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NAMES APPLIED TO THE EUCERINE BEES OF
NORTH AMERICA

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CALIFORNIA ACADEMY OF SCIENCES
DEPARTMENT OF ENTOMOLOGY
DATE

BY

G. E. Bohart

T. D. A. COCKERELL

Of the University of Colorado, Boulder

No. 1932.—From the Proceedings of the United States National Museum,
Vol. 43, pages 261-273

Published October 19, 1912



Hymenoptera - Apoidea - Eucerinae

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NAMES APPLIED TO THE EUCERINE BEES OF NORTH AMERICA.¹

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

INTRODUCTION.

The Eucerinae are bees of the family Anthophoridae, in which the paraglossae are very long and hairy. The antennae of the males are usually very long, and the two sexes generally differ much in appearance. No fossil eucerine bees are known; *Calyptapis* from Florissant, at first supposed to belong here, proves to belong to the Bombidae.² At the present time the subfamily is richly represented in the nearctic and palaearctic regions, and is also quite abundant in the neotropical (especially southward). In Africa it is widely scattered, but the species are not very numerous. In the Indian and Chinese regions there are rather numerous species, mostly, however, from the borders of the palaearctic. In the Malay and Austromalay regions they are absent; they are also absent from Australia and New Zealand, as well as from the islands of the Pacific and the Indian Ocean. Supposed species of *Tetralonia* recorded from Australia seem to belong to the nomiine group *Reepenina* of Friese.

The holarctic *Tetralonia*, with three submarginal cells in the anterior wings, and six-jointed maxillary palpi, must be regarded as the basic type of the subfamily. From this has arisen the palaearctic *Eucera*, with only two submarginal cells. This now well-defined group may have originated in a "mutation," for a specimen of *Tetralonia acerba* taken by Mr. G. Hite, at Boulder, Colorado, has only two submarginal cells on each side, and would be referred to *Eucera* were it not evidently an aberrant specimen of a well-known species of *Tetralonia*.³

¹ The asterisk (*) indicates that the species is in the collection of the United States National Museum. Certain few specimens sent to the Museum by Prof. T. D. A. Cockerell and labeled cotypes are considered paratypes, as Prof. Cockerell uses the name "cotype" in the same sense in which the Museum uses "paratype." The Museum has a goodly lot of unworked material in this group and when this has been determined the number of species in this collection will be greatly increased. Of the 261 names in the following list, 79 are represented by specimens in the collection. Of this 79, 26 are types or paratypes.—S. A. ROHWER.

² Ann. Mag. Nat. Hist., Oct., 1908, p. 324.

³ University of Colorado Studies, 1907, p. 256, vol. 4.

Another line of modification is observed in the reduction of the number of joints in the maxillary palpi. This has evidently gone on independently in the New and Old Worlds, by a process of parallel evolution, which might be described as orthogenetic. In the case of the forms with five-jointed maxillary palpi, it is questionable whether *Xenoglossodes* of America and the Old World *Tetraloniella* should be kept apart. *Melissodes* of America is represented by *Melissina* in India, both having four-jointed maxillary palpi. The neotropical *Thygater*, with three-jointed maxillary palpi, is represented by *Thygatina* in Ceylon. In South America is a genus *Melissoptila* Holmberg, with rather numerous species, having the maxillary palpi only two-jointed.¹ According to the theory of successive radiation² it may be maintained that the true evolutionary center of the Eucerines is neotropical, a suggestion which gains some support from the apparent absence of the group in the Tertiary strata of Europe and North America. On the other hand, the apparent stem-form *Tetralonia* is not only especially abundant in the holarctic, but appears on the wing earlier in the year than *Melissodes*, etc., being apparently adapted to cooler conditions. We also have the Asiatic series with the palpal joints reduced to four and three, and there is surely no reason to suppose that in the Old World the group had a southern origin.

The North American Eucerines were last catalogued in the Transactions of the American Entomological Society.³ Since that time numerous species have been added, and a few changes in nomenclature made. The present list gives the type-localities, which were omitted in the former one, and also the collectors of the types when known. There are also added references to the principal synoptic tables.

LIST OF SPECIES.

Genus TETRALONIA Spinola.

Type.—*Macrocera malvæ* (Rossi)=*antennata* (Fabricius).

Maxillary palpi six-jointed.

This genus is also well represented in the Old World.

Eusynhalonia Ashmead, type *Eusynhalonia edwardsii* (Cresson), is a name for the slightly differentiated group including this and its allies.

Synhalonia Patton has for its type *Tetralonia* (*Melissodes*) *fulvitaris*.

TABLES.

(1) Cockerell. Trans. Amer. Ent. Soc., vol. 32, 1906, pp. 74-91. (Species discussed in connection with the tables are included.)

(2) Cockerell. Trans. Amer. Ent. Soc., vol. 32, 1906, pp. 94-96. (Three short tables.)

(3) Cockerell. Trans. Amer. Ent. Soc., vol. 32, 1906, p. 114 (females).

(4) Robertson. Trans. Amer. Ent. Soc., vol. 31, 1905, pp. 366-367. (Illinois species.)

¹ Bertoni and Schrottky, Zool. Jahrbüch, 1910, p. 587.

² Nature, Aug. 6, 1908, p. 319.

³ Vol. 32, 1906, pp. 101-104.

(5) Chitt. Ann. & Mag. Nat. Hist. Ent. 13 (8) p. 287.
 (6) Varick Etal. Can. Ent. 8: 187. p. 16 (1/2 & 3 species)

- acerba* CRESSON, 1879. Nevada (Morrison). Tab. 1.
- actuosa* CRESSON, 1878. California (Hy. Edwards). Tab. 1, 3.
Male; Bull. S. California Acad. Sci., Feb. 1905, p. 30.
- albicans* PROVANCHER, 1896. Los Angeles, California (Coquillett).
Described from the male. "Bien distincte de *l'albata* Cresson, par sa taille plus petite, les bandes blanches de l'abdomen plus distinctes, etc." (Provancher).
- albopilosa* FOWLER, 1899. Berkeley, California (Fowler).
- angustior* COCKERELL, 1897. Pasco, Washington State (Kincaid).
Identical with *edwardsii*.
- annæ* COCKERELL, 1906. Gibson, New Mexico (Anna Gohrman). Tab. 3.
- argyrophila* COCKERELL, 1909. Lee County, Texas (Birkmann.)
- astragalina* COCKERELL, 1905. Boulder, Colorado (W. P. Cockerell). Tab. 1.
- * *atriventris* SMITH, 1854. "North America?" Tab. 1.
- * *belfragei* CRESSON, 1872. Texas (Belfrage). Tab. 1, 4.
"Distinguished at once (female) by the three beautiful, rather broad, snow-white bands on abdomen" (Cresson). Mr. J. C. Crawford notes that female *T. belfragei* from Dallas, Texas, has the hair on basal joint of hind tarsi within deep red or inclining to sooty; in certain lights most show it distinctly reddish.
Type.—Cat. No. 1790, U.S.N.M.
- birkmanniella* COCKERELL, 1906. Fedor, Texas, April 1 (Birkmann). Tab. 2.
- californica* CRESSON, 1878. California (H. Edwards). Tab. 1.
Male "closely resembles *edwardsii*, but easily separated by the longer third joint of antennæ, and differently formed intermediate tibiae and tarsi" (Cresson).
- californica* FOWLER, 1899. Berkeley, California (Fowler).
Name preoccupied: = *fowleri*.
- chrysobotryæ* COCKERELL, 1908. Boulder, Colorado, May 2 (G. M. Hite).
Visits *Chrysobotrya*.
- cordleyi* VIERECK, 1905. Corvallis, Oregon (Cordley). Tab. 1, 2.
- * *crenulaticornis* COCKERELL, 1898. Prude's Summit, Ruidoso, New Mexico. (C. M. Barber).
Type.—Cat. No. 13190, U.S.N.M.
- crenulaticornis maculata* COCKERELL, 1898. Big Rock, Ruidoso, New Mexico (Townsend).
Male variant, with small yellow spot on base of mandibles.
- cressoniana* COCKERELL, 1905. Texas. Tab. 1, 3.
- dilecta* CRESSON, 1878. "Texas (Belfrage); Colorado (Ridings)." Tab. 1, 2, 4.
This is the *T. speciosa* of Tab. 4.
- donata* CRESSON, 1878. Mexico (Sumichrast). Tab. 1 (p. 85), 3.
- douglasiana* COCKERELL, 1906. Steamboat Rock, Grand Coulee, Washington.
- dubitata* CRESSON, 1878. Georgia. Tab. 4.
This name has been used for *Tetralonia atriventris*; the genuine *dubitata* is a valid species of *Melissodes*.
- * *edwardsii* CRESSON, 1878. California (H. Edwards). Tab. 1.
- * *edwardsii vagabunda* COCKERELL, 1906. Boulder, Colorado (W. P. Cockerell). Tab. 2.
- fedoris* COCKERELL, 1906. Fedor, Texas, May 5 (Birkmann). Tab. 2.
Perhaps a variety of *T. rosæ*.
- flagellicornis* SMITH, 1879. Oaxaca, Mexico.
Notes on type: Trans. Amer. Ent. Soc., vol. 31, p. 326.
- * *fowleri* COCKERELL, 1905. Los Angeles, California (Davidson).
Allied to *T. belfragei*.
Paratype.—Cat. No. 15068, U.S.N.M.
- frater* CRESSON, 1878. Colorado (Morrison). Tab. 1, 2.
- * *frater aragalli* COCKERELL, 1904. Colorado Springs, Colorado (Cockerell). Tab. 2.
Probably the female of *fulvitaris*; Canadian Entomologist, 1908, p. 234.

fulvitaris CRESSON, 1878. Colorado (Morrison). Tab. 1.

fulvohirta CRESSON, 1878. Georgia (Morrison). Tab. 1.

fuscipes ROBERTSON, 1900. Illinois (Robertson). Tab. 4.

Probably same as *illinoensis*; described as a variety of *T. atriventris*. The name is preoccupied (*T. fuscipes* Morawitz, 1894).

fuscotincta COCKERELL, 1905. Oak Creek Cañon, Arizona (F. H. Snow).

gillettei COCKERELL, 1905. Fort Collins, Colorado, June 12.

Male of *T. speciosa*.

gillettei snoviana COCKERELL, 1905. Clark County, Kansas (F. H. Snow). Tab. 1, 2.

hirsutior COCKERELL, 1905. Banning, California (Davidson). Tab. 1.

Clypeus of male black with light hair.

* *honesta* CRESSON, 1872. Texas (Belfrage; Boll). Tab. 1.

Same as *belfragei*, according to Robertson.

idiotes COCKERELL, 1905. Rock Creek, California (Davidson). Tab. 1 (p. 91).

Probably a race of *T. stretchii*.

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

intrudens CRESSON, 1879. Nevada. Tab. 1.

lata PROVANCHER, 1888. Vancouver Island (Taylor).

laticornis COCKERELL, 1897. Olympia, Washington (Kincaid).

Same as *lata*.

lepidia CRESSON, 1878. "Texas (Belfrage); Colorado (Morrison)". Tab. 1, 2.

lippiae COCKERELL = *Xenoglossodes lippiae*.

* *lycii* COCKERELL, 1897. Mesilla Valley, New Mexico (Cockerell). Tab. 2.

Type.—Cat. No. 5833, U.S.N.M.

medicata COCKERELL, 1911. (Canadian Entomologist, p. 34.) Medicine Hat, Alberta (T. N. Willing).

Resembles *T. atriventris* (female), but pygidial plate narrower; hair of head (except occiput), of pleura and under part of thorax, all black; of thorax above, creamy white.

nevadensis CRESSON, 1879. Nevada (Morrison.)

Same as *intrudens*.

nigricornis PROVANCHER, 1888. Vancouver Island (Taylor).

phaceliæ COCKERELL, 1911. Albuquerque, New Mexico (J. R. Watson).

Related to *T. annæ*.

rosæ, ROBERTSON, 1900. Illinois (Robertson). Tab. 4.

* *speciosa* CRESSON, 1878. Colorado (Ridings, Morrison). Tab. 1, 2, 3.

stretchii CRESSON, 1878. California (R. H. Stretch). Tab. 1 (p. 91).

territella COCKERELL, 1905. Palisade, Colorado, May 7 (Gillette). Tab. 1, 2.

Described from the male.

trinidadensis FRIESE, 1908. Belmont, Trinidad, West Indies.

Male like *nigroænea* Smith, but face black, etc. Length, 9 mm.

truttæ COCKERELL, 1905. Trout Spring, New Mexico (Cockerell). Tab. 2.

virgata COCKERELL, 1905. Los Angeles, California (Davidson).

Described as a subspecies of *belfragei*.

yakimensis COCKERELL, 1906. Yakima, Washington.

Genus CEMOLOBUS Robertson.

Type.—(*Xenoglossa*) *Cemolobus ipomoeæ* (Robertson).

Female with clypeus trilobed; inner tooth of claws short; clypeus in male also trilobed, with a transverse apical whitish band; hind basitarsus of male arcuate, its upper apical border beveled, produced below. For other characters see Robertson, Trans. Amer. Ent. Soc., vol. 31, pp. 365 and 366.

ipomoeæ ROBERTSON, 1891. Carlinville, Illinois (Robertson).

Visits *Ipomoea*. Also in Pennsylvania.

Genus XENOGLOSSA Smith.

Type.—*Xenoglossa fulva* Smith.

Maxillary palpi five jointed, longer and more slender than in *Xenoglossodes*, the last joint well developed. The mandibles are bidentate at apex in the male of *X. fulva* Smith, the type of the genus, as determined from an examination of one of F. Smith's specimens. In the similar *X. patricia* they are simple at apex in the male. They are also simple at apex in male *X. mustelina*.

SUBGENUS.

Peponapis ROBERTSON.

Type—(*Xenoglossa*) *Peponapis pruinosa* (Say). Mandibles bidentate at apex in female. Male with first joint of flagellum short.

TABLES.

- (1) Cockerell. Trans. Amer. Ent. Soc., vol. 32, 1906, pp. 74-90.
 (2) Cockerell. Canadian Entomologist, vol. 28, 1896, pp. 192-193.
- angelica* COCKERELL, 1902. Los Angeles, California (Cockerell).
apiculata CRESSON, 1878. Costa Rica (Gabb). Tab. 1 (p. 82).
assimilis SMITH, 1879. Oaxaca, Mexico.
- Described as a *Melissodes*, but an examination of specimens taken by Mrs. Cockerell at Quirigua, Guatemala, shows that it is a *Xenoglossa* of the subgenus *Peponapis*.
 Third antennal joint of male very short.
- * *brevicornis* CRESSON, 1872. Texas (Belfrage).
crawfordi COCKERELL, 1910. Guadalajara, Mexico (D. L. Crawford).
cressonii DALLA TORRE, 1896.
 Same as *brevicornis*.
- * *cucurbitarum* COCKERELL, 1896. Mesilla, New Mexico (Cockerell). Tab. 2.
 Same as *strenua*.
Paratype.—Cat. No. 3364, U.S.N.M.
- davidsoni* COCKERELL, 1905. Los Angeles, California (Davidson).
 Allied to *X. angelica*.
- exquisita* CRESSON, 1878. Mexico (Sumichrast). Tab. 1 (p. 89).
Triepeolus digueti Cockerell is parasitic on this species.
- * *fulva* SMITH, 1854. Puebla, Mexico. Tab. 2.
Type of the genus.—Third antennal joint of male of the long type, but considerably shorter and less slender than in *X. patricia*.
Notes on type.—Trans. Amer. Ent. Soc., vol. 31, p. 328.
- fulviventris* SMITH, 1854. "Mexico?"
Notes on type.—Trans. Amer. Ent. Soc., vol. 31, p. 326.
- gabbii* CRESSON, 1878. Costa Rica (Gabb). Tab. 1 (p. 81).
holopyrrha DOURS (Sichel MS.), 1869. Mexico.
 Same as *fulva*.
- mustelina* FOX, 1893. San Jose del Cabo, Lower California (Eisen).
 In Proc. California Acad. Sci., 1894, p. 118, Fox treated this as a synonym of *X. fulva*. I have cotypes of both species, and find *mustelina* considerably less robust, and with paler wings, than *fulva*.
- * *patricia* COCKERELL, 1896. Mesilla, New Mexico (Cockerell). Tab. 2.
 Visits *Cucurbita*.
Paratype.—Cat. No. 3363, U.S.N.M.
- patricia angustior* COCKERELL, 1900. Buckeye, Arizona (Cockerell).
 Common at Los Angeles, California.
- * *pruinosa* SAY, 1836. Tab. 2.
 Characters: Trans. Amer. Ent. Soc., vol. 31, pp. 365, 366. Falls Church, Virginia (N. Banks), west to Colorado.

pruinosa limitaris COCKERELL, 1906. Brownsville, Texas (Snow).

Male; clypeus without any yellow spot; hair of head cinereous, with black hairs sparsely intermixed on face and vertex; hair of thorax above pale, with only a slight fulvous tint; legs red, more or less clouded with blackish; abdomen very black and shiny, with the usual bands much reduced.

* *strenua* CRESSON, 1878. "Georgia, Texas, New Mexico."

Characters: Trans. Amer. Ent. Soc., vol. 31, pp. 365, 366.

strenua kansensis COCKERELL, 1905. Clark Co., Kansas (Snow).

Male rather larger; legs dark reddish-fuscous; tomentum of apical abdominal segments pale cinereous or whitish.

utahensis COCKERELL, 1905. Utah. Tab. 1 (p. 90).

Female about 14 mm.; rather dark reddish-brown or ferruginous, legs bright ferruginous; maxillary palpi six-jointed, the last two joints very minute.

The South American genus *Svastra* Holmberg has five-jointed maxillary palpi, and resembles *Peponapis* in having the third antennal joint of the male short. The inner tooth of the hind claws is shorter than the outer, very much shorter in the female, an approach toward the condition found in *Cemolobus*. The mandibles are not bidentate at apex in either sex. *Svastra bombylans* Holmberg superficially resembles *Martinella luteicornis*.

Genus XENOGLOSSODES Ashmead.

Type.—(*Xenoglossa*) *Xenoglossodes albata* (Cresson).

Maxillary palpi five-jointed, the fifth joint sometimes very small.

This is almost identical with the Old World genus *Tetraloniella* Ashmead; see Cockerell, Ann. Mag. Nat. Hist., July, 1911, p. 185.

TABLES.

(1) Cockerell and Porter; Ann. Mag. Nat. Hist., December, 1899, p. 407.

(2) Cockerell; Ann. Mag. Nat. Hist., October, 1903, p. 449 (mouth-parts).

(3) Cockerell and Robbins; Univ. of Colorado Studies, vol. 7, 1910, pp. 194-195.

* *albata* CRESSON, 1872. Texas (Belfrage). Tab. 1, 2.

"Very distinct by the white pubescence, that on abdomen having a satiny or silky luster" (Cresson).

* *ericiarpi* COCKERELL, 1898. Fillmore Cañon, Organ Mountains, New Mexico (Townsend). Tab. 1, 2.

Female, 9 mm.

Type.—Cat. No. 4343, U.S.N.M.

* *excurrens* COCKERELL, 1903. Roswell, New Mexico (Cockerell). Tab. 2, 3.

gutierreziae COCKERELL, 1905. Fillmore Cañon, Organ Mountains, New Mexico (C. H. T. Townsend). Tab. 3.

* *imitatrix* COCKERELL and PORTER, 1899. Las Vegas, New Mexico (A. Garlick). Tab. 1, 2, 3.

Visits *Sphaeralcea*.

lippiæ COCKERELL, 1904. La Cueva, Organ Mountains, New Mexico (C. H. T. Townsend). Tab. 3.

Described as a variety of *Tetralonia crenulaticornis*.

lippiæ semilippiæ COCKERELL, 1905. Oak Creek Cañon, Arizona (Snow).

* *neotomæ* COCKERELL, 1906. Raton, New Mexico (T. and W. Cockerell). Tab. 3. Allied to *X. lippiæ*.

Genus FLORILEGUS Robertson.

Type.—(*Melissodes*) *Florilegus condigna* (Cresson).

For the characters of this genus, see Robertson, Trans. Amer. Ent. Soc., vol. 31, 1905, pp. 365-366. The maxillary palpi are five-jointed.

* *condigna* CRESSON, 1878. "Illinois, Kansas."

lanierii GUÉRIN, 1845. Cuba.

palustris ROBERTSON, 1892. Illinois (Robertson).

Same as *condigna*.

Genus ANTHEDON Robertson.

Type.—(*Melissodes*) *Anthedon compta* (Cresson).

"Scopa of female simple"; male antennæ black, not surpassing thorax. For other characters see Robertson, Trans. Amer. Ent. Soc., vol. 31, pp. 365 and 366. The female tibial scopa is in reality very briefly plumose, as may be seen under the compound microscope.

For Char. see Robertson loc. cit. in table.

* *compta* CRESSON, 1878. Georgia (Morrison).

Genus MARTINELLA Cockerell.

Type.—(*Melissodes*) *Martinella luteicornis* (Cockerell.)

Maxillary palpi four-jointed, last joint long and cylindrical, not very much shorter than third; apex with two bristles. Malar space practically absent.

* *luteicornis* COCKERELL, 1896. Rincon, New Mexico (Cockerell).

Visits *Prosopis glandulosa*. Male antennæ yellow.

Paratype.—Cat. No. 3362, U.S.N.M.

Genus MELISSODES Smith.¹

Type.—(*Macrocera*) *Melissodes rustica* (Say), designated by Patton.

Maxillary palpi four-jointed, last joint much shorter than third. Sometimes there are only three joints. (See Robertson, Can. Ent., Aug., 1901, p. 231.)

Melissina Cockerell is an analogous genus, with four-jointed maxillary palpi, found in India. (See Ann. Mag. Nat. Hist., Nov., 1911, p. 670.) The malar space in this genus is practically obsolete.

Epimelissodes Ashmead is a subgeneric name for *Melissodes atripes* (the type of the subgenus) and allied species.

The males have the seventh abdominal segment without lateral spines.

TABLES.

(1) Cockerell. Trans. Amer. Ent. Soc., vol. 32, 1906, pp. 74-90. (I include references to species discussed in connection with the tables.)

(2) Cockerell. Trans. Amer. Ent. Soc., vol. 32, 1906, p. 113 (females).

(3) Cockerell. Ann. Mag. Nat. Hist., June, 1905, pp. 521-522 (females).

(4) Robertson. Trans. Amer. Ent. Soc., vol. 31, 1905, pp. 367-371 (Illinois species).

* *agilis* CRESSON, 1878. Texas (Belfrage). Tab. 1, 4.

Variation; Bull. S. California Acad. Sci., Feb., 1905, p. 28.

* *agilis aurigenia* CRESSON, 1878. "Can., Me., N. Y., Va., La., Mo., Kans., Colo., N. M., Utah." Tab. 1.

agilis semiagilis COCKERELL, 1906. Fedor, Texas (Birkmann).

Male labrum black, and mandibles without yellow spot; nervures darker and redder; mesothorax more shiny.

agilis subagilis COCKERELL, 1905. Fort Collins, Colorado. Tab. 1.

Male labrum all black; no yellow spot on mandibles.

ambigua SMITH, 1879. Mexico.

Notes on type.—Trans. Amer. Ent. Soc., vol. 31, p. 329.

americana LEPELETIER, 1841. Carolina.

apicata LOVELL and COCKERELL, 1906. Waldoboro, Maine (Lovell).

assimilis SMITH, 1879. Oaxaca, Mexico.

Notes on type.—Trans. Amer. Ent. Soc., vol. 31, p. 329.

Same as *Xenoglossa assimilis* (Smith).

atrata SMITH, 1879. Oaxaca, Mexico. Tab. 1.

Notes on type.—Trans. Amer. Ent. Soc., vol. 31, p. 329. Not a true *Melissodes*; maxillary palpi five-jointed; male clypeus black, with a large yellow patch.

¹ *Melissodes* is usually credited to Latreille, but it was defined, and species assigned to it, by F. Smith in 1854. Lepelletier described what was understood to be Latreille's insect as *Melissoda latreillii*; this is *Acanthopus goryi* Romand. Mr. J. C. Crawford writes in a letter that Romand in 1841 included a species in *Melissodes*; I have not had access to this work.

atratura DALLA TORRE, 1896.

Same as *atrata*.

7 *atrifera* COCKERELL, 1910. Mexico (Deppe).

atrifera sandiarum COCKERELL, 1910. Sandia Mountains, New Mexico (J. R. Watson).

atrifrons SMITH, 1854. North Carolina. Tab. 1.

Name preoccupied: = *carolinensis*.

1 * *atripes* CRESSON, 1872. Texas (Belfrage). Tab. 1.

atripes acomanche COCKERELL, 1905. Fedor, Texas (Birkmann).

autumnalis ROBERTSON, 1905. Near Carlinville, Illinois (Robertson). Tab. 4.

baileyi COCKERELL, 1906. Fedor, Texas, April 5 (Birkmann).

* *bimaculata* LEPELETIER, 1825. Pennsylvania. Tab. 1, 4.

Varieties *a*, *b*, *c*, Cockerell, Canadian Entomologist, July, 1905, p. 267. The species goes west to Kansas.

binotata SAY, 1837. Indiana.

Same as *bimaculata*.

blakei COCKERELL, 1905. Beulah, New Mexico (Cockerell). Tab. 1, 3.

* *boltoniae* ROBERTSON, 1905. Near Carlinville, Illinois (Robertson). Tab. 4.

Falls Church, Virginia, August and September (N. Banks). Very like *M. perplexa*, but smaller; differs from *M. illata* by the smaller average size, band on middle of second abdominal segment entire or almost, and tuft on end of hind femora pale.

bruesi COCKERELL, 1906. Fedor, Texas, May 5 (Birkmann). Tab. 2.

Allied to *petalostemonis*.

cajennensis LEPELETIER, 1841. Cayenne.

Also in the West Indies.

californica SMITH, 1879. California.

Name preoccupied: = *smithii*.

* *caliginosa* CRESSON, 1878. Georgia (Morrison, Ridings). Tab. 1.

carolinensis DALLA TORRE, 1896. Tab. 1.

New name for *Tetralonia atrifrons* Smith, from North Carolina.

chrysothamni COCKERELL, 1905. Embudo, New Mexico (Cockerell). Tab. 1, 3.

Visits *Chrysothamnus*.

civica COCKERELL, 1910. Mexico (Forrer).

* *cnici* ROBERTSON, 1901. Illinois. Tab. 1, 4.

collicata COCKERELL, 1910. Mexico (Deppe).

* *coloradensis* CRESSON, 1878. Colorado (Ridings, Morrison). Tab. 1, 4.

Ranges to Illinois (Robertson).

* *comanche* CRESSON, 1872. Texas (Belfrage, Boll). Tab. 1.

Female resembles *M. obliqua*.

* *communis* CRESSON, 1878. "Georgia, Illinois." Tab. 1, 2.

comptoides ROBERTSON, 1897. Illinois (Robertson). Tab. 1, 4.

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

Also in the mountains of New Mexico.

* *confusiformis* COCKERELL, 1906. Fedor, Texas (Birkmann).

Resembles *M. gilensis*. Also occurs in Colorado; see Univ. of Colo. Studies, vol. 4, 1907, p. 255.

coreopsis ROBERTSON, 1905. Near Carlinville, Illinois (Robertson). Tab. 4.

dagosa COCKERELL, 1909. Grand Coulee, Washington, July 8.

Resembles *M. lupina* and *agilis*, but male antennae much shorter.

denticulata SMITH, 1854. "United States."

* *dentiventris* SMITH, 1854. Georgia. Tab. 1.

* *desponsa* SMITH, 1854. Ohio. Tab. 1.

desponsiformis COCKERELL, 1905. Corvallis, Oregon. Tab. 1, p. 89.

calloleuca Chell Saltan Ut.

Co. tygeri in Calif. Area

dubitata CRESSON, 1878. Georgia (Ridings, Morrison).

A valid species. See Cockerell, Canadian Entomologist, 1911, p. 34.

duplocincta COCKERELL, 1905. Bill Williams' Fork, Arizona (Snow). Tab. 1.

epicharina COCKERELL, 1905. Oak Creek Cañon, Arizona (Snow).

Female peculiar for the one-banded abdomen, giving it a curious resemblance to *Epicharis maculata*. A variety has two bands.

* **festonata** PROVANCHER, 1888. Cap Rouge, Canada (Provancher).

Differs from *M. nigripes* by its smaller size and less elongated abdomen, and from *M. desponsa* by the whitish abdominal bands. Male: clypeus yellow, antennæ testaceous beneath, last two segments of abdomen with lateral teeth. Female: hair pale yellow, mixed with black on vertex and mesothorax, tegulæ black, hair of legs reddish brown.

* **fimbriata** CRESSON, 1878. Texas (Belfrage). Tab. 1.

* **floris** COCKERELL, 1896. San Rafael, Veracruz, Mexico (C. H. T. Townsend).

Allied to *M. agilis*. Male has some black hairs on dorsum of thorax.

Type.—Cat. No. 3354, U.S.N.M.

fremontii COCKERELL, 1907. Florissant, Colorado (Rohwer).

Allied to *M. confusa*. Visits *Geranium fremontii*.

galvestonensis COCKERELL, 1905. Galveston, Texas, May (F. H. Snow). Tab. 1.

georgica CRESSON, 1878. Georgia (Morrison). Tab. 1.

* **gilensis** COCKERELL, 1896. Gila River, New Mexico (C. H. T. Townsend). Tab. 1.

variety of the female, with much less black hair on vertex than type, was taken by Eldred Jenne at North Yakima, Washington, July 24, 1903.

Cotype.—Cat. No. 3358, U.S.N.M.

* **glenwoodensis** COCKERELL, 1905. Glenwood Springs, Colorado (Gillette). Tab. 1, 2, 3.

Paratype.—Cat. No. 15069, U.S.N.M.

grandissima COCKERELL, 1905. Fedor, Texas (Birkmann). Tab. 1.

Resembles *M. comanche*; female nearly 19 mm. long. Male: Ann. Mag. Nat. Hist., April, 1906, p. 361.

* **grindeliæ** COCKERELL, 1898. Santa Fe, New Mexico (Cockerell). Tab. 1.

Paratype.—Cat. No. 4077, U.S.N.M.

helenæ COCKERELL, 1906. Las Cruces, New Mexico, August 19 (Townsend).

Allied to *M. humilior*.

helianthelli COCKERELL, 1905. Mesilla, New Mexico (Cockerell). Tab. 1, 3.

Female almost 18 mm. Visits *Helianthus ciliaris*.

herricki COCKERELL, 1905. New Mexico (F. H. Snow). Tab. 1.

hewetti COCKERELL, 1905. Santa Fe, New Mexico (Cockerell). Tab. 1, 3.

hexacantha COCKERELL, 1905. Arizona (F. H. Snow). Tab. 1.

hirsuta SMITH, 1879. Oaxaca, Mexico.

Notes on type.—Trans. Amer. Ent. Soc., vol. 31, p. 328. Allied to *M. aurigenia*.

hitei COCKERELL, 1908. Pueblo, Colorado, August 17 (G. M. Hite).

Resembles *M. martini*.

hortivagans COCKERELL, 1905. Garden City, Kansas (H. W. Menke). Tab. 1.

Gynandromorph; Ann. Mag. Nat. Hist., April, 1906, p. 360.

humilior COCKERELL, 1903. Organ, New Mexico (Cockerell). Tab. 1.

humilior catalinensis COCKERELL, 1905. Catalina Island, California (Davidson).

Described as a variety of *M. intermediella*.

* **hymenoxidis** COCKERELL, 1906. Florissant, Colorado (Cockerell).

Related to *M. perplexa*. Hair of pleura black in female. Visits *Hymenoxys*.

Paratype.—Cat. No. 150571, U.S.N.M.

illata LOVELL and COCKERELL, 1906. Waldoboro, Maine (Lovell).

Visits *Solidago*.

- illinoensis* ROBERTSON, 1895. Illinois (Robertson). Tab. 4.
- intermedia* CRESSON, 1872. Texas (Belfrage). Tab. 1, p. 90.
- intermediella* COCKERELL, 1905. Mesilla Valley, New Mexico (Cockerell). Tab. 1.
- intorta* CRESSON, 1872. Texas (Belfrage). Tab. 1.
- Male with black clypens; antennæ not half as long as in *tristis*.
- kallstroemiæ* COCKERELL, 1905. Mesilla Park, New Mexico (Cockerell). Tab. 1.
- kallstroemiæ phenacoides* COCKERELL, 1905. Las Cruces, New Mexico (Cockerell). Tab. 1.
- Formerly confused with *M. communis* (male), but easily separated by the total absence of black hair on thorax and entirely ferruginous tarsi.
- **labiatarum* COCKERELL, 1896. San Rafael, Vera Cruz, Mexico (Townsend).
Superficially rather like *Tetralonia atriventris*.
Type.—Cat. No. 3356, U.S.N.M.
- loena* COCKERELL, 1909. Lee County, Texas (Birkmann).
- lupina* CRESSON, 1878. California (Hy. Edwards). Tab. 1.
Extremely close to *M. agilis*. See Bull. S. California, Acad. Sci., February, 1905, p. 31. North Yakima, Washington, July 10, 1903, from Professor Melander.
- **lupina composita* TUCKER, 1909. Colorado Springs, Colorado (Tucker).
Male with eyes bluer green and diverging less above; mesothorax more shiny.
Type.—Cat. No. 12878, U.S.N.M.
- **machærantheræ* COCKERELL, 1904. Near White Sands, New Mexico (Cockerell). Tab. 1.
Also in Arizona. Male almost 15 mm. long.
- manipularis* SMITH, 1854. Georgia. Tab. 1.
The thoracic dorsum of male has some black hair, not mentioned by Smith.
Notes on type.—Trans. Amer. Ent. Soc., vol. 31, p. 329. Falls Church, Virginia (N. Banks).
- martini* COCKERELL, 1905. Las Valles, New Mexico (T. and W. Cockerell). Tab. 1, 3.
Visits *Petalostemon* in August.
- masuca* COCKERELL, 1909. Fedor, Texas (Birkmann).
Runs in Tab. 1 to vicinity of *aurigenia* and *agilis* (males).
- maura* CRESSON, 1865. Cuba (Gundlach). Tab. 1.
- megacerata* COCKERELL, 1906. Fedor, Texas, October 13 (Birkmann).
Male antennæ very long (10 mm.).
- melandri* COCKERELL, 1906. Fedor, Texas, October (Birkmann). Tab. 2.
- melanosoma* COCKERELL, 1905. Fedor, Texas (Birkmann).
In Canadian Entomologist, July, 1905, p. 266, is a table comparing this with *M. pernigra*, *atrata*, and *bimaculata*.
- **menuacha* CRESSON, 1868. New Mexico (S. Lewis). Tab. 1.
Colorado. (See Cresson).
- menuacha semilupina* COCKERELL, 1905. Los Angeles, California (Davidson).
Male; labrum not black at sides; red of antennæ darker; mandibles with yellow spot.
- menuacha submenuacha* COCKERELL, 1897. Las Cruces, New Mexico (Cockerell).
Male with mandibles black, without any yellow spot; nervures dark.
- microsticta* COCKERELL, 1905. Vancouver Island. Tab. 1.
- **mimica* CRESSON, 1869. Cuba. Tab. 1.
Also in Jamaica, according to Fox.
- **mizeæ* COCKERELL, 1905. Las Vegas, New Mexico, (S. L. Mize). Tab. 1, 3.
Visits *Grindelia*. A variety was found by Mr. Eldred Jenne at North Yakima, Washington, September 26, 1903.
- **montana* CRESSON, 1878. Colorado (Ridings); New Mexico (Lewis). Tab. 1.
The female described is the same as *M. grindelia*, but the male is another species.
- morosa* CRESSON, 1878. Mexico (Sumichrast). Tab. 1, p. 82.

* *mysops* COCKERELL, 1905. Maybell, Colorado. Tab. 1, 2.

Visits thistle flowers.

Variation; Entomologist, December, 1907, p. 269. Also at North Yakima, Washington, July 27, 1903 (Eldred Jenne). A male from North Yakima, August 22, 1903 (E. Jenne) is placed as a variety of *M. mysops*, but it has the apical part of flagellum bright ferruginous beneath. It is unfortunately in bad condition; possibly it is the undescribed male of *M. desponsiformis*.

* *nevadensis* CRESSON, 1879. Nevada (Morrison). Tab. 1.

nigra LEPELETIER, 1841. Pennsylvania.

Same as *bimaculata*.

nigripes SMITH, 1854. "United States."

Smith's male is *M. cnici*.

nigroaenea SMITH, 1854. Brazil.

Bertoni and Schrottky (1910) state that they received it from Texas, labelled *M. menuacha*. A female *nigroaenea* received from Schrottky has the facial quad-rangle broader and shorter than in *menuacha*. It is from San Juan, Argentina.

* *nigrosignata* COCKERELL, 1905. Oak Creek Cañon, Arizona (Snow). Tab. 1.

nigrosignata pallidesignata COCKERELL, 1905. Oak Creek Cañon, Arizona (Snow). Tab. 1.

nivea ROBERTSON, 1895. Illinois (Robertson). Tab. 4.

Falls Church, Virginia, September (N. Banks).

oajacena DALLA TORRE, 1896.

Same as *hirsuta*.

* *obliqua* SAY, 1837. Indiana. Tab. 1, 4.

* *opuntiella* COCKERELL, 1911. Brownsville, Texas (Jones and Pratt).

Type.—Cat. No. 14105, U.S.N.M.

otomita CRESSON, 1878. Mexico (Sumichrast). Tab. 1.

pallida ROBERTSON, 1895. Illinois (Robertson). Tab. 4.

* *pallidicincta* COCKERELL, 1896. Gila River, New Mexico (C. H. T. Townsend). Tab. 1.

Paratype.—Cat. No. 3357, U.S.N.M.

paroselæ COCKERELL, 1905. Mesilla, New Mexico (Cockerell). Tab. 1.

Visits *Parosela scoparia*.

pecosella COCKERELL, 1905. Pecos, New Mexico (W. P. Cockerell). Tab. 1.

pecosella verbesinarum COCKERELL, 1905. Las Cruces, New Mexico (Cockerell). Tab. 1.

Identical with *Xenoglossodes excurrens*.

* *pennsylvanica* LEPELETIER, 1841. Pennsylvania. Tab. 1.

pernigra COCKERELL, 1896. San Rafael, Vera Cruz, Mexico (C. H. T. Townsend).

Resembles *M. atrata* and *bimaculata*. Visits *Ipomoea*. Male clypeus dark.

* *perplexa* CRESSON, 1878. "Georgia (Morrison); Texas (Belfrage)." Tab. 1, 2.

Falls Church and Glencarlyn, Virginia, July to September (N. Banks).

* *personatella* COCKERELL, 1901. La Jolla, California (Cockerell). Tab. 1.

Type.—Cat. No. 13189, U.S.N.M.

petalostemonis ROBERTSON, 1900. Illinois (Robertson). Tab. 4.

Near *M. communis*.

petulca CRESSON, 1878. Georgia (Morrison). Tab. 1.

petulca suffusa CRESSON, 1878. Texas (Belfrage, Heiligbrodt).

The Rev. G. Birkmann writes that he believes *suffusa* to be a valid species, distinct from *petulca*, but that males which have been ascribed to *suffusa* really belong to *petulca*. He takes *suffusa* during the first half of May, *petulca* from about the middle of May to the middle of June.

petulciformis COCKERELL, 1906. Fedor, Texas (Birkmann).

Closely resembles *M. petulca*.

pimella COCKERELL, 1906. Arizona.

A small species resembling *agilis*.

pinguis CRESSON, 1878. Mexico (Sumichrast). Tab. 1.

New description.—Trans. Amer. Ent. Soc., vol. 24, p. 157.

pinguis velutinella COCKERELL, 1897. San Rafael, Mexico (C. H. T. Townsend).

The abdominal pile yellowish white.

prælauda COCKERELL, 1905. Oak Creek Canon, Arizona (Snow). Tab. 1.

pullata CRESSON, 1865. Cuba. Tab. 1.

pygmæa CRESSON, 1872. Texas (Belfrage). Tab. 1, p. 91.

* *raphaelis* COCKERELL, 1896. San Rafael, Mexico (Townsend). Tab. 1, 2.

Quirigua, Guatemala (W. P. Cockerell).

Type.—Cat. No. 3355, U.S.N.M.

rivalis CRESSON, 1872. Texas (Belfrage, Boll). Tab. 1.

* *rufodentata* SMITH, 1854. St. Vincent, Grenada.

* *ruidosensis* COCKERELL, 1896. Ruidoso Creek, New Mexico.

Same as *confusa*.

Cotype.—Cat. No. 3361, U.S.N.M.

* *rustica* SAY, 1837. Indiana.

saponellus COCKERELL, 1908. Soap Lake, Grand Coulee, Washington.

Female; looks like *Xenoglossodes imitatrix*.

semitristis COCKERELL, 1905. Oak Creek Cañon, Arizona (Snow). Tab. 1.

senilis SMITH, 1854. Mount Pleasant, Ohio.

Same as *denticulata*. Provancher records it from Ottawa, Canada.

simillima ROBERTSON, 1897. Illinois (Robertson). Tab. 2, 4.

Comparison with *perplexa*; Psyche, October, 1906, p. 111.

smithii DALLA TORRE, 1896.

Notes on type.—Trans. Amer. Ent. Soc., vol. 31, p. 328.

* *snowii* CRESSON, 1878. Colorado (F. H. Snow). Tab. 1.

Pubescence white.

Comparison with *M. agilis* and *aurigenia*; Tucker, Trans. Kansas Acad. Sci., 1909, pp. 278-281.

* *sphæralcæ* COCKERELL, 1896. Santa Fe, New Mexico (Cockerell). Tab. 1.

Male clypeus black.

Paratype.—Cat. No. 3360, U.S.N.M.

spissa CRESSON, 1872. Texas (Belfrage). Tab. 1.

* *stearnsi* COCKERELL, 1905. Los Angeles, California (Davidson). Tab. 1.

Paratype.—Cat. No. 15070, U.S.N.M.

suavis CRESSON, 1878. Colorado (Morrison). Tab. 1, p. 91.

"A very pretty little species, the abdomen (female) appearing white with four narrow shining black bands." (Cresson.) Flagellum rufo-testaceous beneath.

* *suffusa* CRESSON, 1878. Texas (Belfrage, Heiligbrodt). Tab. 1.

See *M. petulca suffusa*.

tenuitarsis COCKERELL, 1905. Arizona (F. H. Snow). Tab. 1.

tepaneca CRESSON, 1878. Mexico (Sumichrast). Tab. 1.

tepaneca aschenborniana COCKERELL, 1912. Guatemala (W. P. Cockerell).

tepida CRESSON, 1878. Nevada (Hy. Edwards). Tab. 1, p. 85.

texana CRESSON, 1872. Texas (Belfrage, Boll). Tab. 1.

texana flaveriæ COCKERELL, 1906. Roswell, New Mexico (Cockerell).

Visits *Flaveria*.

* *thelypodii* COCKERELL, 1905. La Cueva, Organ Mountains, New Mexico (Townsend).

Tab. 1, 3.

townsendi COCKERELL, 1896. Las Cruces, New Mexico (Townsend). Tab. 1.

Male large and robust, the abdomen covered with fulvous hair.

* *trifasciata* CRESSON, 1878. Porto Rico (Krug). Tab. 1.

"This may prove to be the female of *mimica*." (Cresson.) Jamaica.

- * *trifasciatella* ASHMEAD, 1900. Kingstown, St. Vincent, West Indies (H. M. Smith).
Female 8 to 9 mm.
Type.—Cat. No. 6396, U.S.N.M.
- trinodis* ROBERTSON, 1901. Illinois (Robertson). Tab. 4.
Maxillary palpi often three-jointed.
- * *tristis* COCKERELL, 1904. Mesilla Valley, New Mexico (Cockerell). Tab. 1.
Paratype.—Cat. No. 3359, U.S.N.M.
- tristis malvina* COCKERELL, 1902. Cerro Chilicote, State of Chihuahua, Mexico (Townsend).
Male smaller than *tristis*, eyes dark brown, flagellum dark reddish beneath, nervures mostly piceous. Probably a distinct species. Visits Malvaceæ.
- * *tuckeri* COCKERELL, 1909. Plano, Texas, October (E. S. Tucker).
Resembles *perplexa* (female), but mesothorax shining, and closely beset with very deep and large punctures.
- variabilis* ROBERTSON, 1905. Near Carlinville, Illinois (Robertson). Tab. 4.
- vernonsensis* VIERECK, 1905. Vernon, British Columbia (Harvey). Tab. 1.
Described as a subspecies of *M. menuacha*.
- * *vernoniæ* ROBERTSON, 1902. Illinois (Robertson). Tab. 4.
- vernoniana* ROBERTSON, 1905. Near Carlinville, Illinois (Robertson). Tab. 4.
- wheeleri* COCKERELL, 1906. Fedor, Texas, May 23 (Birkmann). Tab. 2.
Supposed male; Ann. Mag. Nat. Hist., April, 1906, p. 367.
- wickhami* COCKERELL, 1906. Fedor, Texas, May 3 (Birkmann). Tab. 2.
- xanthopteralis* COCKERELL, 1906. Fedor, Texas, May 26 (Birkmann).
Wings very yellow.

Genus THYGATER Holmberg.

Type.—(*Tetralonia*) *Thygater terminata* (Smith).

Maxillary palpi three jointed. Malar space large.

Macroglossapis Cockerell, type (*Macroglossa*) *Macroglossapis oribazi* Radoszkowski, is the same genus. This genus, on account of the large malar space and other characters can not well have been derived from the *Melissodes* group.

Thygatina Cockerell is an analogous genus, with three-jointed maxillary palpi, found in Ceylon. (See Trans. Amer. Ent. Soc., vol. 37, p. 237.)

TABLES.

(1) Cockerell. Trans. Amer. Ent. Soc., vol. 32, 1906, p. 74, 83.

* *albilabris* CRESSON, 1878. Mexico (Sumichrast). Tab. 1.

analís LEPELETIER, 1841. Brazil. Tab. 1.

According to Friese the Mexican *oribazi* is the same.

* *cockerelli* CRAWFORD, 1906. San Jose, Costa Rica (Crawford).

Described from the female. Quirigua, Guatemala (W. P. Cockerell).

Type.—Cat. No. 10076, U.S.N.M.

modesta SMITH, 1879. Oaxaca, Mexico. Tab. 1.

Notes on type.—Trans. Amer. Ent. Soc., vol. 31, p. 327.

montezuma CRESSON, 1878. Mexico (Sumichrast). Tab. 1.

* *nigravillosa* CRAWFORD, 1906. San Jose, Costa Rica (Crawford).

Described from the male. Quirigua, Guatemala (W. P. Cockerell).

Type.—Cat. No. 10077, U.S.N.M.

oribazi RADOSZKOWSKI, 1884. Mexico.

Same as *analís*, according to Friese. Female 16 mm.

* *rubricata* SMITH, 1879. Oaxaca, Mexico. Tab. 1.

Notes on type.—Trans. Amer. Ent. Soc., vol. 31, p. 328.

Costa Rica form; Trans. Amer. Ent. Soc., vol. 32, p. 159. Specimens in U. S.

National Museum are Costa Rican form.

