

A REVISION OF THE MUTILLID WASPS OF THE
GENERA MYRMILLOIDES AND PSEUDOMETHOCA
OCCURRING IN AMERICA NORTH OF MEXICO.

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This study is the outgrowth of an attempt, several years ago, to identify a large collection of Mutillidae at the University of Nebraska. In this work it soon became apparent that accurate identification of the North American Mutillidae was hopeless, until something like order could be brought out of the chaotic condition of the generic and specific classifications. Several generic classifications have been proposed, but that outlined by Dr. J. C. Bradley (1916) seems to be the most satisfactory at present for the North American species and, in the main, is the classification followed by the writer.

Most of the genera recognized in Doctor Bradley's classification need to be studied and revised, and the present paper deals with two of these groups, *Myrmilloides* André and *Pseudomethoca* Ashmead. The species included by Fox (1899) in his *grandiceps* group is here placed in the genus *Myrmilloides* André, while those which he included under the *canadensis* and *simillima* groups, together with some others are placed in a single genus, *Pseudomethoca* Ashmead. On account of the scarcity of material from Mexico and Central America and the impossibility of examining the types of many of the species described from those regions, the work has been limited to the forms which are found in North America north of Mexico. A list of the species described from Mexico and Central America which probably belong to the genus *Pseudomethoca* Ashmead is included herein.

The females of the various species of Mutillidae are in many cases more or less superficially alike, but the males are even more so. This fact has caused a great deal of confusion in the identification of the males of this family. No less than six different species of males have been found by the writer in a series of specimens which were supposed to include representatives of a single species. In searching for characters by which the males could be separated from one another the writer was led to examine the genital structures and found

that they possessed excellent specific characters. After separating the various species of males by this means, it was found that external structural characters could be correlated with the specific characters found in the genitalia, and that keys based on external characters alone could be made.

Edward Saunders (1884) was the first to point out the taxonomic value of the male genitalia in the aculeate Hymenoptera, and he figured them for a number of families. Radoszkowski (1885) figured and described these structures for a large number of Mutillidae with the intention of revising the classification of the family. However, from that time until recently, the male genitalia of the Mutillidae do not seem to have been seriously considered as possessing good specific or generic characters, although in several cases they have been figured for a number of species.

The morphology and homologies of the male genitalia of the Hymenoptera have been discussed by Peytoureau (1895), Bordas (1895), Zander (1900), and Crampton (1919, 1920). Dufour (1834), Saunders (1884), and Radoszkowski (1885) describe their structure in the Mutillidae in considerable detail. The nomenclature of the parts (pl. 1, fig. 1) used in this paper is that given by Bradley (1917). The parts which have proved most useful for specific characters are the squama, sagitta, volsella, and ramus. In the various species these parts exhibit a great variety of form and vestiture. In the genus *Pseudomethoca* Ashmead, at least, the uncus and the cardo do not appear to be important as far as specific characters are concerned.

The external structural characters which have been found useful in separating either the females or the males are as follows: The dentate condition of the genae of the females together with the character of the longitudinal carina of the genae; the distance between the antennae at their base; the character of the frontal tubercles at the base of the antennae; the character of the cephalic margin of the propleura and the humeral angles of the pronotum; the relative width of the head and thorax; the shape of the thorax; the sculpture of the pygidium of the female; the form and sculpture of the tegulae of the males; and the sculpture and vestiture of other sclerites of the head, thorax, and abdomen.

The average worker will not find it necessary to examine the male genitalia in order to identify specimens, but an account of the technique used in removing these structures without injury to the specimen may prove of value to those who wish to examine them. The instrument used for dissection is a No. 00 white pin. The tip of this is bent to form a very minute hook, and the head of the pin is fastened into a small piece of cork, which serves as a handle. The specimen is first relaxed, then holding it in one hand, the probe

is inserted at the tip of the abdomen between the genitalia and the last sternite, until the hook is pushed beyond the base of the cardo. By a slight twist of the probe, the hook is brought into position to catch at the base of the cardo and then withdrawn from the abdomen, bringing the genitalia with it. With a little practice one soon becomes skilful enough to remove the genitalia in this manner without in any way injuring them or the specimen. The former are mounted on a paper point which is placed on the pin directly beneath the specimen from which the genitalia were removed.

On account of the fact that the various species of males may be recognized by the use of external characters alone, I have not ventured to make detailed descriptions of the genitalia. However, in each case, except two, figures of the genitalia have been drawn by the author either from the type specimen or from a specimen which has been compared with the type. These figures present the dorsal view of these structures as they lie in their normal position within the abdomen. The figures are all drawn to the same scale; 1 mm. in the drawing equals 0.0185 mm. in the genitalia.

For the loan of material and the privilege of examining type specimens in various collections I am indebted to the following: S. A. Rohwer, United States National Museum; Dr. Henry Skinner, American Entomological Society and Philadelphia Academy of Sciences; Dr. Frank E. Lutz, American Museum of Natural History; Dr. Nathan Banks, Museum of Comparative Zoology; Prof. S. J. Hunter, University of Kansas; and Dr. J. C. Bradley, Cornell University. I am also indebted to the following persons for the loan of material: Prof. Myron H. Swenk, University of Nebraska; Dr. J. Bequaert, American Museum of Natural History; Dr. C. P. Gillette, Colorado State Agricultural College; Prof. G. A. Dean, Kansas State Agricultural College; Prof. J. R. Parker and Prof. R. A. Cooley, Montana State Agricultural College; Dr. J. G. Sanders, Pennsylvania Department of Agriculture; Prof. R. W. Doane, Leland Stanford University; Prof. W. J. Chamberlin, Oregon State Agricultural College; Dr. I. W. Hawley, Utah State Agricultural College; Dr. J. McDunnough, Department of Agriculture of Canada; Prof. R. W. Harned, Mississippi State Plant Board; Prof. C. S. Brimley, North Carolina State College of Agriculture; Prof. G. M. Bentley, University of Tennessee; Prof. H. F. Wickham, Iowa State University; Prof. Don C. Mote, State Entomologist of Arizona; Mr. H. S. Smith, California State Insectary; Prof. H. J. Reinhard, Texas State Agricultural College; Prof. O. A. Stevens, North Dakota State Agricultural College; and Mr. C. N. Ainslie, Sioux City, Iowa. To all of these I wish to express my appreciation. I am also greatly indebted to Dr. William A. Riley and Dr. H. H. Knight for encouragement and helpful suggestions during the course of this work.

Genus MYRMILLOIDES André.

Myrmilloides ANDRÉ, 1903, Gen. Ins., vol. 1, fasc. 11, p. 26.—ASHMEAD, 1903, Can. Ent., vol. 25, p. 324, male; p. 332 female.—BRADLEY, 1916, Trans. Amer. Ent. Soc., vol. 42, p. 191.

Haplotype.—*Mutilla grandiceps* Blake.

The genus *Myrmilloides* was proposed by André in 1903 to include a single species.

MYRMILLOIDES GRANDICEPS (Blake).

Plate 1, fig. 2.

1872. *Mutilla grandiceps* BLAKE, Trans. Amer. Ent. Soc., vol. 4, p. 74, male.

1886. *Sphaerophthalma grandiceps* BLAKE, Trans. Amer. Ent. Soc., vol. 13, p. 244, male and female.

1887. *Sphaerophthalma grandiceps* CRESSON, Trans. Amer. Ent. Soc., suppl. vol., p. 265, male and female.

1897. *Mutilla grandiceps* DALLE TORRE, Cat. Hymen., vol. 8, p. 44, male and female.

1899. *Mutilla grandiceps* Fox, Trans. Amer. Ent. Soc., vol. 25, p. 222, male and female.

1903. *Myrmilloides grandiceps* ANDRÉ, Gen. Ins., vol. 1, fasc. 11, p. 27, male and female.

1903. *Mutilla grandiceps* MELANDER, Trans. Amer. Ent. Soc., vol. 29, p. 293, male and female.

Type.—Male, Texas, in collection of American Entomological Society of Philadelphia.

Plesiotype.—Male, August 24, 1916, Mitchell, Nebraska (R. W. Dawson), in entomological collection of University of Nebraska.

Specimens examined.—Colorado: Male, August 3, 1899, Sterling; 4 males, 4 females, Colorado Springs (W. M. Wheeler); female, June 1, 1921, Lamar (C. E. Mickel). Iowa: female, July 8, 1921, Sioux City (C. N. Ainslie); male, July 10, 1920, Sioux City (C. N. Ainslie); female, July 15, 1920, Sioux City (C. N. Ainslie); female, 2 males, July 15, 1922, Sioux City (C. N. Ainslie); male, August 27, 1920, Sioux City (C. N. Ainslie); male, September 7, 1920, Sioux City (C. N. Ainslie); female, September 17, 1921, Sioux City (C. N. Ainslie); female, Sioux City (C. N. Ainslie). Kansas: male and female, July 11, Riley County (Popenoe); female, July 19, Riley County (Popenoe); female, August 12, Riley County (G. A. Dean); female, Wallace County (F. X. Williams). Nebraska: female, May 27, 1916, South Bend (L. Bruner); female, July 10, 1912, Bridgeport (L. M. Gates); female, June 23, 1916, Mitchell (R. W. Dawson); female, July 8, 1915, Mitchell (L. M. Gates); female, July 26, 1916, Mitchell (C. E. Mickel); 2 females, August 1, 1916, Mitchell (C. E. Mickel); male, August 4, 1916, Mitchell (C. E. Mickel); male, August 24, 1916, Mitchell (R. W. Dawson). Oklahoma: female, June 11, South McAlester (Wickham). Texas: male, September 23, 1905, Rosser (C. R. Jones).

The genitalia of the type and the plesiotype have been compared and found to be identical. The mandibles in both sexes are distinctly bidentate, and not tridentate as indicated by Fox (1899) in his key to the groups of species. Nothing is known of the biology of this species other than the possibility suggested by Melander (1903) that it is parasitic on *Halictus pruinosus* Robertson.

Genus PSEUDOMETHOCA Ashmead.

- Pseudomethoca* ASHMEAD, 1896, Trans. Amer. Ent. Soc., vol. 23, p. 181, male; 1899, Journ. N. Y. Ent. Soc., vol. 7, p. 55, female; p. 59 male.—ANDRÉ, 1903, Gen. Ins., vol. 1, fasc. 11, p. 27, male and female.—ASHMEAD, 1903, Can. Ent., vol. 35, p. 325, male; p. 331, female.—BRADLEY, 1916, Trans. Amer. Ent. Soc., vol. 42, pp. 191, 311, 318.—ROHWER, 1916, Hymen. Conn., p. 622.
- Nomiaephagus* ASHMEAD, 1899, Journ. N. Y. Ent. Soc., vol. 7, p. 56, female, p. 59, male; 1903, Can. Ent., vol. 35, p. 307, male; p. 309, female.—ROHWER, 1916, Hymen. Conn., p. 623.
- Ephuta* ANDRÉ, 1903, Gen. Ins., vol. 1, fasc. 11, p. 51 (part).
- Orthotype*.—*Photopsis cressonii* Fox=*canadensis* Blake.

The genus *Pseudomethoca* was proposed by Ashmead in 1896. He designated *Photopsis cressonii* Fox as the type, which subsequently was shown to be the male of *Mutilla* (*Sphaerophthalma*) *canadensis* Blake. In 1899 and in 1903 Ashmead characterized the females in his keys to the genera of Mutillidae. He stated that the females possessed a distinct pygidial area. André in 1903 recharacterized the females stating that Ashmead was in error and that the females did not possess a distinct pygidial area. I have examined a number of females of *Pseudomethoca canadensis* (Blake) under a binocular microscope and find that Ashmead was correct; the females of this species possess a distinct pygidial area bounded laterally each side by a sharp carina. This is also true of the females of other species which have been assigned to this genus. In 1899 Ashmead established the genus *Nomiaephagus* with *Mutilla* (*Sphaerophthalma*) *sanbornii* Blake as the type. In his keys to the genera of Mutillidae (1903) he placed *Nomiaephagus* in the tribe *Photopsidini* and *Pseudomethoca* he placed in the tribe *Mutillini*, making this division on the character of the eyes. Bradley (1916) has pointed out the inconsistency of this division. I have before me the specimens of *sanbornii* upon which Ashmead based his diagnosis. These specimens include both males and females which had been reared from the cells of a bee, *Nomia pattoni* Cockerell. In some of the female specimens the eyes are "highly polished with the facets vaguely defined," while in others the eyes are "distinctly faceted." Ashmead's division of genera into the tribes *Photopsidini* and *Mutillini* based on the character of the eyes, certainly can scarcely stand in the face of this evidence. The species which have been placed under *Nomiaephagus*

are very closely related to those which have been assigned to *Pseudomethoca*, and have been so treated by Fox (1899) and by Bradley (1916). Bradley (1916) reduced *Nomiaephagus* to subgeneric rank, making it a subgenus of *Pseudomethoca*. I have been unable to find characters of sufficient value for separating these two groups of species even as subgenera and therefore unite them here under the one genus *Pseudomethoca*. In the sense used in this paper the species of *Pseudomethoca* may be separated from all of the other North American forms by the following characters: eyes round or slightly oval, entire, not emarginate; pubescence of the body composed entirely of simple hairs; first segment of the abdomen entirely sessile with the second, the apex of the first segment being of the same size as the base of the second; a longitudinal carina always present on the genae of the females.

KEY TO THE SPECIES.

Females.

1. Head spinose or dentate beneath..... 2
Head not spinose or dentate beneath..... 7
2. Head thickly clothed with appressed, silvery pubescence..... 3
Head more or less bare, not thickly clothed with appressed, silvery
pubescence..... 5
3. Size large, 13 mm.; ventral, postero-lateral angles of head sharply angulate,
or dentate..... 12. *cephalargia*, new species.
Size small, 3-5 mm.; ventral, postero-lateral angles of head carinate,
but not sharply angulate, or dentate..... 4
4. Carina of postero-lateral angles prominent, sharp, extending upon the
vertex..... 6. *toumeyii* Fox.
Carina of postero-lateral angles not prominent, not extending upon the
vertex..... 7. *bequaerti*, new species.
5. Genae beneath bidentate..... 4. *nephele* Fox.
Genae beneath unidentate..... 6
6. Front produced at the base of the antennae into a thin, bidentate lamella
..... 2. *dentifrontalis* Bradley.
Front not so produced..... 1. *canadensis* Blake.
7. (1) Greater part of abdomen ferruginous, or yellowish..... 8
Abdomen black, except first and last segments.... 14. *wickhami* Cockerell.
8. Dorsum of propodeum with a large, prominent, rugose tubercle at the apex
medially..... 13. *donae-anae* Cockerell and Fox.
Propodeum without any such tubercle..... 9
9. Dorsum of body densely clothed with erect and semierect pubescence... 10
Dorsum of body thinly clothed with pubescence..... 13
10. Head distinctly wider than the thorax; pubescence of dorsum of body
fulvous..... 19. *harpalyce* Fox.
Width of head and thorax about equal..... 11
11. Pubescence of dorsum of head, thorax, and abdomen concolorous..... 12
Pubescence of head and thorax black, that of the second dorsal tergite
golden..... 22. *pigmentata*, new species.

12. Pubescence of dorsum of head, thorax and abdomen light golden. 21. *aureovestita* Bradley.
 Pubescence of dorsum of head, thorax and second tergite fiery red; third tergite with black pubescence medially, silvery pubescence laterally; remaining tergites with silvery pubescence. 20. *flammigera*, new species.
13. (9) Head thickly clothed with appressed, silvery or golden pubescence. 14 Head more or less bare, not clothed with appressed, silvery or golden pubescence..... 18
14. Size small, 3-5 mm..... 15
 Size large, 7-10 mm..... 16
15. Second abdominal tergite reticulato-punctate medially on the basal half. 8. *occulissima*, new species.
 Second abdominal tergite finely punctate throughout. 9. *scaevolella* Cockerell.
16. Second abdominal tergite with a well defined pattern of silvery maculation 17
 Second abdominal tergite without any well defined pattern of silvery maculation..... 17. *praeclara* Blake.
17. Second abdominal tergite with a large, basal and apical, dark macula connected by a narrow line, thereby making the form of an hourglass; the remainder of the segment filled in with silvery pubescence; punctures of the thorax coarse but rather close, not running into reticulations posteriorly..... 15. *connectens* Cresson.
 Second abdominal tergite with a transverse bar of thin, silvery pubescence a little behind the middle, which is extended near each side into a narrower stripe almost to the base of the segment, thus ll; thorax with distinct reticulations posteriorly..... 16. *contumax* Cresson.
18. (13) Size small, 3-5 mm., pygidium punctate..... 19
 Size large, 8-15 mm., pygidium rugose or striate..... 20
19. Body testaceous, second abdominal tergite without any definite pattern of silvery ornamentation..... 11. *aprica* Melander.
 Body ferruginous, second abdominal tergite with two, round, silvery spots of pubescence..... 10. *nudula*, new species.
20. Pygidium rugose..... 21
 Pygidium striate..... 26
21. Head, thorax, and abdomen for most part ferruginous..... 22
 Head and thorax black; second abdominal tergite entirely, and remaining abdominal tergites fringed at the apex, with golden pubescence. 36. *brazoria* Blake.
22. Humeral angles of prothorax with a weak, slightly elevated carina..... 23
 Humeral angles of prothorax with a strong, sharp carina..... 24
23. Propodeum with the posterior face more or less rounded into the dorsum, not at a distinct right angle with the dorsum; metapleura micropunctate, thinly clothed with silvery pile..... 34. *sanbornii* Blake.
 Propodeum with the posterior face at a distinct right angle with the dorsum; metapleura sometimes very slightly micropunctate, not clothed with silvery pile..... 35. *propinqua* Cresson.
24. Humeral angles acute..... 23. *occola* Blake.
 Humeral angles more or less rounded..... 25
25. Apex of second abdominal tergite broadly fringed with black; legs reddish..... 26. *meritoria*, new species.
 Apex of second abdominal tergite silvery pubescent, with a narrow fringe of black pubescence medially; legs blackish red. 28. *paludata*, new species.

26. (20) Pygidium with diverging striae..... 30. *aectis* Fox.
 Pygidium with longitudinal striae..... 27
27. Apex of second abdominal tergite fringed with silvery pubescence, except
 a small, black spot medially..... 32. *oculata* Banks.
 Apex of second abdominal tergite fringed with a broad band of black
 pubescence..... 31. *simillima* Smith.

Males.

1. Size small, 3-5 mm..... 2
 Size large, 7-20 mm..... 4
2. Postero-lateral angles of head dentate..... 1. *canadensis* Blake.
 Postero-lateral angles of head rounded or obtuse..... 3
3. Head quadrate, the punctures sparse, coarse, evenly distributed.
5. *gila* Blake.
 Head transverse, the punctures fine, sparse and irregularly distributed.
3. *athamas* Fox.
4. Pubescence of abdomen above, fiery red or golden..... 5
 Pubescence of abdomen above, white or black..... 8
5. Each abdominal tergite with an apical band of fiery red pubescence.
38. *vanduzei* Bradley.
 Abdominal tergites 3-5, at least, with an apical band of golden pubes-
 cence..... 6
6. Abdomen castaneous, second tergite yellowish; tegulae coarsely punctate
 throughout; second abdominal tergite with fine, sparse punctures.....
24. *flavida* Blake.
 Abdomen entirely black..... 7
7. Humeral angles rounded, punctate, without any evidence of a carina;
 dorsum of thorax usually yellowish..... 35. *propinqua* Cresson.
 Humeral angles carinate, thorax black..... 21. *aureovestita* Bradley.
8. (4) Second dorsal segment of abdomen red..... 9
 Body entirely black..... 13
9. Posterior part of tegulae bent downward so as to form a posterior face
 at a sharp angle with the dorsal surface..... 10
 Tegulae convex, without a posterior face..... 12
10. Femora densely clothed beneath with long hairs..... 23. *oceola* Blake.
 Femora sparsely pubescent beneath..... 11
11. Tegulae rugosely punctate throughout; sixth and seventh tergites with
 whitish pubescence..... 29. *scrupulosa*, new species.
 Tegulae sparsely punctate, shining; all the tergites with black pubes-
 cence..... 31. *simillima* Smith.
12. Body clothed with pale pubescence..... 39. *russeola*, new species.
 Body clothed with black pubescence..... 34. *sanbornii* Cresson.
13. (8) Body clothed with pale pubescence..... 15
 Body clothed with black pubescence..... 14
14. Sides of propodeum rugoso-striate..... 25. *nigricula*, new species.
 Sides of propodeum rugoso-punctate..... 18. *anthracina* Fox.
15. Abdominal tergites with a distinct apical band of pale pubescence..... 16
 Abdominal tergites without a distinct apical band of pale pubescence.
33. *gerjon* Fox.
16. Tegulae subhemispherical, with a distinct posterior face; wings sub-
 fuscous..... 37. *carbonaria*, new species.
 Tegulae convex, without a distinct posterior face..... 17
17. Frontal tubercles at insertion of antennae densely punctate.
40. *aegeon* Fox.

- Frontal tubercles at insertion of antennae smooth and shining----- 18
 18. Second tergite with strong, close punctures, especially at the base and
 apex----- 27. *albicoma*, new species.
 Second tergite with sparse punctures throughout-- 41. *manca*, new species.

1. PSEUDOMETHOCA CANADENSIS (Blake).

Plate 2, fig. 7.

1871. *Mutilla (Sphaerophthalma) canadensis* BLAKE, Trans. Amer. Ent. Soc., vol. 3, p. 252, female.
 1886. *Sphaerophthalma canadensis* BLAKE, Trans. Amer. Ent. Soc., vol. 13, p. 248, female.
 1887. *Sphaerophthalma canadensis* CRESSON, Trans. Amer. Ent. Soc., suppl. vol., p. 265, female.
 1890. *Photopsis cressonii* FOX, Ent. News, vol. 1, p. 138, male (not *Mutilla Cressoni* Blake).
 1895. *Sphaerophthalma alveolata* PROVANCHER, Le Nat. Can., vol. 22, p. 110, female.
 1896. *Pseudomethoca cressonii* ASHMEAD, Trans. Amer. Ent. Soc., vol. 23, p. 182, male.
 1897. *Mutilla canadensis* DALLE TORRE, Cat. Hymen., vol. 8, p. 20, female.
 1897. *Mutilla neojerseiensis* DALLE TORRE, Cat. Hymen., vol. 8, p. 65, male.
 1899. *Mutilla canadensis* FOX, Trans. Amer. Ent. Soc., vol. 25, p. 224, female and male.
 1903. *Pseudomethoca canadensis* ANDRÉ, Gen. Ins., vol. 1, fasc. 11, p. 28, female.
 1903. *Mutilla canadensis* MELANDER and BRUES, Biol. Bull., vol. 5, p. 24.
 1903. *Mutilla canadensis* MELANDER, Trans. Amer. Ent. Soc., vol. 29, p. 293.
 1916. *Pseudomethoca (Pseudomethoca) canadensis* BRADLEY, Trans. Amer. Ent. Soc., vol. 42, p. 318.
 1916. *Pseudomethoca canadensis* ROHWER, Hymen. Conn., p. 622.
 1918. *Sphaerophthalma alveolata* GAHAN and ROHWER, Can. Ent., vol. 50, p. 196.
 1922. *Pseudomethoca canadensis* RAU, Trans. Acad. Sci. St. Louis, vol. 24, p. 6, females and males.
 1923. *Pseudomethoca canadensis* MICKEL, 19th Rep. State Ent. Minn., p. 100, female.

Type.—Female, Canada, in collection of American Entomological Society of Philadelphia.

Allotype.—Male, *cressonii* FOX, in collection of American Entomological Society of Philadelphia.

Plesiotype.—Male, Colorado (C. F. Baker). Collection of U. S. National Museum.

Specimens examined.—Connecticut: Female, July 4, 1893, Hartford; female, June 17, Hartford; female, September 2, 1909, Lyme (A. Champlain). District of Columbia: Female, July 23, Washington (J. C. Crawford). Georgia: Female, June 7–23, 1911, Spring Creek, Decatur County (J. C. Bradley); female, August 2, 1913, Atlanta. Illinois: Female, June 1, 1909, Tampico. Iowa: Female, July 8, 1921, Sioux City (C. N. Ainslie); female, July 15, 1922,

Sioux City (C. N. Ainslie); female, July 30, 1921, Sioux City (C. N. Ainslie); female, August 11, 1919, Sioux City (C. N. Ainslie); female, Sioux City (C. N. Ainslie). Kansas: Female, August 5, Riley County (G. A. Dean); female, May, Riley County (Marlatt); male, September, Riley County (Marlatt); female, October 1, Riley County (E. E. Faville). Louisiana: 2 males (C. F. Baker). Maryland: 3 females, June 28, 1911, Chesapeake Beach (Wm. T. Davis). Massachusetts: Female, Woods Hole. Minnesota: Female, August 1, 1922, Jordan, Scott county (A. T. Hertig); female, July 26, 1923, Fridley sand dunes, Anoka county (R. W. Dawson); 2 females, August 30, 1923, Moorhead (O. A. Stevens). Nebraska: Female, June 11, 1913, Omaha (L. T. Williams); female, June 12, 1914 Omaha (L. T. Williams); female, June, 1888, West Point; female, West Point; female, June 21, 1920, Lincoln (R. W. Dawson); 3 females, July 18, 1920, Lincoln (R. W. Dawson); female, October 20, 1894, Lincoln (R. H. Wolcott); female, August 14, 1920, Halsey (C. B. Philip). New Jersey: Female, May 30, 1912, Lakehurst; female, August 22, 1912, Lakehurst (Wm. T. Davis); female, May 21, 1910, Hackettstown; female, May 21, 1905, Brown's Mill Jr.; female, June 8, 1902, Iona; female, May 24, 1902, Clementon (J. C. Bradley); female, August 19, 1906, Mount Holly; female, August 19, 1916, Ocean Gate; male, September 1, 1916, Palisades. New York: Female, 1883, Nyack; 2 females, West Farms, New York City; female, Mosholu; female, May 29-30, Yaphank, Long Island; female, August 10, 1916, McLean; female, August 2, 1916, Rocky Glen; female, August 23, 1886, Ithaca (Comstock); female, August 10, 1916, Ithaca; 2 males, July 19, 1904, Ithaca; 2 males, July 20, 1904, Ithaca. North Carolina: Female, July 21, 1906, Valley of Black Mountains (W. Beutenmuller); female, August 10, 1906, Summit of Craggy Mountains (W. Beutenmuller). Nova Scotia: Female, June 5, 1911, Weymouth. Pennsylvania: Female, June 9, 1912, Dauphin; female, May 21, 1912, Linglestown (Champlain); female, July 7, 1910, Heckton Mills (P. R. Meyers); female, September 5, 1909, Camp Hill; 4 females (C. F. Baker). South Dakota: Female, August 10, 1922, Ravinia (C. N. Ainslie). Texas: Female, April 17, 1907, Dallas (Schwarz and Pratt); female, Austin (W. M. Wheeler); female, May 29, 1918, Richmond (J. C. Bradley); female, April 24, 1904, Paris. Virginia: 2 females, August 4, Falls Church; female, August 7, Falls Church; male, July 27, Falls Church; female, September 1, 1915, Falls Church (C. T. Greene); 2 females, September 6, Falls Church; male, August 30, Falls Church; male, August 31, Falls Church.

I have examined the types of *canadensis* and *cressonii*, the latter being an allotype. The genitalia of the allotype and the plesiotype

have been compared and found to be identical. Melander and Brues (1903) have observed this species near the nests of *Halictus*, species and have described a combat between the two species; they have therefore concluded that *canadensis* is probably parasitic on *Halictus* species.

2. PSEUDOMETHOCA DENTIFRONTALIS J. C. Bradley, new species.

Female.—Sanford brown; nearly nude, a spot of appressed white pubescence on each side of the disk of the second dorsal segment: covered with scattered, erect, long, fine, white hairs, these black on the front; front, dorsum and second dorsal segment, except for the white spots, with rather long depressed black hairs, rather dense on the second dorsal; apices of the 3rd–5th dorsal segments with a small amount of white or yellowish hairs. Length 4.5 mm.

Head very large, transversely quadrate, much wider than the thorax; its hind angles and the posterior borders of the temples strongly carinate, the carina ending below in a spine, much as in *canadensis*; width of temples twice the long diameter of the eyes, which are $3\frac{1}{2}$ times their diameter's length apart; head closely, shallowly, somewhat confluent punctate; a curved carina extending from below each eye to the antennae, at the base of which it is greatly produced and bidentate; antennae widely separated at base.

Thorax short, its margins convex, slightly contracted at the spiracles, humeri not prominent, sides of propodeum margined, its caudal face convex, rounded into the dorsal.

Holotype.—Female, Felton, Santa Cruz Mountains, California, May 15–19, 1907, at an elevation of from 92–153 meters (300–500 feet) (J. C. Bradley). Collection of Cornell University No. 655.1.

Paratypes.—Female, May 18 1913, Carmel, Monterey County, California (E. C. Van Dyke), Cornell University collection; female, May 18, 1913, Monterey County, California (E. C. Van Dyke), author's collection; female, Claremont, California (Baker), collection U. S. National Museum; 3 females, Claremont, California (Baker), Cornell University collection.

Paratype.—Cat. No. 26393, U.S.N.M.

This species comes nearest to *nephele* Fox. The prominent dentate carina at the base of the antennae will at once distinguish it from any other species. In *nephele* these carina are slightly enlarged, but not at all as in *dentifrontalis*.

Dr. J. C. Bradley had recognized this species as new and has sent me the holotype and paratype material together with the description of the species, which he had drawn up, and which is given above. I have an additional specimen, one female from San Diego County, California.

The following additional characters may also be mentioned: Propleura punctate, with sparse, long, whitish hairs; mesopleura, meta-pleura and sides of propodeum smooth and shining; dorsum of thorax shallowly and confluent punctate (similar to the puncturation of the head), becoming broadly reticulate on the dorsum of the propodeum; caudal face of propodeum smooth; second tergite with moderately deep punctures, basally and medially the punctures confluent, laterally the punctures strong but sparse.

While this species is similar to *nephele* Fox in many respects it is easily distinguished from the latter by the prominent bidentate carina at the base of the antennae mentioned in the description; by the fact that *nephele* has the carina on the genae bidentate while in *dentifrontalis* it is unidentate; and by the fact that in *nephele* the antennae are separated by a distance equal to half the length of the scape while in *dentifrontalis* they are more widely separated, the distance between them equal to the length of the scape.

3. PSEUDOMETHOCA ATHAMAS (Fox).

Plate 2, fig. 8.

1899. *Mutilla athamas* Fox, Trans. Amer. Ent. Soc., vol. 25, p. 225, male.

1903. *Pseudomethoca? athamas* ANDRÉ, Gen. Ins., vol. 1, fasc. 11, p. 28, male.

Type.—Male, Poway, California, in collection of American Entomological Society of Philadelphia.

Plesiotype.—Male, Laguna Beach, California (Baker), Cornell University collection.

Specimens examined.—California: Male, Claremont (Baker).

The genitalia of the type and the plesiotype have been compared and found to be identical. *P. dentifrontalis* Bradley is possibly the female of this species.

4. PSEUDOMETHOCA NEPHELE (Fox).

1899. *Mutilla nephele* Fox, Trans. Amer. Ent. Soc., vol. 25, p. 223, female.

1903. *Pseudomethoca? nephele* ANDRÉ, Gen. Ins., vol. 1, fasc. 11, p. 28, female.

1903. *Mutilla nephele* MELANDER, Trans. Amer. Ent. Soc., vol. 29, p. 293, female.

Type.—Female, Brownsville, Texas, in collection of American Entomological Society of Philadelphia.

Specimens examined.—Texas: Female, June 1, 1904, Elmendorf (A. W. Morrill); female, April 29, 1896, Neueces (Marlatt).

I have examined the type of this species and find that the carina on the gena is bidentate. This character is not mentioned in Fox's description and is one which distinguishes it from other related forms.

5. PSEUDOMETHOCA GILA (Blake).

1871. *Mutilla* (*Sphaerophthalma*) *gila* BLAKE, Trans. Amer. Ent. Soc., vol. 3, p. 250, male.
 1886. *Sphaerophthalma gila* BLAKE, Trans. Amer. Ent. Soc., vol. 13, p. 245, male.
 1887. *Sphaerophthalma gila* CRESSON, Trans. Amer. Ent. Soc., suppl. vol., p. 265, male.
 1897. *Mutilla gila* DALLE TORRE, Cat. Hymen., vol. 8, p. 43, male.
 1899. *Mutilla gila* FOX, Trans. Amer. Ent. Soc., vol. 25, p. 225, male.
 1903. *Pseudomethoca?* *gila* ANDRÉ, Gen. Ins., vol. 1, fasc. 11, p. 28, male.

Type.—Male, Texas, in collection of American Entomological Society of Philadelphia.

I have examined the genitalia of the type specimen of this species. It is of the same general type as that found in *canadensis* Blake and *athamas* Fox. Time was not available for making a drawing of the genitalia. *P. nephele* Fox may be the female of this species.

6. PSEUDOMETHOCA TOUMEYI (Fox).

1894. *Sphaerophthalma toumeyi* FOX, Ent. News, vol. 5, p. 297, female.
 1897. *Mutilla toumeyi* DALLE TORRE, Cat. Hymen., vol. 8, p. 92, female.
 1899. *Mutilla toumeyi* FOX, Trans. Amer. Ent. Soc., vol. 25, p. 223, female.
 1903. *Pseudomethoca?* *toumeyi* ANDRÉ, Gen. Ins., vol. 1, fasc. 11, p. 28, female.

Type.—Female, Tucson, Arizona, in collection of American Entomological Society of Philadelphia.

I have examined the type of this species and find that the posterior angles of the head are not spinose as Fox states in his description. The postero-lateral angles of the head are very sharply carinate, the carina extending slightly upon the vertex laterally, but they are not spinose. The clypeus is very prominent in this species, more so than in related forms, being produced at right angles to the front. Only the type and paratype have been seen.

7. PSEUDOMETHOCA BEQUAERTI, new species.

Female.—Ferruginous; size 4.5–6 mm. Head ferruginous, densely clothed with appressed, pale golden pubescence and long, sparse, erect hairs; mandibles tridentate; antennae separated at their base by a distance equal to half the length of the scape; eyes slightly ovate; front, vertex and genae with close, well defined, separated punctures; genae with a carina which originates at the postero-lateral angles of the head and terminates in a slight tooth at its cephalic end; relative widths of head and thorax, 9–6.

Thorax ferruginous; its dorsum sparsely clothed with a mixture of black and silvery pubescence, the black more apparent; thorax short, very slightly longer than wide; cephalic portion of thorax very closely, confluent punctate, the sculpture becoming striato-reticulate on the mesothoracic area, and reticulate on the propodeal

area; humeri rounded; a carina present on the cephalic margin of the propleura reaching from its ventral edge to the humeral tubercle; propleura punctate; remainder of sides of thorax smooth and shining.

Abdomen ferruginous; first segment entirely sessile with the second; first tergite with well-separated punctures, and silvery pubescence which is especially apparent at the apex; second tergite with a round spot of silvery pubescence on each side midway between base and apex; sides of second tergite with sparse, silvery pubescence; remainder of second tergite with sparse, black pubescence; confluent punctate on the basal third, and with punctures separated by about their own width on the apical two-thirds; tergites 3-5 with sparse, silvery pubescence and fine, sparse punctures; tergite 6 with black pubescence; pygidial area well defined, shining, not sculptured; second sternite sparsely punctate; all the sternites with sparse, silvery pubescence at the apex.

Legs ferruginous, clothed with sparse, silvery pubescence.

Holotype.—Female, July 15-18, 1917, Post Creek Canyon, Pinalene Mountains, Fort Grant, Arizona (J. Bequaert), author's collection.

Paratypes.—Female, August 20, Pecos, New Mexico (Cockerell), collection American Entomological Society of Philadelphia; female, July 3-6, Marfa, Texas (Wickham), collection American Museum Natural History; female, June 1, 1912, Florence, Montana, collection Montana Agricultural College.

I have named this species in honor of Dr. J. Bequaert, who collected the type specimen.

Superficially this species resembles *oculissima* Mickel and *scaevolella* Cockerell and Casad, all having essentially the same color pattern. They are very distinct in structure, however, and may be distinguished by the characters used in the key.

8. PSEUDOMETHOCA OCULISSIMA, new species.

Female.—Ferruginous; size 6 mm. Head ferruginous, densely clothed with appressed, silvery pubescence and long, sparse, erect hairs; mandibles tridentate; antennae separated at the base by a distance equal to half the length of the scape; eyes slightly ovate; front, vertex, and genae with coarse, confluent punctures, except on the cephalic portion of the genae the punctures coarse and sparse; genae with a longitudinal carina which originates at the posterolateral angles; genae not dentate; relative widths of head and thorax 9-8.

Thorax ferruginous; its dorsum clothed with sparse, long, appressed, black pubescence, and sparse, erect hairs; sides of dorsum of propodeum with sparse, appressed, silvery pubescence; thorax short, a very little longer than wide; dorsum of thorax coarsely

punctato-reticulate, the dorsum and upper third of the posterior face of the propodeum broadly reticulate; humeri rounded; propleura diagonally rugoso-punctate with a sharp carina on the cephalic margin extending from the ventral edge to the humeral tubercle; sides of propodeum with a few scattered punctures; mesopleura and metapleura smooth, shining.

Abdomen ferruginous; first segment entirely sessile with the second; first tergite with long, sparse, pale hairs throughout, and a band of black pubescence at the apex; punctate, the punctures fine and well separated; second tergite with a large triangular spot each side, and laterally, with sparse, silvery pubescence; sparsely punctate at the sides and on apical third, the remainder of the tergite coarsely punctato-reticulate; tergites 3-5 with sparse, silvery pubescence, and fine, sparse punctures; sixth tergite with black pubescence; pygidial area well defined, minutely rugose; second sternite with sparse, moderate punctures; all the sternites with very sparse, silvery pubescence at the apex.

Legs ferruginous clothed with sparse, silvery pubescence.

Holotype.—Female, September 3, Pecos, New Mexico (Cockerell), Cat. No. 26206, U.S.N.M.

This species is similar in general appearance to *scaevolella* Cockerell and Casad, and *bequaerti* Mickel, which possess the type of vestiture here described and are similar in size. *P. oculissima* may be distinguished by the fact that the genae are not dentate, and by the coarse sculpture of the second tergite noted above.

9. PSEUDOMETHOCA SCAEVOLELLA (Cockerell and Casad).

1895. *Sphaerophthalma scaevolella* COCKERELL and CASAD, Trans. Amer. Ent. Soc., vol. 22, p. 298; female.

1899. *Mutilla scaevolella* FOX, Trans. Amer. Ent. Soc., vol. 25, p. 224; female.

1903. *Pseudomethoca? scaevolella* ANDRÉ, Gen. Ins., vol. 1, fasc. 2, p. 28; female.

1903. *Mutilla scaevolella* MELANDER, Trans. Amer. Ent. Soc., vol. 29, p. 293; female.

Type.—Female, New Mexico, in collection of American Entomological Society of Philadelphia.

Specimens examined.—New Mexico: Female, Springer (C. N. Ainslie); female, May 19, Mesilla (Cockerell); female, July 13, Mesilla Park (Cockerell). Texas: 8 females, July 11, 1917, El Paso (J. Bequaert).

10. PSEUDOMETHOCA NUDULA, new species.

Female.—Ferruginous; length, 5 mm. Head ferruginous, sparsely clothed with short, black, appressed pubescence, and sparse, erect, black hairs; mandibles much worn, dentition not apparent; antennae

separated at the base by a distance equal to half the length of the scape; eyes slightly ovate; front, vertex and genae with close, shallow, confluent punctures; genae with a longitudinal carina which originates at the postero-lateral angles, not dentate, sparsely silvery pubescent; relative widths of head and thorax 1-1.

Thorax ferruginous, distinctly longer than wide; its dorsum clothed with sparse, appressed, silvery pubescence, and sparse, erect, black hairs; dorsum of thorax with close, shallow, confluent punctures in the prothoracic and mesothoracic area, the metathoracic and propodeal area very broadly reticulate; posterior face of propodeum for the most part smooth, divided longitudinally by a carina; humeral angles dentate; propleura with separated punctures; remainder of sides of thorax smooth and shining.

Abdomen ferruginous; first tergite with sparse, silvery pubescence, closely, confluent punctured at the apex; second tergite with a round spot of appressed, silvery pubescence each side, laterally with appressed, silvery pubescence, remainder of tergite with sparse, black appressed pubescence and sparse, black, erect hairs; tergites 3 and 4 with moderate, well-separated punctures, sparse, erect hairs, and a band of silvery pubescence at the apex; tergites 5 and 6 with black pubescence; pygidial area well defined, closely and minutely punctate; second sternite with well-separated, moderate punctures; all the sternites sparsely, silvery pubescent.

Legs ferruginous, sparsely clothed with silvery pubescence.

Holotype.—Female, August 19, Pecos, New Mexico (W. P. Cockerell), in collection of American Entomological Society of Philadelphia.

Paratype.—Female, August 18, Pecos, New Mexico (Cockerell), author's collection.

This species is easily recognized by the dentate humeri, punctate pygidial area, and sparse pubescence of the head.

A note on the paratype by T. D. A. Cockerell reads: "Running around among burrows of *Melissodes sphaeralceae*. However, my wife finds that it does not enter the *Melissodes* burrows, but enters much smaller burrows, very likely of *Calliopsis*."

11. PSEUDOMETHOCA APRICA (Melander).

1903. *Mutilla aprica* MELANDER, Trans. Amer. Ent. Soc., vol. 29, p. 323, female.

Type.—Female, Texas, in Museum of Comparative Zoology, Cambridge, Massachusetts.

Specimens examined.—Texas: Female, June 2, 1909, Fedor, Lee County (Birkman): 7 females, October, 1908, Lee County (Birkman); female, 1908, Lee County (Birkman).

I have examined the type of this species and find that it is a true *Pseudomethoca* and does not belong in the "*anthophorae*" group

of Fox, where it was placed by Melander (1903). The following additional characters may be mentioned: genae with a delicate, longitudinal carina; width of head between hind margin of eyes and postero-lateral angles distinctly less than the longitudinal diameter of the eyes; humeri angulate. The pygidium is closely and minutely punctate, not granular as indicated by the original description.

12. PSEUDOMETHOCA CEPHALARGIA, new species.

Female.—Ferruginous; length 13 mm. Head ferruginous; front and vertex clothed with dense, appressed, pale golden pubescence and sparse, erect, pale hairs; genae with sparse, semierect, silvery pubescence; mandibles tridentate; antennae separated at the base by a distance equal to half the length of the scape; first segment of flagellum very long, equal in length to segments 2-4 united; pedicellum as long as segment 2 of flagellum; eyes slightly ovate; front, vertex and genae with coarse, confluent punctures; distance between hind margin of eyes and postero-lateral angles almost twice the longitudinal diameter of the eyes; genae with a prominent, longitudinal carina which originates at the postero-lateral angles; genae produced beneath ventrad of the postero-lateral angles into a sharply angulate prominence, giving the head, viewed from the side, a definite rectangular outline; relative widths of head and thorax 1-1.

Thorax ferruginous, short, its width slightly greater than its length; prothoracic area of dorsum with sparse, recumbent and erect, black hairs; mesothoracic and metathoracic area with sparse, recumbent, reddish golden pubescence, and sparse, erect hairs; propodeal area with sparse, erect, black hairs, posterior face of propodeum with long, pale, erect hairs; dorsum of thorax and posterior face of propodeum coarsely rugoso-punctate, more so on the latter; humeri angulate; the carina on the cephalic margin of the propleura strong and sharp; propleura longitudinally striato-punctate; mesepisternum finely rugose; mesepimeron transversely rugoso-striate; ventral half of metapleura transversely rugose, the dorsal half smooth and shining; cephalic half of sides of propodeum delicately rugose, the caudal half coarsely rugoso-striate.

Abdomen ferruginous; first segment entirely sessile with the second; apex of first tergite rugoso-punctate, with a band of silvery pubescence broadly interrupted medially by a band of long, stiff, black, recumbent bristles; second tergite with a small, round spot of sparse, silvery pubescence each side, silvery pubescence laterally, a distinct band of silvery pubescence at the apex interrupted medially by a spot of black pubescence, and remainder of tergite with sparse, semierect black pubescence; second tergite with coarse, confluent punctures throughout, the basal area more strongly than remainder

of tergite; tergites 3-5 with confluent punctures, the latter about half the size of those of the second tergite; tergite 3 with sparse, silvery pubescence throughout; tergite 4 with lateral thirds silvery pubescent, the median third black pubescent; tergite 5 black pubescent, except the lateral margins silvery pubescent; tergite 6 golden pubescent; pygidial area distinct, irregularly rugose; sternite 2 with large, well-separated punctures; sternites 3-6 with close, confluent punctures; all the sternites beneath with long, silvery pubescence.

Legs ferruginous, with sparse, silvery pubescence.

Holotype.—Female, July 8-20, 1916, Sabino Basin, St. Catalina Mountains, Arizona, in collection of American Museum of Natural History.

This species is not closely related to any other of the forms treated herein. It will likely be found represented in the Mexican fauna. It may be easily recognized by the structure of the head at the sides beneath.

13. PSEUDOMETHOCA DONAE-ANAE (Cockerell and Fox).

1897. *Sphaerophthalma donae-anae* COCKERELL and FOX, Proc. Acad. Nat. Sci. Phila., vol. 49, p. 137, female.

1899. *Mutilla donae-anae* FOX, Trans. Amer. Ent. Soc., vol. 25, p. 224, female.

1903. *Pseudomethoca? donae-anae* ANDRÉ, Gen. Ins., vol. 1, fasc. 11, p. 28, female.

1903. *Mutilla donae-anae* MELANDER, Trans. Amer. Ent. Soc., vol. 29, p. 294, female.

Type.—Female, New Mexico, in collection of American Entomological Society of Philadelphia.

Specimens examined.—Arizona: Female, October 9, 1903. Florence (Biederman). California: Female, August 16, Calexico.

This species may be easily recognized by the prominent, rugose tubercle of the propodeum. I have examined the type specimen and find that this tubercle is not a scutellar scale as suggested by Fox (1899) but is a part of the propodeum.

14. PSEUDOMETHOCA WICKHAMI (Cockerell and Casad).

1895. *Sphaerophthalma wickhami* COCKERELL and CASAD, Trans. Amer. Ent. Soc. vol. 22, p. 297, female.

1899. *Mutilla wickhami* FOX, Trans. Amer. Ent. Soc., vol. 25, p. 224, female.

1903. *Pseudomethoca? wickhami* ANDRÉ, Gen. Ins., vol. 1, fasc. 11, p. 28, female.

1903. *Mutilla wickhami* MELANDER, Trans. Amer. Ent. Soc., vol. 29, p. 294, female.

Type.—Female, Texas, in collection of American Entomological Society of Philadelphia.

Specimens examined.—Texas: Female, Fedor.

The type of this species has been examined and I find that it possesses neither a scutellar scale nor a propodeal tubercle. Attention may be called here to the fact that Fox (1899) in his key to the species of his group "*canadensis*" mentions *donae-anae* as having a scutellar scale, evidently referring to the propodeal tubercle of that species, while in a note under *wickhami* he says that the latter differs from others in the group by the well developed scutellar scale. Obviously, this note should have referred to *donae-anae* and not to *wickhami*.

15. *PSEUDOMETHOCA CONNECTENS* (Cresson).

1865. *Mutilla connectens* CRESSON, Proc. Ent. Soc. Phila., vol. 4, p. 387, female.
 1871. *Mutilla (Sphaerophthalma) connectens* BLAKE, Trans. Amer. Ent. Soc., vol. 3, p. 252, female.
 1886. *Sphaerophthalma connectens* BLAKE, Trans. Amer. Ent. Soc., vol. 13, p. 249, female.
 1887. *Sphaerophthalma connectens* CRESSON, Trans. Amer. Ent. Soc., suppl. vol., p. 265, female.
 1897. *Mutilla connectens* DALLE TORRE, Cat. Hymen., vol. 8, p. 26, female.
 1899. *Mutilla connectens* FOX, Trans. Amer. Ent. Soc., vol. 25, p. 224, female.
 1903. *Pseudomethoca? connectens* ANDRÉ, Gen. Ins., vol. 1, fasc. 11, p. 28, female.

Type.—Female, Lower California, in collection of American Entomological Society of Philadelphia.

Specimens examined.—Female, July 22, 1919, La Rivera, District Sur, Baja California (J. F. Ferris).

This species is included here since Fox (1899) reports a specimen from California.

16. *PSEUDOMETHOCA CONTUMAX* (Cresson).

1865. *Mutilla contumax* CRESSON, Proc. Ent. Soc. Phila., vol. 4, p. 437, female.
 1871. *Mutilla (Sphaerophthalma) contumax* BLAKE, Trans. Amer. Ent. Soc., vol. 3, p. 252, female.
 1886. *Sphaerophthalma contumax* BLAKE, Trans. Amer. Ent. Soc., vol. 13, p. 250, female.
 1887. *Sphaerophthalma contumax* CRESSON, Trans. Amer. Ent. Soc., suppl. vol., p. 265, female.
 1897. *Mutilla contumax* DALLE TORRE, Cat. Hymen., vol. 8, p. 27, female.
 1899. *Mutilla contumax* FOX, Trans. Amer. Ent. Soc., vol. 25, p. 224, female.
 1903. *Pseudomethoca? contumax* ANDRÉ, Gen. Ins., vol. 1, fasc. 11, p. 28, female.
 1903. *Mutilla contumax* MELANDER, Trans. Amer. Ent. Soc., vol. 29, p. 293, female.

Type.—Female, Colorado, in collection of American Entomological Society of Philadelphia.

Specimens examined.—Arizona: Female, Phoenix (Osler). Iowa: Female, August 27, 1920, Sioux City (C. N. Ainslie); 6 females, September 17, 1921, Sioux City (C. N. Ainslie). Kansas: Female, July 1, 1885, Gove County; 2 females, July, 1885, Wallace County; female, July 7, Wallace County; female (Popenoe). Nebraska: Female, June 24, 1913, Ogallala (R. W. Dawson). Texas: Female, June 13–17, 1908, Rio Grande, Brewster County (Mitchell and Cushman).

17. *PSEUDOMETHOCA PRAECLARA* (Blake).

1886. *Sphaerophthalma praeclara* BLAKE, Trans. Amer. Ent. Soc., vol. 13, p. 252, female.
 1887. *Sphaerophthalma praeclara* CRESSON, Trans. Amer. Ent. Soc., suppl. vol., p. 266, female.
 1897. *Mutilla praeclara* DALLE TORRE, Cat. Hymen., vol. 8, p. 74, female.
 1899. *Mutilla praeclara* FOX, Trans. Amer. Ent. Soc., vol. 25, p. 224, female.
 1903. *Pseudomethoca? praeclara* ANDRÉ, Gen. Ins., vol. 1, fasc. 11, p. 28, female.
 1915. *Nomiaephagus acuum* COCKERELL, Ent., vol. 48, p. 250, female.

Type.—Female, Arizona, in collection of American Entomological Society of Philadelphia.

Specimens examined.—Arizona: Female, May 2, 1919, Tucson. Sabino Basin, St. Catalina Mountains; female. California: Female, San Diego County.

I have examined the type specimens of *praeclara* Blake and *acuum* Cockerell and find them to be identical.

18. *PSEUDOMETHOCA ANTHRACINA* (Fox).

Plate 1, fig. 3.

1892. *Sphaerophthalma anthracina* FOX, Ent. News, vol. 3, p. 172, male.
 1897. *Mutilla anthracicolor* DALLE TORRE, Cat. Hymen., vol. 8, p. 9, male.
 1899. *Mutilla anthracicolor* FOX, Trans. Amer. Ent. Soc., vol. 25, p. 228, male.
 1903. *Ephuta anthracicolor* ANDRÉ, Gen. Ins., vol. 1, fasc. 11, p. 57, male.

Type.—Male, San Diego, California, in collection of U. S. National Museum.

Plesiotype.—Male, August 18, 1917, La Jolla, San Diego County, California (H. Klotz), in entomological collection of Leland Stanford University.

Specimens examined.—California: Male, August 29, 1919, La Jolla, San Diego County (H. Klotz); male, Santa Clara County.

The genitalia of the type and plesiotype have been compared and found to be identical.

19. PSEUDOMETHOCA HARPALYCE (Fox).

1899. *Mutilla harpalyce* Fox, Trans. Amer. Ent. Soc., vol 25, p. 227, female.
 1903. *Ephuta harpalyce* ANDRÉ, Gen. Ins., vol. 1, fasc. 11, p. 60, female.
 1903. *Mutilla harpalyce* VIERECK, Proc. Acad. Nat. Sc., Phila., vol. 54, p. 743, female.

Type.—Female, California, in collection of American Entomological Society of Philadelphia.

Specimens examined.—California: Female, April 12, 1914, Los Angeles (Fisk); 5 females, Los Angeles County; 2 females, Fresno (E. A. Schwarz); 3 females, San Bernardino County; 3 females, Claremont (Baker); 2 females, September 12, 1917, Santa Ana canon, Orange County; female, August 12, 1917, Santa Ana Canon, Orange County; female, May 13, 1907, Redwood, Corralitos, St. Cruz Mountains (J. C. Bradley); female, July 16, 1917, La Jolla, San Diego County (H. Klotz); female August 26, 1917, La Jolla, San Diego County (H. Klotz); female, August 28, 1917, La Jolla, San Diego County (H. Klotz); female, San Diego; female, San Diego County; female.

This is very probably the female of *anthracina* Fox. These are the only two species of this section of the genus that are present in collections from California.

20. PSEUDOMETHOCA FLAMMIGERA, new species.

Female.—Ferruginous; length 11 mm. Head ferruginous; front and vertex clothed with thick, fiery-red pubescence, and sparse, erect, pale hairs; genae clothed with sparse, semierect, silvery pubescence; front and vertex rugoso-punctate, the genae with close, strong, confluent punctures; mandibles tridentate; antennae separated at the base by a distance equal to half the length of the scape; length of pedicellum equal to half the length of the first segment of flagellum; eyes large, slightly ovate, the distance between the hind margins of the eyes and the postero-lateral angles slightly greater than the longitudinal diameter of the eyes; longitudinal carina of genae strong and sharp; relative widths of head and thorax 1-1.

Thorax dark ferruginous; about as long as wide; dorsum of thorax rugoso-punctate, coarsely so on the posterior face of propodeum; dorsum of thorax clothed with appressed, fiery-red pubescence and sparse, erect pubescence of the same color; posterior face of propodeum with long, sparse, black hairs; humeri rounded; cephalic margin of propleura with a sharp carina; propleura punctate; mesepisternum finely rugose and punctate; mesepimeron with large, confluent punctures; metapleura smooth and shining; sides of propodeum smooth and shining with a few sparse punctures medially and rugoso-punctate on the caudal margin.

Abdomen ferruginous; first segment completely sessile with the second; first tergite with close, confluent punctures at the apex; first tergite with sparse, long, erect, black hairs, and a band of recumbent, bristle-like hairs at the apex; second tergite with close, confluent punctures; second tergite silvery pubescent narrowly at the sides, the remainder of the tergite with thick, appressed, fiery-red pubescence, and sparse, erect hairs of the same color, the apex of the tergite with a very narrow band of silvery pubescence interrupted medially by a few black hairs; tergites 3-5 closely punctate; tergite 3 with median third black pubescent, and lateral thirds silvery pubescent; tergite 4 silvery pubescent with a narrow area of black pubescence medially; tergite 5 silvery pubescent; tergite 6 with copper-colored pubescence; pygidial area distinct, finely rugose; second sternite with large elongate, separated punctures, sparsely silvery pubescent at the apex.

Leg dark ferruginous, clothed with long sparse silvery pubescence; calcaria pale.

Holotype.—Female, July 12, Palmerlee, Arizona (H. A. Kaeber), in collection of American Entomological Society of Philadelphia.

This species is very similar to *harpalyce* Fox but may be distinguished by the fact that the head is not wider than the thorax, and by the vestiture of the abdominal tergites.

21. PSEUDOMETHOCA AUREOVESTITA J. C. Bradley, new species.

Plate 1, fig. 4.

Female.—Ground color claret brown, largely clothed with golden pubescence; front, vertex, dorsum and second dorsal segment except at sides clothed with long, matted, and moderately dense appressed golden (light cadmium) hairs; sides and back of head, scape, pleural and sternal parts, legs and ventral segments with rather long white hairs, giving them a griseous appearance, little or no appressed pubescence on these parts; caudal surface of propodeum and the petiole above with numerous erect bay hairs; apex of the third to fifth dorsal segments with short appressed white, in the middle brown and erect short and sparse brown pubescence. Length 9.5 mm.

Head seen from above transversely quadrate, 0.6 as long as broad; the temples behind the eyes approximately equal to the long diameter of the latter (0.7 mm.); the temples bordered posteriorly by a very strong carina, carried down onto the gulae, but not spined; front and vertex scabrous, the genae closely punctate; a fine carina between eyes and antennae; bases of the latter separated by about the length of the pedicel; face very short, with carinae widely diverging toward the bases of the mandibles, setting off the depressed,

impunctate short and very broad clypeus, with the anterior median lobe of which is broadly truncate, laterally subdentate; mandibles with a strong and sharp inner tooth, of the ordinary type for the genus. Scape not carinate, coarsely punctate: third segment fully as long as the fourth and fifth.

Thorax narrower than the head, widest at the tegulae, narrowest at the spiracles, behind which it is slightly widened, the anterior margin truncate, the posterior face somewhat sloping, flat, rather sharply delimited from the dorsal.

Petiole without a distinct ventral carina or tooth, pygidium with a distinct area, transversely rugose.

Holotype.—Huachuca Mountains, Arizona, August 17, 1903 (Os-lar), Cornell University No. 656.1.

Dr. J. C. Bradley had recognized this species as new and has sent me the type specimen together with the description of the species which he had drawn up and which is given above.

Specimens examined.—New Mexico: Female, May 16, 1902, Alamo-gordo.

I also have before me a specimen which is apparently the male of *aureovestita*. The two sexes were not taken in copulation, but I place it here in preference to giving it a specific name.

Male.—Black; length 11 mm. Head black; front and vertex sparsely clothed with erect, golden pubescence; genae with sparse, erect black pubescence; front and vertex with very close, confluent punctures; genae with large, separated punctures; mandibles tridentate; antennae separated at the base by a distance equal to two-thirds the length of the scape; first segment of flagellum about half the length of the second segment; eyes very slightly ovate; width of head between hind margin of eyes and postero-lateral angles a little less than the longitudinal diameter of the eyes; relative widths of head and thorax 1-1.

Thorax black; pronotum, mesonotum and scutellum with sparse, semierect, golden pubescence; closely, confluent punctured; dorsum and posterior face of propodeum reticulate; humeri rounded; propleura punctate, the cephalic margin with a strong, sharp carina; mesopleura punctate; metapleura smooth, shining; cephalic half of sides of propodeum smooth and shining, the caudal half punctate and rugoso-punctate.

Abdomen black; first segment completely sessile with the second; first tergite with distinct, separated punctures, sparse, erect, pale hairs, and a thin band of golden pubescence at the apex; second tergite punctate throughout with large, separated punctures; basal half of second tergite with sparse, black pubescence, the apical half with sparse, golden pubescence, and a distinct band of golden pubes-

cence at the apex; tergites 3-6 with thick, erect, golden pubescence; second sternite with large, separated punctures; sternites 2-4 with a thin band of golden pubescence at the apex.

Wings subhyaline; cell R4 almost obsolete; vein M 3+4 received by cell R5 at the middle.

Legs black, sparsely clothed with silvery pubescence; calcaria whitish.

Allotype.—Male, May 15, 1902, Alamogordo, New Mexico, in collection of American Entomological Society of Philadelphia.

22. *PSEUDOMETHOCA PIGMENTATA*, new species.

Female.—Black; length 10 mm. Head black, covered with sparse, erect and semierect, black hairs; front and vertex rugoso-punctate; genae with large, confluent punctures; mandibles tridentate; antennae separated at the base by a distance equal to half the length of the scape; pedicellum half the length of first segment of flagellum; longitudinal carina of genae strong and sharp; eyes slightly ovate; distance between hind margin of eyes and postero-lateral angles equal to the longitudinal diameter of the eyes; head slightly wider than the thorax.

Thorax black; dorsum of thorax and posterior face of propodeum rugoso-reticulate, the reticulations broader on the propodeum; moderately clothed with erect and recumbent, black hairs; propleura confluent punctured, the cephalic margin with a strong, sharp carina; humeri rounded; mesepisternum slightly finely rugose; mesepimeron with large, confluent punctures; metapleura polished; sides of propodeum with cephalic half polished, caudal half coarsely punctured.

Abdomen dark ferruginous; first segment completely sessile with the second; first tergite with small, separated punctures, with sparse, long, black hairs on the disk and a thin band of golden pubescence at the apex; tergite 2 confluent punctured on basal half, with separated punctures on apical half; tergites 2-6 thickly clothed with golden pubescence; pygidial area distinct, finely transversely rugose; sternite 2 with distinct, sparse punctures; sternites 2-5 with a thin band of silvery pubescence at the apex.

Legs black; anterior legs with sparse black pubescence; middle and posterior legs with sparse, silvery pubescence; calcaria pale.

Holotype.—Female, June 10-12, 1908, Chisos Mountains, Brewster County, Texas (Mitchell and Cushman), Cat. No. 26207 U. S. N. M.

Paratype.—Female, Chisos Mountains, Texas (W. B. Phillips), collection American Museum Natural History.

Superficially this species resembles *brazoria* Blake. It may be distinguished from the latter by its heavier vesture and the strong, sharp carina of the genae.

23. PSEUDOMETHOCA OCEOLA (Blake).

Plate 2, fig. 5.

1871. *Mutilla (Sphacrophthalma) occola* BLAKE, Trans. Amer. Ent. Soc., vol. 3, p. 248, male.
1886. *Sphacrophthalma occola* BLAKE, Trans. Amer. Ent. Soc., vol. 13, p. 243, male.
1887. *Sphacrophthalma ocella* CRESSON, Trans. Amer. Ent. Soc., suppl. vol., p. 266, male.
1897. *Mutilla ocella* DALLE TORRE, Cat. Hymen., vol. 8, p. 68, male.
1899. *Mutilla ocella* FOX, Trans. Amer. Ent. Soc., vol. 25, p. 228, male.
1899. *Mutilla hippodamia* FOX, Trans. Amer. Ent. Soc., vol. 25, p. 227, female.
1903. *Ephuta hippodamia* ANDRÉ, Gen. Ins., vol. 1, fasc. 11, p. 60, female.
1903. *Ephuta ocella* ANDRÉ, Gen. Ins., vol. 1, fasc. 11, p. 62, male.
1903. *Mutilla ocella* MELANDER, Trans. Amer. Ent. Soc., vol. 29, p. 295, male.
1903. *Mutilla hippodamia* MELANDER, Trans. Amer. Ent. Soc., vol. 29, p. 294, female.
1916. *Pseudomethoca (Nomiaephagus) ocella* BRADLEY, Trans. Amer. Ent. Soc., vol. 43, p. 319, male.
1916. *Pseudomethoca (Nomiaephagus) hippodamia* BRADLEY, Trans. Amer. Ent. Soc., vol. 43, p. 319, female.

Type.—Male, Florida, in collection of American Entomological Society of Philadelphia.

Plesiotype.—Male, August 15, 1919, Lincoln, Nebraska (R. W. Dawson); female specimen taken in copulation, on same pin; in entomological collection of University of Nebraska.

Specimens examined.—Arizona: Female. Colorado—2 females and male, August 29, Bent County; female, June 26, 1921, Rocky Ford (C. E. Mickel.) Florida—Female, November 19, 1911, Fort Myers; female, October 4-8, 1914, Monticello; female, May 1, 1905, Quincy (W. A. Hooker). Georgia—Female and male, September 3-7, 1910, Bainbridge (J. C. Bradley); male, September 10, Albany. Kansas: 2 males, August 22, Riley County (Popenoe); female, July 3, Riley County (Popenoe); 2 females, September, Riley County (Marlatt); female, September 2, Riley County, (Popenoe); female, Riley County (Popenoe); female, August 23, 1911, Clark County (F. X. Williams); female, June 28, 1912, Rush County (F. X. Williams); male, Meade County; male, July 22, Riley County (J. B. Norton); female and male, Wabaunsee County (Forest Anderson). Louisiana: Female, May 26, 1905, Natchitoches; female, May 2, 1905, Logansport; female and male. Mississippi: Female, August 5. Belsoni (H. Barber); female, May 21, 1909, Natchez (E. S. Tucker); male, August 2, 1914, Agricultural College (C. C. Green); female, August 22, 1915, Agricultural College (C. C. Green); female, September, 1915, McCondy (J. M. Pearson); female, June, 1916, Eddiceton (C. S. Whittington); female, October 2, 1915, Agricul-

tural College (W. E. McMahon); female, August, 1916, Norris (B. A. Williamson); male, July 9, 1913, Agricultural College (J. G. Hester). Nebraska: Female, August 22, 1920, Lincoln (R. W. Dawson); female, June, Lincoln; female, August, Lincoln. South Carolina: Female, August 8, 1911, Swansea (Frederick Knab). South Dakota: Female, October 1, 1913, Buffalo Valley, Stanley County (W. H. Over). Texas: Female, August 7, 1906, Jacksonville (F. C. Bishopp); male, August 11, 1906, Jacksonville (F. C. Bishopp); female, July 7, 1906, Bryan (J. C. Crawford); female, August 19, Victoria (W. E. Hinds); female, August 6, 1904, Mineola (C. R. Jones); female, August 20, 1907, Mineola (W. W. Yothers); female, September 2, 1915, Mineola; male, July 19, Mineola (F. C. Bishopp); female, June 24, 1917, Wharton; male, May 11, Beeville; male, August 22, 1907, Overton (W. W. Yothers); male, Paris (F. C. Bishopp).

Mr. R. W. Dawson has had the good fortune to collect a male in copulation with a female, the latter proving to be *hippodamia* Fox. I have examined the type specimens of both *oceola* Blake and *hipporamia*. This species is much more widely distributed than our previous knowledge has indicated. Its geographical range as known at present, presents some peculiarities not exhibited by other species of *Pseudomethoca*; thus from east to west it includes the States of South Carolina, Florida, Georgia, Alabama, Mississippi, Louisiana, Texas, and Arizona, and an extension northward into the States of Colorado, Kansas, Nebraska, and South Dakota.

24. PSEUDOMETHOCA FLAVIDA (Blake).

1871. *Mutilla (Sphaerophthalma) flavida* BLAKE, Trans. Amer. Ent. Soc., vol. 3, p. 249, male.
 1886. *Sphaerophthalma flavida* BLAKE, Trans. Amer. Ent. Soc., vol. 13, p. 244, male.
 1887. *Sphaerophthalma flavida* CRESSON, Trans. Amer. Ent. Soc., suppl. vol., p. 265, male.
 1897. *Mutilla flavida* DALLE TORRE, Cat. Hymen., vol. 8, p. 40, male.
 1899. *Mutilla flavida* FOX, Trans. Amer. Ent. Soc., vol. 25, p. 228, male.
 1903. *Ephuta flavida* ANDRÉ, Gen. Ins., vol. 1, fasc. 11, p. 60, male.

Type.—Male, Texas, in collection of American Entomological Society of Philadelphia.

I have examined the type specimen and find that the genitalia are of the same general type as in *oceola* Blake. Time was not available for making a drawing of the genitalia. The species may be recognized by the characters given in the key.

25. PSEUDOMETHOCA NIGRICULA, new species.

Plate 2, fig. 6.

Male.—Entirely black with black pubescence; length 9 mm. Head black, clothed with sparse, long, erect, black pubescence; mandibles

tridentate; clypeus bidentate medially, closely and rugosely punctate; antennae separated at the base by a distance very slightly greater than half the length of the scape; first segment of flagellum slightly longer than half the length of the second segment; front with close, confluent punctures; vertex with punctures more separated than on the front and more or less confluent; genae with close, confluent punctures; postero-lateral angles of head rounded; eyes slightly ovate; distance between hind margin of eyes and postero-lateral angles about two-thirds the longitudinal diameter of the eyes: relative widths of head and thorax 11-13.

Thorax black, clothed with sparse, long, erect, black pubescence; pronotum, mesonotum and scutellum with close, confluent punctures; dorsum and posterior face of propodeum reticulate; tegulae slightly convex, punctured on the basal third, polished on the apical two-thirds: humeri rounded; propleura rugose; mesepisternum and mesepimeron punctured and striato-punctate; metapleura for the most part polished, slightly transversely striate on the ventral half; sides of propodeum coarsely, transversely striato-rugose.

Abdomen black, clothed with sparse, long, erect, black pubescence; first segment completely sessile with the second; first tergite with small, separated punctures; second tergite with deep, distinct punctures separated by about their own width; tergites 3-6 with distinct, separated punctures: second sternite with distinct, sparse, irregularly distributed punctures.

Wings very dark; cell R4 almost obsolete; vein M 3+4 received by cell R5 a little before the middle.

Legs very dark blackish-red, clothed with sparse, black pubescence.

Holotype.—Male, July 31, 1909, Willcox, Arizona (A. K. Fisher).
Cat. No. 26208 U. S.

Superficially this closely resembles *anthracina* Fox but may be at once distinguished from that species by the coarse sculpture of the sides of the propodeum. Considering the structure of the genitalia it would seem to be most nearly related to *oceola* Blake, *flavida* Blake and *aureovestita* Bradley.

26. PSEUDOMETHOCA MERITORIA, new species.

Female.—Ferruginous; length 9 mm. Head ferruginous, very sparsely clothed with semierect, short, golden pubescence, and a few erect hairs; the pubescence of the genae more of a silvery color; mandibles tridentate; antennae separated at the base by a distance equal to half the length of the scape; a prominent curved carina extending from below the eyes to the base of antennae; front very coarsely, deeply and confluent punctate; vertex and genae coarsely and confluent punctate but not so deeply as the front; longitudinal carina of genae distinct and sharp; distance between the hind

margin of the eyes and postero-lateral angles about equal to the longitudinal diameter of the eyes; relative widths of head and thorax 1-1.

Thorax ferruginous, distinctly wider than long; dorsum of thorax very sparsely clothed with short, recumbent, golden pubescence, coarsely, confluent punctate; upper one-fifth of posterior face of propodeum broadly reticulate, the remainder polished, with a few scattered punctures; humeri rounded; cephalic margin of propleura with a strong, sharp carina extending from the ventral edge to the humeral tubercles; propleura coarsely punctate; remainder of sides of prothorax polished except a row of coarse punctures at the caudal margin of the mesepimeron and a few scattered punctures near the caudal margin of the sides of the propodeum.

Abdomen ferruginous; first segment completely sessile with the second; disk of first tergite with sparse, long, erect, silvery hairs, the apex finely, rugosely punctate with a band of recumbent, stiff, black hairs; basal two-thirds of second tergite coarsely, rugosely punctate, the apical third with close, confluent punctures, except the lateral margins of the tergite which have separated punctures; sides of second tergite with sparse, silvery pubescence, a narrow band of sparse, black hairs at the base, a wide band of sparse, black pubescence at the apex, and the remainder of the tergite with short, sparse, golden pubescence; tergites 3-5 with fine, close punctures and sparse, silvery pubescence; tergite 6 with golden pubescence at the base and sides; pygidial area distinct, distinctly irregularly rugose; second sternite with large, irregularly distributed punctures; sternites 2-6 with a thin band of silvery pubescence at the apex.

Legs ferruginous, sparsely clothed with silvery pubescence; calcaria pale.

Holytype.—Female, May 12, 1906, Cotulla, Texas (J. C. Crawford), Cat. No. 26209 U. S. National Museum.

Paratypes.—2 females, May 12, 1906, Cotulla, Texas (J. C. Crawford), collection U. S. National Museum; female, May 12, 1906, Cotulla, Texas (J. C. Crawford), Cornell University collection; female, May 12, 1906, Cotulla, Texas (J. C. Crawford), entomological collection of University of Nebraska; 2 females, May 12, 1906, Cotulla, Texas (J. C. Crawford), author's collection; female, July 1, 1906, Victoria, Texas (A. McLaughlin), collection U. S. National Museum; female, February, 1909, Mercedes, Texas (F. C. Pratt), collection U. S. National Museum.

Paratypes.—Cat. No. 26209 U.S.N.M.

This species is related to *simillima* Smith. It may be distinguished from the latter by the much shorter thorax and rugose pygidium.

27. PSEUDOMETHOCA ALBICOMA, new species.

Plate 2, fig. 9.

Male.—Black with whitish pubescence; length 9 mm. Head black, clothed with sparse, long, whitish pubescence; mandibles tridentate, clypeus bidentate medially at the apex; closely punctate throughout; antennae separated at the base by a distance equal to two-thirds the length of the scape; front with close, confluent punctures; frontal tubercles smooth, shining; vertex with the punctures for the most part separated, but occasionally confluent; genae confluent punctured; eyes slightly ovate, the distance between the hind margins and the postero-lateral angles equal to two-thirds the longitudinal diameter of the eyes; relative widths of head and thorax 1—1.

Thorax black, sparsely clothed with long, whitish pubescence; pronotum, mesonotum and scutellum closely, confluent punctate; dorsum and posterior face of propodeum deeply alveolate; humeri rounded; cephalic margin of propleura not distinctly carinate; propleura, mesepisternum and mesepimeron closely punctate; metapleura polished; sides of propodeum polished, except caudal half which is rugoso-punctate; tegulae convex, polished.

Abdomen black, very sparsely clothed with whitish pubescence; first segment completely sessile with the second; first tergite with large, scattered punctures, a thin band of silvery pubescence at the apex; second tergite with large, close, separated punctures throughout, the apex with a distinct band of silvery pubescence; tergites 3–5 with distinct, separated punctures, the apex of each with a distinct band of silvery pubescence; tergites 6–7 with blackish pubescence; second sternite with large, close punctures; all the sternites with a very thin band of silvery pubescence at the apex.

Wings subhyaline; cell R4 indistinct; vein M 3+4 received by cell R5 near the middle.

Legs dark reddish, sparsely clothed with silvery pubescence; calcaria whitish.

Holotype.—Male, June 13–17, 1908, Rio Grande, Brewster County, Texas (Mitchell and Cushman), Cat. No. 26210 U.S.N.M.

This may possibly be the male of *meritoria* Mickel.

28. PSEUDOMETHOCA PALUDATA, new species.

Female.—Ferruginous; length 8–11 mm. Head ferruginous; front and vertex clothed with sparse, short, recumbent, golden pubescence and scattered, erect hairs; genae with sparse, long, silvery pubescence; mandibles tridentate; antennae separated at the base by a distance equal to half the length of the scape; segment one of the flagellum as long as segments two and three united; pedicellum equal to half the length of the first segment of the flagellum; front,

vertex and genae with coarse, close, punctures giving them a rugose appearance; longitudinal carina of genae evident but not sharp; eyes slightly ovate, distance between the hind margins and the postero-lateral angles equal to the longitudinal diameter of the eyes; relative widths of head and thorax 1-1.

Thorax ferruginous, very slightly wider than long; dorsum clothed with sparse, short, recumbent, golden pubescence and scattered, long, erect, hairs; the posterior face of propodeum with very long, sparse, erect, pale hairs; dorsum punctured like the front and vertex with close, coarse, punctures; upper one-fifth of posterior face of propodeum deeply and broadly reticulate, the remainder with scattered, deep punctures; propleura with large, deep punctures, the cephalic margin with a prominent, sharp carina extending from the ventral edge to the humeral tubercles; anterior half of mesepisternum-mesepimeron micro-punctate, the posterior half with coarse, confluent punctures; metapleura polished; sides of propodeum polished, with large confluent punctures near the posterior margin.

Abdomen ferruginous; first segment completely sessile with the second; first tergite with long, sparse, erect hairs, confluent punctate at the apex, and a thin band of silvery-golden pubescence at the apex; second tergite with the sides and apex silvery pubescent, a narrow transverse spot of blackish pubescence at the extreme apex medially, the remainder of the tergite with short, sparse, golden pubescence; sides and apex of second tergite with distinct, separated punctures, the basal two-thirds of the disc with close, coarse, confluent punctures; tergites 3-5 closely punctate, and silvery pubescent thruout; tergite 6 with golden pubescence at the base and sides; pygidial area distinct, longitudinally rugose; second sternite with sparse, distinct, irregularly distributed punctures; sternites 2-6 with a thin band of silvery pubescence at the apex.

Legs very dark ferruginous, clothed with sparse, silvery pubescence; calcaria dark (in some of the paratypes, pale).

Holotype.—Female, July 5, 1916, Mitchell, Nebraska (C. E. Mickel), in entomological collection of University of Nebraska.

Paratypes.—Nebraska: Female, June 16, 1916, Mitchell (C. E. Mickel), entomological collection of University of Nebraska; female, July 5, 1916, Mitchell (C. E. Mickel), author's collection; female, August 1, 1916, Mitchell (C. E. Mickel), entomological collection of University of Nebraska; female, August 5, 1917, Mitchell (E. J. Yates), collection U. S. National Museum; female, July 12, 1912, Mitchell (L. M. Gates), entomological collection of University of Nebraska; 2 females, June, Halsey, entomological collection of University of Nebraska; female, June, Halsey, author's collection; female, June 15, 1912, Halsey (J. T. Zimmer), Cornell University collection; female, August 24, 1911, Halsey (J. T. Zimmer), en-

tomological collection of University of Nebraska: 3 females. August 13, 1920, Halsey (C. B. Philip), entomological collection of University of Nebraska: 3 females, August 13, 1920, Halsey (C. B. Philip), author's collection; female, August 13, 1920, Halsey (C. B. Philip), collection U. S. National Museum; 2 females, August 14, 1920, Halsey (C. B. Philip), entomological collection of University of Nebraska: female August 14, 1920, Halsey (C. B. Philip), author's collection; female, June 26, 1905, Haigler, author's collection; female, Sand Hills, entomological collection of University of Nebraska. Kansas: Female, Morton county (F. H. Snow), entomological collection of University of Kansas. Wyoming: Female, July, 1895, 30 miles north of Lusk, entomological collection of University of Kansas.

Paratype.—Cat. No. 26394 U.S.N.M.

This species resembles *simillima* Smith and *propinqua* Cresson very closely. It may be distinguished from both by the characters used in the key.

29. PSEUDOMETHOCA SCRUPULOSA, new species.

Plate 4, fig. 15.

Male.—Black, with the second abdominal segment ferruginous; length 8 mm. Head black, clothed with long, sparse, erect, black pubescence; mandibles tridentate; clypeus bidentate medially at the apex, punctate throughout; antennae separated at the base by a distance equal to five-sevenths the length of the scape; scape confluent punctate; front with close, confluent punctures; vertex with distinct, separated punctures; genae closely punctate; eyes slightly ovate, the distance between the hind margins and postero-lateral angles equal to one-half the longitudinal diameter of the eyes; head not as wide as the thorax.

Thorax black, clothed with long, sparse, erect, black pubescence; pronotum, mesonotum and scutellum with close, more or less confluent punctures; dorsum and posterior face of propodeum deeply reticulate; humeri rounded; propleura punctate, without a carina on the cephalic margin; mesepisternum and mesepimeron with large, close punctures; metapleura polished; sides of propodeum rugoso-punctate, except the anterior third polished; tegulae transverse, coarsely rugoso-punctate, with a distinct posterior face.

Abdomen black and ferruginous, clothed with sparse, long, erect, black pubescence; first segment completely sessile with the second; first tergite with large, separated punctures; second tergite ferruginous, with large punctures, separated by their own diameter; tergites 3-5 black, with distinct separated punctures; tergites 6-7

with silvery pubescence; second sternite ferruginous, with large, separated punctures; sternites 3-7 black.

Wings dark; cell R4 almost obsolete; vein M 3+4 received by cell R5 at the middle.

Legs black, clothed with sparse, black pubescence; calcaria dark.

Holotype.—Male, August 20, 1906, Glen, Sioux County, Nebraska (H. S. Smith), in entomological collection of University of Nebraska.

Paratypes.—Male, August 20, 1906, Glen, Sioux County, Nebraska (H. S. Smith), author's collection; male, September, Sand Hills, Nebraska, collection U. S. National Museum, Cat. No. 26395.

This species is easily recognizable by the coarse sculpture of the tegulae and the silvery pubescence at the apex of the abdomen. It is possibly the male of *paludata* Mickel.

30. PSEUDOMETHOCA AETIS (Fox).

1899. *Mutilla aetis* Fox, Trans. Amer. Ent. Soc., vol. 25, p. 228, female.

1903. *Ephuta aetis* ANDRÉ, Gen. Ins., vol. 1, fasc. 11, p. 57, female.

1916. *Pseudomethoca (Nomiaephagus) aetis* BRADLEY, Trans. Amer. Ent. Soc., vol. 43, p. 320, female.

Type.—Female, Florida, in collection of American Entomological Society of Philadelphia.

Specimens examined.—Florida: 2 females, November 8, Miami (C. H. T. Townsend); female, December 5, 1912, Marathon (Frederick Knab); female, April 20, Enterprise (Dr. D. M. Castle); female, March 30–May 10, Enterprise; 2 females, May 7, 1916, Fort Meyers (J. C. Bradley); female, Lake City. Georgia: 9 females, May 18–21, 1916, Spring Creek (J. C. Bradley); female, June 7–23, 1911, Spring Creek, Decatur county (J. C. Bradley); 2 females, June, 1912, Billy's Island, Okefenokee Swamp (J. C. Bradley); 3 females, September 1–5, 1913, Billy's Island, Okefenokee Swamp (J. C. Bradley); female, August 2, 1913, Atlanta. North Carolina: Female, April 20, 1906, Southern Pines (S. W. Foster); female, April 22, 1913, Southern Pines (A. H. Manee). Texas: 4 females, July 19, 1906, Mineola (Bishopp and Jones); female, July 19, 1906, Mineola (C. R. Jones); female, August 22, 1907, Overton (W. W. Yothers); female, August 23, 1907, Palestine (W. W. Yothers); female, September 21, 1905, Lee county.

31. PSEUDOMETHOCA SIMILLIMA (Smith).

Plate 3, fig. 11.

1855. *Mutilla simillima* SMITH, Cat. Hymen. Brit. Mus., vol. 3, p. 62, female.

1871. *Mutilla (Sphaerophthalma) simillima* BLAKE, Trans. Amer. Ent. Soc., vol. 3, p. 255, female.

1886. *Sphaerophthalma simillima* BLAKE, Trans. Amer. Ent. Soc., vol. 13, p. 254, female.

1887. *Sphaerophthalma simillima* CRESSON, Trans. Amer. Ent. Soc., suppl. vol., p. 266, female.
1897. *Mutilla simillima* DALE TORRE, Cat. Hymen., vol. 8, p. 86, female.
1899. *Mutilla simillima* FOX, Trans. Amer. Ent. Soc., vol. 25, p. 227, female.
1903. *Ephuta simillima* ANDRÉ, Gen. Ins., vol. 1, fasc. 11, p. 64, female.
1903. *Mutilla simillima* MELANDER, Trans. Amer. Ent. Soc., vol. 29, p. 294, female.
1916. *Pseudomethoea (Nomiaephagus) simillima* BRADLEY, Trans. Amer. Ent. Soc., vol. 42, p. 320, female.
1916. *Nomiaephagus simillimus* ROHWER, Hymen. Conn., p. 623, female.
1922. *Bruesia sparsiformis* RAU, Trans. Acad. Sci. St. Louis, vol. 25, p. 3, female and male.

Type.—Female, Massachusetts, in collection of British Museum.

I have before me the specimens mentioned by Rau (1922) and find that the female is *simillima* Smith, while the male has heretofore been undescribed.

Male.—Black, with the second segment of the abdomen ferruginous; length 9 mm. Head black, clothed with sparse, long, erect, black pubescence; mandibles tridentate; clypeus bidentate medially at the apex, closely punctate; antennae separated at the base by a distance equal to two-thirds the length of the scape; scape coarsely punctate; front and genae closely punctate; vertex with the punctures for the most part separated; eyes slightly ovate, the distance between the hind margins and the postero-lateral angles equal to half the longitudinal diameter of the eyes; relative widths of head and thorax 1-1.

Thorax black, clothed with sparse, long, erect, black pubescence; pronotum, mesonotum and scutellum with large, close, sometimes confluent punctures; dorsum and posterior face of propodeum deeply alveolate; humeri rounded; cephalic margin of the propleura rounded; propleura, mesepisternum and mesepimeron with large, close punctures; metapleura polished, with a thin microscopic silvery pile; sides of propodeum polished, the caudal half reticulato-punctate; tegulae with a few fine punctures at the base, for the most part polished, with a distinct posterior face.

Abdomen black, with the second segment ferruginous, clothed throughout with long, sparse, black pubescence; first segment completely sessile with the second; first tergite very dark red, with distinct scattered punctures; second tergite ferruginous, distinctly punctate, the punctures separated by about their own diameter; tergites 3-7 black, distinctly punctate; second sternite reddish black, with distinct, separated punctures; remaining sternites black; sternite 7 transversely concave, punctate.

Wings subfuscous; cell R4 obsolete; vein M 3+4 received by cell R5 slightly before the middle.

Legs black, clothed with sparse, black pubescence.

Allotype—Male, August 26, 1901, Lincoln, Nebraska (W. D. Pierce), in entomological collection of University of Nebraska.

The males of this species are rare in collections. Two additional specimens are known; male, August 27, St. George, Kansas; male and female, July 31, Jerseydale, Missouri (Rau). The latter is the specimen taken with the female.

Specimens examined.—Arkansas: Female, June 29, 1897, Marion County. Connecticut: Female, April 29, 1894, Hartford (S. N. Dunning); female, April 29, 1894, Hartford; female, September 15, 1895, Hartford. District of Columbia: Female, May, 1898; female May 11, (Marlatt); female, July, 1898; female, August, 1898. Florida: Female, October 4–8, 1914, Monticello. Georgia: Female, June 19–25, 1909, Tallulah (J. C. Bradley); female, August 3, 1913, Stone Mountain; female, August 27, 1910, Austell. Indiana: 3 females. Iowa: Female, June 18, Iowa City (Wickham); female, September 7, 1920, Sioux City (C. N. Ainslie); female, September 17, 1922, Sioux City (C. N. Ainslie). Kansas: Female, April, Riley County (Marlatt); female, June 5, 1919, Neosho County (Grace O. Wiley); female, July 3, Riley County (Popenoe); female, July 14, Riley County (Popenoe); female, July 17, Riley County, (Popenoe); female, August 30, 1912, Phillips County (F. X. Williams); female, Sheridan County (F. X. Williams); female, Salina (Knaus). Louisiana: Female, April 7, 1905, Calhoun (Wilmon Newell). Maryland: Female, May 18, Great Falls; female, July 19, Baltimore (F. E. Blaisdell). Mississippi: Female, May 15, 1915, Agricultural College (J. L. E. Lauderdale); female, April 18, Agricultural College (H. G. Ewell); female, October 9, 1922, Agricultural College (H. Gladney). Nebraska: Female, August 2, 1912, South Sioux City (L. T. Williams); female, September 10, 1913, Omaha (L. T. Williams); female, June 20, 1913, Omaha (L. T. Williams); female, July 2, 1915, South Bend (E. G. Anderson); female, May 8, 1909, South Bend (R. W. Dawson); female, July 6, 1915, South Bend (E. G. Anderson); female, May 17, South Bend; female, April 24, 1915, Lincoln (C. E. Mickel); female, July 11, 1920, Lincoln (C. E. Mickel); female, September 9, 1917, Lincoln (R. W. Dawson); female, May, 1888, West Point. New Jersey: Female, July 13, 1902, Iona (E. Daecke); female, April 15, 1910, Lakehurst; female, May 5, 1901, Manumuskin; female, July 22, Highlands; 2 females, August 18, 1910, Midwood; female, July 15, 1906, Wenonah; female, May 13, Andrews; female, September 3, 1906; Lucaston; female, April 22, 1906, Riverton; female, May 20, 1906; Almonessen; female, May 14, 1905, Bamber; female, September 1, 1905; Bamber; female, April 19, Westville; 2 females, May 24, 1902, Clementon; female, July 25, 1909, Delair; female, Runyon (Wm. T. Davis); female, August, 1910, Cassville (Wm. T. Davis); 4 females. New

York: Female, May 19, 1897, Flatbush, Long Island; female, May 16, 1896, Flatbush, Long Island; female, September 6, 1897, Flatbush, Long Island; female, 1887, Flatbush, Long Island; female; August 30, 1916, Selden, Long Island (Wm. T. Davis); female, September 1, 1916, Selden, Long Island (Wm. T. Davis); female, May, Wyandanch, Long Island; female, August 20, 1911, Kissena Lake, Long Island; 2 females, Long Island. North Carolina: Female, April 30, 1905, Ashville (F. Sherman); 2 females. Pennsylvania: Female, May 16, 1911, Water Tank (H. B. Kirk); female, May 6, 1909, Rockville (A. Champlain); female, May 6, 1909, Rockville (W. R. Walton); female, May 3, 1914, Rockville; female, May 31, 1909, Heckton Mills (W. R. Walton); female, September, 1909, Linglestown (Kirk and Champlain); female, June 14, 1917, Philadelphia (F. M. Trimble); female. Tennessee: Female, August, 1914, Knoxville; female, June 18, 1920, Knoxville (C. N. Ainslie); female, May 17, 1914, Knoxville. Texas: Female, April 6, 1906, Avery (F. C. Bishopp). Virginia: Female, April 22, 1913, Falls Church (C. T. Greene); female, May 11, Falls Church; female, July 2, 1913, Falls Church (Wm. Middleton); female, July 11, 1913, Falls Church (C. T. Greene); female, July 11, 1913, Falls Church; female, July 11, Falls Church; female, July 29, 1913, Falls Church (S. A. Rohwer); female, September 9, 1912, Falls Church (C. T. Greene); female, June 20, 1914, Nelson County (W. Robinson); female, July 29, 1916, Lynchburg (Wm. T. Davis); female, May 5, 1913, Veitch (C. T. Greene); female, April 27, 1884.

32. PSEUDOMETHOCA OCULATA (Banks).

1921. *Nomiaephagus oculatus* BANKS, Ann. Ent. Soc. Amer., vol. 14, p. 24, female.

Type.—Female, Georgia, in collection of Museum of Comparative Zoology, Cambridge, Massachusetts.

Specimens examined.—Florida: Female, April 25, 1905, Quincy (W. A. Hooker); female, Auburndale, Polk County. Georgia: 2 females, May 18–21, 1916, Spring Creek (J. C. Bradley); female, June 7–23, 1911, Spring Creek, Decatur County (J. C. Bradley); female, March 21, Thomasville (Morgan Hebard). North Carolina: Female, April 20, 1915, Southern Pines (A. H. Manee); female, March 10, 1909, Southern Pines (A. H. Manee); female, March 30, 1905, Raleigh (G. M. Bentley); female, April 27, 1906, Raleigh.

The form of the thorax of the type specimen of this species is quite distinct from that of *simillima* Smith. The thorax of this species is not so sharply constricted at the middle as is *similima*; also the thorax of the latter is very closely and irregularly punctate while in *oculata* the punctures are rather close but regular in distribution.

33. PSEUDOMETHOCA GERYON (Fox).

Plate 3, fig. 10.

1899. *Mutilla geryon* Fox, Trans. Amer. Ent. Soc., vol. 25, p. 225, male.
 1903. *Pseudomethoca? geryon* ANDRÉ, Gen. Ins., vol. 1, fasc. 11, p. 28, male.
 1903. *Mutilla henshawi* MELANDER, Trans. Amer. Ent. Soc., vol. 29, p. 303, male.
 1910. *Mutilla daeckei* ROHWER, Proc. Ent. Soc. Wash., vol. 12, p. 49, male.
 1916. *Pseudomethoca (Nomiaephagus) geryon* BRADLEY, Trans. Amer. Ent. Soc., vol. 43, p. 318, male.

Type.—Male, Missouri, in collection of American Entomological Society of Philadelphia.

Plesiotype.—Male, September 9, 1914, Falls Church, Virginia (S. A. Rohwer). Collection of U. S. National Museum.

Specimens examined.—New Jersey: Male, September, 1905, Bamber (paratype of *daeckei* Rohwer). Virginia: Male, August 27, Falls Church; male, September 2, Falls Church; male, September 7, Falls Church; male, September 11, 1915, Falls Church (G. M. Greene); male, September 23, 1913, Veitch (C. T. Greene).

I have examined the genitalia of the types of *henshawi* Melander and *daeckei* Rohwer and find them to be identical with *geryon* Fox.

34. PSEUDOMETHOCA SANBORNII (Blake).

Plate 3, fig. 12.

1871. *Mutilla (Sphaerophthalma) sanbornii* BLAKE, Trans. Amer. Ent. Soc., vol. 3, p. 248, male.
 1886. *Sphaerophthalma sanbornii* BLAKE, Trans. Amer. Ent. Soc., vol. 13, p. 243, male.
 1887. *Sphaerophthalma sanbornii* CRESSON, Trans. Amer. Ent. Soc., suppl. vol., p. 266, male.
 1896. *Nomiaephagus sanbornii* ASHMEAD, Journ. N. Y. Ent. Soc., vol. 7, p. 59, male (Orthotype).
 1897. *Mutilla sanbornii* DALE TORRE, Cat. Hymen., vol. 8, p. 83, male.
 1899. *Mutilla sanbornii* Fox, Trans. Amer. Ent. Soc., vol. 25, p. 228, male.
 1903. *Nomiaephagus sanbornii* ASHMEAD, Can. Ent., vol. 25, p. 307, male.
 1903. *Ephuta sanbornii* ANDRÉ, Gen. Ins., vol. 1, fasc. 11, p. 63, male.
 1903. *Mutilla sanbornii* MELANDER, Trans. Amer. Ent. Soc., vol. 29, p. 295, male.
 1916. *Pseudomethoca (Nomiaephagus) montivaga* BRADLEY, Trans. Amer. Ent. Soc., vol. 42, p. 320, female (not of Cresson).
 1916. *Pseudomethoca (Nomiaephagus) sanbornii* BRADLEY, Trans. Amer. Ent. Soc., vol. 43, p. 320, male.
 1923. *Nomiaephagus sanbornii* WASHBURN, 17th Rept. State Ent. Minn., p. 209, male.
 1923. *Pseudomethoca sanbornii*, MICKEL, 19th Rept. State Ent. Minn., p. 100, female and male.

Type.—Male, Massachusetts, in collection of American Entomological Society of Philadelphia.

Plesiotype.—Male, July 20, Weeping Water, Nebraska, in entomological collection of University of Nebraska.

The female which has heretofore remained undescribed is as follows:

Female.—Ferruginous; length 8–13 mm. Head ferruginous, sparsely clothed with short, semierect, golden pubescence, and scattered, erect hairs; mandibles tridentate; antennae separated at the base by a distance equal to two-fifths the length of the scape; a curved carina extending from below the eyes to the frontal tubercles; front, vertex and genae very closely, confluent punctate; longitudinal carina of genae distinct; eyes slightly ovate, the distance between the hind margins and the postero-lateral angles equal to two-thirds the longitudinal diameter of the eyes; head slightly wider than the thorax.

Thorax ferruginous, clothed with sparse, short, recumbent, golden pubescence, and scattered, erect hairs; dorsum with large, close punctures; dorsum of propodeum and extreme upper part of posterior face of propodeum reticulate, remainder of posterior face with scattered punctures; humeri rounded; propleura punctate, the cephalic margin weakly carinate; mesepisternum-mesepimeron micro-punctate, the posterior margin with large, close punctures; metapleura polished, the ventral half micro-punctate; sides of propodeum with scattered punctures.

Abdomen ferruginous; first segment completely sessile with the second; first tergite with a broad band of black; recumbent hairs at the apex, lateral extremes of the apex with silvery pubescence; sides and apical half of second tergite with well-separated punctures, the basal half rugoso-punctate, clothed with sparse, short, recumbent, golden pubescence, a subapical, broad band of sparse, black pubescence, and a narrow, apical band of silvery pubescence narrowly interrupted medially by black pubescence; tergites 3–5 with silvery pubescence; pygidial area distinct, rugose; second sternite with distinct, separated punctures; sternites 2–6 very sparsely, silvery pubescent.

Legs ferruginous; sparsely clothed with silvery pubescence.

Allotype.—Female, 1880, Selma, Alabama (E. A. Schwarz). Collection of U. S. National Museum. Reared with males from cells of *Nomia pattoni* Cockerell.

Specimens examined.—Alabama: 3 males and a female, 1880, Selma (E. A. Schwarz); male, July 31, 1916, Dothan. Arkansas: Female, September, 1890, Pine Bluffs. Connecticut: Female, September 2, 1909, Lyme (A. Champlain). Florida: Female. Georgia: 2 males, September 6, 1915, Bainbridge (Rehn and Hebard); female, June, 1912, Billy's Island, Okfenokee Swamp (J. C. Bradley); female,

September 1-5, 1913, Billy's Island, Okefenokee Swamp (J. C. Bradley); female, September 9, 1910, Stone Mountain. Illinois: Female, July, 1875, Peoria. Kansas: Female, July 23, 1901, Wells-ville; female, 1915, Johnson County (R. H. Beamer). Maryland: Female, August 20, 1894, Chestertown (E. G. Vanatta). Massachusetts: Male, Nantucket Isle; female, October 5, 1910, Forest Hills; 2 females, September 20, 1905, Waquoit (Owen Bryant); female, August 4, 1902, Sconset. Minnesota: Female, July 14, 1922, Fridley sand dunes, Anoka County (A. A. Nichol); male, August 5, 1896, Gray Cloud Island. Mississippi: Male, August 14, Corinth (H. S. Barber). Nebraska: Female, July 2, 1915, Rulo (E. M. Partridge). New Jersey: 2 males, September 2, 1901, Lucaston; male, September 7, 1890, Camden County; female, August 6, 1911, Trenton; female, May 13, Andrews; female, May 23, 1904, Iona; female, August 25, 1902, Iona (E. Daecke); female, August 24, 1912, Ramsey; female, September 4, 1898, Great Notch; female. New York: Female, July 27, 1900, Cold Spring Harbor, Long Island; male, September 12, New Russia, Essex County (J. C. Bradley). North Carolina: 2 males, August 20, 1908, Raleigh; female. Pennsylvania: Female. Texas: Male, August 23, 1907, Palestine (W. W. Yothers). Virginia: Male, June 13, 1910, Falls Church (R. A. Cushman); female, July 28, Falls Church; female, August 20, 1913, Falls Church (C. T. Greene); female, September, Falls Church; 3 males, September 4, 1915, Falls Church (C. T. Greene); male, September 13, Falls Church; male, September 11, Chain Bridge.

The specimens from Selma, Alabama, 1880 (E. A. Schwarz) were reared from the cells of *Nomia pattoni* Cockerell and establish this female as that of *sanbornii*. Dr. W. H. Ashmead had these specimens before him when he worked out his classification of the Mutilidae, hence the generic name *Nomiaephagus*. This also accounts for the fact that Ashmead included the genus *Nomiaephagus* in his key to the genera based on the females, after designating *sanbornii* Blake as the type of that genus, when apparently the female of *sanbornii* was unknown to other hymenopterists.

Both sexes of this species are quite variable. Many of the southern specimens from Georgia and Alabama have the head and thorax more or less reddish, while those from the north are usually black. The male specimen from Gray Cloud Island, Minnesota, August 5, 1896, has the head and thorax reddish and also has the second, third, and fourth tergites with a band of pale golden pubescence at the apex, rather than the usual black. The genitalia of this specimen are identical with other specimens of *sanbornii* and I therefore regard it as a variant of this species. I have examined the genitalia of the type and compared them with the series I have at hand, and find them to be identical. The females vary in size from 8-13 mm.

In some specimens the apical silvery band of the second tergite is narrowly interrupted, while in others it is broadly interrupted. The legs vary from ferruginous to black.

This species is very closely related to *propinqua* Cresson. The females of this species have been confused with the females of *propinqua* in all collections. The two may be separated by the characters given in the key.

35. PSEUDOMETHOCA PROPINQUA (Cresson).

Plate 3, fig. 13.

1865. *Mutilla propinqua* CRESSON, Proc. Ent. Soc. Phila., vol. 4, p. 433, male.
 1865. *Mutilla montivaga* CRESSON, Proc. Ent. Soc. Phila., vol. 4, p. 436, female.
 1871. *Mutilla (Sphaerophthalma) propinqua* BLAKE, Trans. Amer. Ent. Soc., vol. 3, p. 248, male.
 1871. *Mutilla (Sphaerophthalma) montivaga* BLAKE, Trans. Amer. Ent. Soc., vol. 3, p. 255, female.
 1886. *Sphaerophthalma propinqua* BLAKE, Trans. Amer. Ent. Soc., vol. 13, p. 242, male.
 1886. *Sphaerophthalma montivaga* BLAKE, Trans. Amer. Ent. Soc., vol. 13, p. 254, male.
 1887. *Sphaerophthalma montivaga* CRESSON, Trans. Amer. Ent. Soc., suppl. vol., p. 265, female.
 1887. *Sphaerophthalma propinqua* CRESSON, Trans. Amer. Ent. Soc., suppl. vol., p. 266, male.
 1897. *Mutilla montivaga* DALLE TORRE, Cat. Hymen., vol. 8, p. 64, female.
 1897. *Mutilla propinqua* DALLE TORRE, Cat. Hymen., vol. 8, p. 74, male.
 1899. *Mutilla montivaga* FOX, Trans. Amer. Ent. Soc., vol. 25, p. 227, female (part).
 1899. *Mutilla propinqua* FOX, Trans. Amer. Ent. Soc., vol. 25, p. 228, male.
 1903. *Ephuta montivaga* ANDRÉ, Gen. Ins., vol. 1, fasc. 11, p. 62, female.
 1903. *Ephuta propinqua* ANDRÉ, Gen. Ins., vol. 1, fasc. 11, p. 63, male.
 1903. *Mutilla montivaga* MELANDER, Trans. Amer. Ent. Soc., vol. 29, p. 294, female.
 1903. *Mutilla propinqua* MELANDER, Trans. Amer. Ent. Soc., vol. 29, p. 295, male.
 1923. *Pseudomethoca propinqua* MICKEL, 19th Rept. State Ent. Minn., p. 101, male and female.

Type—Male, Colorado, in collection of American Entomological Society of Philadelphia.

Plesiotype—Male, July 10, 1911, Meade County, Kansas (F. X. Williams), in entomological collection of University of Kansas.

Specimens examined—Canada, Alberta: Female and male, August 20, 1916, Medicine Hat (Sladen); male, August 26, 1912, Lethbridge (J. B. Willis); male, August 28, 1912, Lethbridge (J. B. Willis). Arizona: Male, July 31, Winslow (Barber and Schwarz); 2 females and a male, July 30, 1919, Winslow (Rehn and Hebard); female, Saceton (C. N. Ainslee); female, Yavapai County (O. Buch-

holz); female, Douglas, San Bernardino Ranch (F. B. Snow); female. Colorado: Male, June, 1900, Nephista; male, August 9, 1905, Cope (S. A. Johnson); male, June, Turkey Creek Canyon (Oslar); male and female, August 20, 1895, Poudre River; female, June 7, 1899, Fort Collins; female, June 8, 1899, Fort Collins; female, June 27, 1904, Fort Collins; female, July 25, 1900, Fort Collins; female, August 28, 1899, Fort Collins, female, June 6, 1904, Longmont (E. S. G. Titus); female, July 20, 1916, Boulder (Bonnie Allen); female, August 13, White Rocks, Boulder County (Cockereil); 2 females, September 7, 1901, Denver; female, Denver (Oslar); female, August 31, 1906, Chimney Gulch; female, July 13, Bent County (Lantz); female, August 23, Bent County (Lantz); 2 females, July 21, 1900, Durango (Oslar); female, July 22, 1900, Durango (Oslar); 7 females. Kansas: Female, June, Riley County (Marlatt); 2 females, June 26, Riley County (G. A. Dean); female, July 12, Riley County (Popenoe); female, July 21, Riley County (Popenoe); female, July 22, Riley County (Popenoe); female, August 7, Riley County (Popenoe); female, August 9, Riley County (J. B. Norton); 2 males, August, Riley County (Marlatt); female, Riley County (Popenoe); female, August 9, 1912, Rooks County (F. X. Williams); male, August 27, Rooks County; female, July 18, 1912, Ellis County (F. X. Williams); 2 females, July 19, 1912, Ellis County (F. X. Williams); 3 females, June 28, 1912, Rush County (F. X. Williams); 2 females and a male, July 6, 1911, Kiowa County (F. X. Williams); female, May, Clark County (F. H. Snow); female, June, Clark County (F. H. Snow); female, August 23, 1911, Clark County (F. X. Williams); 5 females, Sheridan County (F. X. Williams); 2 males, Decatur County (F. X. Williams); male, August 24, 1912, Norton County (F. X. Williams); 2 females and 5 males, July 10, 1911, Meade County (F. X. Williams); male, July 12, 1911, Meade County (F. X. Williams); female, July 26, 1912, Russell County (F. X. Williams); female, Wabaunsee County (Forest Anderson); 2 females, 2 males, Rawlins County (F. X. Williams); female, July 27, 1911, Grant County (F. X. Williams); 2 males, July 23, 1911, Grant County (F. X. Williams); 2 females, 4 males, Cheyenne County (F. X. Williams); 2 females, July 7, Wallace County; 3 females, July 8, Wallace County; 3 females, July 10, Wallace County; female, July 15, Wallace County; female and male, August 31, Wallace County, 2 females, and male, Wallace County (F. H. Snow); female, Greeley County (F. X. Williams); 2 females, August 27, Hamilton County; female, Hamilton County (S. J. Hunter); female, 2 males, July 30, 1911, Stanton County (F. X. Williams); female, 4 males, August 5, 1911, Morton County (F. X. Williams); female, Morton County (F. H. Snow); 2 females.

(Snow). Minnesota: Female, August 21, 1911, Fergus Falls (Stoner). Montana: Female, June 20, 1912, Lo Lo; male, August 14, 1906, Billings; male, August 18, 1917, Musselshell. Nebraska: Female, August, Lincoln; female, September, Lincoln; female, June, 1888, West Point; 2 females, July, 1888, West Point; 2 males, West Point; female, July 7, 1915, Curtis (C. E. Mickel); female, July 1, 1911, Imperial (J. T. Zimmer); female, May 24, 1914, Haigler (L. M. Gates); male, August 19, 1909, Haigler (C. H. Gable); male, August 19, 1912, Haigler (J. T. Zimmer); female, June, Halsey; 2 females, August 13, 1920, Halsey (C. B. Philip); female, August 28, 1911, Halsey (J. T. Zimmer); female, June, Dewey Lake Township, Cherry County (R. H. Wolcott); female, June 14, 1916, Mitchell (R. W. Dawson); female, June 16, 1915, Mitchell (L. M. Gates); female, June 27, 1913, Mitchell (L. M. Gates); female, June 28, 1916, Mitchell (C. E. Mickel); female, July 5, 1916, Mitchell (C. E. Mickel); female, July 30, 1914, Mitchell (L. M. Gates); female, August 5, 1917, Mitchell (E. J. Yates); male, August 5, 1914, Mitchell (L. M. Gates); female, August 25, 1913, Mitchell (L. M. Gates); female, June 23, 1911, Monroe Canyon, Sioux County (R. W. Dawson); 2 males, August 24, 1908, Monroe Canyon, Sioux County (R. W. Dawson); 2 males, August 24, 1908, Monroe Canyon, Sioux County (J. T. Zimmer); female, August 27, 1912, Monroe Canyon, Sioux County (E. J. Taylor); male, August 10, 1908, Bad Lands, Sioux County (C. H. Gable); male, August 9, 1908, Harrison (R. W. Dawson); female, August 12, 1912, Harrison (E. J. Taylor); female, Sioux County; male, Pine Ridge. New Mexico: Female, May 30, 1913, Jemez Springs (John Woodgate); female, July 10, 1916, Jemez Springs (John Woodgate); female, July 21, 1914, Jemez Springs (John Woodgate); male, July 27, 1914, Jemez Springs; male, July 29, 1916, Jemez Springs (John Woodgate); male, July 31, 1914, Jemez Springs; female, August 7, 1916, Jemez Springs (John Woodgate); female, August 9, 1913, Jemez Springs (John Woodgate); female, September 3, 1916, Jemez Springs (John Woodgate); female, September 11, 1916, Jemez Springs (John Woodgate); female, August 19-22, 1914, Cimarron (W. R. Walton); male, Cimarron; male, August 9, 1919, Springer (C. N. Ainslie); female, Springer (C. N. Ainslie); female, August 23, Glorieta (W. P. Cockerell); female, July 23, 1902, Las Vegas (Osler); 2 females, August, 1894, Albuquerque (Snow); male, Magdalena. North Dakota: Female, June 16, 1918, Gascoyne (O. A. Stevens); female, July 4, 1918, Marmouth (O. A. Stevens); female, August 22, 1921, Beach (C. N. Ainslie); male, August 30, 1922, Cannon Ball (O. A. Stevens); 2 females. South Dakota: Female, Hot Springs; female. Texas: 2 females, July, 1905, Barstow (J. C. Crawford); female,

October 12, Barstow (J. C. Crawford); female, July 1-2, 1916, Marathon; 3 females, June 13-17, 1908, Brewster (Mitchell and Cushman); female, June 6, 1908, Marfa (Mitchell and Cushman); 3 females, July 3-6, Marfa (Wickham); female, July 11, 1907, Victoria (W. W. Yothers); 2 females, 8 males, June 22, 1917, Richmond, Fort Bend County; 4 females, July 11, 1917, El Paso, El Paso County; 2 females, June 24, 1917, Wharton; male, June 28-30, Alpine (Wickham); male, May, 1907, Lee County; male, November 26, 1905, Cotulla (F. C. Pratt). Wyoming: Female, Douglas (L. Bruner); female, July, 1895, 40 miles north of Lusk.

I consider *montivaga* Cresson the female of *propinqua* Cresson for the following reasons: The geographical ranges of the two are identical; both are found in the outlying portions of this area, that is, Texas, New Mexico, Arizona, North Dakota, Montana, and Alberta, Canada; in the case of North Dakota, Montana, and Alberta, Canada *montivaga* and *propinqua* are the only two *Pseudomethocas* which are present in collections, excepting *bequaerti* Mickel, and it belongs to another section of the genus. Fox (1899) suggested that *montivaga* was perhaps the female of *propinqua* and from the large series of specimens at hand this seems to be perfectly evident.

This species is very closely related to *sanbornii* Blake and from the distribution data at hand it seems to replace *sanbornii* throughout the area of its range.

Both the female and the male are quite variable, although in the case of the female, not so much so as former writers have indicated. The color of the female varies from ferruginous to dark mahogany red; the apex of the first tergite may have the pubescence black or golden, while that of the second may be black or silvery. I have examined the type of *montivaga* Cresson and find that it has the apex of the first tergite with golden pubescence and the apex of the second tergite with silvery pubescence. There is apparently no structural character that will serve to separate the variants. Two males from West Point, Nebraska, have the thorax and the first two abdominal segments almost entirely ferruginous. A male from Lee County, Texas, one from Meade County, Kansas, and one from Cotulla, Texas, have the thorax entirely black. The genitalia of all the specimens in the entire series are identical and the variants are therefore retained here.

36. PSEUDOMETHOCA BRAZORIA (Blake).

1871. *Mutilla (Sphaerophthalma) brazoria* BLAKE, Trans. Amer. Ent. Soc., vol. 3, p. 255, female.
1886. *Sphaerophthalma brazoria* BLAKE, Trans. Amer. Ent. Soc., vol. 13, p. 254, female.

1887. *Sphaerophthalma brazoria* CRESSON, Trans. Amer. Ent. Soc., suppl. vol., p. 265, female.
1897. *Mutilla brazoria* DALLE TORRE, Cat. Hymen., vol. 8, p. 17, female.
1899. *Mutilla montivaga* FOX, Trans. Amer. Ent. Soc., vol. 25, p. 227, female (part).
1903. *Mutilla montivaga* MELANDER, Trans. Amer. Ent. Soc., vol. 29, p. 294, female (part).

Type.—Female, Texas, in collection of American Entomological Society of Philadelphia.

Specimens examined.—Texas: Female, May 9, 1906, Cotulla (J. C. Crawford); female, July 1-2, 1916, Marathon; female, Austin; female, Round Mountain; 2 females.

This species is quite distinct from the female of *propinqua* Cresson and may be distinguished, aside from general color, by the vesture of the abdominal tergites which is almost entirely golden, and by its coarser puncturation.

37. *PSEUDOMETHOCA CARBONARIA*, new species.

Plate 4, fig. 16.

Male.—Black; length 8 mm. Head black, rather quadrate, clothed with long, sparse, erect, silvery pubescence; mandibles tridentate; clypeus feebly bidentate medially, obscurely punctured; antennae separated at the base by a distance equal to half the length of the scape; scape punctate and pubescent; first joint of flagellum shorter than the second; front with coarse, confluent punctures; vertex with coarse, sparse, irregularly placed punctures; genae regularly punctate; eyes slightly ovate, the distance between the hind margins of the eyes and the postero-lateral angles equal to five-sevenths of the longitudinal diameter of the eyes; head not as wide as the thorax.

Thorax black, clothed with long, sparse, erect, silvery pubescence; pronotum and scutellum with coarse, confluent punctures; mesonotum with coarse, separated punctures; dorsum and posterior face of propodeum broadly and shallowly reticulate; humeri rounded; propleura with separated punctures, the cephalic margin rounded; mesepisternum and mesepimeron with coarse, confluent punctures; metapleura polished, with a microscopic silvery pile; sides of propodeum polished, with a few scattered punctures, and rugose at the posterior margin; tegulae subhemispherical, polished, punctate and pubescent at the extreme base and sides.

Abdomen black, clothed with sparse, long, erect, silvery pubescence; first segment completely sessile with the second; first tergite with elongate punctures on the disk, a very thin band of silvery pubescence at the apex; second tergite with coarse, sparse punctures about their own diameter apart; apices of second, third,

and fourth tergites with a prominent band of silvery pubescence; tergites 3-6 distinctly punctate; sternite two with irregular, sparse punctures.

Wings subfuscous; cell R4 almost obsolete; vein M 3+4 received by cell R5 a little before the middle.

Legs black, sparsely clothed with silvery pubescence; calcaria pale.

Holotype.—Male, June, Brownsville, Texas, in entomological collection of University of Kansas.

Paratype.—Male, Texas, Cat. No. 26396 U.S.N.M.

38. PSEUDOMETHOCA VANDUZEI Bradley.

Plate 4, fig. 14.

1916. *Pseudomethoca (Nomiaephagus) vanduzei* BRADLEY, Trans. Amer. Ent. Soc. vol. 42, p. 321, male.

Type.—Male, Clearwater, Florida, in American Museum of Natural History.

Plesiotype.—Male, May 3, 1906, Lee County, Texas, in entomological collection of University of Kansas.

The genitalia of the type and plesiotype have been compared and found to be identical. This record extends the range of *vanduzei* considerably.

39. PSEUDOMETHOCA RUSSEOLA, new species.

Plate 4, fig. 19.

Male.—Black and ferruginous; length 8 mm. Head black, sparsely clothed with long, erect, silvery pubescence; mandibles tridentate; clypeus bidentate medially, distinctly punctate throughout; antennae separated at the base by a distance equal to half the length of the scape; scape punctate and pubescent; first joint of flagellum a little shorter than the second; front and genae closely, confluent punctate; vertex with large, close punctures; eyes slightly ovate, distance between the hind margins of the eyes and the postero-lateral angles equal to half the longitudinal diameter of the eyes; head not as wide as the thorax.

Thorax black, sparsely clothed with long, erect, silvery pubescence; pronotum, mesonotum and scutellum with large, close, more or less confluent punctures; dorsum and upper third of posterior face of propodeum broadly reticulate, remainder of posterior face sparsely rugoso-punctate; humeri rounded; propleura deeply, confluent punctate, the cephalic margin rounded; mesopisternum and mesepimeron coarsely, confluent punctate; metapleura polished, finely rugose on the posterior half; sides of propodeum polished, the pos-

terior half coarsely rugose; tegulae convex, polished, punctured and pubescent at the base and sides.

Abdomen ferruginous, sparsely clothed with long, erect, silvery pubescence; first segment completely sessile with the second; first tergite with elongate punctures on the disk, a very thin band of silvery pubescence at the apex; second tergite with large, shallow, separated punctures; tergites 3-6 distinctly punctate; tergites 2-5 with an obscure, thin band of black hairs at the apex; sternite two with large, separated punctures; sternites 4-7 black.

Wings subfuscous; cell R4 obsolete; vein R5 with a short vestige of a vein projecting at right angles into cell R4 midway between vein R3 and M 1+2; vein M 3+4 received by cell R5 considerably before the middle.

Legs black, sparsely clothed with silvery pubescence; calcaria whitish.

Holotype.—Male, May 4, 1901, San Diego, Texas (R. A. Cushman), Cat. No. 26211 U.S.N.M.

This species may be easily recognized by the red abdomen, and the silvery pubescence of the entire body.

40. PSEUDOMETHOCA AEGAEON (Fox).

Plate 4, fig. 17.

1899. *Mutilla aegaeon* Fox, Trans. Amer. Ent. Soc., vol. 25, p. 229, male.

1903. *Ephuta aegaeon* ANDRÉ, Gen. Ins., vol. 1, fasc. 11, p. 57, male.

Type.—Male, Tucson, Arizona, in U. S. National Museum.

Plesiotype.—Male, Tucson, Arizona (F. H. Snow), in entomological collection of the University of Kansas.

Specimens examined.—Arizona: Male, August 4-7, 1916, Coyote Mountains.

The genitalia of the type and plesiotype have been compared and found to be identical.

41. PSEUDOMETHOCA MANCA, new species.

Plate 4, fig. 18.

Male.—Black; length 8 mm. Head black, sparsely clothed with long, white, erect pubescence; mandibles tridentate; clypeus bidentate medially, finely punctate; front, vertex and genae with large, more or less confluent punctures; eyes slightly ovate, distance between hind margins of eyes and postero-lateral angles a little less than half the longitudinal diameter of the eyes; head not quite as wide as the thorax.

Thorax black, sparsely clothed with long, erect, silvery pubescence; pronotum, mesonotum and scutellum with large, confluent punc-

tures; dorsum and posterior face of propodeum broadly and shallowly reticulate; humeri rounded; propleura confluent punctate, the cephalic margin rounded; mesepisternum and mesepimeron with large, confluent punctures; metapleura polished; sides of propodeum polished on the anterior third, coarsely rugose on the posterior two-thirds; tegulae very convex, polished, punctate, and pubescent at the extreme base and sides.

Abdomen black, sparsely clothed with long, erect, silvery pubescence; first segment completely sessile with the second; disk of first tergite with large, separated punctures; second tergite with large, shallow punctures, separated by about half their own diameter; tergites 3-6 distinctly punctate; tergites 2-5 with a prominent, apical band of silvery pubescence; tergites 5-6 with blackish pubescence; sternite two with large, shallow, more or less confluent punctures; sternites 2-6 with an apical band of silvery pubescence.

Legs black, sparsely clothed with silvery pubescence; calcaria whitish.

Holotype.—Male, Utah, Cat. No. 26212, U.S.N.M.

The type specimen lacks both wings and antennae. However, the structure of the genitalia is so characteristic that it may be easily recognized from that structure alone. External structural characters are used in the key to the males to separate this from other species.

SPECIES OF MUTILLIDAE DESCRIBED FROM MEXICO AND CENTRAL AMERICA WHICH PROBABLY BELONG TO THE GENUS PSEUDOMETHOCHA.

| | | |
|------------------------------|--------------------------------|------------------------------|
| <i>amphissa</i> Cameron. | <i>ferruginea</i> Smith. | <i>munda</i> Cameron. |
| <i>animosa</i> Cameron. | <i>flaviceps</i> André. | <i>odiosa</i> Cameron. |
| <i>areta</i> Cameron. | <i>gothica</i> Blake. | <i>panamensis</i> Cameron. |
| <i>auripes</i> Blake. | <i>gratiosa</i> Cameron. | <i>petricola</i> Blake. |
| <i>beata</i> Cameron. | <i>incognata</i> Cameron. | <i>phedyma</i> Cameron. |
| <i>bisignata</i> Blake. | <i>ingrata</i> Cameron. | <i>psammadroma</i> Blake. |
| <i>caltha</i> Cameron. | <i>inimica</i> Cameron. | <i>ravula</i> Cameron. |
| <i>capitata</i> Smith. | <i>intrepida</i> Cameron. | <i>respublicana</i> Cameron. |
| <i>caroli</i> Cameron. | <i>ipsea</i> Cameron. | <i>robinsoni</i> Blake. |
| <i>cephalica</i> Cameron. | <i>izucar</i> Blake. | <i>rustica</i> Cameron. |
| <i>chiapa</i> Blake. | <i>jaliscoensis</i> Cameron. | <i>salutatrix</i> Blake. |
| <i>chontalensis</i> Cameron. | <i>janira</i> Cameron. | <i>sonorensis</i> Cameron. |
| <i>cleonica</i> Cameron. | <i>jocularis</i> Cameron. | <i>subgracilis</i> Cameron. |
| <i>cordovensis</i> Cameron. | <i>laticeps</i> Blake. | <i>unicincta</i> Ashmead. |
| <i>cruciata</i> Smith. | <i>lerma</i> Blake. | <i>verticalis</i> Smith. |
| <i>damia</i> Cameron. | <i>luatha</i> Cameron. | <i>veraepacis</i> Cameron. |
| <i>dasygastra</i> André. | <i>ludovica</i> Cameron. | <i>volatilis</i> Cameron. |
| <i>erecta</i> Fox. | <i>lycimnia</i> Cameron. | <i>vulnerifrons</i> André. |
| <i>euryclea</i> Cameron. | <i>macrocephala</i> Smith. | <i>xalapa</i> Blake. |
| <i>excentrica</i> Cameron. | <i>minutissima</i> Blake. | <i>xanthocerata</i> Smith. |
| <i>expansa</i> André. | <i>minoritaria</i> Cameron. | <i>zapoteca</i> Blake. |
| <i>extinctor</i> Cameron. | <i>mirandillensis</i> Cameron. | |

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EXPLANATION OF PLATES.

[All drawings to the same scale and made by the author.]

PLATE 1.

- FIG. 1. *Pseudomethoca*, species, male genitalia. *a*, uncus; *b*, squama; *c*, sagitta; *d*, volsella; *e*, ramus; *f*, cardo.
2. *Myrmilloides grandiceps* (Blake). Male genitalia.
3. *Pseudomethoca anthracina* (Fox). Male genitalia.
4. *Pseudomethoca aureovestita* Bradley. Male genitalia.

PLATE 2.

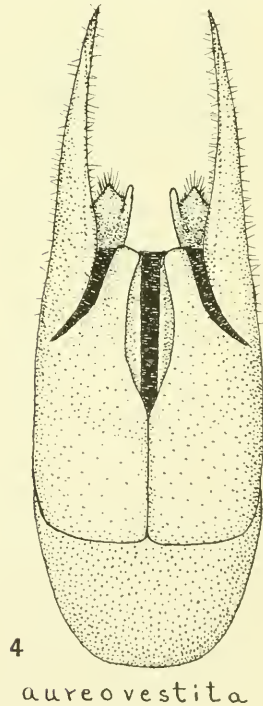
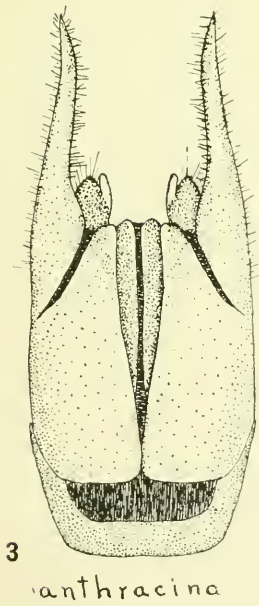
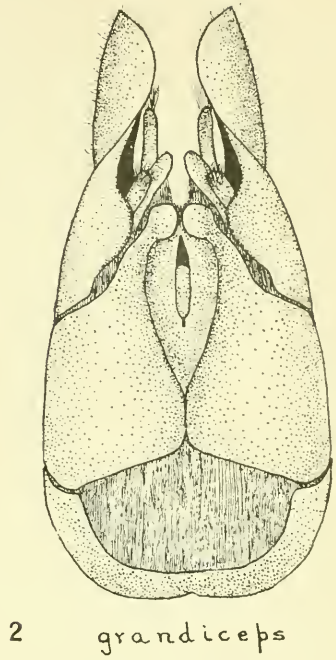
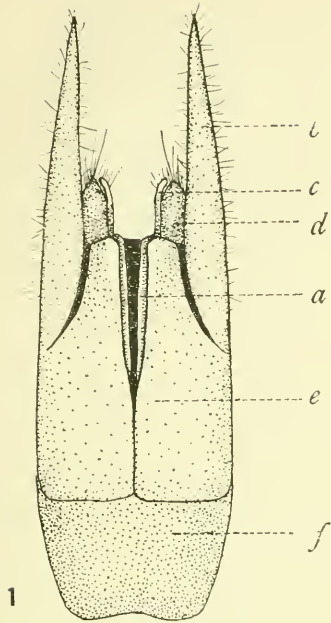
- FIG. 5. *Pseudomethoca oecola* (Blake). Male genitalia.
6. *Pseudomethoca nigricula*, new species. Male genitalia.
7. *Pseudomethoca canadensis* (Blake). Male genitalia.
8. *Pseudomethoca athamas* (Fox). Male genitalia.
9. *Pseudomethoca albicoma*, new species. Male genitalia.

PLATE 3.

- FIG 10. *Pseudomethoca geryon* (Fox). Male genitalia.
11. *Pseudomethoca simillima* (Smith). Male genitalia.
12. *Pseudomethoca sanbornii* (Blake). Male genitalia.
13. *Pseudomethoca propinqua* (Cresson). Male genitalia.

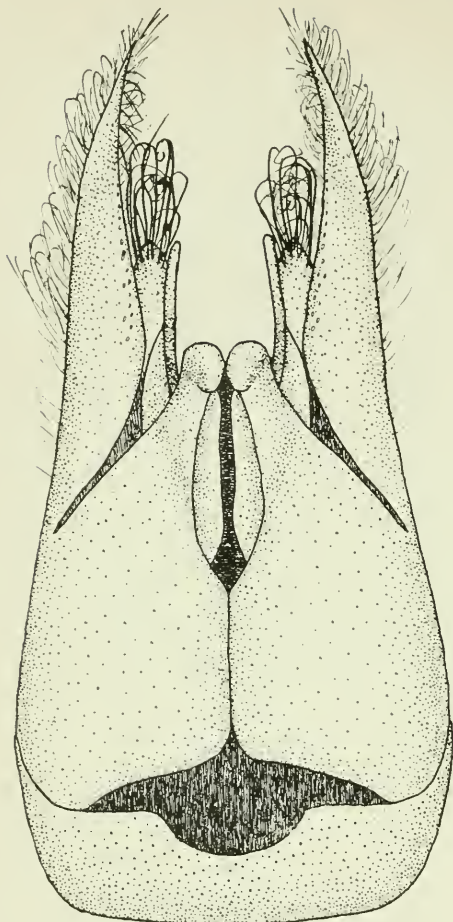
PLATE 4.

- FIG 14. *Pseudomethoca vanduzeei* Bradley. Male genitalia.
15. *Pseudomethoca scrupulosa*, new species. Male genitalia.
16. *Pseudomethoca carbonaria*, new species. Male genitalia.
17. *Pseudomethoca uegæon* (Fox). Male genitalia.
18. *Pseudomethoca manca*, new species. Male genitalia.
19. *Pseudomethoca russcola*, new species. Male genitalia.

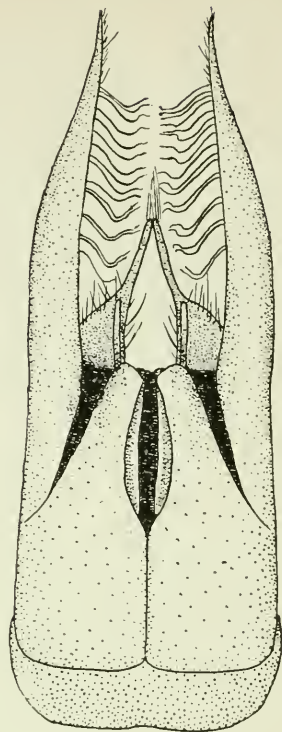


MALE GENITALIA OF THE MUTILLID WASPS. DORSAL VIEW.

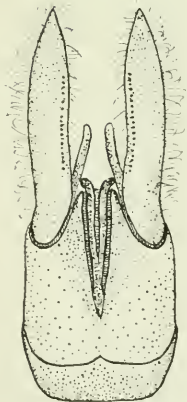
FOR EXPLANATION OF PLATE SEE PAGE 49



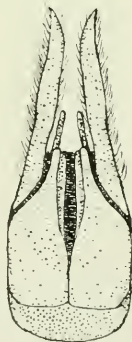
5 *ocoela*



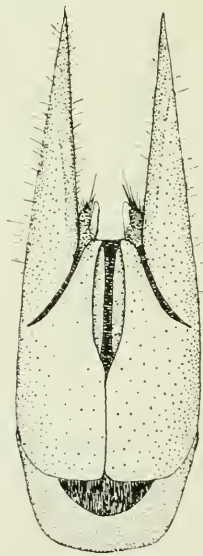
6 *nigricula*



7 *canadensis*



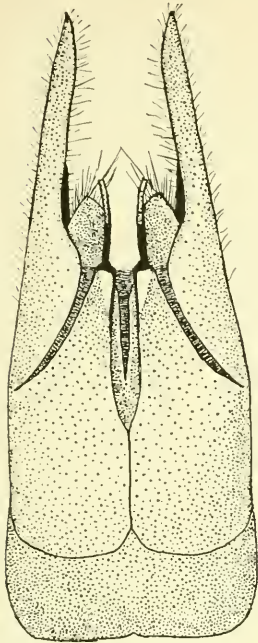
8 *athamas*



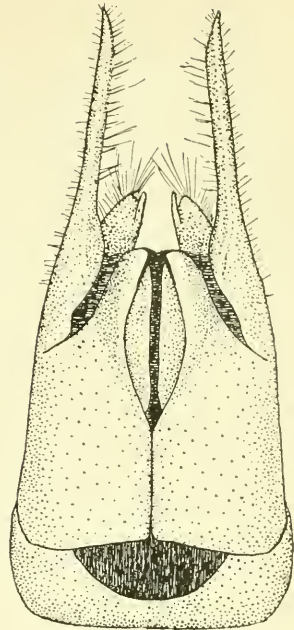
9 *albicoma*

MALE GENITALIA OF THE MUTILLID WASPS. DORSAL VIEW.

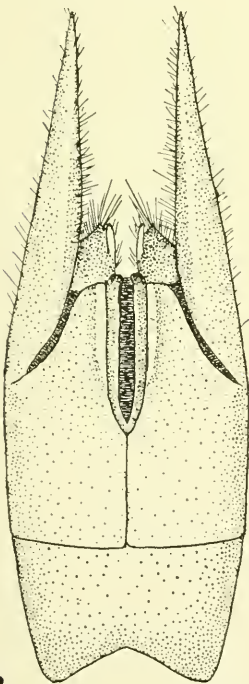
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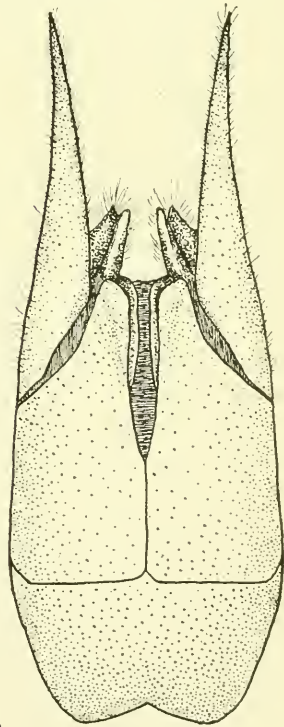
10 *geryon*



11 *simillima*



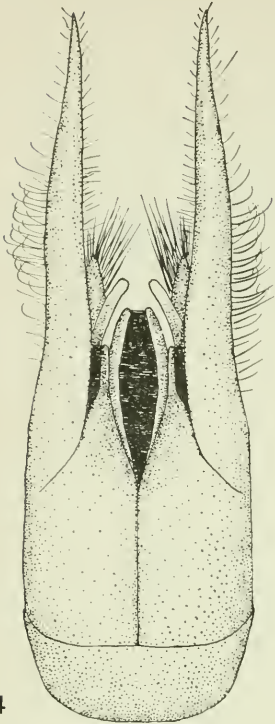
12 *sanbornii*



13 *propinqua*

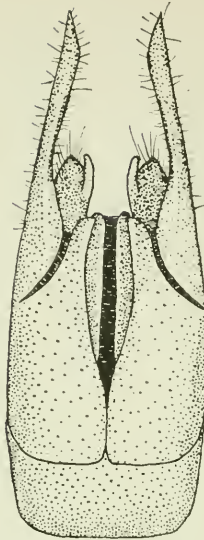
MALE GENITALIA OF THE MUTILLID WASPS. DORSAL VIEW.

FOR EXPLANATION OF PLATE SEE PAGE 49.



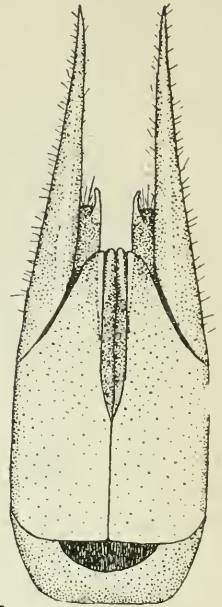
14

vanduzei



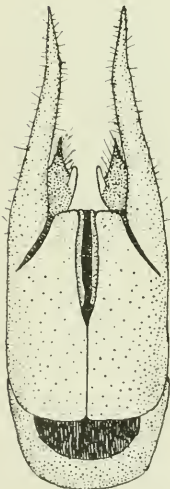
15

scrupulosa



16

carbonaria



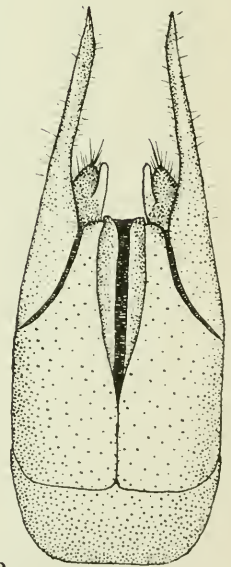
17

aegaeon



18

manca



19

russeola

MALE GENITALIA OF THE MUTILLID WASPS. DORSAL VIEW.

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[Valid genera in heavy face type; valid species in roman; synonyms in italics.]

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