfurcal. Second submarginal cell about half as long as the third, and receiving the recurrent nervure at or near middle. Length 5.5–8 mm.; anterior wing 5–6.1 mm.

Females from along the coast of California (Walnut Creek, San Francisco, and San Diego) have the facial foveae more pallid than in the type series from Davis, and have the apical depression of tergites rufotestaceous to whitish.

*Male*.—Similar to female. Disk of clypeus pale yellow. Pubescence paler and longer than in female, dense and white on face, and nearly concealing the surface of clypeus. Hair of mesoscutum long and erect. Apical bands of abdomen thin or, usually, obsolete. Disk of tergite 1 with long, erect hair. Hair of venter rather long and erect, the apical margin of segments 2 to 5 each with a very short apical fringe. Antennae barely longer than in the female, the flagellum stout. Joint 3 about equaling 4 plus 5, which are both broader than long. Process of labrum about twice as broad as long and more prominent than in female. Medio-apical lobes of stipites together forming a subacute angle. Latero-apical lobes of stipites geniculate before the middle, strongly bent downward, and pallid at apex. Apical part of sagittae very slender and becoming slightly expanded at the extreme apex. Length 5–7.5 mm.; anterior wing 4.5–6 mm.

*Types*.—U.S.N.M. 59279. Holotype (female) and allotype, Davis, Calif., presumably at flowers of *Baeria*, May 12, 1937 (J. J. DuBois); 3 females (paratypes), Walnut Creek, Contra Costa County, April 17, 1913 (J. C. Bridwell); 1 female (paratype), San Francisco (Bridwell); and 1 female (paratype), San Diego.

Many paratypes (82 males, 108 females) from Davis in the collections of the Citrus Experiment Station and of the University of California at Berkeley.

## ANDRENA (MICRANDRENA) PIPERI Viereck

*Andrena piperi* VIERECK, Can. Ent., vol. 36, pp. 189, 196 (female), 1904.

The type locality is Pullman, Wash., but the species ranges to southern California. It is a common winter and spring bee at Riverside, and the female collects pollen from Cruciferae, especially from *Alyssum*, *Brassica*, *Capsella*, and *Sisymbrium*. I have one female collected at Salt Lake City, Utah, May 4, 1913; a male from Riparia, Wash., April 8, 1908 (Aldrich); a male from Merrill, Oreg., from wild mustard, May 10, 1929 (C. C. Wilson); besides many from Riverside.

In the U. S. National Museum is the following material: 1 female, Mount Hamilton Range, Santa Clara County, Calif., April 26, 1913 (J. C. Bridwell); 1 female, Berkeley, April 19, 1915 (E. P. Van Duzee); 2 males, Sacramento, March 6, 1931 (C. C. Wilson); 8 males, Stanford University, March 4-24, 1910; 4 males, Stanford University, March 21 and 24, 1915 (H. Morrison); 2 males, 3 females, Redlands (F. R. Cole); and 1 male, Claremont (Baker).

The male has not been described, and in the National Museum material two manuscript names were attached to specimens of this sex by Viereck. It may be distinguished from males of other North American species of this group by means of the following characters: Integument black, with a slight aeneous tinge; the clypeus yellow, with two minute black dots. Wings faintly dusky, with ferruginous stigma and nervures. First abscissa of radius more or less short or punctiform. Antennae moderately long, with joint 3 longer than 4, but distinctly shorter than 4 plus 5. Head and thorax dull, granular-tessellate. Enclosure very large, finely granular-rugulose, the sculpture somewhat coarser than that of remainder of propodeum. Pubescence usually white, and very long and copious on the cheeks, sides of thorax, and on the front femora.

## ANDRENA (MICRANDRENA) CHLOROGASTER Viereck

*Andrena chlorogaster* VIERECK, Can. Ent., vol. 36, pp. 189, 196 (female), 1904.

From Oregon and California there are now known three very similar species of *Micrandrena*, which are distinguishable with difficulty in the female, but which are surely distinct by the characters of the male, especially those of the genitalia (cf. key, page 396). With only a few specimens at hand from Oregon, it is impossible to be sure about the correct usage of the name *chlorogaster*, but I have provisionally assigned the name to a species which ranges from Corvallis, Oreg., southward to Riverside County and Santa Catalina Island, Calif. *A. chlorogaster*

was described from Oregon, without a more definite locality. The male is new.

*Male*.—Integument with a very dark-green or bluish green luster. Clypeus pale yellow except on the margin, and without dark dots. Flagellum dark reddish ferruginous, blackish above. Small joints of tarsi ferruginous. Tegulae dark testaceous brown. Wings rather dusky hyaline, the stigma and nervures reddish brown. Frons and vertex finely granular-striate. Face below antennae dullish, finely shagreened and indistinctly punctured, the clypeus a little more shining and minutely tessellate. Mesoscutum, scutellum, and metanotum finely tessellate and dullish, the scutellum a little more shining than the other parts. Basal area very large, finely rugulose, smoother toward apex, the sculpture coarser than that of remainder of propodeum. Abdomen minutely tessellate, a little dullish and impunctate. Antennae long, with the middle joints of flagellum distinctly longer than thick, and joint 3 shorter than 4. First abscissa of radius very short or punctiform. Pubescence whitish, moderately long and dense on cheeks and pleura. Usually with much black hair present on sides of face and behind summit of eyes. Genitalia short and compact. Parameres of stipites very stout, the expanded apical part semi-oval, about twice as long as wide, with the inner margin evenly and convexly arcuate from base to apex of the expansion. Sagittae dilated and bulbous at base, the apical part half compressed, with very thick, blunt, spreading tips, the dorsal crest of each component, just beyond the bulbous portion, much thickened and protuberant. Length 5–7 mm.; anterior wing 4.3–4.8 mm.

*Female*.—Like the male, but greenish luster perhaps a little less evident and most distinct on the abdomen. Sculpture as in male, with the clypeus dull, minutely granular-tessellate and obscurely punctate. Process of labrum quadrate, about as long as wide, truncate at apex, and a little widened toward the base. Facial foveae narrow, reaching a little below level of antennae, and usually a light fulvous brown. Pubescence whitish, tinged with brownish ochreous on vertex and notum of thorax. Apical fimbria brown. Tergites 2 to 4 each with a white apical fringe, broadly interrupted on 2 and 3. Length about 7 mm.; anterior wing 4.8–5.2 mm.

In the U. S. National Museum collection: 5 males, 1 female, Corvallis, Oreg., April 24, 1919 (I. N. Gabrielson); 1 male, 1 female, Mount Tamalpais, Marin County, Calif., March 30, 1913 (J. C. Bridwell); 2 males, Stanford University, March 18, 1912; and 1 male, Stanford University, March 17, 1917 (R. Stinchfield).

In the Riverside collection: 1 male, Putah Canyon, on boundary of Yolo and Solano Counties, Calif., on elderberry, February 29, 1936 (R. M. Bohart); 2 males, Berkeley, March 7, 1934, and March 26, 1935 (Bohart); 1 female, Berkeley, on *Ranunculus*, March 19, 1939 (E. G. Linsley); 2 males, 1 female, Visalia, March 29, 1939, and 1 female, on red clover, April 21 (F. T. Scott).

The material of *chlorogaster* from southern California is at least subspecifically distinct, and three races can be distinguished as based on the males.

KEY TO SUBSPECIES OF ANDRENA (MICRANDRENA) CHLOROGASTER

1. Flagellum dark reddish brown beneath; medio-apical lobes of stipites longer than wide and more or less pointed..... 2
- Flagellum ferruginous beneath; medio-apical lobes of stipites blunt and no longer than their basal width; reflexed dorsal margins of sagittae, just beyond the basal expansion, arched as seen from side and nearly parallel with each other (Oregon and northern California).

*chlorogaster chlorogaster* Viereck

2. Sides of face with only a trace of black hair; medio-apical lobes of stipites a little longer than wide; rounded expansion on inner margin of parameres near base longer than in *chlorogaster*; reflexed dorsal margins of sagittae, just beyond the basal expansion, about as in *chlorogaster* (Santa Catalina Island).....

*chlorogaster nesiototes*, new subspecies

Sides of face with considerable black hair; medio-apical lobes of stipites about twice as long as their basal width; expansion on inner margin of parameres near base as in *nesiototes*; reflexed dorsal margins of sagittae, just beyond the basal expansion, hardly arched and strongly divergent basad (San Diego and Riverside Counties).

*chlorogaster gavilanica*, new subspecies

ANDRENA (MICRANDRENA) CHLOROGASTER NESIOTES, new subspecies

*Male*.—To the characters given above, it is necessary to add only that the antennae are somewhat shorter than in *chlorogaster*, with the joints of flagellum each about one and one-fourth times longer than thick. Length 5.5 mm.; anterior wing 4.7 mm.

*Type*.—One male (holotype), Santa Catalina Island, Calif., March 26, 1937 (Cockerell), in the collection of the Citrus Experiment Station.

ANDRENA (MICRANDRENA) CHLOROGASTER GAVILANICA, new subspecies

*Male*.—Almost exactly agreeing with *nesiototes*, except in regard to the characters noted in the above key. Length 5.75 mm.; anterior wing 4.7 mm.

*Female*.—Not distinguishable in any appreciable degree from typical *chlorogaster*. Length 6.5 mm.; anterior wing 4.5 mm.

*Types*.—Holotype (male), allotype, and 9 paratypes (females), The Gavilan, Riverside County, Calif., at flowers of *Lomatium dasycarpum* and *Sanicula bipinnatifida*, March 27 and April 10,

1946; and 2 females (paratypes), Camp Pendleton, 10 miles northeast of Oceanside, San Diego County, on *Sanicula bipinnatifida*, April 22, 1946 (Timberlake), in collection of the Citrus Experiment Station.

A small series of females from Pine Flat, near California Hot Springs, Tulare County, May 3, 1947 (Timberlake) seems to belong here. These females were taken at flowers of *Sanicula tuberosa*, except one that occurred at flowers of *Rhamnus crocea*.

ANDRENA (MICRANDRENA) RADIALIS, new species

Similar to *A. chlorogaster* Viereck, but the male has only a trace of black hair at sides of face, and the genitalia are distinctive. The female differs hardly at all, except that the foveae are whitish, and even this character may not always be distinctive.

*Male*.—Integument with a dark bluish-green tinge. Clypeus, except the margins, pale yellow, without black dots. Flagellum dark ferruginous beneath, blackish above. Wings slightly dusky, the nervures and stigma dark ferruginous. Antennae long, the middle joints of flagellum much longer than wide, and joint 3 shorter than 4. First abscissa of radius very short or punctiform. Basal area large and broad, finely granular rugulose, more coarsely so at base, where the sculpture is distinctly coarser than that of remainder of propodeum. Pubescence white and moderately long and dense on cheeks and pleura. Only a few dusky or blackish hairs on each side of face. Genitalia in general similar to those of *chlorogaster*, but parameres of stipites less thickened at base, and the apical expansion subtriangular. Compressed apical half of sagittae having the two component parts moderately incrassate at the tips, and the dorsal crest of each thin-edged and a little separated just beyond the basal bulbous portion. Length about 5 to 6 mm.; anterior wing 4.3–4.8 mm.

*Female*.—Like *chlorogaster*, but pubescence white, the facial foveae soiled whitish. Length 6–7 mm.; anterior wing 4.8–5 mm.

*Types*.—U.S.N.M. 59280. Holotype (male) and allotype, Elsinore, Riverside County, Calif. (Baker); another pair (paratypes), Redlands (F. R. Cole).

In the collection of the Citrus Experiment Station are the following paratypes: 107 males, 59 females, Riverside, taken on *Salix*, *Sisymbrium*, *Brassica*, *Capsella*, *Alyssum*, *Sedum* (in cultivation), *Taraxacum*, *Sonchus*, *Baccharis*, Marguerite daisy, and flying near *Sambucus*, February 16 to April 28; 2 females, Valyermo, Los Angeles County, on *Salix*, March 26; 1 female, Andreas Canyon, near Palm Springs, on *Sisymbrium*, March 2; 2 males, Soboba Hot Springs, on *Salix*, March 11; and 1 male,

San Jacinto River, at 2,100 feet, on *Salix*, February 22 (Timberlake).

The female collects pollen, as far as is known, only from *Salix*.

The following females, with no associated males, have whitish facial foveae as in *radialis*, but they may belong with *chlorogaster*, as the color of the foveae may not be always distinctive: 2 from The Dalles, Oreg., May 2 and 3, 1927 (Scullen); 1 from Marion, Oreg., May 13, 1928 (A. Gray); 1 from Salt Lake City, Utah, May 4, 1913 (Timberlake); 1 from Sand Flat, Calaveras County, Calif., 5,000 feet, June 11, 1930 (D. W. Clancy); and 1 from Berkeley, April 7, 1935 (R. M. Bohart). The two females from Visalia, recorded above under *chlorogaster*, also have whitish foveae, but are associated with males with definite *chlorogaster* characters.

ANDRENA (MICRANDRENA) NITIDICORNIS Cockerell

*Andrena nitidicornis* COCKERELL, Pan-Pacific Ent., vol. 12, p. 144, 1936 (male).

This is another sibling species difficult to distinguish, at least in the female sex, from *A. chlorogaster* and *A. radialis*. It was described from Garberville, Humboldt County, Calif., but I have taken it in southern California, in the foothills of the San Gabriel Mountains, up to an elevation of about 1,500 feet on *Ceanothus*, and also at The Gavilan, Riverside County, on *Salix*.

The male has much black hair on the face and behind the summits of eyes, and the yellow of the clypeus covers not much more than half of the disk. The parameres of the stipites are not angulate on the inner margin, the apical expanded part being elongate oval; and the bulbous basal part of the sagittae bears a distinct median impression apically.

These three sibling species are separated in the key, the characters given for the males having greater value:

KEY TO SPECIFIC CHARACTERS IN ANDRENA CHLOROGASTER,  
A. RADIALIS, AND A. NITIDICORNIS

- |   |                     |
|---|---------------------|
| 1. Females .....  | 2                   |
| Males .....   | 4                   |
| 2. Stigma and nervures ferruginous, facial foveae more or less pallid; scopal hairs of hind tibiae more distinctly curled.....        | 3                   |
| Stigma and nervures reddish brown; facial foveae pale brown, more pallid below; scopal hairs more erect on outer face of hind tibiae. |                     |
|   | <i>chlorogaster</i> |
| 3. Basal area of propodeum nearly uniformly finely granular; facial foveae whitish, tinged with brown above.....                      | <i>radialis</i>     |
| Basal area finely rugulose except on margins; facial foveae more brownish.  | <i>nitidicornis</i> |



4. Sagittae not so thick and blunt at apex and not spreading apart at their tips ..... 5  
 Sagittae very broad and blunt at apex, their tips spreading apart. *chlorogaster*
5. Clypeus more or less broadly black on upper margin; sides of face with black hair; flagellum dark; dorsal margins of sagittae rather broadly reflexed just beyond basal bulbous part.....*nitidicornis*  
 Clypeus narrowly black on upper margin; hair of face entirely, or almost entirely, whitish; flagellum ferruginous beneath; dorsal margins of sagittae not reflexed just beyond basal bulbous part.....*radialis*

ANDRENA (MICRANDRENA) MICROCHLORA SUBALIA Cockerell

*Andrena microchlora subalia* COCKERELL, Pan-Pacific Ent., vol. 12, p. 143, 1936 (female; in part).

In the United States National Museum are 30 females, San Francisco, Calif., March 16, 1913 (J. C. Bridwell); 5 females, Mount Hamilton Range, Santa Clara County, April 26, 1913 (Bridwell); and 2 males, Berkeley, March 15, 1913 (Bridwell). In the Riverside collection is a female from Pullman, Wash., May 11, 1922 (Melander), and a pair from Corvallis, Oreg. (Scullen), the female taken April 26, 1928, and the male, on *Taraxacum*, April 17, 1929.

Cockerell described *subalia* from the coastal region of northern California, but confused two species in his material. The type and a cotype taken near Lower Lake, Lake County, at a yellow umbellifer are virtually indistinguishable from females of *microchlora* from Boulder, Colo. The remainder of the material, as far as I have examined it, is referable to *A. nitidicornis* Cockerell, and it is probable that Cockerell was led to separate *subalia* because of the inclusion of this extraneous material. The male of *microchlora* from Boulder, however, has the pubescence of the face entirely white, while the males from the Pacific coast have much black hair on the sides of the face and behind the summits of eyes. For this reason alone, the race *subalia* appears to deserve recognition.

The female of *microchlora* can be distinguished from the females of the *chlorogaster* group by the duller, more finely granular-tessellate and much more hairy mesoscutum, and by the upright, and but little curved scopal hairs of the hind tibiae.

ANDRENA (MICRANDRENA) CANDIDIFORMIS SEMOTULA Cockerell

*Andrena semotula* COCKERELL, Pan-Pacific Ent., vol. 12, p. 149, 1936 (male).

This is only a weakly distinguishable race of *Andrena candidiformis* Viereck and Cockerell, the male having the stigma more or less infuscated and the flagellum black. It occurs in the mountains of southern California and northward along the coast to

Humboldt County. The type locality is 8 miles north of Ukiah, in Mendocino County. The female also may have the stigma darkened, but this character is slight and apparently unreliable, as three specimens collected in Mendocino County by E. R. Leach have the stigma as pale as in typical Colorado material. The female collects pollen from *Ceanothus*.

It is represented in the United States National Museum by 1 female from Walnut Creek, Contra Costa County, April 19, 1913 (J. C. Bridwell), and by 3 females from Santa Cruz Mountains, Santa Cruz County, April 25, 1913 (Bridwell).

ANDRENA (MICRANDRENA) MISERABILIS Cresson

*Andrena miserabilis* CRESSON, Trans. Amer. Ent. Soc., vol. 4, p. 259, 1872 (female).

*Andrena bipunctata* CRESSON, Trans. Amer. Ent. Soc., vol. 4, p. 259, 1872 (male).

*Andrena flavoclypeata* SMITH, Description of new species of Hymenoptera, p. 54, 1879 (male).

There is one male of this species in the United States National Museum from Sacramento, Calif., May 19, 1931 (C. C. Wilson). I have collected it also at a point 3 miles west of Three Rivers, Tulare County, but it is not known to occur in southern California.

ANDRENA (MICRANDRENA) HAROLDI, new species

This is most similar to *A. piperi* Viereck, from which it differs in its somewhat larger size and broader abdomen; in having the mesoscutum less opaque, it being tessellate instead of granular; and in having the abdomen devoid of the appressed light pubescence which is characteristic of *piperi*. This species was studied by Viereck, whose manuscript name I have adopted. Viereck associated males of *piperi* with the female of this species, and the true male appears to be one to which he had given another manuscript name.

*Female*.—Black, the abdomen with a faint, very dark-green tinge. Mandibles dark red at apex. Flagellum ferruginous red beneath except toward the base. Small joints of tarsi, especially the apical joint, pale ferruginous. Tibial spurs testaceous yellow. Tegulae piceous, becoming more or less brownish testaceous at apex. Wings dusky hyaline, with dull ferruginous stigma and nervures. Pubescence dull ochreous, moderately long, and thin enough to expose the integument. Apical fimbria of abdomen brownish fuscous. Tergites 2 to 4 each with a narrow, whitish apical hair band, interrupted medially on 2. Scopa of hind tibiae brownish on dorsal half, whitish below, rather long and moderately loose, the hairs on the outer surface entirely simple, and

those on dorsal margin fully as long as width of tibia. Facial foveae chocolate brown, or varying to reddish ochreous, when viewed from above, sometimes appearing entirely black in frontal view, moderately narrow, ending very bluntly at level of antennae, and somewhat narrowed and ill-defined above, where they cover about half the space between eye and lateral ocellus. Process of labrum with the sides very oblique and the apex rather narrow, rounded, or subtruncate. Head and thorax dull, without evident punctures. Clypeus almost opaque, impunctate, slightly roughened at apex. Frons substriate. Thorax minutely tessellate, subopaque in some views, more shiny in others. Basal area large, triangular, finely tessellate, the tessellation slightly coarser than that on remainder of dorsal surface of propodeum. Abdomen minutely tessellate, dullish, impunctate. Stigma moderately broad. First abscissa of radius a little less than half as long as the second. Second submarginal cell subquadrate, half as long as the third, and receiving the recurrent nervure at one-third of the length from the apex. Middle and hind basitarsi moderately narrow. Length 8 mm.; anterior wing 6 mm.

*Male*.—Resembling the female in many characters, but differing as follows: Clypeus yellow, except around the margins, with two black dots on disk, a little shiny on middle of disk, and rather obscurely and closely punctured on the yellow part. Process of labrum broad, only slightly elevated and truncato-emarginate at apex. Frons granular-tessellate, opaque, and not at all striate. Antennae longer than in female, the flagellum dark beneath, the joints of flagellum, including the first, about one and one-half longer than thick, and the apical one still longer. Thorax more opaque than in female. Pubescence whiter and a little longer than in female, and rather abundant on cheeks and pleura. A little black hair present on sides of face and behind summit of eyes. The parameres of stipites broadly and semiovally dilated beyond the constricted base, the dilated part being almost straight on outer margin and evenly rounded within. Basal fused part of sagittae large, triangular, depressed and gently convex above, then rapidly attenuating toward apex, with the two component parts thin, opposed, and ending in an acute, slightly upturned point, which projects a little beyond apex of the stipital parameres. Length 7.5 mm.; anterior wing about 6 mm.

*Types*.—U.S.N.M. No. 59281. Holotype (female) and 11 paratypes (female) from Stanford University, Calif., 8, including holotype, taken on March 26, 3 on March 21, and 1 on April 27, 1915 (Harold Morrison); allotype (male), Corte Madero Creek, Stanford University, April 4, 1915 (Morrison); 2 paratypes

(females), San Geronimo, Marin County, April 23, 1913 (J. C. Bridwell); and 1 paratype (female), Russelman Park, Contra Costa County, on *Baeria*, April 26, 1942 (E. G. Linsley).

ANDRENA (ANDRENA) PALPALIS, new species

This species is blue green in both sexes, with pubescence mainly whitish, the abdomen fasciate, and the clypeus of the male yellowish white. In most characters it agrees with typical *Andrena*, except in the fasciate abdomen, the less corbiculate propodeal floccus, and the white clypeus of the male. Other North American species possessing similar characters are *A. banksi* Malloch, *A. angustella* Cockerell, and *A. quercina* Cockerell, all of which differ from *palpalis* in the black integument. This little group, as exemplified by *palpalis*, differs from *Dactylandrena* in the undeveloped malar space, fasciate abdomen, and compact tibial scopa. *A. quercina* has a basal tooth on outer side of mandible, as in *A. helvola* (Linnaeus), the type of *Andrena*.

*Female*.—Dark blue-green, the venter blackish. Antennae and legs black, the claws ferruginous, the spurs testaceous. Tegulae testaceous brown. Mandibles, except reddish tips, labrum and clypeus, except the extreme upper margin, black. Pubescence dull white, moderately long and dense, but not dense enough to conceal surface of integument. Tergites 2 to 4 each with a narrow, pure-white apical band. Disk of tergites 3 and 4 with short, erect blackish hair, that of 2 with longer whitish hair. Apical fimbria dark brown to fuscous. Hair of legs whitish, becoming partly brownish on outer side of tibiae and tarsi. Scopa of hind tibiae compact, broadly brown above and whitish on lower half, the hairs simple. Hair on inner side of middle and hind tarsi pale brown, that on front tarsi darker brown on both sides. Flocculus of hind trochanters rather dense and whitish. Floccus of propodeum dense, but not much curled, the flanks below the floccus with numerous long, scattered hairs. Process of labrum broadly triangular, with a truncato-emarginate and somewhat nodose apex. Facial foveae moderately broad, reaching level of antennae, dark brown on upper half and whitish below, when viewed from above. Clypeus large, convex, a little dullish but more shining in middle, and with fine, moderately close punctures, which are finer toward the margins and more or less sparser on middle of disk. Sides of face dullish, indistinctly punctured. Frons dull, granular, hardly striate, and impunctate. Mesoscutum dull, minutely granular-tessellate, and finely, rather closely punctured. Scutellum similar but shining. Basal area minutely tessellate like remainder of propodeum. Abdomen shining, more distinctly tessellate at base

of segments, and with extremely minute setigerous punctures. Antennal joint 3 longer than 4 plus 5. Wings dusky hyaline, the stigma and nervures dark ferruginous. Length 9.5–10.5 mm.; anterior wing 7–7.25 mm.

*Male*.—Similar to female, but clypeus yellowish white and flagellum dull ferruginous beneath. Disk of clypeus with two dark dots. In one paratype (from Palmdale) there is a curved, transverse whitish line at anterior corners of face, paralleling the margin of clypeus. Mandibles long, curved, decussate. Cheeks broad and angulate, the angulate portion a little above level of middle of eyes. Antennal joint 3 a little shorter than 4 plus 5. Joint 4 slightly longer than wide and plainly shorter than 5, which nearly equals the following joints. Process of labrum short, nodose, prominent, with a semicircular emargination at apex as seen from in front. Clypeal margin with a small triangular tooth on each side, projecting over base of labrum. Pubescence whitish, sometimes with a little dusky or blackish hair at summit of eyes and on scutellum and posterior part of mesoscutum. Hair on disk of tergites 4 to 6 blackish, that on disk of tergite 2 about as long as that on tergite 1. Tergites 2 to 5 each with a thin white apical band. Hair of legs entirely light. Sculpture about as in the female, except that the clypeus is polished, and with fine, delicate, rather sparse punctures. Form slender, with the head broader than thorax. Length 7.75–9 mm.; anterior wing 6–6.4 mm.

*Types*.—Holotype (female), Palm Springs, Calif., March 9, 1924 (H. S. Smith) in the collection of the Citrus Experiment Station. Allotype (male), Palm Springs, February 25 (Hubbard and Schwarz), U.S.N.M. No. 59282.

Paratypes, in the collection of the Citrus Experiment Station: 2 females, The Gavilan, Riverside County, on *Phacelia distans*, April 18, 1937; 1 male, Riverside, on same flower, March 21, 1936; 1 male, Riverside, on *Calandrinia*, March 8, 1932; 1 male, Andreas Canyon, near Palm Springs, on *Phacelia distans*, March 5, 1933 (Timberlake); 1 male, same locality, on *Cryptantha*, March 14, 1942 (Cockerell); and 2 males, Palmdale, San Bernardino County, April 11, 1936 (R. M. Bohart).

The name *palpalis* has reference to the fact that the third joint of the labial palpi is inserted near the middle of the second joint, and the fourth joint before the apex of the third.

ANDRENA (SCOLIANDRENA) CRYPTANTHAE, new species

Closely allied to *A. osmioides* Cockerell, which is the type species of *Scoliandrena* Lanham. It is easily distinguished from

*osmioides* by the mainly black color. It is similar to *A. perplexa* Smith and *A. viburnella* Graenicher in having the broad facial foveae a little separated from margin of eyes, the abdomen finely and closely punctured, the apical depression of tergites hairless, the basal process of labrum large, triangular, and truncated at apex, but it differs in the dense opaque sculpture of the head and thorax, in the short, nearly straight floccus of propodeum, and in having hooked hairs on the mouth-parts.

*Female*.—Black, the abdomen slightly tinged with purplish blue. Mandibles and tegulae rufopiceous, the flagellum reddened beneath, the small joints of tarsi dark ferruginous. Wings dusky, the nervures nearly fuscous, the stigma with a central reddish streak. Head considerably broader than long. Process of labrum large, triangular, and rather narrowly truncated at apex. Antennal joint 3 equaling the next three joints together. Maxillary and labial palpi very short. Apical lobes of maxillae and apical part of labium (the prementum) set with stiff, erect hairs, curled over at their tips; the basal joint of labial palpi with a tuft of similar hair on its outer side. Facial foveae about three-fourths as wide as space between eye and lateral ocellus, and extending to level of top of clypeus. Head and thorax opaque, only the metapleura and pleura of propodeum shining. Clypeus with dense, obscure punctures; the frons substriate. Mesoscutum and scutellum densely punctured, with the basal half of scutellum more shining and sparsely punctured. Mesopleura and dorsal surface of propodeum granular-tessellate. Abdomen dull, with fine, strong, close punctures, which invade the basal portion of the apical depressions. The latter minutely tessellate, shining, with the impunctate, shining portion very narrow on tergite 1, but much broadened in middle on following segments, especially on tergite 4. Pubescence cinereous, moderately dense, and rather short on mesonotum. Hair covering dorsal surface of propodeum (except basal area) nearly as long as that on the mesopleura, hardly curled on each side, where it descends slightly on the pleural surface; the posterior half of the propodeal pleura with a few simple, erect, scattered hairs. Hair on outer side of basitarsi and on front and middle tibiae tinged with brownish fuscous. Hair of hind femora and lower half of tibial scopa white, the upper half of scopa more or less brownish. Scopa moderately compact, with long hairs curling upward from lower side. Flocculus of hind trochanters white, scanty, and rather short. Abdomen without hair bands, the hair short, suberect, and rather dense on disk of segments, becoming longer at basal margin of apical

depressions, especially on tergite 4, but the depressions themselves hairless. Apical fimbria brown, overlaid with paler hairs. Facial foveae whitish and slightly tinged with brown at upper end. Length 10.5–12 mm.; anterior wing 8–8.4 mm.

*Male*.—Similar to female, especially in color of pubescence and in sculpture. Black, the flagellum and small joints of tarsi a little reddened. Head broader than long and wider than thorax. Cheeks very broad and subangulate, the angle opposite the upper end of the anterior third of eyes. Mandibles rather long, decussate, with the inner tooth about the usual distance from apex. Process of labrum large, little elevated, the truncated apex slightly foveato-emarginate. Antennae moderately long, the third joint as long as the next two together. Clypeus opaque, with fine, dense, obscure punctures. Frons opaque, not striated. Mesoscutum a little less closely punctured and more shining on posterior middle than in female, and metapleura and sides of propodeum duller. Abdomen rather shining; comparatively sparsely and much more minutely punctured than in female. The impunctate, finely tessellate, and hairless apical margins broad and conspicuous on tergites 1 to 5. Genital armature similar to that of *A. osmioides*, but parameral lobes of stipites less deeply concave on outer surface, the apical oblique truncation a little shorter, with the angles on each end of the truncation less broadly rounded. Apical process of ninth sternite slightly dilated at tip, the apex rounded, with a small median notch. Pubescence much longer and denser than in female, copious on face and cheeks but not concealing surface. Hair of abdomen longer and sparser in female, and rather long on the first tergite. Pubescence cinereous, not darkened on legs and at apex of abdomen, but slightly tinged with brown on vertex and behind summit of eyes. Hair on inner side of basitarsi dark ferruginous. Length 8–10 mm.; anterior wing 6.4–7 mm.

*Types*.—U.S.N.M. No. 28526. Holotype (female), San Bernardino County, Calif., in May (Coquillett). Allotype, in the collection of the Citrus Experiment Station, taken at Riverside March 14, 1939.

Paratypes in the collection of the University of California at Riverside and at Berkeley: 12 males, 32 females, Riverside, the males taken from March 5 to April 6, the females from March 13 to May 19; 7 males, 26 females, The Gavilan, Riverside County, April 7 to May 4; 4 females, 1½ miles west of Perris, April 7 to May 4; 1 male, 7 females, 4 to 4½ miles west of Perris, March 27 to April 10; 4 females, Ortega Highway, Santa Ana Mountains, overlooking Elsinore, April 28; 2 females, 6 miles

east of Temecula, May 9; 1 male, 2 females, Warner Hot Springs, May 9; 3 females, 3 miles west of Newton, San Diego County, April 14; 2 females, Puente Hills, near Whittier, February 26 and May 9; Forest Home, San Bernardino Mountains, July 5; 1 female, near Keen Camp, San Jacinto Mountains, June 3, all on *Cryptantha intermedia*; 1 male, Palm Springs, on *Cryptantha barbiger*, March 30 (Timberlake); 1 female, Idyllwild, May 26, 1936, and another, June 3, at Herkey Creek, San Jacinto Mountains; 4 males, La Crescenta, Los Angeles County, April 19, 1936; 3 females, Mint Canyon, Los Angeles County, May 8, 1936; and 1 female, 5 miles north of San Bernardino, San Bernardino County, May 26, 1936, all on *Cryptantha* (E. G. Linsley).

ANDRENA (OLIGANDRENA) ANGELESIA, new species

As in other members of the *Oligandrena* group, the hair of the propodeum in this species is very short and not corbiculate. The flocculus of hind trochanters is also short and straight. From *A. macrocephala* Cockerell and *A. nigroclypeata* Linsley, the female of *angelesia* differs in having only a trace of blackish hairs. The male has the head more transverse than in *macrocephala*, with broader, more angulate cheeks, the mandibles more slender and gently curved, the clypeus only partially yellow, and the third antennal joint little longer than the fourth.

*Female*.—Black, the small joints of tarsi ferruginous, the mandibles and malar space a little reddened, the flagellum more or less reddish brown toward apex, and the spurs brownish testaceous. Tegulae dull ferruginous. Wings dusky hyaline, the nervures fuscous, the stigma with a reddish central streak. Labrum short and transverse, its apical margin gently curved and sharply margined. Basal process of labrum low, very broad, and rounded. Disk of labrum transversely grooved beyond the process. Malar space short and transverse. Facial foveae broad and ending at level of top of clypeus. Antennal joint 3 nearly as long as the next three joints together. Head dull, minutely tessellate, the clypeus, especially toward apical middle, more shining, and closely and shallowly punctured, the punctures fainter toward the margins. Frons closely and rather obscurely striate. Thorax minutely granular-tessellate, opaque and impunctate, becoming a little shining on sternum, sides of propodeum, and basal area, which lack the granulation. Basal area small and triangular. Abdomen tessellate, moderately shining, and impunctate except for excessively minute setigerous punctures. Pubescence moderately dense, bright or reddish fulvous on the vertex, mesonotum and metanotum, and dull whitish elsewhere on head and thorax,



but becoming tinged with fulvous on middle of propodeum. A little dusky or blackish hair on each side of vertex and behind summit of eyes. Facial foveae dull whitish, tinged with brown. Hair of legs whitish, becoming fuscous on outer side of middle tibiae and on middle and hind basitarsi. Hair on inner side of tarsi brownish ferruginous. Scopa of hind tibiae white, ample, moderately compact, the hairs entirely simple, those on lower margin long and curved upward, those on dorsal margin becoming tinged with fuscous toward the base. Abdomen without bands, the hair rather short and thin, blackish on disk of tergites 3 to 5, and whitish and longer, especially on each side, on the apical margin of tergites 2 to 5. Hair of tergites 1 and 2 entirely dull white. Apical fimbria brown or fuscous. Sides of propodeum entirely nude. Length, about 11.5 mm.; anterior wing, almost 9 mm.

*Male*.—Colored like the female, but the flagellum of antennae dark, tarsi brownish ferruginous, and disk of clypeus with a transverse yellow mark on anterior half. Margin of yellow mark more or less distinctly notched in middle and on each side above. Pubescence considerably longer and much looser than in the female, fulvous or ochreous, becoming paler below and on the legs. Hair of abdomen short, thin, and blackish on disk of tergites 3 to 5 and on apical part of tergite 2, that on tergite 1 and along sides of following segments rather long and light. Apical fimbria concolorous with hair of thorax. Head transverse and much broader than thorax, the anterior margin between bases of mandibles convexly arcuate. Mandibles long, simple, moderately stout, and curved. Clypeus more than twice as broad as high. Labrum small, shaped as in female, but without the preapical groove. Process of labrum about twice as broad as long, broadly truncate and more or less emarginate at apex. Antennae rather long and slender, the middle joints of flagellum about one and one-half times longer than thick. Joint 3 slightly longer than either 4 or 5, which are about equal. Cheeks broad and subangulate, the angle well above middle of eye. Sculpture similar to that of female, but less granular, the surface more shining, with setigerous punctures apparent on clypeus, face, cheeks, most of the thorax, and abdomen. Abdomen slender, elongate-oval. Genital armature similar to that of *macrocephala*. Medio-apical lobes of stipites little developed. Parameral lobes large, strongly convergent on basal half, then abruptly angulate on inner margin at the beginning of the elongate, oblong apical expansion, which is slightly tapered to apex. Sagittae slender, depressed, slightly fusiform toward base, and attenuate toward apex. Length 8-9 mm.; anterior wing 6.8-7.3 mm.

*Types*.—U.S.N.M. No. 28522. Holotype (female), Los Angeles County, Calif. (Coquillett). Allotype, in the collection of the Citrus Experiment Station, taken at The Gavilan, April 27, 1938.

Paratypes, in the collection of the Citrus Experiment Station: 5 females, Riverside, 2 on *Encelia farinosa*, 1 on *Cryptantha intermedia*, and 2 on *Platystemon californicus*, March 5 to April 10; 13 males, 5 females, The Gavilan, on *Cryptantha intermedia*, except 3 of the males flying about juniper trees, April 10 to May 4; 4 females, 4 to 4½ miles west of Perris, on *Cryptantha* and *Platystemon*, March 27 and April 10; and 2 males, 1 female, Temecula, on *Cryptantha intermedia*, April 7 (Timberlake).

As far as is known the female collects pollen exclusively from *Platystemon*.

ANDRENA (SIMANDRENA) OPACELLA, new species

This species is allied to *A. nasonii* Robertson and *A. orthocarpi* Cockerell. It agrees with the latter in size, in general appearance, and in the finely sculptured basal area, but it differs in the duller head and thorax, erect hair of clypeus, and fulvous-tinted wings. It agrees with *nasonii* in color of wings and dull mesoscutum, but the basal area is much more finely sculptured, the head broader, with dark foveae, the process of labrum smaller, and the basal nervure opposite the nervulus.

*Female*.—Black, the tarsi more or less reddened. Flagellum only slightly brownish beneath. Mandibles red at apex. Tegulae rufotestaceous, darker at base. Wings fulvous tinted, the stigma and nervures ferruginous, with the subcosta darker. Pubescence as in *orthocarpi* except hairs of clypeus more erect, not curved forward, and brownish except at sides. Facial foveae seal brown. Tergites 2 to 4 each with a white apical hair band, that on 2 broadly interrupted and that on 3 more narrowly interrupted medially. Apical fimbria light golden brown. Head much broader than long, the facial foveae broad. Process of labrum small, subtriangular, obtuse at apex. Clypeus strongly convex, dull, and roughened with fine papillae or wartlike elevations. Mesoscutum strongly tessellate, subopaque, and with sparse, obscure punctures. Scutellum more shining and more distinctly punctured than the scutum. Basal area tessellate, opaque, its sculpture similar to that of remainder of propodeum. Abdomen somewhat shining, and finely punctured, especially on tergites 1 and 2, the punctures about as in *orthocarpi*, and perhaps a little less distinct than in *nasonii*. Length about 7 mm.; anterior wing 6 mm.

*Types*.—U.S.N.M. No. 59284. Holotype (female) and 2 female paratypes, Mount Hamilton Range, Santa Clara County, Calif., April 26, 1913 (J. C. Bridwell).

One paratype, with same data, in the collection of the Citrus Experiment Station.

ANDRENA (THYSANDRENA) SUBDEPRESSA, new species

Allied to *A. chlorura* Cockerell, but distinct in the large amount of black hair on the head and mesopleura, in the unusually narrow facial foveae, subdepressed clypeus, and shorter antennae.

*Female*.—Head and thorax faintly bluish green, the abdomen dark olive green. Mandibles, labrum, clypeus, antennae, and legs black, the sides of thorax and propodeum almost black. Apex of mandibles dark red, and the tegulae slightly reddened. Wings rather strongly dusky, the stigma and nervures dark reddish, the subcosta black. Head somewhat broader than long. Process of labrum about twice as broad as long, truncate at apex. Antennae short, the joints of flagellum, except the first and last, no longer than wide. Facial foveae linear, narrower than width of flagellum, and reaching level of antennal sockets. Clypeus more produced than in *chlorura*, subdepressed, shining, but not polished, closely and rather finely punctured, the punctures fading out on lateral and dorsal margins. Frons closely striate. Thorax dullish, the mesoscutum somewhat granular-tessellate, and with fine, shallow punctures. Propodeum almost opaque, the basal area minutely granular-tessellate. Abdomen a little less shining than in *chlorura*, but with about the same minute setigerous punctures. Pubescence brownish ochreous, a little paler on the underparts. Hair on each side of face, almost to anterior end of eyes, that on scapes, the thin hair of frons and vertex, that on the temples in part, and a rather large patch on upper part of each mesopleuron, below tegulae, black. Hair on clypeus and middle of face below antennae dusky ochraceous, sometimes with a few black hairs intermixed, but strongly contrasting with the black orbital hair. Hair of face long, especially the black hair of scapes and orbits. Hair of legs mainly light, but a little tinged with brownish on front and middle tibiae and tarsi. The short tuft at apex of hind femora, hair on dorsal margin of hind tibiae especially toward the base, and short, dense tuft of hair at extreme apex of hind tibiae above, fuscous. Hair of abdomen above rather abundant and erect, but not dense enough to obscure the surface. Hair of first tergite long and that of second but little shorter. Apical bands of tergites 2 to 4 thin, concolorous, and not noticeable except when viewed from above. Apical fimbria fuscous. Facial foveae black in frontal view and pale brown when viewed obliquely. Length 9 mm.; anterior wing 7.5 mm.

*Male*.—Similar to female. Head and thorax dark bluish green. Black hair of head and thorax more abundant, the black orbital

hair very long and contrasting with light hair of clypeus. Temples and mesopleura with much black hair. Disk of mesoscutum and scutellum with a few shorter black hairs intermixed. Process of labrum about twice as broad as long, truncato-emarginate at apex. Clypeus not depressed, dullish, closely and shallowly punctured. Antennae extending slightly beyond base of propodeum, the flagellum not at all reddened. First joint of flagellum nearly equaling joints 2 and 3 together. Joint 2 as long as wide, the following joints somewhat longer than wide. Genitalia nearly as in *chlorura*, but the sagittae slightly less broadened across the basal part. Length 7-8.5 mm.; anterior wing 5.6-6.5 mm.

*Types*.—U.S.N.M. No. 59285. Holotype (female), Stanford University, Calif., March 5, 1906 (J. M. Aldrich) and 5 other females (paratypes), from Stanford University, February and March (Aldrich and H. Morrison), 2 of these from wild mustard. Allotype, in the collection of the Citrus Experiment Station, from Berkeley, February 16, 1935 (R. M. Bohart).

*Paratypes*: In the collection of the Citrus Experiment Station, 1 male, 6 females, Berkeley, February and March 1934 and 1935 (R. M. Bohart); in the collections of the University of California at Berkeley and of Dr. U. N. Lanham: 2 males, 1 female, Grizzly Peak Boulevard, Berkeley, February 15, 1939; 5 females, Berkeley, on *Brassica*, March 6, 1947 (J. W. McSwain); and 11 females, Berkeley, on *Brassica*, March 12, 1947 (U. N. Lanham).

ANDRENA (THYSANDRENA) DISSIMULANS, new species

This is a small green fasciate species of *Thysandrena*, similar to *A. suavis* Timberlake, but distinguishable by having the facial foveae broader, the tibial scopa weakly plumose, and the middle basitarsi no wider than the hind pair. The male is easily separated from *suavis* by having antennal joints 3 and 4 subequal in length.

*Female*.—Dark green; the labrum, anterior margin of clypeus, mandibles, antennae, and legs, black. Mandibles dark red on apical half. Flagellum reddish brown beneath, except toward base. Legs slightly brownish, the small joints of tarsi, especially the apical joint, ferruginous. Tegulae testaceous brown, paler at apex. Wings strongly dusky, the stigma and nervures dark reddish, the subcosta piceous. Head much broader than long, the eyes slightly convergent below. Process of labrum rather small, with sloping sides and broadly truncate to rounded apex. Antennal joint 3 barely longer than the next two joints together. Facial foveae dark brown above, appearing whitish below when viewed from behind, moderately narrow, short, contiguous to eye margin and ending distinctly below level of anterior ocellus and thus widely separated from the lateral ocelli. Head and thorax

minutely granular-tessellate and dull. Clypeus and mesoscutum with close, fine, shallow, indistinct punctures. Frons finely striate. Basal area narrowly triangular, with a smoother tessellate sculpture than remainder of dorsal surface of propodeum. Abdomen tessellate, shining, with minute setigerous punctures. Basal nervure usually opposite the transverse median. Second submarginal cell about one-half, or sometimes more than one-half, as long as the third, a little narrowed above, and receiving recurrent nervure at or near the middle. Pubescence whitish or cinereous, moderately dense, and rather short, being longest on the mesopleura. Hair of mesoscutum in part very short, with longer hairs interspersed. Floccus of propodeum about as long as hair of mesopleuron, but little curled, the pleuron beneath the floccus with a few scattered hairs, except at posterior end. Abdomen with short, erect pale hair on disk of segments, becoming much longer on first tergite and at sides of the second. Tergites 2 to 4 each with a whitish, entire, moderately broad, and dense apical hair band. Apical fimbria brown. Hair of legs whitish, that at apex of hind femora above, and at base of hind tibiae on outer side, brown. Scopa of hind tibiae moderately loose, the hairs on lower margin strongly curled upward and weakly plumose, the hairs on dorsal margin about as long as greatest width of tibia and distinctly plumose. Flocculus of hind trochanters short, scanty, but curled. Length 7.5–8.5 mm.; anterior wing 6.5–7 mm.

*Male*.—Similar to female in color and sculpture. Antennae much longer than in female, the joints of flagellum beyond the second nearly twice as long as thick. First and second joints of flagellum subequal and a little shorter than the third. Mandibles short, not decussate. Process of labrum foveately emarginate at apex. Pubescence of head and thorax long and loose, becoming moderately dense on face below antennae and about as long on mesoscutum as on the pleura. A little black hair usually present on sides of face and behind summit of eyes. Pubescence of legs and at apex of abdomen entirely light. Hair of abdomen otherwise as in the female, except that the apical bands are weak. Hair of venter thin and erect, the segments without apical fringes. Length 6–9 mm.; anterior wing 5.2–6.5 mm.

*Types*.—Holotype (female), allotype, and paratypes, 51 males, 22 females, Earlimart, Tulare County, Calif., on *Baeria* and a few on *Calandrinia*, March 9, 1937 (Timberlake and Linsley); 1 female (paratype), same locality, on *Baeria*, March 30, 1937; and 6 males, 3 females (paratypes), Strathmore, Tulare County, on *Baeria*, April 1, 1933, and March 29, 1937 (Timberlake), in

collection of the University at Berkeley (paratypes) and Riverside (types and paratypes), from which a series of paratypes has been transferred to the U. S. National Museum, No. 59286.

ANDRENA (THYSANDRENA) BLANDULA, new species

Similar to *A. dissimulans* but distinguishable by the longer erect hair of the abdomen, with but little indication of hair bands on the middle tergites.

*Female*.—Agreeing with *A. dissimulans* in most respects, but differing as follows: Pubescence a little longer, especially on the mesoscutum and tergum of abdomen. Tergites 1 to 4 with erect hair, rather long on 1 and gradually decreasing in length toward apex of abdomen. Hair at apex of tergites a little depressed but not forming distinct hair bands. Facial foveae fuscous in frontal view, but pallid, with a brownish tinge, as seen from above. Wings slightly less dusky, with light red stigma and nervures. Basal nervure slightly postfurcal. Second submarginal cell quadrate, a little more than half as long as the third, and receiving the recurrent nervure slightly before the middle. Both species have golden and reddish reflections on clypeus above the black anterior border. Length 7.5 mm; anterior wing 6.8 mm.

*Type*.—U.S.N.M. No. 59287. Holotype (female) collected on Mount Hamilton Range, Santa Clara County, Calif., April 26, 1913 (J. C. Bridwell).

ANDRENA MISELLA, new species

This species is similar to *A. anisochlora* Cockerell in size, color, and very dull sculpture of the head and thorax, but they cannot be closely allied. In the broad process of labrum, narrow foveae, short and nearly straight floccus of sides of propodeum, and small incomplete flocculus of hind trochanters, it agrees well with *A. merriami* Cockerell, *A. fulvinigra* Viereck and Cockerell, and *A. nigrihirta* (Ashmead), but it differs in having the clypeus very dull and impunctate, and the hair of the abdomen abundant and erect. The *merriami* group is placed by Lanham near the subgenus *Gymnandrena* and probably will deserve recognition as a subgenus when better known.

*Female*.—Black, the abdomen faintly dark green. Mandibles at apex and small joints of tarsi a little reddened. Flagellum slightly brownish beneath. Tegulae dark castaneous at apex. Wings dusky hyaline, stigma and nervures dusky brown, the subcosta blackish. Head a little wider than long. Labrum short and broad, with a transverse groove before the large, broadly truncate basal process. Facial foveae rather narrow, parallel sided, and reaching level of antennae. Antennal joint 3 about

equaling the next three joints together. Head and thorax opaquely sculptured. Clypeus and sides of face below antennae with close, shallow punctures. Frons finely striate. Thorax granular-tessellate and indistinctly punctured. Basal area small, triangular, minutely tessellate. Remainder of propodeum and abdomen with minute, craterlike, setigerous punctures. Second submarginal cell quadrate, half as long as the third, and receiving the recurrent nervure at the middle. Floccus on each side of propodeum rather short and nearly straight, the pleural surface beneath with shorter and scattered hairs. Flocculus of hind trochanters short and incomplete. Pubescence whitish to ochreous on occiput, mesonotum and metanotum, and tegulae, otherwise black on the head and thorax, including a tuft of short black hair on tegulae. Hair of abdomen black, erect, moderately long and dense, with some light hair on apical middle of tergite 1, on middle of tergite 2, and on the middle of apical margin of tergites 3 and 4. Hair of venter dark. Hair of legs almost entirely dark, the scopa of hind tibiae a little tinged with brown. Hair on inner side of the basitarsi glistening chocolate brown. Tibial scopa moderately long and dense. Facial foveae chocolate brown, when viewed from above, and black in frontal view. Length 8.5–9 mm.; anterior wing 6.5 mm.

*Type*.—U.S.N.M. No. 59288. Holotype (female), Berkeley, Calif., February 29, 1934 (R. M. Bohart).

Paratypes, in the collections of the University of California at Riverside and at Berkeley: 1 female, Berkeley, February 24, 1939 (Bohart); 1 female, Lindsay, on *Amsinckia eastwoodae*, April 1, 1933 (Timberlake); 3 females, 6 miles west of Tracy, March 4, 1948 (J. W. MacSwain and P. D. Hurd); and 14 females, Westley, Stanislaus County, on *Brassica*, April 1, 1948 (P. D. Hurd).

#### Genus MEGANDRENA Cockerell

In his recent study of the North American Andrenidae, Lanham<sup>3</sup> recognizes *Megandrena* as a good genus and reduces *Ancylandrena* to subgeneric rank.

#### MEGANDRENA (ANCYLANDRENA) LARREAE, new species

This species agrees with *M. atoposoma* (Cockerell) in many ways, but differs in having the mesoscutum and abdomen more finely and closely punctured, the pubescence generally fulvous, with little fuscous or blackish hair, and the white lateral face marks of the male triangular.

*Female*.—Black, with the tips of mandibles, flagellum beneath, and small joints of tarsi dull ferruginous. Tegulae dark brown.

<sup>3</sup> Univ. California Publ. in Ent., vol. 8, pp. 183–238, 1949.

Wings dusky hyaline, the stigma and nervures dark ferruginous (these parts piceous in paratypes, excepting those from Inyo County). Tibial spurs testaceous yellow. A small transverse blister at base of mandibles, yellowish. Pubescence of head and thorax denser than in *atoposoma*, whitish on face, cheeks, underside of thorax, and fulvous or fulvo-ochraceous on vertex, mesonotum and metanotum, with hair of propodeum similar but paler. Tergites 1 to 4 each with a dense, white apical hair band, and the disk of tergites 2 to 4 between the bands with rather dense, short, erect black hair. Disk of tergite 1 in front of the band with long, erect hair, which is white or slightly tinged with fulvous. Fimbria pale chocolate brown, shading into whitish at the sides and base of the fifth segment. Hair of legs fulvo-ochraceous, more whitish on the femora, and becoming ferruginous on front tarsi and on underside of middle and hind basitarsi. Facial foveae pale brown, broad, reaching nearly to lateral ocelli, but failing to reach level of antennae. Process of labrum broader than long, with a large triangular emargination at apex. Clypeus polished and prominent, with the transverse anterior groove strongly arcuate and receding from the margin on each side. Disk of clypeus gently convex and nearly impunctate, except for a group of fine punctures on each side of a slightly ridged median space on the upper half. Sides of face below antennae, frons, and almost all of the thorax finely and closely punctured. Abdomen still more finely and closely punctured than thorax. Antennae longer than in *atoposoma*, with the middle joints of flagellum a little longer than thick. Length, about 11–12 mm.; anterior wing 7.5–8 mm.

*Male*.—Black, with the white lateral face marks triangular, broad below and coming to a point at level of antennae. Clypeus more prominent and more produced beyond base of mandibles than in *atoposoma*. Mandibles with a transverse testaceous blister at base on outer side. Antennae longer than in *atoposoma*, the joints of flagellum nearly twice as long as thick. Sides of face, frons, and almost the whole thorax and abdomen finely and closely punctured, the punctures rather dense on notum of thorax and tergum of abdomen, so that the surface is considerably less shining than in *atoposoma*. Pubescence long, white, and dense, being denser than in *atoposoma*, with some fuscous or black hairs intermixed on the posterior middle of mesoscutum and on the scutellum. Hair of abdomen long and erect, not forming bands, and longer on the first segment and at sides of the seventh than elsewhere. Some short, fine fuscous hair intermixed at the extreme base of at least tergites 5 and 6. Pygidial plate of seventh tergite triangular, very acute at apex, the broad basal half with a median carina, but this carina much



less raised and less tectiform than in *atoposoma*. Wings more glassy hyaline, with the fine, short, dark-colored discal setae much sparser than in *atoposoma*, especially in the submarginal and discoidal cells. Genital armature very nearly identical in the two species. Length 9.5–11 mm.; anterior wing 7.4–7.8 mm.

*Types*.—U.S.N.M. No. 28559. Holotype (female) and allotype, Panamint Valley, Inyo County, Calif., April 1891 (A. Koebele).

*Paratypes*: In the collection of the Citrus Experiment Station: 1 female, Palm Springs, March 10, 1935; 2 males, 1 female, Andreas Canyon, near Palm Springs, March 24, 1932; 7 males, 1 female, Palm Canyon, Borego Valley, San Diego County, March 29, 1936; 1 female, 4 miles south of Victorville, June 4, 1938 (Timberlake); 8 males, 4 females, Tahquitz Canyon, near Palm Springs, March 24, 1936 (C. M. Dammers); and 1 female, Picture Rocks, Pima County, Ariz., May 6, 1935 (A. J. Basinger). In the Bohart collection: 4 males, 1 female, Tahquitz Canyon, near Palm Springs, April 16, 1938 (R. M. and G. E. Bohart); 1 male, Westgard Pass Plateau, Inyo Mountains May 27, 1937 (L. D. Phillips); and 1 male, Mazourka Canyon, Inyo Mountains, May 25, 1937 (N. W. Frazier). In collection of the University of California at Berkeley: 1 female, 2 miles east of Cathedral City, April 10, 1936; 2 males, Box Canyon, Riverside County, April 4, 1937; and 1 male, Palm Canyon, Borego Valley, San Diego County, March 29, 1936 (E. G. Linsley).

This bee visits the flowers of *Larrea divaricata*, from which the female collects pollen.

MEGANDRENA (ANCYLANDRENA) KOEBELEI, new species

This differs from the two other species of *Ancylandrena* in having the basal half of mandibles and large mark on clypeus creamy white, the blister on base of mandibles very large, and a large patch of brown hair present on the mesoscutum.

*Male*.—Black, the basal half of mandibles, clypeus except broadly at sides and on anterior margin, and triangular lateral marks ending acutely above level of antennae, creamy white. Apex of mandibles, flagellum beneath, tubercles, tegulae, metapleura, sides of propodeum, legs and venter dark ferruginous; the sternum and mesopleura less reddened. Apical margin of tergites broadly subhyaline. Pubescence white, long, fine, silky, and rather dense, mainly concealing surface of face and mesonotum, and only a little less dense on other parts. Hair of vertex, that on apex of tegulae, and a large quadrate patch on posterior half of mesoscutum, brown. Hair on the basal half of tergites 2 to 5 fuscous or black, contrasting with the white hair

at apex of segments. Hair of cheeks, tibiae, and basitarsi especially long, and that on inner side of basitarsi short and golden. Wings faintly dusky, the stigma and nervures ferruginous, the subcosta blackish. Stigma very narrow. Basal nervure slightly postfurcal. Second submarginal cell large, longer than high and receiving the recurrent nervure at one-third of its length before the apex. Antennae reaching base of scutellum, the middle joints of flagellum nearly twice as long as thick. Antennal joint 3 nearly as long as 4 plus 5, joint 4 being barely longer than thick. Ocelli slightly enlarged. Sculpture throughout extremely fine, consisting of close, setigerous punctures, the surface mainly shining. Median ridge on disk of clypeus and the apical half of disk polished and impunctate. Pygidial area of tergite 7 well elevated, almost carinate laterally, narrowly triangular, nude, and black, the remainder of the tergite ferruginous and hairy. Genital armature very similar to that of *larreae*, but the lobes of the stipites a little more incrassate and ending more bluntly. Length 11 mm.; anterior wing 7.5 mm.

*Type*.—U.S.N.M. No. 28560. Holotype (male), Panamint Valley, Inyo County, Calif., April 1891. (A. Koebele).